CITY OF CARSON

Draft Environmental Impact Report for OXY USA Inc. Dominguez Oil Field Development Project

SCH No. 2012031019

Volume 1: Draft Environmental Impact Report And Appendix A

(Appendices B through E in Volumes 2 and 3)

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CITY OF CARSON

DOMINGUEZ OIL FIELD DEVELOPMENT PROJECT

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CHAPTER 1
INTRODUCTION AND EXECUTIVE SUMMARY

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 INTRODUCTION

OXY USA Inc. (OXY) is proposing the construction and operation of a new oil and gas production facility to develop a portion of the Dominguez Oil Field that has been out of production for many years. The proposed Project will be designed and constructed to incorporate an existing oil and gas test well facility and to be visually compatible with the existing industrial and commercial buildings at the Dominguez Technology Centre.

OXY proposes to construct a production facility (Facility) located at 1450 -1480 Charles Willard Street, consisting of up to 202 wells (2 existing test wells and 200 new wells), an oil and gas processing facility, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 barrels per day of oil and three million standard cubic feet per day of natural gas. Directional drilling techniques will be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet. The Facility will be constructed within a 30-foot high walled 6.5 acre compound, with the drill rig mast enclosed.

1.2 PURPOSE/LEGAL REQUIREMENTS

CEQA Public Resources Code §21000 et seq., requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment (Public Resources Code §21067). The proposed Project requires discretionary approval from the City of Carson (City or Carson) for a Development Agreement and, therefore, it is subject to the requirements of CEQA (Public Resources Code, §21000 et seq.). Because the City has the primary responsibility for supervising or approving the entire project as a whole it is the most appropriate public agency to act as lead agency (CEQA Guidelines §15051(b)).

In accordance with §15121(a) of the California Environmental Quality Act (CEQA) Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an Environmental Impact Report (EIR) is to serve as an informational document that: "will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project."

To fulfill the purpose and intent of CEQA, as the lead agency for this project, the City of Carson prepared and released for a 30-day public review and comment period, a Notice of Preparation and Initial Study (NOP/IS) to identify potentially significant environmental impacts and provided a preliminary analysis associated with the OXY, Dominguez Oilfield Development Project (see Appendix A).

1.3 SCOPE AND CONTENT

The NOP/IS was circulated for a 30-day comment period beginning on March 6, 2012, through April 4, 2012. The NOP/IS was circulated in Carson and to neighboring jurisdictions, responsible agencies, other public agencies, and interested individuals in order to solicit input on the scope of the environmental analysis to be included in the EIR. Three comment letters were received on the NOP/IS during the public comment period and are provided in Appendix A. The NOP/IS formed the basis for and focus of the technical analyses in this Draft EIR. The following environmental issues were identified in the NOP/IS as potentially significant and are further addressed in this document:

- Air Quality,
- Geology and Soils
- Greenhouse Gases
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation and Traffic

The NOP/IS concluded that the proposed Project would not create significant adverse environmental impacts to the following areas: aesthetics, agricultural and forestry resources, biological resources, cultural resources, land use and planning, mineral resources, population and housing, public services, recreation, and utilities and service systems. No comments were received disputing this conclusion.

Pursuant to CEQA Guidelines §15130, a discussion of potential cumulative impacts has been prepared and is provided in Chapter 5. Alternatives to the proposed Project in Chapter 6 of this Draft EIR were prepared in accordance with §15126.6 of the CEQA Guidelines. Chapter 6 describes a range of reasonable alternatives that could feasibly attain the basic objectives of the proposed Project as a means of eliminating or reducing some of the significant adverse environmental effects associated with the proposed Project.

1.4 RESPONSIBLE AND OTHER AGENCIES

CEQA Guidelines §15381 defines a "responsible agency" as: "a public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For purposes of CEQA, responsible agencies include all public agencies other than the lead agency that have discretionary approval authority over the project." The City of Carson is the lead agency for the Dominguez Oil Field Development Project.

The California Department of Oil, Gas, and Geothermal Resources (DOGGR) has discretionary authority for aspects of the proposed Project and has also been given an opportunity to review and comment of the NOP/IS and EIR for the proposed Project. The SCAQMD is a responsible agency over the proposed Project as air quality permits are required, and has been given an opportunity to review and comment on the NOP/IS and EIR for the proposed Project.

No trustee agencies as defined by CEQA Guidelines §15386 have been identified with respect to the proposed Project. However, notice of the proposed Project has been sent to the Office of Planning and Research pursuant to Public Resources Code §21080.4 for distribution in the event trustee or other responsible agencies are identified for the proposed Project.

1.5 INTENDED USES OF THE EIR

The EIR is intended to be a decision-making tool that provides full disclosure of the environmental consequences associated with implementing the proposed Project. Additionally, CEQA Guidelines §15124(d)(1) requires a public agency to identify the following specific types of intended uses:

- A list of the agencies that are expected to use the EIR in their decision-making;
- A list of permits and other approvals required to implement the project; and,
- A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

To the extent that local public agencies, such as cities, SCAQMD, DOGGR, etc., are responsible for making land use and planning decisions related to the proposed Project, they could possibly rely on this EIR during their decision-making process. See the preceding section for a list of public agencies whose approval may be required and who may also be expected to use this EIR in their decision-making process. See also Table 2.9-1 in Chapter 2 for a list of permits and other approvals required to implement the proposed Project.

1.6 AREAS OF CONTROVERSY

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in the CEQA document. "Controversy" is defined as a difference in opinion or a dispute. After public notification and review of the NOP/IS, the City of Carson received three comment letters. Consistent with the purpose of the NOP/IS to solicit comments or other information, issues raised in the comment letters are related specifically to potential impacts from the proposed Project and were addressed in the EIR. Comment letters were received from the South Coast Air Quality Management District, DOGGR, and the

County of Los Angeles Fire Department and generally no areas of controversy were raised. The SCAQMD comment letter provided guidance for the evaluation of air quality impacts. The County Fire Department and DOGGR comment letters provided guidance on their requirements that would apply to the proposed Project. The NOP/IS and the comment letters received on those documents can be found in Appendix A.

Subsequent to the NOP/IS, the City of Carson held two informational meetings on the proposed Project which were attended by many public members. A total of 206 members of the public attended the meetings and had the opportunity to ask questions and comment on the proposed Project. Table 1.6-1 presents a summary of the key comments received during the public meetings and references to the sections of this EIR addressing them. The issues that could be considered controversial are provided in Table 1.6-1.

TABLE 1.6-1

Summary of Potentially Controversial Topics

Key Issues Raised	EIR Sections Where Addressed
Concerns regarding potential impacts from hydrologic fracturing during oil drilling activities	Section 2.8 Hydraulic fracturing has been removed from the proposed Project
Concerns that oil well operations could cause subsidence under homes	Section 4.6.2.2 Proposed Project will use salt water injection to replace removed oil
Concerns that oil well operations could create contamination of groundwater	Section 4.6.2.2 Proposed Project will comply with DOGGR regulations

1.7 EXECUTIVE SUMMARY – CHAPTER 2: PROJECT DESCRIPTION

1.7.1 INTRODUCTION (SECTION 2.1)

OXY USA Inc. (OXY) is proposing the construction and operation of a new oil and gas production facility to develop a portion of the Dominguez Oil Field that has been out of production for many years. The proposed Project will be designed and constructed to incorporate an existing oil and gas test well facility and to be visually compatible with the existing industrial and commercial buildings at the Dominguez Technology Centre.

OXY proposes to construct a production facility consisting of up to 200 wells, an oil and gas processing facility including a process flare, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 barrels per day (bbl/day) of oil and three million standard cubic feet per day (mmscf/day) of natural gas. Directional drilling techniques will be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet. The Facility will be located in a 30-foot high walled compound with the drill rig mast enclosed.

1.7.2 PROJECT OBJECTIVES (SECTION 2.2)

The objectives of the proposed Project are to:

- Develop the Dominguez Oil Field utilizing state-of-the-art technology;
- Encourage development of local oil and gas resources to reduce dependence on foreign energy supplies;
- Integrate an oil and gas production facility with the current commercial and light industrial neighborhood;
- Locate the proposed Project to utilize existing pipeline networks to transport oil and natural gas to local refineries and natural gas suppliers;
- Centrally locate the proposed Project relative to the Dominguez Oil Field to allow oil reservoir access from a single site; and,
- Utilize proven technology to maximize individual well production and to minimize the number of wells and associated drilling.

1.7.3 PROJECT LOCATION (SECTION 2.3)

The proposed Project will be located in the northern portion of the City of Carson within Los Angeles County. The proposed Project site is approximately 6.5 acres and will be located entirely within the Dominguez Technology Centre. The proposed Project location currently consists of an industrial building and two oil and gas test wells (and associated process equipment) located at 1450-1480 Charles Willard Street.

1.7.4 LAND USE AND ZONING (SECTION 2.4)

OXY USA Inc. is proposing to construct an oil drilling and production facility within the confines of the existing industrial site. The General Plan designates the land use of the proposed Project site as Light Industrial (LI). The zoning for the proposed Project site is Manufacturing, Light (ML).

The Dominguez Technology Center Specific Plan recognizes that oil production and recovery have occurred within the specific plan area for over 65 years and will continue to be a component of the overall development of the Specific Plan area. Oil and gas exploration, production and transmission are allowable land uses within the Dominguez Technology Center Specific Plan. Therefore, the proposed Project is consistent with the designated land use and zoning of the site and will not conflict with the adopted General Plan or Specific Plan for the site.

1.7.5 EXISTING FACILITY CONFIGURATION AND OPERATION (SECTION 2.5)

The existing facilities at the proposed Project location include a 77,360-square foot warehouse building, located in the northern portion of the property, and an oil and gas production test facility, located in the southern portion of the property. Activities associated with the warehouse facility involve the receipt and distribution of goods via trucks, which based on traffic monitoring data operates from 4:30 a.m. to 10:30 p.m. The oil and gas production test facility is comprised of two production test wells, production testing equipment, a process flare, an emergency flare, electrical generators, and several temporary storage tanks. The two test wells were drilled more than two miles (i.e., over 10,560 feet) deep using diesel-powered generators and a drill rig equipped with a 168-foot tall mast. The current oil and gas testing operations occur 24 hours a day, seven days a week with two 12-hour shifts.

1.7.6 PROPOSED PROJECT (SECTION 2.6)

OXY proposes to construct a production facility consisting of up to 200 wells, an oil and gas processing facility, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 barrels per day of oil and 3 million standard cubic feet per day of natural gas. Crude oil production results in produced fluids (oil, water, and gas liquids) and natural gases that must be processed to meet buyer and transportation specifications. Once brought to the surface, the oil, water, and gas mixture is processed to recover the salable products (crude oil and natural gas) from the water.

Directional drilling techniques will be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet within the Dominguez oil field. The Facility will be located in a 30-foot high, walled compound with an enclosed drill rig mast. An artistic rendering is shown in Figure 2.6-3. The Facility will be equipped with two main gates, one located at the northwest corner accessed from Charles Willard Street, and one located on the southeast corner accessed from Bishop Avenue.

1.7.7 CONSTRUCTION OF THE PROPOSED PROJECT (SECTION 2.7)

The proposed construction schedule for the proposed Project is approximately 12 to 18 months and is anticipated to begin upon project approval and receipt of all necessary permits. The construction will include demolition of the existing structures at the proposed Project site, which is expected to take approximately three months, followed by construction of the facility and off-site improvements. Well drilling is estimated to begin approximately five to six months following Project approval and will continue as part of the proposed Project operations since it is anticipated that the facility will operate during the time wells are being drilled. The final phases of construction may overlap with the initial well drilling in the early months of the proposed Project.

1.7.8 OPERATION OF THE PROPOSED PROJECT (SECTION 2.8)

The proposed Project will operate 24-hours per day, 365 days per year. Operations will consist of drilling wells, maintaining wells, and operating and maintaining the production and transportation systems. Each new well is expected to take four to six weeks to install with up to approximately 20 wells installed per year. Over time, re-drilling of wells will need to take place and it is expected that up to approximately 20 re-drills per year will be performed. Re-drilling occurs when a drilling rig is used to drill a new hole or lateral from an existing surface well (wellhead) to change the properties of the well. Drilling will use non-potable water from the oil reservoir for all but the first ten wells. The first ten wells will use approximately 4,500 gallons per day of potable water. Blowout Prevention systems will be employed to prevent an uncontrolled release of reservoir fluids and shut off the flow to prevent spills and releases of materials during drilling.

Once constructed, the proposed Project will be operated and maintained as an oil and gas production facility, and designed to current oil field technology standards. Operations will be designed to utilize automated equipment for emergency shutdowns due to major equipment and system malfunctions, as well as natural disasters, such as earthquakes. Oil field operators will be present on-site 24 hours per day to monitor activity and check for safety and security of operations.

1.7.9 PERMITS AND APPROVALS (SECTION 2.9)

The proposed Project will require approvals or permits from a variety of federal, state, and local agencies. Examples of general permits and approvals required for the proposed Project are summarized in Section 2.9 of Chapter 2.

1.8 EXECUTIVE SUMMARY – CHAPTER 3: EXISTING ENVIRONMENTAL SETTING

CEQA Guidelines §15125 requires that an EIR include a description of the environment within the vicinity of a proposed project as it exists at the time the NOP/IS is published, or if no NOP/IS is published, at the time the environmental analyses commences, from both a local and regional perspective. The environmental baseline for the EIR is the environment as it existed at the time the NOP/IS was published (March 2012). Therefore, the baseline for the proposed Project is generally the 2010 – 2011 timeframe. Chapter 3 presents the existing environmental setting for the proposed Project against which potential impacts of the Project have been evaluated. The environmental analyses in this EIR are focused only on the environmental topics identified in the NOP/IS (see Appendix A) that could be significantly adversely affected by the proposed Project.

1.8.1 AIR QUALITY (SECTION 3.2)

The proposed Project site is located within the SCAQMD jurisdiction which consists of the four-county South Coast Air Basin (Basin), including Orange, and the non-desert portions of Los Angles, Riverside, and San Bernardino counties, the Riverside County portions of the Salton Sea Air Basin (SSAB), and the Mojave Desert Air Basin (MDAB). The Basin is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountain ranges to the north and east.

1.8.1.1 Meteorological Conditions

The climate in the Basin generally is characterized by sparse winter rainfall and hot summers tempered by cool ocean breezes. The mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. Temperature affects the air quality of 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 Basin due to a wide variation in topography. Temperature also has a major effect on vertical mixing height and affects chemical and photochemical reaction times.

1.8.1.2 Criteria Pollutants

The sources of air contaminants in the Basin vary by pollutant but generally include on-road mobile sources (e.g., automobiles, trucks and buses), other off-road mobile sources (e.g., airplanes, ships, trains, construction equipment, etc.), stationary sources (e.g., fuel combustion, petroleum production and marketing, and other industrial processes), and solvent evaporation (e.g., consumer products and architectural coatings). Mobile sources are responsible for a large portion of the total Basin emissions of several pollutants.

Health-based air quality standards have been established by the U.S. EPA and the CARB for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter less than ten microns in diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), sulfur dioxide (SO_2), and lead. California also has established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. The Basin, including the Project area, is classified as attainment for both the state and federal standards for CO, NO_2, SO_2, sulfates, and lead and the state standard for sulfates. The Basin is currently designated as non-attainment for PM2.5 and ozone for both state and federal standards. The Basin has met the federal PM10 standard and has been designated as attainment by the U.S. EPA, but is in non-attainment for the state standards.

The project site is located within the SCAQMD's South Coastal Los Angeles County 1 Monitoring Station No. 072 monitoring area. The area has shown a general improvement in air quality with decreasing or consistent concentrations of most pollutants. Air quality in the South Coastal Los Angeles County 1 Monitoring Station No. 072 monitoring area complies with the state and federal ambient air quality standards for CO, NO_2, SO_2, PM10, lead, and sulfate. The air quality in the area was also in compliance with the federal eight-hour and state one-hour ozone standards. The air quality in the South Coastal Los Angeles County 1 Monitoring Station No. 072 area is not in compliance with the state annual PM10 standards in 2008 and 2009, but has been in compliance from 2010 – 2012. The air quality in the South Coastal Los Angeles County 1 Monitoring Station No 072 is not in compliance with the state or federal PM2.5 standards.

1.8.1.3 Toxic Air Contaminants

CARB conducts air monitoring for a number of toxic air contaminants (TACs) every 12 days at approximately 20 sites throughout California. A summary of the averaged data from 2012 monitoring from the Long Beach station for various TACs is considered to be an appropriate estimate of the TAC concentration in the vicinity of the proposed Project.

1.8.1.4 Air Emissions at the Existing Site

The proposed Project site currently contains an industrial warehouse building and an oil and gas production test facility on the south end of the site. Current oil and gas site operations include two production test wells and production testing equipment. Existing site operations have included the drilling of the two test wells and currently include production testing. A process flare, an emergency flare, electrical generators, and several tanks are also used during testing operations.

Average emissions over a 30-day period were used to describe the existing conditions at the proposed Project site. The existing emissions from operations at the proposed Project site are: 97.1 pounds per day (lbs/day) of volatile organic compounds (VOC); 602.3 lbs/day of nitrogen oxides (NOx); 11.8 lbs/day of sulfur oxides (SOx); 145.0 lbs/day of CO; 16.8 lbs/day of PM10; and 13.8 lbs/day of PM2.5.

1.8.2 GEOLOGY AND SOILS (SECTION 3.3)

1.8.2.1 General Geological Conditions

The proposed Project area is located on the coastal plain on the western portion of the Los Angeles basin, near the northern end of the Peninsular Ranges physiographic province. The Peninsular Ranges physiographic province, which includes most of the western portion of southern California, is typified by northwest trending faults - bounded by mountain ranges and hills separating elongated basins, including the Los Angeles Basin. The proposed Project site is situated in an area underlain by old alluvial flood plain deposits.

1.8.2.2 Faulting and Regional Seismicity

Based on geological studies, there are no known active faults crossing the Project Site and proposed pipelines are not within an Alquist-Priolo Earthquake Fault Zone. Even though the proposed Project site is not located on or adjacent to any identified active fault traces, regional faults are capable of earthquakes producing strong ground shaking over the life of the facility. Known faults within the proposed Project area include but are not limited to: the San Andreas; the San Jacinto; the nearby Newport-Inglewood (Offshore and L.A. Basin segments); the Palos Verdes; the Puente Hills Blind Thrust; the Upper Elysian Park Blind Thrust; the Whittier, the Santa Monica, the Hollywood, the Raymond, and the Malibu Coast. The closest active fault to the proposed Project site is the Newport-Inglewood Fault, located about 1.9 mile from the site. Data from the U.S. Geological Survey indicates that there has been an average of about five earthquakes per year less than a magnitude of 5, over the last 20 years within 25 kilometers (15.5 miles) of the proposed Project site.

1.8.3 GREENHOUSE GASES (SECTION 3.4)

1.8.3.1 Introduction

The term greenhouse gases (GHGs) includes gases that contribute to the natural greenhouse effect, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), as well as gases that are only manmade, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The most common GHG is CO_2. The GHGs absorb longwave radiant energy reflected by the earth, which warms the atmosphere. GHGs also radiate longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation absorbed by the atmosphere is known as the "greenhouse effect." Because greenhouse gas emissions are generally considered to affect global climate, applicable impacts are considered to be cumulative impacts. Global climate change refers to changes in average climatic conditions on earth as a whole, including temperature, wind patterns, precipitation, and storms. Global warming, a related concept, is the observed increase in average temperature of the earth's surface and atmosphere.

GHG emissions from a single project will not necessarily have an adverse environmental effect. Rather, it is the increased accumulation of GHGs from more than one project and many sources in the atmosphere that may result in global climate change. The resultant consequences of that climate change can cause adverse environmental effects. In virtually every project subject to CEQA review, a project's GHG emissions will be relatively small, even infinitesimal, within the scope of global or even statewide GHG emissions, and, as such, will almost certainly have no significant direct impact on climate change. Due to the complex physical, chemical, and atmospheric mechanisms involved in global climate change, it is likely impossible to identify the specific impact, if any, to global climate change from one project's incremental increase in global GHG emissions. As such, the project GHG emissions and the resulting significance of potential impacts are more properly assessed on a cumulative basis. Therefore, the environmental setting and the significance of potential impacts from the proposed Project's GHG emissions is addressed as a cumulative impact.

1.8.3.2 Baseline Emissions from Existing Operations

Current oil and gas site operations include two production test wells and production testing equipment. The drilling of the two test wells began November 2010 and was completed in May 2011. The production testing began in August 2011 and is ongoing. A process flare, an emergency flare, a backup generator, and several tanks are used during testing operations.

Baseline GHG emissions were estimated for the existing warehouse and oil and gas operations in Table 3.4-2 from November 2010 to November 2011. The total estimated direct CO_2e emissions are 18,025 metric tons per year. The total indirect plus direct CO_2e emissions (i.e., GHG emissions generated by third-parties like electricity and water suppliers plus project generated sources like flares and vehicles) are 21,726 metric tons per year.

1.8.4 HAZARDS AND HAZARDOUS MATERIALS (SECTION 3.5)

Hazards at a facility can occur due to natural events, such as earthquakes, and non-natural events, such as mechanical failure or human error. A hazard analysis generally considers compounds or physical forces that can migrate off-site and result in acute health effects to individuals outside of the proposed Project site. The risk associated with a facility is defined by the probability of an event and the consequence (or hazards) should the event occur.

1.8.4.1 Types of Hazards

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facility. Typical industrial hazards include toxic gas clouds, torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases), thermal radiation, explosion/overpressure.

1.8.4.2 Facility Hazards

1.8.4.2.1 Oil Drilling and Production Well Hazards

The potential hazards associated with oil drilling and production well activities are a function of the oil field conditions (e.g., reservoir pressure, prior production activity), procedures used, and maintenance of the equipment used. The types of hazards associated with oil drilling include uncontrolled loss of fluids (i.e., oil gas, and drilling mud), soil and groundwater contamination, and damage to abandoned wells.

When fluids associated with drilling are not controlled potential hazards similar to pipeline and process hazards can occur, which is referred to as a blow-out. Historical records indicate that early in the development of the Dominguez Oil Field, prior to 1926, five blowouts occurred (Mearns, 2013). No other blowouts have been documented. For a blow-out to occur, the pressure in the formation has to be great enough to force fluids to the surface. For oil fields that have been extensively operated, as in the case of the Dominguez Oil Field, the pressure in the reservoir drops, such that pressure is below that of hydrostatic pressure and pumps are required to produce fluids from the well, minimizing the potential for a blow-out. In addition, blow-out prevention systems are required, which serve as an emergency shutoff of the well.

Historically, drilling muds used to install oil wells were stored in open pits (referred to as mud sumps) adjacent to the drilling rig. In compliance with DOGGR and RWQCB regulations, drilling muds, which can contain petroleum hydrocarbons from the subsurface, are required to be stored in aboveground leak-proof containers.

According to DOGGR records, there are 600 abandoned oil wells associated with the Dominguez Oil Field. The potential hazard associated with damaging existing abandoned oil wells would be to compromise the abandoned well such that natural gas or oil/water could migrate from the oil reservoir via the abandoned oil well.

1.8.4.3 Pipeline Hazards

The U.S. DOT, Pipeline and Hazardous Material Safety Administration, keep detailed pipeline incident and mileage reports to chart fatalities, injuries, property damage, and loss of barrels of product resulting from pipeline incidents.

The 10-year total (2003 - 2012) for onshore hazardous liquid pipelines, including crude oil and petroleum products, in California, reported 268 incidents, one of which resulted in fatality, and two of which resulted in serious injuries. These 268 incidents resulted in 36,161 gross barrels spilled, and a net loss of 12,105 barrels (barrels not recovered). California contains 6,525 miles of hazardous liquid pipeline, transporting primarily crude oil and petroleum products. The accident rate was 0.00133 accidents per mile of hazardous liquid pipeline per year. "Serious" incidents (those resulting in fatality or serious injury) accounted for two accidents over the 10-year period (2003-2012) over 6,525 miles of hazardous pipeline in California, or an accident rate of 0.000031 per mile of hazardous liquid pipeline per year. The data demonstrates that the rate of risk of hazardous liquid pipeline accidents resulting in serious injury, or fatality is very low.

The U.S. DOT reported 91 accidents over 115,000 miles of natural gas pipeline in California. The accident rate was 0.000079 accidents per mile of hazardous liquid pipeline per year. "Serious" incidents accounted for 18 accidents over the 10-year period (2003-2012) over about 115,000 miles of pipeline in California, or an accident rate of 0.000016 per mile of hazardous liquid pipeline per year. The data demonstrates that the rate of risk of pipeline accidents resulting in serious injury, or fatality is very low.

1.8.4.4 Transportation Hazards

The transportation of hazardous substances poses a potential for fires, explosions, and hazardous materials releases. In general, the greater the vehicle miles traveled, the greater the potential for an accident. The U.S. DOT conducted a study on the comparative risks of hazardous materials and non-hazardous materials truck shipment accidents and incidents. The estimated accident rate for trucks was 0.73 per million miles travelled. The average accident rate for trucks transporting hazardous materials was estimated to be 0.32 million miles traveled. Though it is difficult to compare hazardous and non-hazardous transport risk, the differences appear to be significant enough to conclude that the magnitude of non-hazardous transport accidents dominates highway transport.

1.8.4.5 Sensitive Receptors

Sensitive receptors are those land uses that are more susceptible to hazards, or are more acutely impacted by potential hazards. In general, children and medical patients fall into this category. Therefore, residential areas, schools, healthcare facilities, and residents are the most sensitive land uses with respect to hazards relating to hazardous materials and wastes. The nearest sensitive receptors to the facility are a residential development to the northwest and California State University Dominguez Hills student housing to the west approximately 1,800 feet from the facility.

1.8.5 HYDROLOGY AND WATER QUALITY (SECTION 3.6)

1.8.5.1 Regional Surface Water Hydrology

The proposed Project is located within the Dominguez Watershed of the greater Los Angeles River Drainage Basin in Los Angeles County. This watershed is drained by the Dominguez Channel, located southwest of the proposed Project site. The Dominguez Watershed drains approximately 133 square miles in southwestern Los Angeles County. Permitted discharges from industrial sources are a substantial percentage of the persistent flows in the Dominguez Channel. Development in the watershed is approximately 40 percent residential, and 41 percent mixed industrial, commercial, and transportation uses. The Dominguez Channel, which drains into the Inner Harbor via the Consolidated Slip, is on the current list of waters that are impaired (i.e., are water bodies with chronic or recurring monitored violations of the applicable numeric and/or narrative water quality criteria).

1.8.5.2 Stormwater Runoff

The current runoff from the project site is conveyed into and through the existing storm drains along Bishop Avenue and Charles Willard Street, west and south of the Project site. There is a retention basin approximately 1.6 acres in size located south of and adjacent to the project site, and has an outlet at its western end and in an extreme storm event, drains south west to the Dominguez Channel. Under existing conditions, the estimated runoff from the proposed Project site area to the storm-drain and retention basin south of the site ranges from 4.51 cubic feet per second (cfs) for a two-year event to 18.13 cfs for a 100-year event. Total runoff from the entire industrial park ranges from 45 to 205 cfs for storms ranging from 2-year to 100-year events. The existing runoff from the proposed Project site is roughly nine percent of the total runoff from the Dominguez Hills Technology Centre that drains to the retention basin south of the project site.

1.8.5.3 Surface Water Quality

Surface water quality may be impacted by pollutants discharged directly into receiving waters. Water quality may also be affected by pollutants found in surface water runoff originating from a wide range of dispersed sources, or "nonpoint sources." Recent studies have indicated that stormwater runoff is a significant source of water pollution that may result in impairment of the existing and potential beneficial uses of receiving waters. "Stormwater runoff" encompasses "urban runoff," which includes the discharge of pollutants to water bodies from such non-storm (or dry weather) related activities as irrigation, hosing sidewalks, draining swimming pools, and washing cars.

The proposed Project is located within the Los Angeles Region. The Los Angeles Regional Water Quality Control Board (RWQCB) has jurisdiction over the coastal drainages between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line (RWQCB, 1994). The Water Quality Control Plan for the Los Angeles Regional Board's Basin Plan (Basin Plan) is the basis for the Regional Board's regulatory programs for the basin.

The only surface water feature located near the proposed Project is the retention basin and stormwater drain located on the south side of the proposed Project site. No water quality information is available for waters draining to that feature.

1.8.5.4 Groundwater Hydrology

The proposed Project site is located within the overall South Coast Hydrologic Region. This region has 56 delineated groundwater basins, including twenty-one basins in the Los Angeles subregion 4. Groundwater is typically found in unconfined alluvial aquifers in most of the basins of the Los Angeles subregions. Coastal basins in this hydrologic region are prone to intrusion of seawater, and seawater intrusion barriers are maintained along the Los Angeles sections of the coastal plain owing to conjunctive use.

The West Coast Groundwater Basin underlies 160 square miles in the southwestern part of the Los Angeles Coastal Plain in Los Angeles County. The proposed Project is located on the eastern edge of the West Coast Groundwater Basin. The West Coast Groundwater Basin includes several smaller aquifers. These aquifers range in depth from less than 100 feet to about 1,000 feet below the ground level. The base of the fresh water is about 1,400 feet deep. Additional brackish and saltwater aquifers are located at greater depths, and the targeted injection source for water associated with the proposed Project is over 4,000 feet below mean sea level.

1.8.5.5 Groundwater Quality

Groundwater quality throughout the Central Basin and West Coast Basin is monitored by the Water Replenishment District (WRD) through monitoring wells, water production wells, and monitoring of the quality of water used for groundwater replenishment.
The WRD focuses on ten key water quality constituents to represent overall groundwater quality in the basins, including total dissolved solids (TDS), iron, manganese, nitrate, chloride, trichloroethylene (TCE), tetrachloroethylene (PCE), arsenic, perchlorate, and hexavalent chromium. The WRD maintains a number of monitoring wells in the vicinity of the proposed Project. Approximately five groundwater monitoring wells are located within about one mile of the proposed Project site. Monitoring data from the WRD are only available for three of those wells. Based on the available monitoring data, the groundwater quality meets the applicable Maximum Contaminant Levels.

1.8.5.6 Abandoned Oil Wells in the Dominguez Oil Field

A review of DOGGR records indicates a total of 605 oil wells were drilled in the Dominguez Oil Field since 1923, 600 of which have been abandoned at various times during the field operation. DOGGR records indicate that 147 of the abandoned wells were used as water injection wells (DOGGR, 2013). Of the 605 oil wells, 594 abandoned oil well records were available for review (Mearns, 2013). Two wells are active, one is idle, two are test wells on the proposed Project site. Additionally, there are four applications by OXY pending approval of the proposed Project.

1.8.5.7 Subsidence

Subsidence is the motion of the Earth's surface as it shifts downward relative to a datum such as sea-level. Ground subsidence has been a concern in certain oil fields where petroleum reserves have been removed and not replaced. In the Dominguez Oil Field, water was added back into the geological formations where crude was removed. This allowed the pressure to be maintained in the geological formations and prevented additional subsidence. As stated in the City of Carson General Plan "There is no documented ground subsidence associated with the Dominguez Oil Field" (Carson, 2004). Therefore, there is no evidence of existing or historic ground subsidence in the Dominguez Oil Field.

1.8.6 NOISE (SECTION 3.7)

1.8.6.1 Noise Introduction

Noise is a by-product of urbanization and there are numerous noise sources and receptors in an urban community. Noise is generally defined as unwanted sound. The decibel (referred to as the A-weighted decibel or (dBA)) is the preferred unit for measuring sound since it accounts for these variations using a relative scale adjusted to the human range for hearing. The A-weighted decibel is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold for pain. The duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress.

The State Department of Aeronautics and the California Commission of Housing and Community Development have adopted the Community Noise Exposure Levels (CNEL) to measure and regulate noise sources within communities. The CNEL is the adjusted noise exposure level for a 24-hour day and accounts for noise source, distance, duration, single event occurrence frequency, and time of day. The CNEL considers a weighted average noise level for the evening hours, from 7:00 pm to 10:00 pm, increased by five dBA (i.e., an additional five dBA is added to all actual noise measurements), and the late evening and morning hour noise levels from 10:00 pm to 7:00 am, increased by ten dBA (an additional ten dBA is added to all actual noise measurements). The daytime noise levels are combined with these weighted levels and averaged to obtain a CNEL value. Using this formula, the CNEL weighted average noise level weights noise measurements taken in the evening and nighttime hours more heavily than noise during the daytime. The adjustment accounts for the lower tolerance of people to noise during the evening and nighttime period relative to the daytime period.

1.8.6.2 Existing Noise Sources

Onsite Noise: To characterize the existing noise environment, Acoustics Group, Inc. (AGI) measured sound levels at locations near the proposed Project site in April 2011 (see Appendix D). Observations during the sound measurements indicated the existing sound environment in the proposed Project vicinity is composed primarily of noise from traffic. Other noise sources include birds, aircraft, parking noises, residential activities, and other localized noise sources. Existing CNELs in the closest residential areas range from 58 to 63 dBA. Existing noise levels in the Dominguez Technology Centre range from 59 to 70 dBA.

Existing Noise Sources near Pipeline Routes: New gas and oil pipelines are proposed to be installed and/or connected to existing pipelines as part of the proposed Project. The area in the vicinity of the proposed pipeline routes is an urban environment characterized by extensive industrial, commercial and residential land uses located in the City of Carson. Major contributors to the ambient noise levels in the general vicinity of the proposed pipeline routes are primarily vehicular and truck traffic on the major streets. Additional noise sources include industrial facilities such as a refinery and other light/heavy industrial and manufacturing facilities.

The land uses near the proposed pipeline routes are predominately industrial and commercial. The closest sensitive receptors to the proposed pipeline routes are the residential land uses located on the south side of University Avenue, as well as student housing at California State University at Dominguez Hills, located west of Central Avenue.

1.8.7 TRANSPORTATION AND TRAFFIC (SECTION 3.8)

1.8.7.1 Regional Circulation

Four major freeways are located within the City of Carson including the Gardena Freeway (Route 91), Long Beach Freeway (I-710), the Harbor Freeway (I-110), and the San Diego Freeway (Interstate 405). Regional access to the site is provided by the Gardena Freeway (Route 91), which lies just north of the site and runs east/west. The Long Beach Freeway (I-710) and the Harbor Freeway (I-110) are major north and south highways, which extend from the Ports of Los Angeles and Long Beach through Los Angeles County. Wilmington Avenue, Central Avenue, and Alameda Street are key arterials servicing the area. Alameda Street has been, and continues to be upgraded, expanded and modified to provide a dedicated roadway system for trucks and railcars leaving the Ports of Los Angeles/Long Beach to provide more efficient movements of goods and materials into/out of the port areas. Streets in the Carson area will be impacted during construction of the pipeline portion of the proposed Project.

1.8.7.2 Existing Site Traffic Conditions

The proposed Project site is located within the Dominguez Technology Centre, which is located between Charles Willard Street on the north and Bishop Avenue on the east. Access to the site is via Charles Willard Street off of Victoria Street. South Central Avenue, Wilmington Avenue, East Del Amo Avenue, Alameda Street, and Avalon Boulevard are key arterials servicing the area. The primary route used to access the proposed Project site is from Route 91, at either South Central or Wilmington Avenues, onto Victoria Street, and then to Charles Willard Street.

The current use of the proposed Project site is for oil and gas production facility and the industrial warehouse that is currently leased to a retail hardware and merchandise distributor, an electronic equipment manufacturer, and a global freight forwarder. Existing operations include freight warehousing and distribution operations. Current oil and gas operations at the site include two production test wells and production testing equipment, which operate 24 hours a day, seven days a week. In order to determine existing traffic generated at the proposed Project site, traffic counts were taken at the proposed Project site. The average daily trip level associated with the existing site is 256 trips per day.

1.8.7.3 Existing Setting for Potentially Impacted Roadways

In addition to the proposed Project site, the proposed Project includes pipelines connecting the new oil and gas production facility to distribution facilities. The same freeways, key arterials, and roadways providing regional circulation to the proposed Project site provide access to the proposed pipeline routes, e.g., Charles Willard Street, South Central Avenue, University, Wilmington Avenue, and East 223rd Street. Construction of the proposed Project has the potential to contribute additional traffic and result in temporary lanes closures associated with pipeline installation activities.

1.8.7.4 Truck Routes

The City has many trucks on its streets due to the types of industrial and commercial uses in the City. It is estimated that trucks make up 10 to 25 percent of the vehicles within the city. The City of Carson has designated truck routes where vehicles in excess of three tons may travel. Truck routes in the vicinity of the proposed Project site include Central Avenue, Victoria Street, Wilmington Avenue, Del Amo Boulevard, and Alameda Street.

1.8.7.5 Transit Facilities

Public transportation in the City of Carson is provided primarily by the Carson Circuit, Torrance Transit and the Los Angeles County Metropolitan Transportation Authority (MTA) bus lines. There is also limited service from Long Beach Transit and Gardena Municipal Bus Lines. The Carson Circuit Transit System generally provides service within the City of Carson, with connections to other systems. The MTA bus lines provide connections to other surrounding areas.

1.8.7.6 Bike Lanes

The City of Carson has update the Bike Master Plan in August 2013, and has designated bicycle routes called bicycle paths, bicycle lanes and bicycle routes (Class I, II and III respectively). Several bicycle routes are located in the vicinity of the proposed Project and the related pipeline construction activities.

1.9 EXECUTIVE SUMMARY – CHAPTER 4: ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Chapter 4 assesses the potential environmental impacts of the construction and operation of the OXY Dominguez Oil Field Development Project. Chapter 4 evaluates those impacts that are considered potentially significant under the requirements of CEQA, as determined by the NOP/IS (see Appendix A). Specifically, an impact is considered significant under CEQA if it leads to a “substantial, or potentially substantial, adverse change in the environment.” Table 1.9-1 (located at the end of this chapter) summarizes the impacts of the proposed Project.

1.9.1 AIR QUALITY (SECTION 4.2)

The NOP/IS concluded that the proposed Project could potentially result in significant adverse air quality impacts for criteria pollutants and TAC emissions associated with construction and operations. Additionally, impacts to sensitive receptors and odor impacts are evaluated in this section, as well as, other air quality topics such as compliance with air quality plans and air quality rules and regulations.

1.9.1.1 Construction Impacts

Regional Impacts: Construction activities associated with the proposed Project would result in emissions of CO, VOC, NOx, SOx, PM10, and PM2.5. The proposed Project construction emissions were separated into three components for analysis: (1) the production facility; (2) the off-site pipelines; and, (3) the Southern California Edison (SCE) connection. The emissions expected to be generated include diesel combustion from the construction equipment, fugitive dust from earth moving (i.e., grading and trenching) and demolition, off-site vehicle activity from deliveries and construction worker commuting, and VOC emissions from architectural coating.

Construction activities associated the proposed Project would result in emissions of CO, VOC, NOx, SOx, PM10 and PM2.5, as summarized in Table 4-2, together with the SCAQMD's daily construction significance threshold levels. The construction phase of the proposed Project is expected to result in less than significant impacts for CO, VOC, SOx, PM10, and PM2.5 and significant impacts for NOx. Therefore, unmitigated air quality impacts associated with construction are considered significant for NOx emissions.

Localized Impacts: The SCAQMD has developed the Localized Significance Threshold (LST) Methodology to evaluate the potential localized impacts of criteria pollutants from construction activities. The LST Methodology requires that the emissions of criteria pollutants be evaluated for impact on ambient air quality standards, including CO, NO_2, SOx, PM10, and PM2.5 associated with the proposed Project. The LST analysis indicates that the proposed Project CO, NO_2, SOx, PM10, and PM2.5 construction emissions would not exceed the LST significant thresholds. Therefore, the proposed Project complies with the LST methodology and no localized significant impacts on air quality during the construction period are expected.

1.9.1.2 Operational Impacts

Criteria Pollutants: Operational emissions from the proposed Project include both stationary and mobile sources. Stationary sources include well drilling, emergency flare, polymer hopper vent, process heater, truck loading operations, emergency generators, fugitive components, workover rig, process flare and backhoe. The primary sources of onsite emissions are from the process heater, workover rig, and process flare. The primary sources of offsite emissions are from the various transport trucks.

The emissions from operation of the proposed Project will be less than the baseline emissions and are not expected to exceed any significance thresholds. Emissions are lower with the proposed Project than the baseline emissions largely due to the reduction in truck traffic and the use of an electric drill rig rather than a diesel rig. Therefore, the air quality impacts associated with operational emissions from the proposed Project are not considered significant.

Ambient Air Quality Impacts: Dispersion modeling was used to calculate concentrations of criteria pollutants from the proposed Project sources which emit CO, NOx, SOx, PM10 and PM2.5 to evaluate potential localized air quality impacts to the nearest sensitive populations. Based on the air dispersion model results, the ground level concentrations of the criteria pollutants of concern would be below the SCAQMD CEQA significance thresholds. Therefore, no significant adverse localized air quality impacts are anticipated to occur from the proposed Project.

Toxic Air Contaminant Impacts: In order to determine the potential toxic air contaminant impacts associated with the proposed Project, a Health Risk Assessment (HRA) was prepared for the proposed Project in accordance with SCAQMD risk assessment procedures, which are based on CARB's Air Toxics Hot Spots Program Risk Assessment Guidelines and the state Office of Environmental Health Hazard Assessment. The baseline risk, which is higher than the risk from the proposed Project, was not included in this analysis as a conservative assumption.

All maximum impact locations are verified as credible locations for receptors (i.e., streets, railroad tracks, and waterways are not considered valid receptor locations). The locations of the maximum impacts are then verified for the type of receptor (e.g., residential or occupational). The maximum potential health risk to the residential and worker receptor is 1.0 per million and 3.6 per million, respectively, which is well below the significance threshold of 10 per million. The maximum chronic and acute health hazards for a residential exposure is less than 0.01 for chronic hazards and 0.02 for acute hazards which are well below the significance threshold of 1.0. The maximum chronic and acute health hazards for a worker exposure is 0.01 for chronic hazards and 0.08 for acute hazards which are well below the significance threshold of 1.0. Based on the HRA, potential adverse health risks will be below the SCAQMD CEQA significance thresholds. Therefore, no significant adverse health risks are anticipated to occur from the proposed Project.

1.9.1.3 Mitigation Measures

Feasible mitigation measures are required to minimize the significant air quality impacts associated with the construction phase of the proposed Project as peak day emissions of NOx exceed the SCAQMD significance threshold. Construction mitigation measures include the use of Tier 3 or equivalent engines, as available; use of temporary power in lieu of diesel generators; prohibit equipment from idling longer than five minutes, maintaining construction equipment tuned up and with two to four degree retard diesel engine timing, and suspend construction activities that generate air pollution emissions during first stage smog alerts.

1.9.1.4 Level of Significance after Mitigation

Construction emissions for the proposed Project for NOx are expected to be less than significant following mitigation, primarily due to the use of Tier 3 engines for construction equipment. The construction emissions associated with CO, SOx, VOC, PM10, and PM2.5 are less than significant prior to mitigation. Construction emissions are expected to be short-term and they will be eliminated following completion of the construction phase.

Localized impacts from construction activities were analyzed for CO, NO_2, SO_2, PM10, and PM2.5. The construction activities associated with the proposed Project are not expected to cause a significant adverse impact on ambient air quality and no mitigation would be required. The analysis concluded that construction emissions of CO, NO_2, SO_2, PM10, and PM2.5 would not exceed applicable LSTs (Table 4.2-1).

Traffic impacts were analyzed for potential impact to CO ambient air quality and determined that no significant change in the ambient CO air quality is expected as a result of the proposed Project. Therefore, the proposed Project is not expected to cause CO hotspots and no significant adverse impact on ambient air quality is expected.

The proposed Project is not expected to have significant impacts to CO, NOx, SOx, VOC, PM10, or PM2.5 during operation. Ambient air quality modeling indicates that the proposed Project emissions of NO_2, SO_2, PM10, and PM2.5 during operation of the proposed Project would not cause or contribute to an exceedance of any ambient air quality standard. Therefore, the operation of the proposed Project is not expected to cause a significant adverse impact on ambient air quality and no mitigation measures are required.

The proposed Project was analyzed for cancer and non-cancer human health impacts and determined to be less than significant. The estimated cancer risk due to the operation of the proposed Project is expected to be less than the significance criterion of 10 per million. The chronic and acute hazard indices are both well below the significance criterion of 1.0. There is no change to the acute hazard index as a result of implementing the proposed Project. Therefore, the proposed Project is not expected to cause a potentially significant adverse impact associated with exposure to toxic air contaminants.

1.9.2 GELOLGY AND SOILS (SECTION 4.3)

1.9.2.1 Environmental Impacts

As described in the NOP/IS, the proposed Project will be located in an already developed area and will not result in significant changes or topographic alterations. The NOP/IS determined that the proposed Project has the potential to generate significant adverse geology and soil hazards related to anthropogenic seismic ground-shaking. This determination was based on the inclusion of hydraulic fracturing in the proposed Project. As discussed in Section 2.8.1, OXY has removed hydraulic fracturing from the proposed Project.

With regard to the potential for secondary seismic effects that could damage facility structures, a probabilistic seismic hazards analysis was performed using the 2008 Interactive Deaggregations Seismic Hazard Analysis tool, which evaluates the site specific probabilities of exceedance for selected spectral periods. Based on a review of these data, and considering the relative seismic activity of the southern California region, a probabilistic horizontal ground acceleration (PHGA) of 0.59g and 0.39g were calculated. The calculated values are within the range typical for the southern California region.

The proposed Project will be required to comply with the California Building Code, which is designed to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The proposed Project will be required to obtain building permits, as applicable, for construction of all new proposed above-ground structures, including tank foundations. The Project applicant will be required to receive approval of building plans and building permits to assure compliance with the latest Building Code prior to commencing construction. Accordingly, compliance with the California Building Code will reduce risks of seismic damage to less than significant.

The other source of potential anthropogenic seismic ground-shaking would be from oil and gas production. There is the possibility that minor earthquakes can be a result of anthropogenic activities such as extraction of oil at major oil fields, due to a net liquid mass depletion (i.e., removal of oil without replacement of water). The Dominguez Oil Field was discovered in 1923 and was operated using salt water injection beginning in the mid-1940s as a means to extract more oil. The oil and gas production activities associated with the proposed Project will include the injection of salt water as well. Therefore, net liquid mass depletion will not occur and pressures within the formations are expected to remain constant. Therefore, no significant adverse geologic and soils impacts associated with anthropogenic sources are expected as a result of the proposed Project.

1.9.2.2 Mitigation Measures

No mitigation measures are required for the proposed Project because all geologic and soils impacts were determined to be less than significant. However, a mitigation measure was imposed to assure that hydraulic fracturing is not used as part of the proposed Project.

1.9.2.3 Level of Significance after Mitigation

No mitigation measures are required but with the imposed mitigation, and the geologic and soils impacts from the proposed Project would remain less than significant.

1.9.3 GREENHOUSE GASES (SECTION 4.4)

While the proposed Project is expected to emit GHGs, the impact of GHG emissions from a single project towards global change cannot be readily measured. Rather, it is the increased accumulation of GHGs in the atmosphere from many projects and sources that result in global climate change. Due to the complex physical, chemical, and atmospheric mechanisms involved in global climate change, it is likely impossible to identify the specific impact, if any, to global climate change from one project's incremental increase in global GHG emissions. As such, the project GHG emissions and the resulting significance of potential impacts are more properly assessed on a cumulative basis. Therefore, the analysis of potential impacts from the proposed Project's GHG emissions and significance determination are assessed on a cumulative basis in Chapter 5 - Cumulative Impacts.

1.9.4 HAZARDS AND HAZARDOUS MATERIALS (SECTION 4.5)

1.9.4.1 Environmental Impacts

A number of rules and regulations that are designed to minimize the potential for hazards and hazardous materials release would apply to the proposed Project. These regulations include: OSHA regulations (29 CFR Part 1910); Process Safety Management of Highly Hazardous Chemicals (29 CFR Part 1910.119); Title 8 of the CCR, General Industry Safety Order §5189; U.S. EPA's EPCRA; SPCC Plan requirements (40 CFR, Section 112); Federal regulations for the qualification and maintenance of cargo tanks (40 CFR Part 180, Subpart E); the Hazardous Materials Transportation Act; Caltrans standards for trucks in California; Hazardous Materials Business Plan requirements (AB 2185); and California Pipeline Safety Act (California Government Code Sections 51010-51019).

The Project will be equipped with a number of safety features designed to minimize the potential hazard and hazardous materials impacts. These safety features include: (1) computerized control, monitoring and communication systems; (2) 24-hour staff; (3) two uninterruptible power supplies and a diesel emergency generator; (4) gas and fire detection systems and a fire suppression system; (5) implementation of an Emergency Response Plan; and (6) inclusion of firefighting and other emergency equipment at the site.

1.9.4.2 Onsite Hazard Impacts

The hazards associated with the proposed Project were assessed by developing a range of potential upset scenarios associated with the Project; estimating the consequences of the scenarios, should they occur; estimating the likelihood of the upset scenarios occurring; and determining the significance of the risk based on the probability of an occurrence.

The processing and transport activities were reviewed to determine the operations with the most potential to create offsite hazard impacts. The processing and transport activities that were analyzed for potential hazards include oil storage tanks, transfer pumps, gas compressors, separators, NGL storage, NGL truck loading, crude oil pipeline operations, and natural gas pipeline transport. The potential hazards include flash fires, explosion or overpressure, pool/torch fire, thermal radiation, boiling liquid expanding vapor cloud explosion (BLEVE), and toxic gas releases. The equipment/release events that were evaluated include: oil storage tank (tank top fire); oil transfer pump (pump rupture); gas compressors (line rupture); low temperature separator (line rupture); NGL storage and loading (BLEVE); crude oil pigging station (rupture); crude oil pipeline rupture (rupture); and natural gas pipeline (rupture).

The results of the hazard analysis indicate that the onsite processing activities including oil storage tanks, oil transfer pumps, gas compressors, and low temperature separation were determined to have the potential to generate hazards, but such hazard impacts would remain onsite or be contained by the 30-foot wall and remain onsite. The NGL storage and truck loading have the potential to create hazards that would result in offsite impacts. Once the scenarios with a potential for hazardous releases are identified, a hazards analysis calculates the likelihood of such a release occurring based upon actual operating data. The worst-case event at the proposed site would be a failure of the NGL tank or a tank truck in the NGL loading area. Guidelines for Process Equipment Reliability Data (AIChE, 1989) estimate the probability of a failure of a pressurized storage tank (i.e., NGL storage tank or NGL tank truck while at the loading rack) at 0.424 events per million hours of operation or one failure every 269 years. Since the anticipated useful life of the facility is 50 years, this event has a low probability of occurring. Therefore, no significant adverse hazard impacts are expected from the processing facilities associated with proposed Project.

1.9.4.3 Water Quality Impacts

Spills at the facility would generally be collected within containment facilities for individual processing equipment (e.g., tanks, separators). Large spills outside of individual containment areas at the facility are expected to be controlled, since the facility is designed to capture liquids within the walled-compound and direct them to the well cellars. Spilled material would be collected and pumped to an appropriate tank, or transported off-site if the spilled material cannot be processed on-site. Because of the containment systems in place, spills are not expected to migrate from the facility. Also, because the site will be paved and any spilled material will be cleaned up quickly, impacts to groundwater quality would be prevented. Thus, potential adverse water quality hazard impacts from processing activities are considered to be less than significant.

1.9.4.4 Transportation Hazard Impacts

The transportation by truck of hazardous substances poses a potential for fires, explosions, and hazardous materials releases. In general, the greater the vehicle miles traveled, the greater the potential for an accident. The U.S. Department of Transportation (U.S. DOT) conducted a study on the comparative risks of hazardous materials and non-hazardous materials truck shipment accidents and incidents. The average accident rate for trucks transporting hazardous materials (all hazard classes) was estimated to be 0.32 per million miles traveled (FMCSA, 2001). The average accident rate for trucks carrying flammable materials (hazard class 2.1), such as NGL, was estimated to be 0.06 per million miles traveled (FMCSA, 2001). Using the maximum estimated truck trips of 2 per day, the potential for an accident involving an NGL truck is 0.00002 or approximately one accident every 55,556 years. The likelihood that an accident involving NGL truck transport would occur during the lifetime of the facility is one every 55,556 years, which is much greater than the lifetime of the facility (expected to be 50 years). Therefore, the probability for an adverse impact from truck transport of NGL from the proposed Project is extremely low and the potential hazard impacts related to truck transport from the proposed Project is less significant.

1.9.4.5 Pipeline Hazards

Crude Oil Pipelines: Hazards are also associated with pipeline operations so a hazard analysis was also completed for pipeline operations. The hazard analysis shows that impacts from a pool fire, explosion overpressure, or flash fire events could extend up to 205 feet of the crude oil pipeline. At the sensitive receptor locations (i.e., Analee Elementary and Curtiss Middle Schools) along Analee Avenue and residential locations along Analee Avenue, South Perry Street, and Acarus Avenue, these types of events have the potential for significant adverse hazard impacts.

The pipeline accident statistics for petroleum products from the U.S. Department of Transportation were utilized to determine the rate of serious accidents per pipeline mile, per year. “Serious” (i.e. resulting in an injury or fatality) hazardous liquid pipeline incidents occur approximately 0.000031 times per pipeline mile, per year. The proposed Project would connect to and reactivate the Crimson 6-inch crude oil pipeline (approximately four miles in length). Therefore, the statistical rate of “serious” incidents for the approximately four miles of the Crimson Oil Pipeline would be 0.00012 incidents per year. This equates to approximately one serious incident every 8,065 years for the crude oil pipeline. Since the anticipated useful life of the pipelines is 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project and is considered to be less than significant.

The pipeline accident statistics for petroleum products from the U.S. Department of Transportation were utilized to determine the rate of “significant” accidents per pipeline mile, per year. “Significant” hazardous liquid pipeline incidents (i.e., all incidents required to be reported) occur approximately 0.00133 times per pipeline mile, per year. Therefore, the statistical rate of “significant” pipeline incidents for the four miles of the Crimson Oil Pipeline would be 0.00532 incidents per year, which equates to approximately one event every 188 years. Again, since the useful life of the Project crude oil pipeline is approximately 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project. Therefore, no significant impact from crude oil transport by pipeline is expected from the proposed Project.

Natural Gas Pipeline: Based on U.S DOT statistics, "serious" natural gas pipeline incidents occur approximately 0.000016 times per pipeline mile, per year. The proposed Project would connect to an active natural gas line by installing a 6-inch diameter pipeline for approximately 2,000 feet along Charles Willard Street. Therefore, the statistical rate of "serious" incidents for the 2,000 feet (0.38 miles) of Project pipeline would be less than 0.00001 incidents per year. This equates to approximately one serious incident every 100,000 years for the natural gas pipeline. Since the anticipated useful life of the pipelines is 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project.

For potential "significant" natural gas pipeline incidents as defined by the U.S. Department of Transportation, effects would be considered to be mostly moderate (refer to Table 4.5-3), due to the fact that the 91 "significant" incidents recorded, only the 18 "serious" incidents had reported injuries. As outlined in Section 3.5.3.2, "significant" natural gas pipeline incidents occur approximately 0.000079 times per pipeline mile, per year. Therefore, the statistical rate of "significant" pipeline incidents for the 0.38 miles of Project pipeline would be 0.00003 incidents per year, which equates to approximately one event every 33,300 years. Again, since the useful life of the Project natural gas connector pipeline is approximately 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project. Therefore, no significant impact from natural gas transport by pipeline is expected from the proposed Project.

Use of the U.S. Department of Transportation statistics is considered conservative because it does not take into account that proposed Project facilities would be designed and constructed in accordance with modern standards and requirements, while much of the existing hazardous materials pipeline infrastructure (on which the U.S. Department of Transportation accident statistics are partially based) is aged and more likely to be subject to accidental release events. In addition, pipelines, new and reactivated, are subject to comprehensive regulation including requirements for pre-operational testing to ensure the operational integrity of the pipeline, e.g., hydrostatic testing, use of instrumented internal inspection devices (commonly referred to as smart pigs), etc. Compliance with such regulations will reduce the frequency and consequences of events resulting in hazardous releases.

1.9.4.6 Emergency Access

Once constructed, the proposed Project would not impede any designated disaster evacuation routes or impair implementation of any emergency response plans through long-term street blockage. No roads or streets will be blocked by project-related activities. Emergency Response Plans are required for the Oil and Gas Processing Facility under OSHA regulations (29 CFR §1910.120). Therefore, impacts to adopted emergency plans or emergency evacuation plans during proposed Project operation would be less than significant.

1.9.4.7 Hazardous Materials or Waste

Provided that applicable federal, state, and local regulations are adhered to, the risk of exposure to hazardous materials is limited. Hazardous waste handling and transportation regulations contain specific procedures to ensure that hazardous waste and hazardous waste sites are managed in such a manner as to limit the potential exposure to workers and the general public. The existing regulatory framework includes hazardous waste regulations imposed by the Department of Toxic Substances Control, U.S. EPA, SCAQMD, and CalOSHA.

1.9.4.8 Oil and Gas Production

The loss of control of produced fluids (blow-out) from a well during drilling occurs when the pressure in the oil reservoir is sufficient to force fluids to the surface. The Dominguez Oil Field has produced over 274 million barrels of oil, a large portion of which were produced by the aid of salt water injection to improve oil recovery. The probability of loss of control of produced fluids during drilling is low since the field has been extensively developed since 1923, the operating pressure is less than hydrostatic pressure, and a blow-out prevention (BOP) system will be in place during drilling. Therefore, hazard impacts associated with loss of control of produced fluids are considered to be less than significant.

Soil contamination from drilling operations historically has been from the use of unlined mud sumps, which pursuant to 14 CCR 1775 are currently prohibited. The use of aboveground, liquid-tight tanks for mud will eliminate the potential for soil contamination. In addition, secondary containment has been incorporated into the proposed Project design to prevent the spills from migrating offsite, therefore, the probability of soil contamination is low.

The Dominguez Oil Field has approximately 600 abandoned oil wells. A review of DOGGR oil well files for 594 of the abandoned oil wells was performed to identify wells with the potential to be influenced by reactivation of the Dominguez Oil Field. Of the well files reviewed, 18 wells were identified as potentially being influenced by the reactivation of the Dominguez Oil Field (shown in Figure 4.5-2). The well abandonment record notes in the DOGGR well files indicate that the well abandonment methods for these 18 wells may not have been sufficient to comply with regulations and requirements and preclude influence by the reactivation of the field.

Of the 200 wells proposed to be installed in the Dominguez Oil Field, the 100 extraction and 65 salt water injection wells have the potential to change the conditions of the Dominguez Oil Field in the vicinity of the potentially influenced existing abandoned oil wells. In addition, drilling activities have the potential to damage abandoned wells by inadvertently striking the well during drilling activities. To avoid adversely influencing the 18 wells identified during the records review or striking abandoned wells, the City is imposing mitigation measures restricting the use of salt water injection wells in vicinity of the 18 wells listed.

1.9.4.9 Mitigation Measures

The 18 identified existing abandoned oil wells have the potential to be influenced by the proposed Project. Additionally, the proposed Project has a potential to damage the existing abandoned oil wells. Therefore, mitigation measures H-1 and H-2 (see Section 4.5.3) are being imposed which require a 75-foot radius around the 18 identified existing abandoned wells and evaluation of the subsurface location of all existing abandoned wells to avoid striking the wells.

1.9.4.10 Level of Significance Following Mitigation

Hazard impacts are expected to be minimized to less than significant following mitigation.

1.9.5 HYDROLOGY AND WATER QUALITY (SECTION 4.6)

1.9.5.1 Environmental Impacts

The proposed Project includes facilities to process oil and gas produced from the Dominguez Oil Field. During construction, water will be required for dust suppression and hydrostatic testing of tanks and pipelines. During operation, the production of crude oil and natural gas is expected to generate approximately 94,000 barrels per day of saltwater, which will be treated and reinjected into the oil bearing formation. The operation of the proposed Project will maintain a balance in the oil bearing formation between the volume of material extracted and volume of saltwater reinjected into the oil bearing formation. An additional 20,000 barrels per day of saltwater will be produced and treated for reinjection into the oil bearing formation. Prior to the completion of the saltwater production wells, up to 4,500 gallons (approximately 100 barrels) per day of potable water will be needed.

1.9.5.2 Construction Impacts

Water will be used for dust suppression and to hydrotest new pipeline segments during the construction activities. Water use during construction is temporary and would be less than the established thresholds on a peak day. Therefore, no significant impacts on water use during the construction period are expected.

Water quality during construction activities will be protected through the implementation of stormwater management measures including Best Management Practices (BMP) specified in the Stormwater Pollution Prevention Plan (SWPPP) and Wet Weather Erosion Control Plan (WWECP) which include good housekeeping measures, preventative maintenance, spill prevention and response, etc. By adherence to the requirements of the SWPPP and WWECP with implementation of appropriate BMPs, construction activities associated with the proposed Project are not expected to result in the discharge of stormwater from the site that could potentially result in off-site contamination. Therefore, the proposed Project construction activities are not expected to result in significant impacts to surface water quality.

1.9.5.3 Operational Impacts

Groundwater Level and Water Demand: The proposed Project will require potable water during the initial well drilling operations of 4,500 gallons per day until the saltwater production wells are completed. Well drilling will not occur while site grading and construction is occurring. However, even if there is a period of overlap, the combined usage (construction water use of 10,382 gpd plus well drilling water use of 4,500 gpd = 14,582 gpd) would be less than the significance threshold. Once the saltwater production wells are completed, potable water demand for operations will cease. Domestic water demand is not expected to increase, since the existing warehouse activities and associated water demand will be eliminated. The temporary potable water demand is below 233,300 gallons per day and the proposed Project is not a "water demand project" as defined by CEQA Guidelines Section 15155.

Water Quality: There will be no discharges of process water to surface water. Surface water runoff from the site will be managed according to the BMPs, specified in the SWPPP and WWECP. The proposed Project includes project design features to protect water quality during operations including: concrete-lining the well cellars and paving the facility; capture and treatment of stormwater that falls within the enclosed area of the facility; storage tanks are surrounded by containment berms; pan will be installed in drill rig and catch pans will be installed under drill pipe to catch drilling mud; spill control and containment equipment will be maintained onsite; process equipment will be surrounded by curbed areas to contain spills; and onsite water treatment system will treat storm and process water.

The stormwater drainage to the existing stormwater drainage system for the Dominguez Technology Centre will no longer receive surface water runoff from the enclosed areas of the proposed Project site; therefore, the proposed Project would reduce stormwater runoff from the site and would not contribute runoff water that would exceed the capacity of existing stormwater drainage systems. In addition, the proposed Project would capture and treat most stormwater onsite and is, therefore, not expected to result in surface water quality impacts. Therefore, no significant impacts to surface water quality are expected.

Groundwater Quality: Operation of the facility (i.e., oil and gas production) has the potential for impacting groundwater from oil drilling activities. While the proposed Project will produce oil and saltwater, and inject saltwater (and potentially slurry materials if the slurry injection well is permitted and installed) into oil producing zones, geologic features, engineering design and regulatory oversight will help ensure that the proposed Project will not impact fresh water aquifers.

Numerous project design features help ensure that the proposed Project will not impact fresh water aquifers. The proposed Project is designed and required by regulations to install sealed casing through the water bearing aquifers to protect potable groundwater.

The oil zones are geologically isolated from the fresh water aquifer by many impermeable layers of siltstone. Engineering designs and regulations will also help ensure that the operations do not impact different zones. The casing procedure protects both the environment and the mechanical integrity of the well. The casing requirements will isolate the wells from the fresh water aquifers and will meet or exceed requirements of DOGGR and EPA. All wells will be designed and constructed to prevent contact between the water in the fresh water aquifers and the produced fluids and the injected fluids. Extracted saltwater and captured stormwater will be treated prior to injection into the oil bearing formation. Further, groundwater volume and quality is routinely monitored by the Water Replenishment District, including in the vicinity of the proposed Project. Water quality concerns in the vicinity of the Dominguez Oil Field have not been associated with oil recovery or processing activities. Therefore, no significant groundwater quality impacts are expected.

1.9.5.4 Mitigation Measures

No significant water demand or water quality impacts associated with operation of the proposed Project were identified. Therefore, no mitigation measures are required during operation of the proposed Project as the potential water demand and water quality impacts are considered to be less than significant

1.9.5.5 Level of Significance Following Mitigation

No mitigation measures are required and the water demand and water quality impacts from the proposed Project would remain less than significant.

1.9.6 NOISE (SECTION 4.7)

1.9.6.1 Environmental Impacts

The NOP/IS determined that the noise impacts associated with the construction and operation of the proposed Project were potentially significant and those noise impacts are evaluated herein. The analysis of the noise impacts of the proposed Project has been divided into two subsections: (1) construction activities; and (2) proposed Project operation.

1.9.6.2 Onsite Production Facility Construction Noise Impacts

To assess potential noise impacts from onsite construction equipment, the potential overall sound levels for each of the construction phases were screened using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). The RCNM was used to evaluate the overall noise levels of equipment identified for each of the four on-site construction phases, including demolition/site preparation, well cellars, process equipment areas, and tanks. Sound levels during demolition and site preparation would be the loudest phase of construction. More detailed noise model was completed using the Computer Aided Noise Abatement (CadnaA) industrial noise calculation procedure to estimate construction-related sound levels from on-site equipment.

Based on the results of modeling, construction noise levels would be fairly low at the nearest residential receptors (47-53 decibels or dBA). Construction activities are anticipated to occur only during daytime hours. Because the construction noise level increases at the residential areas are 3 dBA or less, construction noise levels are considered to be less than significant (>5 dBA for construction projects more than 10 days in a three month period). It should also be noted that the maximum noise levels in the City of Carson for construction equipment used for repetitive operations of 21 days or more is 65 dBA in single family residential areas and 70 dBA in multi-family residential areas (see Table 4.7-4). Therefore, the noise related to construction activities would be less than the established Carson noise limits.

1.9.6.3 Off-site Construction Noise Impacts

New Pipelines: New gas and oil pipelines would need to be installed and/or connected to existing pipelines as part of the proposed Project. There are three areas where pipeline installation and related facilities will be required: approximately 2,000 feet from the site to the intersection of Charles Willard Street and South Central Avenue, approximately 1,000 feet on and near the intersection of University Drive and South Central Avenue, and approximately 100 feet near the intersection of 223rd Street and Wilmington Avenue. Construction in each area would take approximately two to three weeks and include asphalt removal and ditching, pipe installation and testing, and refilling of the trench.

Construction sound levels were calculated at sensitive receptors near the off-site pipeline installation areas. These levels were then added to the measured existing sound levels to identify a range of potential noise increases due to construction activities.

<u>New Pipeline Installation to the Intersection of Charles Willard Street and South Central:</u> Noise increases during construction activities at this location would not exceed 10 dBA and are not expected to exceed 5 dBA for more than 10 days at any location as the pipeline construction activities would move throughout the construction period.

<u>Reconnection of Crimson Pipeline at University Drive and South Central Avenue:</u> The construction activities at this location would range from 80 to 600 feet or more from the single-family residences south of University Drive. At the most affected residences (the residences closest to the University Drive/South Central Avenue intersection), the increase in hourly sound levels during pipeline construction activities would range from 1 to 21 dBA. Therefore, noise construction impacts associated with pipeline construction at this location would exceed a 10 decibel noise increase and are considered to be potentially significant (exceed an increase of 10 dBA).

<u>Connection Between the Crimson Pipeline and Norwalk-Carson Pipeline:</u> Construction activities associated with the connection of the Crimson Pipeline to the Norwalk-Carson Pipeline would be near the intersection of 223rd Street and Wilmington Avenue, within a

commercial parking lot. Construction activities at this location would not occur near any sensitive receptors and would occur 100 feet or more from business structures. The closest residential area to the proposed construction activities is about 0.5 miles. Therefore, no significant noise impacts would be expected at this location.

SCE Connection Construction: The electrical power supply to the proposed facility would be provided by SCE. Most of the below ground construction would consist of digging a trench, but a boring machine and associated equipment would be used to install approximately 1,000 feet of electricity lines beneath Interstate 91. Noise impacts were assessed for the three phases of conduit installation: underground conduit installation via trenching, repaving, and horizontal directional drilling (HDD).

Construction sound levels were calculated at sensitive receptors nearest the underground conduit installation and HDD drilling areas. These levels were then added to the measured existing sound levels to identify a range of potential noise increases due to construction activities. The sound levels from the underground conduit installation equipment and activities would range from 47 to 69 dBA at the most affected residences near the intersection of South Central Avenue and Victoria Street, resulting in a noise increase of 0-12 dBA. Although the 12 dBA increase is temporary and would occur for a short time period, it could potentially continue for more than one day and is considered to be significant.

HDD Drilling and Stringing Activities: Approximately 1,000 feet of HDD would be required to install the conduit and cables under the 91 Freeway. HDD drilling and HDD stringing equipment are expected to operate more than 50 feet from the nearest business structures, resulting in noise levels of 83 and 78 dBA or less for the HDD drilling and HDD stringing operations, respectively. The construction equipment would operate in the same location for a period of approximately four weeks, including 24-hour operation for a portion of the overall construction period. Assuming the HDD drilling equipment was located south of the 91 Freeway, the noise levels would be approximately 55 dBA at the residences on the west side of South Central Avenue, north of Victoria Street. The increase in hourly sound levels due to HDD drilling would range from 1 to about 5 dBA. Assuming the HDD stringing equipment were to be located north of the 91 Freeway, the noise levels would be approximately 50 dBA at the nearest residences and the increase in hourly levels would range from 0 to 2 dBA. As HDD construction activities could occur 24-hours a day, if the drilling equipment was located south of the 91 Freeway, the resulting noise increase of 5 dBA would be considered a significant noise impact

HDD drilling and string activities are expected to occur 50 feet or farther from any business structures, resulting in sound levels of 83 and 78 dBA or less for HDD drilling and HDD stringing operations, respectively. These levels would comply with the 85 dBA construction noise limit at business structures.

1.9.6.4 Operation Noise Impacts

The proposed facility would consist of drilling activities; slurry, oil, water, and gas handling; slop and utility systems; electrical power; flares; and truck loading racks. The noise impact assessment included drilling and slurry handling equipment and multiple pumps, compressors, blowers, and other miscellaneous equipment associated with the various handling and treatment processes. Occasional workover/maintenance activities were also considered.

As was done for assessing construction noise impacts, the CadnaA industrial noise calculation procedure was used to estimate operational sound levels from on-site equipment. The overall hourly sound levels (L_{eqs}) of the noise sources were estimated at the nearest and/or most affected residential and property boundary locations. The CNEL levels due to operation of the facility were added to the existing sound levels to estimate the overall future noise levels and noise level increases at the affected properties nearest the proposed Project site.

A substantial permanent noise increase would occur if the noise level increase from the proposed Project is 3 dBA CNEL or greater where the future overall noise level would be within the “normally unacceptable” or clearly unacceptable” category (see Table 3.7-5) or 5 dBA CNEL or greater otherwise. Equipment and activities related to the proposed Project operation would increase overall CNEL sound levels by 0 to 1 dBA at the nearest residences, which would be considered a less than significant increase in noise levels.

At receptors in the Dominguez Technology Centre, projected increases in CNEL range from 0 to 4 dBA with resulting overall sound levels of 63 to 71 dBA. These levels are within the “normally acceptable” to "conditionally acceptable" range for both office/professional buildings and industrial/manufacturing facilities, and would not, therefore, be considered substantial increases. Therefore, no significant impacts would be anticipated due to operational noise levels.

1.9.6.5 Mitigation Measures

No mitigation measures are required for the operation phase because noise impacts were determined to be less than significant. Feasible mitigation measures are required to minimize the significant noise impacts associated with the construction phase of the proposed Project as the emissions of noise impacts associated with pipeline and electrical conduit installation are considered significant. Mitigation Measures N-1 through N-13 will be imposed which require: the use of barriers for generators, use of electric-powered equipment where feasible, use of silencers on equipment exhaust and air intake, appropriate maintenance and training programs, require staging areas to be 500 feet or more from sensitive receptors, and provide public notices to residents and business along the pipeline route prior to the commencement of construction activities.

1.9.6.6 Level of Significance Following Mitigation

The mitigation measures are expected to reduce the potential construction noise impacts. However, for many of the noise mitigation measures it is not possible to estimate the reduction in noise level that will be achieved. In addition, all the measures may not be feasible at all construction locations and at all times. Therefore, the construction noise impacts, while temporary, are considered significant even with incorporation of the recommended mitigation measures. Construction noise impacts will cease after the completion of the construction period. Operational noise impacts are less than significant prior to mitigation.

1.9.7 TRANSPORTATION AND TRAFFIC (SECTION 4.8)

1.9.7.1 Environmental Impacts

Traffic impacts related to the operational phase of the proposed Project were evaluated in the NOP/IS and determined to be less than significant. Therefore, only construction-related traffic impacts were analyzed in the EIR. Once construction of the proposed Project is completed, the facility is expected to require up to 15 permanent workers. Operations will be conducted 24-hours a day, seven days a week, so traffic would be spread throughout the day. One to two truck trips are also expected to be required to transport supplies or remove natural gas liquids, hazardous/solid wastes, etc., once operations commence. The existing (baseline) traffic at the site is 256 trips per day. Operational activities associated with the proposed Project are expected to generate a peak of 30 trips per day. Since the proposed Project will generate much less traffic than the existing warehouse operations, no significant LOS impacts are expected at any of the local intersections. No increase in traffic during peak hours is expected during project operations. Therefore, traffic impacts associated with the operational phase of the proposed Project are considered to be less than significant.

1.9.7.2 Construction Phase Traffic Conditions – Trips Generated

The construction traffic associated with the proposed Project can be compared to the existing traffic at the proposed Project site. The estimated maximum construction traffic would be about 120 workers at the proposed Project site, which would result in a maximum of 240 vehicle trips per day. The existing (baseline) traffic at the site is 256 trips per day. Therefore, construction activities associated with the proposed Project are expected to generate less traffic than existing warehouse operations and no significant traffic impacts during construction activities at the proposed Project site would be expected. It is expected that most construction workers will meet at a staging yard and go to the construction site in buses due to the limited parking space at the proposed Project site. Therefore, construction vehicle trips are expected to be less than the existing traffic at the proposed Project site.

1.9.7.3 Construction Phase Traffic Conditions – In-Street Construction Activities

The potential in-street construction impacts associated with pipeline construction activities were evaluated using the screening criteria and significance thresholds contained in the City of Los Angeles CEQA Thresholds Document (City of LA, 2006) for in-street construction impacts which includes impacts associated with projects requiring major construction activity within a street right-of-way, such as temporary loss of access to adjacent parcels, temporary loss of bus stops and temporary loss of on-street parking. Pipeline construction activities within street rights-of-way would potentially result in significant traffic impacts to the following: (1) Vehicular or pedestrian access to a parcel fronting the construction area; (2) street and lane closures; (3) temporary loss of a bus stop; and (4) temporary loss of on-street parking.

Construction of the proposed pipeline would result in short-term impacts to traffic patterns and result in temporary traffic congestion on the affected roadways, resulting in potentially significant impacts, since construction activities would result in lane closures for approximately 10-15 days on Charles Willard Street, South Central Avenue, and University Drive. No construction activities are expected in Wilmington Avenue or 223rd Street; therefore no significant traffic impacts would be expected at these locations. The proposed Project construction activities are not expected to result in the loss of regular vehicular or pedestrian access to existing land use as access would be provided to existing parcels along the proposed pipeline routes. In-street construction activities could result in the temporary loss for more than one day of an existing bus stop or rerouting of a bus route (Carson Circuit Transit System Route E) that serves the South Central Avenue/Charles Willard Street location. Therefore, traffic impacts during the construction period would be temporary but potentially significant. However, significant impacts would be avoided through the preparation of traffic control plans (*e.g.* restriping, directional guidelines, cones, installing street plates after construction hours, etc.).

1.9.7.4 Mitigation Measures

Mitigation measure TT-1 was imposed that requires the preparation and implementation of a traffic control plan. The traffic control plan shall include permitted hours of construction, method of safeguarding traffic flow, method of re-routing or detouring traffic, if necessary, the placement of traffic control devices (including warning signs, flashing arrows, traffic cones and delineators, barricades, etc.) and flaggers (if needed), temporary modifications to existing signals and signal timing (if needed), method to maintain access to parcels fronting the construction area (e.g., use of street plates), method to re-route or re-locate temporary loss of bus stop, and other details of the pipeline construction. The Traffic Control Plan would be required to help to ensure that public safety would not be endangered, and inconvenience would be reduced to a minimum. Implementation of the Traffic Control Plan is expected to minimize traffic impacts to less than significant.

1.9.7.5 Level of Significance Following Mitigation

The impact of the proposed Project construction activities on traffic and transportation would be less than significant following mitigation.

1.10 EXECUTIVE SUMMARY – CHAPTER 5: SUMMARY OF CUMULATIVE IMPACTS

CEQA Guideline §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065(a)(3). For this Draft EIR, related projects with a potential to contribute to cumulative impacts were identified using the "list" approach, using a list of closely related projects that would be constructed in the cumulative geographic scope, as defined for each technical area. The list of closely related projects utilized in this analysis includes 24 identified projects (see Table 5.1-1). The discussion in Chapter 5 lists projects which are reasonably expected to proceed in the foreseeable future, i.e., project information has been submitted to a public agency.

1.10.1 AIR QUALITY (SECTION 5.2.1)

Construction: Construction emissions are calculated for peak day construction activities based on a phased construction schedule and present a worst case emission scenario. It is unlikely that the peak construction day activities for the related projects will occur at the same time as the peak construction day for the proposed Project. Accordingly, it is likely that construction emissions from the cumulative projects will not overlap. Also, construction emissions are limited in duration and will be eliminated following completion of the construction phase. Mitigation measure A-1 would require the use of Tier 3 engines or the equivalent for construction equipment associated with the proposed Project. After mitigation, construction emissions of NOx are expected to be below the SCAQMD thresholds and localized impacts are not expected to cause a significant adverse impact on air quality. Construction emissions associated with the other criteria pollutants are less than significant prior to mitigation. Therefore, the construction activities associated with the proposed Project after mitigation are not cumulatively considerable.

Operation: Operation of the proposed Project would not exceed the SCAQMD significance thresholds for NOx, VOC, CO, SOx, PM10 or PM2.5. Therefore, the proposed Project is not cumulatively considerable. Emission offsets and implementation of best available control technology (BACT) are required for operational impacts associated with the stationary sources in the proposed Project. Additional mitigation is not required because the impact of the proposed Project on air quality was determined to be less than significant and thus the proposed Project is not cumulatively considerable.

The impact of CO, SOx, PM10, and NOx emissions during operation on ambient air quality is expected to be less than significant for the proposed Project and is not cumulatively considerable with respect to the Basin's ability to comply with ambient air quality standards.

TACs: The proposed Project is not expected to result in significant health risks associated with operational activities from the facility. The maximum exposed individual worker (MEIW) would be about 3.6 per million and the maximum exposed individual resident (MEIR) would be about 1.0 per million. Therefore, the proposed Project would not result in a cumulatively considerable contribution to the existing significant impact because the Project cancer risk is below the significance threshold of 10 per million. The non-carcinogenic health risks associated with the proposed Project are also well below the significance threshold of 1.0 and would also be less than significant and no cumulative impacts would be expected.

1.10.2 GEOLOGY AND SOILS (SECTION 5.2.2)

The NOP/IS (see Appendix A) determined that the proposed Project has the potential to generate significant adverse geology and soil hazards related to anthropogenic seismic ground-shaking. This determination was based on the inclusion of hydraulic fracturing in the proposed Project. As discussed in Section 2.8.1, OXY has removed hydraulic fracturing from the proposed Project, therefore no geology or soils impacts, specifically no anthropogenic earthquakes are expected from the proposed Project.

The proposed Project is not expected to generate anthropogenic seismic ground-shaking from oil and gas production. There is the possibility that minor earthquakes can be a result of anthropogenic activities such as extraction of oil at major oil fields, due to a net liquid mass depletion (i.e., removal of oil without replacement of water). The Dominguez Oil Field was discovered in 1923 and was operated using salt water injection beginning in the mid-1940s as a means to extract more oil. The oil and gas production activities associated with the proposed Project will include the injection of salt water as well. Therefore, net liquid mass depletion will not occur. As discussed in Section 3.3.1.3, no known earthquakes have occurred within the Dominguez Oil Field. Therefore, extraction of oil and gas from the Dominguez Oil Field has not been associated as the cause of earthquakes in the vicinity of the Dominguez Oil Field. Therefore, no significant adverse cumulative geologic and soils impacts associated with anthropogenic sources are expected as a result of the proposed Project.

1.10.3 GREENHOUSE GASES (SECTION 5.2.3)

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). GHGs do not have direct human health effects like criteria pollutants. Rather, it is the increased accumulation of GHGs in the atmosphere that may result in global climate change. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project. Furthermore, the GHG emissions associated with the proposed Project would be small relative to total global or even state-wide GHG emissions. Thus, the significance of potential impacts from GHG emissions related to the proposed Project has been analyzed for long-term operations on a cumulative basis, as discussed in this Section. The SCAQMD interim significance threshold for industrial projects is 10,000 metric tons per year of carbon dioxide (CO_2) equivalent emissions.

GHG emissions from human activities are considered to contribute to global climate change. Past, present, and reasonably foreseeable future projects, and the proposed Project, which emit GHGs, would contribute to global climate change. Therefore, the cumulative global emissions of GHGs can be attributed to every nation, region, and city, and virtually every individual on Earth. In California alone, CO_2 emissions totaled approximately 452.97 million metric tons in year 2009.

The operations at the proposed Project location currently include test well operations and warehousing activities. The test well operation GHG emissions sources include a process flare, an emergency flare, an electrical generator, drill rig generators, well workover activities, and mobile sources. Warehouse GHG emissions sources include energy consumption in the existing warehouse and mobile sources. The direct GHG emissions from existing operations are a total of 18,025 metric tons per year.

The contribution of the proposed Project is considered in two aspects: (1) GHG emissions generated from construction of the proposed Project; and (2) GHG emissions generated during the operation of the proposed Project. The total direct GHG emissions associated with the proposed Project, including the 30-year amortized construction GHG emissions, are 18,497 metric tons per year. To assess the overall impact of the proposed Project, the change from the existing operations is compared to the significance threshold. As shown in Table 5.2-4, the incremental increase in direct GHG emissions from the proposed Project is 472 metric tons per year (18,497 compared to 18,025). The incremental increase of 472 metric tons is below the significance threshold of 10,000 metric tons. Therefore, the GHG cumulative impacts are not considered to be cumulatively considerable.

1.10.4 HAZARDS AND HAZARDOUS MATERIALS (SECTION 5.2.4)

The proposed Project would be subject to applicable federal, state, and local laws and regulations governing the spill prevention, storage, use, and transport of hazardous materials, as well as emergency response to hazardous material spills, thus minimizing the potential for adverse health and safety impacts. While hazardous materials could be encountered during construction and operation of the proposed Project or other related projects, with implementation of federal, state, and local regulations and procedures, the Project's impacts related to hazardous materials would be less than significant. Therefore, construction and operation of the proposed Project are not cumulatively considerable.

In the event of a pipeline release, a release from the proposed pipelines would not be expected to result in a release from another pipeline and, therefore, would not be expected to result in a cumulative hazard. Hazards associated with operating the both the crude and natural gas pipelines associated with the proposed Project were determined to be less than significant. Therefore, the proposed Project is not cumulatively considerable as it relates to oil and gas pipeline transport.

The proposed Project may also transport hazardous materials by truck. The proposed Project was considered to be less than significant for the transport of hazardous materials by truck. Therefore, the proposed Project is not cumulatively considerable as it relates to hazardous material transport by truck.

The Dominguez Oil Field has approximately 600 abandoned oil wells. Of the well files reviewed, 18 wells were identified as potentially being influenced by the reactivation of the Dominguez Oil Field. The well abandonment record notes in the DOGGR well files indicate that the well abandonment methods for these 18 wells may not have been sufficient to comply with regulations and requirements and preclude influence by the reactivation of the field. To avoid adversely influencing the 18 wells identified during the records review, the City is imposing mitigation restricting the use of salt water injection wells in vicinity of the wells listed in Table 4.5-4. Mitigation measures H-1 and H-2 require the evaluation of abandoned wells and restrict injection wells within 75 feet of the 18 existing abandoned wells. Mitigation measures are expected to reduce project-specific impacts to less than significant and no additional cumulative impacts would be expected.

1.10.5 HYDROLOGY AND WATER QUALITY (SECTION 5.2.5)

The proposed Project impacts on hydrology and water quality are limited to the project vicinity in the City of Carson and are associated with crude production which generates large quantities of saltwater, potentially impacting local groundwater levels and water quality. Therefore, hydrology and water quality impacts analysis is limited to the Dominguez Oil Field area.

Water Demand: The proposed Project's impacts on water demand during construction and operation are expected to be less than significant as minimal potable water use is expected to be required for hydrotesting purposes. Water use associated with grading activities and hydrotesting would cease following construction activities and no further water demand would be required for these purposes. The proposed Project will require potable water during the initial well drilling operations of up to 4,500 gpd, until the saltwater production wells are completed. Once the saltwater production wells are completed, potable water demand for well drilling operations will reduce to sanitary use, facility safety showers, wash down connections, fire protection, and fugitive dust abatement. Therefore, potable water demand associated with the proposed Project is less than significant and would not contribute to a cumulatively considerable impact.

Water Quality: The proposed project includes a number of features for water quality control including site design and the implementation of BMPs specified in the SWPPP and Wet Weather Erosion Control Plan. Such measures include preventing liquids from running onto or off of the site, capturing and treating stormwater that falls on the site, collecting all drilling mud within enclosed tanks, using catch pans to catch drilling mud, and maintaining spill equipment onsite (absorbent material, booms, plastic sheets, etc.) for use in the event of a spill. Fluids captured would be processed onsite to separate water and solids from oil. Water will be retained and injected into the subsurface, below the potable aquifers. Therefore, the proposed Project would reduce stormwater runoff from the site by capturing and treating most stormwater onsite. Therefore, no significant surface water quality impacts are expected.

While the proposed Project will produce oil and saltwater, and inject saltwater and potentially slurry materials into oil producing zones, geologic features, engineering design of the oil wells, regulatory oversight (including continued groundwater monitoring by the Water Replenishment District) will help ensure that the proposed Project will not impact fresh water aquifers. Therefore, water quality impacts associated with the proposed Project are less than significant and would not contribute to a cumulative considerable impact.

1.10.6 NOISE (SECTION 5.2.6)

The noise impact analysis for the proposed Project indicates that the onsite construction activities associated with the proposed Project modifications would result in noise levels at local sensitive receptors of between 55-61 dBA with noise increases of 3 dBA or less. Noise impacts during construction activities associated with the pipeline and electrical conduit could result in significant noise impacts during the construction phase when construction noise levels are anticipated to exceed ambient noise levels by more than 10 dBA at residences near the pipeline and conduit construction activities. Therefore, the proposed Project would have a cumulatively considerable contribution to a significant impact at receptors along portions of the pipeline and electrical conduit routes during construction activities only. These impacts are temporary and will cease following the completion of construction activities.

Mitigation measures N-1 through N-13 would address the significant impacts from construction noise at nearby noise sensitive receptors and are expected to reduce the potential noise impacts. However, for many of the noise mitigation measures it is not possible to estimate the reduction in noise level that will be achieved. Therefore, the construction noise impacts of the proposed Project are considered to contribute to a cumulatively significant and an unavoidable noise impact.

The operational noise impacts associated with the proposed Project modifications were determined to be less than significant. Equipment and activities related to the proposed Project would increase overall CNEL sound levels by 0 to 1 dBA at the nearest residences, which would be considered less than significant increases. Traffic associated with the proposed Project is expected to be less than the existing traffic so that noise generated by traffic would be reduced as compared to existing conditions. Therefore, operational noise impacts were considered to be less than significant and the proposed Project would not result in a cumulatively considerable noise increase due to operational activities.

1.10.7 TRANSPORTATION AND TRAFFIC (SECTION 5.2.7)

Given the geographic area covered by the proposed pipeline and conduit routes, there is a possibility that other construction projects (i.e., related projects) would occur along the same routes as the pipeline during the construction phase. While there is a potential for cumulative impacts to occur, the duration of the impact would be very limited given the rate of construction for the proposed pipelines (1-2 days in any one location). With mitigation, the proposed Project is not expected to result in significant adverse traffic impacts during pipeline construction activities. Traffic Control Plans will be prepared and will address potentially significant issues such as: (1) potential blocked vehicular and pedestrian access to parcels fronting the construction area; (2) temporary loss of bus stops; and (3) lane closures along major streets. The impact of the proposed Project modifications on transportation and traffic would be less than significant with implementation of the traffic control plans. Further, construction traffic associated with the proposed Project will cease after the completion of construction activities. Therefore, the proposed Project is not cumulatively considerable for transportation and traffic during the construction phase. Traffic impacts related to the operational phase of the proposed Project were evaluated in the NOP/IS and determined to be less than significant.

1.11 EXECUTIVE SUMMARY – CHAPTER 6: SUMMARY OF ALTERNATIVES

This EIR identifies and compares the relative merits of a range of reasonable alternatives to the proposed Project as required by the CEQA guidelines. According to the CEQA Guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide a means for evaluating the comparative merits of each alternative. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines, §15126.6(a)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

1.11.1 DESCRIPTION OF ALTERNATIVES (SECTION 6.3)

The five alternatives include: (1) the "No Project Alternative"; (2) Alternative Site (Crimson Pipeline); (3) Alternative Site (Plains Pipeline); (4) Reduced Project; and (5) Alternative Crude Oil Pipeline. The alternatives are described in the following subsections.

Alternative 1: CEQA Guidelines §15126.6 (e) require evaluation of a "No Project Alternative." Under the No Project Alternative, the proposed Project would not occur and the site would remain as it is today. No additional development of the oil field would occur in the No Project Alternative, however, the existing test wells and warehouse would remain onsite. The No Project Alternative would not meet the objectives of the proposed Project, which include development of the Dominguez Oil Field to produce local supplies of crude oil and natural gas.

Alternative 2: Alternate locations are limited to the general vicinity of the proposed Project as they would need to be located near the central portion of the Dominguez Oil Field in order to access the oil reserves within this field. Alternative sites are also limited to sites within commercial/industrial areas that would be available for sale or lease and not located close to residential areas. An alternative site meeting the above conditions was found located at 18301 South Broadwick Street in the Rancho Dominguez area of the County of Los Angeles. The alternative site location would require longer connections to the Southern California Gas natural gas pipeline and to the Crimson Oil Pipeline. Additionally, assuming the electrical connection is from the same junction, the electrical transmission lines would be about 10,800 feet as compared to the proposed project of 8,000 feet. The use of the alternative site would move the site location to the Rancho Dominguez area of Los Angeles County (an unincorporated area) and outside of the City of Carson.

Alternative 3: Alternative 3 would be the same as Alternative 2 in that the alternative site would be located at 18301 South Broadwick Street in the Rancho Dominguez area of the County of Los Angeles. Alternative 3 would include pipeline connections to the existing Plains Connection Oil Pipeline (which is closer to this alternative site than the Crimson Pipeline) in lieu of the reactivating the Crimson Pipeline, and would require longer connections to the Southern California Gas natural gas pipeline. Assuming the electrical connection is from the same junction, the electrical transmission lines would be about 10,800 feet as compared to the proposed Project of 8,000 feet, and no additional upgrades would be necessary like those needed to reactivate the Crimson Pipeline.

Alternative 4: The Reduced Project Alternative would use the same site as the proposed Project but would reduce the number of total wells from 200 to 100. The infrastructure for the proposed Project would also be required for the Reduced Project Alternative. With the reduction in the number of wells, the production rate will be lower, thus the lifetime of the Project is expected to be longer (i.e., twice as long or 100 years for the Reduced Project Alternative) in order to maximize production from the site. The total recoverable amount of crude oil under Alternative 4 is expected to be less than the proposed Project due to the reduced number of wells and the inefficiency of re-drilling wells.

Alternative 5: The Alternative Crude Oil Pipeline Connection would use the same site as the proposed Project but would transport crude oil via a new pipeline that would connect to the Plains Connection Oil Pipeline located to the east of the proposed Project site (approximately 8,600 feet of new pipeline). This alternative would eliminate the reactivation of the Crimson Pipeline and the 2,000-foot new connecting pipeline. All other aspects of the proposed Project would remain the same.

1.11.2 ENVIRONMENTAL IMPACTS OF ALTERNATIVES (SECTION 6.4)

Based on the alternatives analyses herein, no feasible alternatives were identified that would reduce or eliminate the potentially significant impact of the proposed Project which includes potentially significant noise impacts during construction activities.

Alternative 1 - No Project Alternative would eliminate these impacts, but would not achieve any of the goals of the proposed Project. Therefore, Alternative 1 would not be considered to be the environmentally superior alternative.

Alternatives 2 and 3 would result in increased emissions during construction and increased noise impacts with all other environmental impacts equal to the proposed Project. Therefore, Alternatives 2 and 3 would not be considered to be the environmentally superior alternative as they would not reduce project impacts. Alternatives 2 and 3 would allow the facility to meet the project objectives of developing the Dominguez Oil Field.

Alternative 4 would result in less GHG emissions with all other environmental impacts equal to the proposed Project. Therefore, Alternative 4 would be considered to be the environmentally superior alternative as it would reduce some project impacts, which were not found to be significant, but would not avoid or substantially lessen the significant adverse noise impacts during construction. Alternative 4 would allow the facility to meet most of the project objectives of developing the Dominguez Oil Field but would not fully develop the potential oil reserves. Therefore, Objective 2 would not be fully realized (encourage development of local oil and gas resources to reduce dependence on foreign energy supplies).

Alternative 5 would result in greater construction emissions, GHG emissions, and noise impacts with all other environmental impacts equal to the proposed Project. Therefore, Alternative 5 is not the preferred alternative.

1.12 EXECUTIVE SUMMARY – CHAPTER 7, 8 AND 9: REFERENCES, ACRONYMS, AND GLOSSARY

Information on references cited (including organizations and persons consulted) and the acronyms and glossary are presented in Chapters 7 and 8, respectively. Chapter 9 contains a glossary of technical terms used in the EIR.

TABLE 1.9-1

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Air Quality		
Construction activities would generate air emissions associated with construction equipment including excavators, dozers, backhoes, cranes, trucks and worker commute vehicles. The construction emissions of CO, VOC, SOx, PM10, and PM2.5 will not exceed SCAQMD CEQA significance thresholds and are less than significant.	None required.	Construction emissions are expected to be less than significant for CO, VOC, SOx, PM10, and PM2.5.
Construction activities would generate air emissions associated with construction equipment including excavators, dozers, backhoes, cranes, trucks and worker commute vehicles. The construction emissions of NOx will exceed SCAQMD CEQA significance thresholds and are considered significant.	Mitigation measures A-1 thru A-5 will be imposed which requires that: For off-road construction equipment rated 50 hp or greater that will be operating for eight hours or more per day, the project proponent shall use Tier 3 or equivalent engines as available. The project proponent will investigate the use of temporary power to be used in lieu of diesel generators and submit the results of the investigation to the City during Plan Check. Prohibit construction equipment from idling longer than five minutes at the Facility. Maintain construction equipment tuned up to optimize emissions without nullifying engine warranties. Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts.	Construction emissions of NOx are expected to be less than significant after mitigation.
Construction impacts for CO, NO_2, SOx, PM10, and PM2.5 would not exceed applicable local significance thresholds. Therefore, construction impacts on ambient air quality are less than significant.	None required.	Ambient air quality concentrations of CO, NO_2, SOx, PM10, and PM2.5 during construction will be less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
The largest source of air emissions associated with the operation of the proposed Project includes process heaters, process flare, and transport trucks. Operational emissions of criteria pollutants are less than significant for CO, VOC, NOx, SOx, PM10, and PM2.5.	None required.	Operational emissions are expected to be less than significant for CO, VOC, NOx, SOx, PM10, and PM2.5.
Ambient air quality modeling indicates that the Project operation emissions of CO, NOx, SOx, PM10, and PM2.5 will be below ambient air quality standards and are less than significant.	None required.	Project emissions of NO_2, PM10, and PM2.5 will be below ambient air quality standards and are less than significant.
The health risk due to the operation of the proposed Project is expected to be less than the significance criterion of 10 per million for carcinogens and 1.0 for non-carcinogens, so that proposed Project health risk impacts are less than significant.	None required.	Health risk impacts are less than significant.
Geology/Soils		
The proposed Project has the potential to generate significant adverse geology and soil hazards related to anthropogenic seismic ground-shaking with the use of hydraulic fracturing. Hydraulic fracturing has been removed from the proposed Project.	Mitigation measure G-1 will be imposed which requires that: OXY shall be subject to inspection by a City representative or consultant to verify that hydraulic fracturing has not been employed. Drilling records maintained per DOGGR requirements shall be available during the inspection.	Geologic and soils impacts from the proposed Project would remain less than significant.
A probabilistic horizontal ground acceleration of 0.59g and 0.39g were calculated for the site. The calculated values are within the range typical for the southern California region. Compliance with the California Building Code will reduce risks of seismic damage to less than significant.	None required.	No mitigation measures are required and the geologic and soils impacts from the proposed Project would remain less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Minor earthquakes could result due to a net liquid mass depletion (i.e., removal of oil without replacement of water). Oil and gas production activities associated with the proposed Project will include the injection of salt water so that net liquid mass depletion will not occur and pressures within the formations are expected to remain constant. No significant adverse impacts associated with earthquakes are expected.	None required.	No mitigation measures are required and the geologic and soils impacts from the proposed Project would remain less than significant.
Hazards and Hazardous Materials		
On-site processing activities including oil storage tanks, oil transfer pumps, gas compressors, and low temperature separation were determined to have the potential to generate hazards, but such hazard impacts would remain on-site or be contained by the 30-foot wall and remain onsite.	None required.	No mitigation measures are required and the on-site hazards impacts from the proposed Project are considered to be less than significant.
The NGL storage and truck loading have the potential to create hazards that would result in offsite impacts. The worst-case event at the proposed site would be a failure of the NGL tank or a tank truck in the NGL loading area, with the estimated probability of a failure of a pressurized storage tank being 0.424 events per million hours of operation or one failure every 269 years. Since the anticipated useful life of the facility is 50 years, this event has an extremely low probability of occurring. Therefore, no significant adverse hazard impacts are expected from NGL storage or truck loading.	None required.	No mitigation measures are required and the on-site hazards impacts from NGL storage and truck loading are considered to be less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Water quality impacts from spills are controlled by containment systems in place, and spills are not expected to migrate from the facility. Also, the site will be paved. Potential adverse water quality hazard impacts from processing activities are considered to be less than significant.	None required.	No mitigation measures are required and the on-site water quality impacts from spills are considered to be less than significant.
The likelihood of an accident involving NGL truck transport occurring during the lifetime of the facility is one every 55,556 years, which is much greater than the lifetime of the facility (expected to be 50 years). Therefore, the probability for an adverse impact from truck transport of NGL from the proposed Project is extremely low and the potential hazard impacts related to truck transport from the proposed Project is less significant.	None required.	No mitigation measures are required and the transportation hazard impacts from spills are considered to be less than significant.
Pipeline accident statistics for petroleum products were analyzed for "serious" and "significant" incidents. The statistical rate of "serious" incidents for the approximately four miles of Crimson Oil Pipeline would equate to approximately one "serious" incident every 8,065 years, and one "significant" incident every 188 years for the crude oil pipeline. Since the useful life of the Project crude oil pipeline is approximately 50 years, this type of event has a low probability of occurring and no significant impacts from crude oil transport by pipeline are expected from the proposed Project.	None required.	No mitigation measures are required and the crude oil pipeline hazard impacts are considered to be less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Pipeline accident statistics for natural gas pipelines were analyzed for "serious" and "significant" incidents. The statistical rate of "serious" incidents for the approximately 2,000 feet of natural gas pipeline would equate to approximately one "serious" incident every 100,000 years, and one "significant" incident every 33,000 years for the natural gas pipeline. Since the useful life of the Project is approximately 50 years, this type of event has a low probability of occurring, and no significant impacts from natural gas transport by pipeline are expected from the proposed Project.	None required.	No mitigation measures are required and the natural gas pipeline hazard impacts are considered to be less than significant.
Once constructed, the proposed Project would not impede any designated disaster evacuation routes or impair implementation of any emergency response plans through long-term street blockage. Therefore, impacts to adopted emergency plans or emergency evacuation plans during proposed Project operation would be less than significant.	None required.	No mitigation measures are required and the emergency access impacts are considered to be less than significant.
The probability of loss of control (blowout) of produced fluids during drilling is low since the field has been extensively developed since 1923, the operating pressure is less than hydrostatic pressure, and a BOP system will be in place during drilling. Therefore, hazard impacts associated with loss of control of produced fluids are considered to be less than significant.	None required.	No mitigation measures are required and the hazard impacts associated with the loss of control of produce fluids are considered to be less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Soil contamination from drilling operations will be controlled by the use of aboveground, liquid-tight mud tanks to eliminate the potential for soil contamination. In addition, secondary containment has been incorporated into the proposed Project design to prevent the spills from migrating off-site. Therefore, the probability of soil contamination is low.	None required.	No mitigation measures are required and the soil contamination impacts associated with the drilling operations are considered to be less than significant.
Well abandonment record notes in the DOGGR well files indicate that the well abandonment methods for 18 wells in the Dominguez Oil Field may not have been sufficient to comply with regulations and requirements and preclude influence by the reactivation of the field. To avoid adversely influencing the identified 18 wells or striking abandoned wells, the City is imposing mitigation measures restricting the use of salt water injection wells in the vicinity of the 18 wells listed.	Mitigation measure H-1 will be imposed which requires that: OXY shall avoid placing the end point of an injection well within a 75-foot radius of the 18 existing abandoned wells identified in Table 4.5-4. The 75-foot radius shall be approximated based on the best available information from DOGGR regarding the subsurface location of these wells. Records documenting the distance between the 18 wells and new wells shall be maintained by OXY and available for review by the City upon request. Additionally, OXY shall evaluate the potential subsurface location of existing abandoned wells that may be encountered prior to the drilling of a well. The evaluation shall be based on the best available information from DOGGR regarding the subsurface location of these wells. OXY shall reasonably avoid the existing wells based on their evaluation of the location of the existing abandoned wells. Records documenting the evaluation shall be maintained by OXY and available for review by the City upon request.	Hazard and hazardous materials impacts from oil and gas production would remain less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Hydrology and Water Quality		
Potable water use during construction is temporary and would be less than the established thresholds on a peak day resulting in no significant impacts on water use during the construction period.	None required.	Construction impacts on water demand are expected to be less than significant.
Water quality during construction activities will be protected through the implementation of stormwater management measures and are not expected to result in significant impacts to surface water quality.	None required.	Construction impacts on water quality are expected to be less than significant.
The proposed Project will require potable water during the initial well drilling operations of about 4,500 gallons per day until saltwater production wells are completed, when the use of potable water will cease. Potable water use will not increase since existing warehouse activities will be eliminated. Once in operation, the temporary potable water demand is below 233,300 gallons per day and the proposed Project is not a "water demand project" as defined by CEQA Guidelines §15155.	None required.	Operational impacts on water demand are expected to be less than significant.
There will be no discharges of process water to surface water. Surface water runoff from the site will be managed according to the BMPs, specified in the SWPPP and WWECP. In addition, the proposed Project would capture and treat most stormwater onsite and is, therefore, not expected to result in significant surface water quality impacts.	None required.	Operational impacts on surface water quality are expected to be less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
The proposed Project is designed and required by regulations to install sealed casing through the water bearing aquifers to protect potable groundwater. All wells will be designed and constructed to prevent contact between the water in the fresh water aquifers and the produced fluids and the injected fluids. The casing requirements will isolate the wells from the fresh water aquifers and will meet or exceed requirements of DOGGR and U.S. EPA. Water quality concerns in the vicinity of the Dominguez Oil Field have not been associated with oil recovery or processing activities. Therefore, no significant groundwater quality impacts are expected.	None required.	Operational impacts on groundwater quality are expected to be less than significant.
Noise		
Construction noise levels associated with on-site construction activities are expected to increase at residential areas by 3 dBA or less, therefore, on-site construction noise levels are considered to be less than significant.	None required.	Construction noise levels associated on-site construction activities are expected to be less than significant.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Off-site noise construction impacts associated with pipeline construction at University Drive and South Central Avenue would exceed a 10 decibel noise increase and are considered to be potentially significant.	Mitigation measures N-1 thru N-13 will be imposed and requires that: Quieted generators or portable barriers shall be used around the generators for all off-site pipeline construction locations. To minimize the time during which any single noise-sensitive receptor is exposed to construction noise, construction shall be completed as rapidly as possible. Where possible, electric-powered equipment shall be used rather than diesel equipment, and hydraulic-powered equipment shall be used rather than pneumatic power. If compressors powered by diesel or gasoline engines are used, they shall be contained or have baffles to help abate noise levels. All construction equipment shall be properly maintained. All construction equipment shall be equipped with suitable exhaust and air-intake silencers in proper working order. Construction equipment shall be operated only when necessary, and shall be switched off when not in use. Construction employees shall be trained in the proper operation and use of the equipment to minimize noise levels. Contractors shall be required to participate in training programs related to Project-specific noise requirements, specifications, and/or equipment operations. Contractors shall also receive on-site training related to noise-specific issues and sensitive areas adjacent to the pipeline route. Construction staging sites shall be located on properties restricted to industrial and commercial uses only. To the extent	Off-site construction noise impacts, while temporary, are considered significant even with incorporation of the recommended mitigation measures. Construction noise impacts will cease after the completion of the construction period.

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
	possible, construction staging sites shall not be located within 500 feet of a sensitive receptor. Where this is not possible, the contractor shall erect noise barriers, or ensure that existing structures provide adequate noise barriers between the staging site and the sensitive receptor. Stationary noise sources such as generators and compressors shall be positioned as far away as possible from noise sensitive areas. To the extent practicable, construction equipment shall be stored in the construction zone while in use. This will eliminate noise associated with repeated transportation of the equipment to and from the site. Public notice shall be given to residents and business along the pipeline route at least two weeks prior to the commencement of construction activities. The notice shall identify the location and dates of construction, and the name and phone number of the contractor's contact person in case of complaints. The public notice shall encourage the residents to contact this person rather than the police in case of complaint. Residents shall also be kept informed of any changes to the schedule. The contractor's designated contact person shall be on-site throughout Project construction with a mobile phone. If a complaint is received, the contact person shall take whatever reasonable steps are necessary to resolve the complaint. If possible, a member of the contractor's team shall also travel to the complainant's location to understand the nature of the disturbance.	

TABLE 1.9-1 (continued)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Construction impacts associated with the installation of the SCE conduits would exceed a 10 decibel noise increase at residential receptors near the intersection of Victoria Street and South Central Avenue.	Mitigation measures N-1 thru N-13 will be implemented as described above.	Off-site construction noise impacts, while temporary, are considered significant even with incorporation of the recommended mitigation measures. Construction noise impacts will cease after the completion of the construction period.
Equipment and activities related to operation of the proposed Project would increase overall CNEL sound levels by 0 to 1 dBA at the nearest residences, which would be considered less than significant increases.	None required.	Operational noise levels are expected to be less than significant.
Traffic/Transportation		
On-site construction activities associated with the proposed Project are expected to generate less traffic than existing warehouse operations and no significant traffic impacts during construction activities at the proposed Project site would be expected.	None required.	On-site construction traffic impacts are expected to be less than significant.

TABLE 1.9-1 (concluded)

Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
Traffic impacts associated with in-street construction of the proposed pipelines during the construction period would be temporary but potentially significant as lane closures would occur.	Mitigation measure TT-1 will be imposed which requires that: Prior to the start of construction activities, the Applicant shall develop and implement a traffic control plan, prepared by a registered traffic engineer, for the entire pipeline route at all locations where construction activities would interact with the existing transportation system. The traffic control plan shall be approved by the City Traffic Engineer. The traffic control plan shall include permitted hours of construction, method of safeguarding traffic flow, method of re-routing or detouring traffic, if necessary, the placement of traffic control devices (including warning signs, flashing arrows, traffic cones and delineators, barricades, etc.) and flaggers (if needed), temporary modifications to existing signals and signal timing (if needed), method to maintain access to parcels fronting the construction area (e.g., use of street plates), method to re-route or re-locate temporary loss of bus stop, and other details of the pipeline construction.	The impact of the proposed Project construction activities on traffic and transportation would be less than significant following mitigation.

CHAPTER 2
PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

OXY USA Inc. (OXY) is proposing the construction and operation of a new oil and gas production facility to develop a portion of the Dominguez Oil Field that has been out of production for many years. The proposed Project will be designed and constructed to incorporate an existing oil and gas test well facility and to be visually compatible with the existing industrial and commercial buildings at the Dominguez Technology Centre.

OXY proposes to construct a production facility (Facility) consisting of up to 202 wells (2 existing test wells and 200 new wells), an oil and gas processing facility including a process flare, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 barrels per day (bbl/day) of oil and three million standard cubic feet per day (mmscf/day) of natural gas. Directional drilling techniques will be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet (ft). The Facility will be located in a 30-foot high walled compound with the drill rig mast enclosed.

2.2 PROJECT OBJECTIVES

The objectives of the proposed Project are to:

- Develop the Dominguez Oil Field utilizing state-of-the-art technology;
- Encourage development of local oil and gas resources to reduce dependence on foreign energy supplies;
- Integrate an oil and gas production facility with the current commercial and light industrial neighborhood;
- Locate the proposed Project to utilize existing pipeline networks to transport oil and natural gas to local refineries and natural gas suppliers;
- Centrally locate the proposed Project relative to the Dominguez Oil Field to allow oil reservoir access from a single site; and,
- Utilize proven technology to maximize individual well production and to minimize the number of wells and associated drilling.

2.3 PROJECT LOCATION

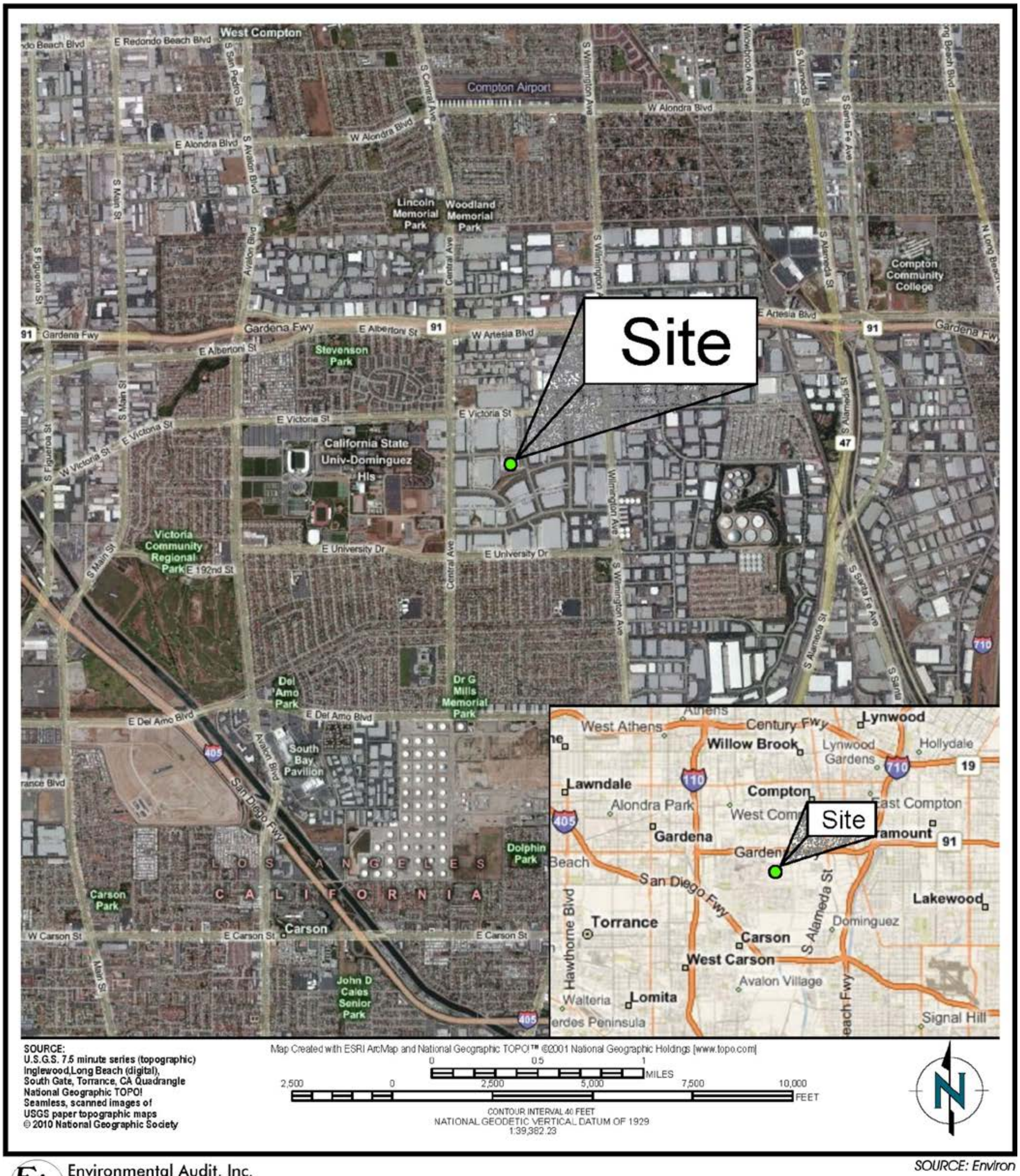
The proposed Project will be located in the northern portion of the City of Carson within Los Angeles County as shown on the site map, Figure 2.3-1. The proposed Project site is approximately 6.5 acres and will be located entirely within the Dominguez Technology Centre as shown in Figure 2.3-2. The Dominguez Technology Centre is an approximately 288-acre business park developed to support light industrial and commercial land uses. The proposed Project location currently consists of an industrial building and two oil and gas test wells (and associated process equipment) located at 1450-1480 Charles Willard Street. The proposed Project location is bounded on the north by Charles Willard Street, on the east by Bishop Avenue, on the west by a commercial/light industrial building, and on the south by a vegetated swale that acts as a conveyance for storm water and adjacent commercial/light industrial buildings.

2.4 LAND USE AND ZONING

The proposed Project would be located within the Dominguez Technology Centre Specific Plan. The current use of the site is an industrial warehouse that is currently leased to a retail hardware and merchandise distributor, an electronic equipment manufacturer, and a global freight forwarder. Existing operations included freight warehousing and distribution operations. Current oil and gas operations at the site include two production test wells and production testing equipment, which operate 24 hours a day, seven days a week. The City of Carson General Plan designates the land use of the proposed Project site as Light Industrial (LI). The Specific Plan zoning for the proposed Project site is Manufacturing, Light (ML).

The Dominguez Technology Centre Specific Plan recognizes that oil production and recovery have occurred within the specific plan area for over 65 years and will continue to be a component of the overall development of the Specific Plan area. The Dominguez Technology Centre Specific Plan lists the permitted land uses of the area which include, but are not limited to, the following:

- General manufacturing or assembly;
- Manufacture, research, assembly, testing, maintenance and repair of components, devices, equipment, parts and systems;
- Business engaged in research and development activities;
- Industries engaged in distribution, storage or warehousing;
- Exploration, production and transmission of oil and gas products appropriately screened;

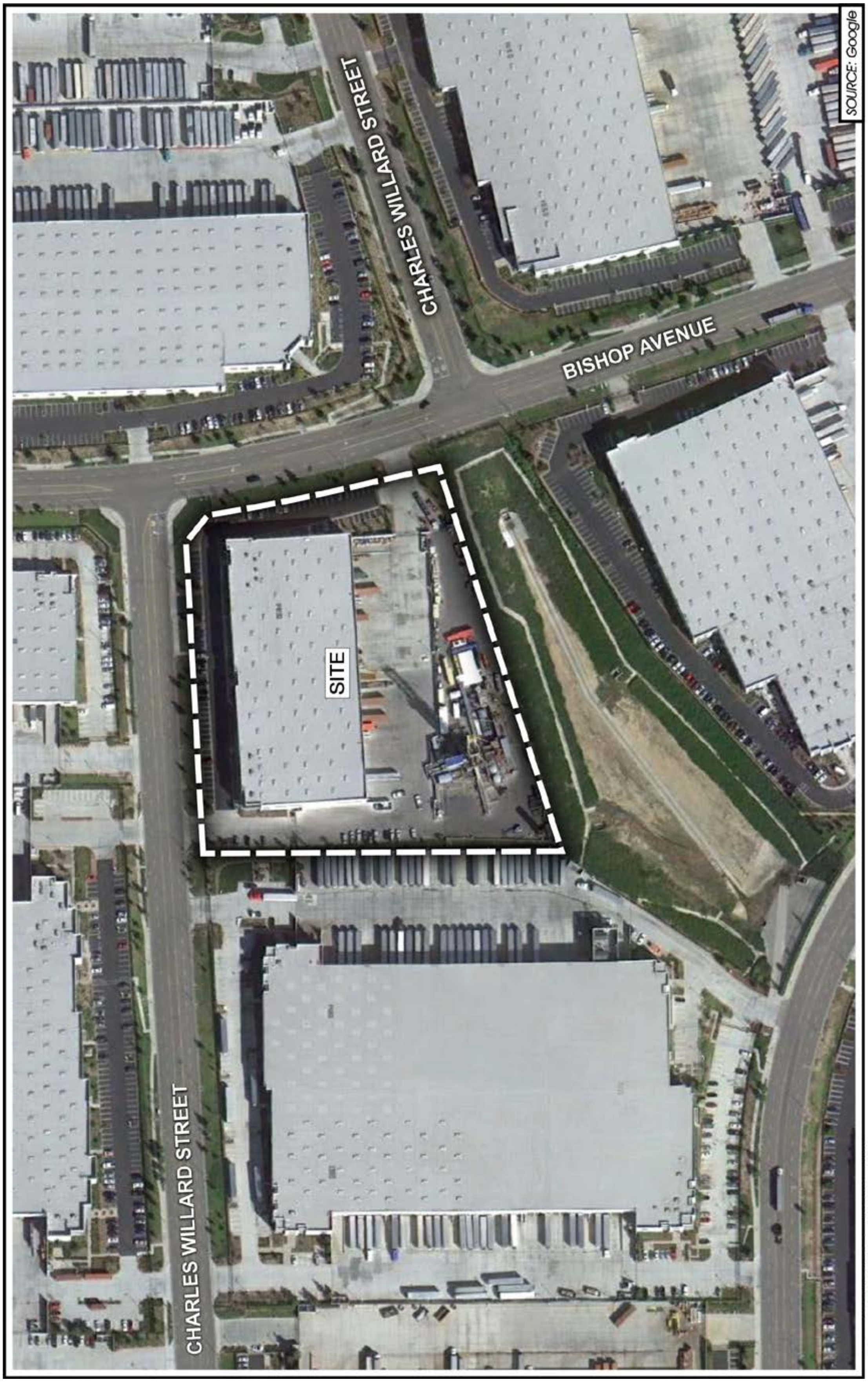


SITE VICINITY MAP
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 2.3-1

N:\2757\Chapter 2\Site Vicinity Map.cdr



SITE DETAIL
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 2.3-2

Project No. 2757
N:\2757\Chapter 2\Site Detail (rev.1).cdr

- Accessory uses and industrial support activities when part of, and related and incidental to, a permitted industrial use;
- Headquarters or regional offices; and,
- General administrative, professional, and business offices.

Oil and gas exploration, production and transmission are allowable land uses within the Dominguez Technology Centre Specific Plan. Therefore, the proposed Project is consistent with the designated land use and zoning of the site and will not conflict with the adopted General Plan or Specific Plan for the site.

2.5 EXISTING FACILITY CONFIGURATION AND OPERATION

The existing facilities at the proposed Project location include a 77,360-square foot warehouse building, located in the northern portion of the property, and an oil and gas production test facility, located in the southern portion of the property (see Figure 2.5-1). Activities associated with the warehouse facility involve the receipt and distribution of goods via trucks, which based on traffic monitoring data, operates from 4:30 a.m. to 10:30 p.m. The oil and gas production test facility is comprised of two production test wells, production testing equipment, a process flare, an emergency flare, electrical generators, and several temporary storage tanks.

Historically, oil and gas production from the Dominguez Oil Field has occurred in the area of the Dominguez Technology Centre. The Dominguez Oil Field was discovered in 1923 and is approximately five miles long and 1.5 miles wide and is comprised of oil-bearing sandstones and siltstones in hundreds of layers between non-porous rocks approximately 4,000 feet (0.8 miles) to 13,500 feet (2.6 miles) below the surface. The Dominguez Oil Field extends from the Long Beach Freeway (I-710) and Del Amo Boulevard in the southeast to the Harbor Freeway (I-110) and Gardena Freeway (Route 91) in the northwest (see Figure 2.5-2).

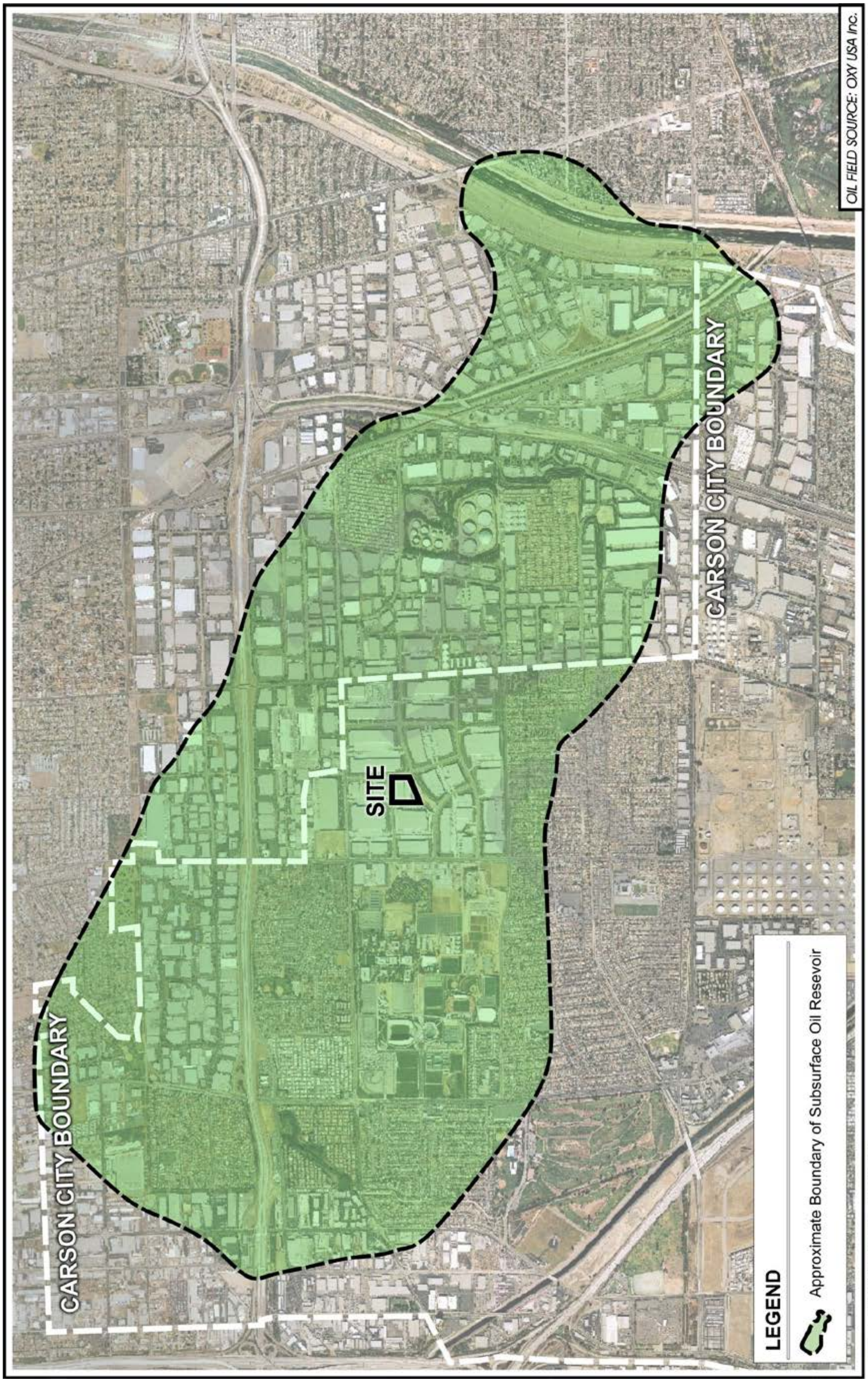
The Dominguez Oil Field was discovered in September 1923 by the Union Oil Company of California. After 20 years of development by four different operators, the field was thought to be approaching the end of its productive life. However, starting in the mid-1940s, the Union Oil Company of California initiated one of California's first field experiments in evaluating the effectiveness of injecting salt water as a means of increasing oil recovery. By 1959, this technique was used in the field to successfully increase oil production. The field had produced more than 250 million barrels of oil by the end of 1971. From the mid 1970’s through 2011, limited oil production occurred in the Dominguez Oil Field, producing an additional 24 million barrels of oil.

I:\2757\Existing Facilities (Created) 05/04/12 (Drawn By) A.S.K. (Check By) M.R.B. (Last Rev.) 05/11/12

EXISTING FACILITIES
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 2.5-1



DOMINGUEZ OIL FIELD LOCATION
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 2.5-2

Project No. 2757
N:\2757\Chapter 2\Oil Field Locations (rev.3).cdr

A total of 605 wells have been drilled in the Dominguez Oil Field of which three are currently active in the southeast portion of the field (approximately 1.3 miles from the proposed Project location), three are idled (one approximately 1.3 miles southeast of the proposed Project location, one approximately 1 mile east of the proposed Project location and one approximately 1.3 miles northwest of the proposed Project location), two existing test wells at the proposed Project property, and the remainder have been abandoned (also referred to as plugged) including four on the proposed Project property (DOGGR, 2012).

Current oil and gas testing operations include two production test wells and production testing equipment. Within the scope of the Dominguez Technology Centre Specific Plan, the drilling of the two test wells began in November 2010 and was completed in May 2011. The production testing began in August 2011 and is ongoing. The two test wells were drilled more than two miles deep using diesel-powered generators and a drill rig equipped with a 168-foot tall mast. A process flare, an emergency flare, and several temporary tanks have been used and are currently being used at the site during testing operations. The current oil and gas testing operations occur 24 hours a day, seven days a week with two 12-hour shifts.

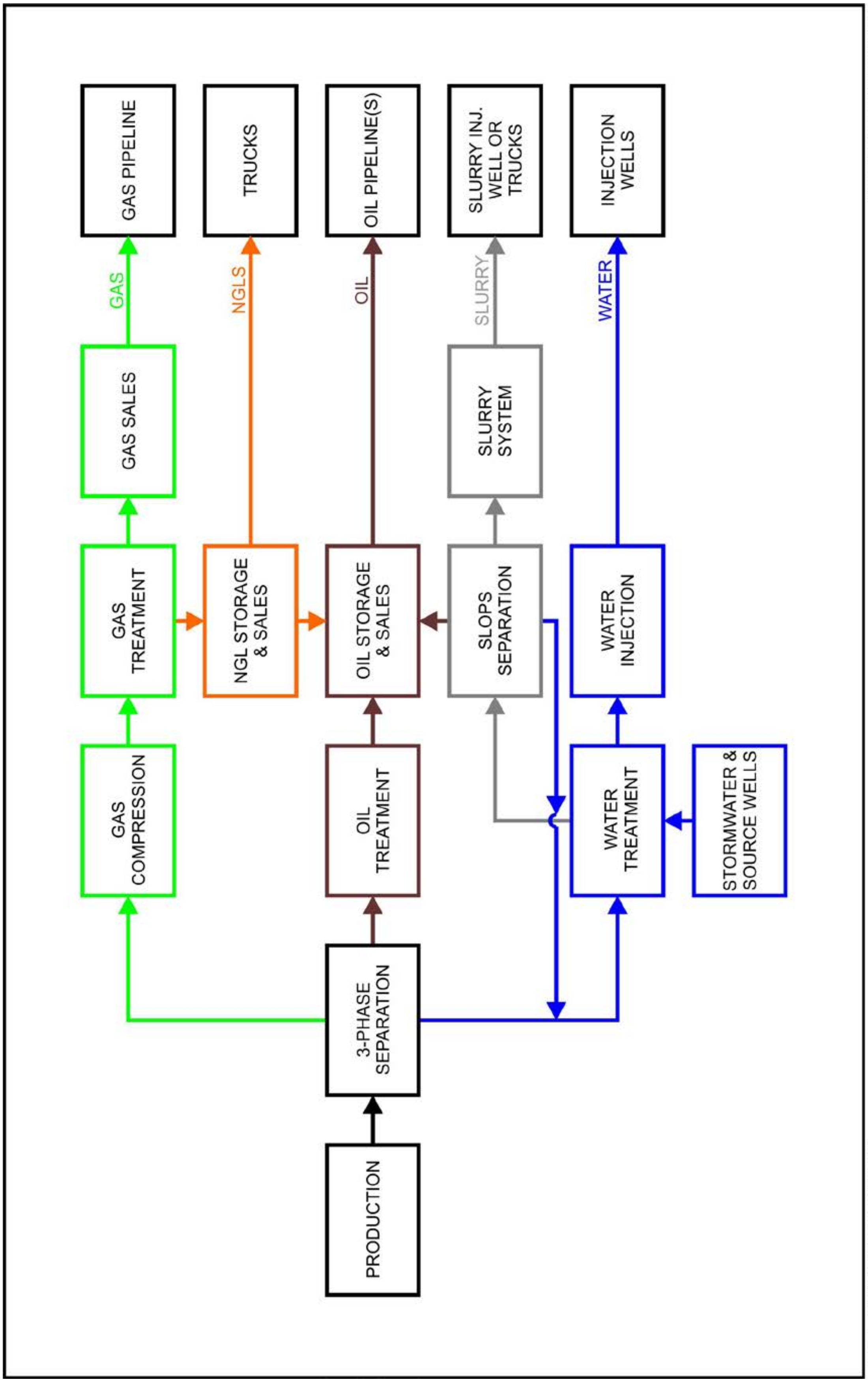
2.6 PROPOSED PROJECT

OXY proposes to construct a production facility consisting of up to 200 additional wells, (a total of 202 wells including the two existing test wells) an oil and gas processing facility, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 bbl/day of oil and 3 mmscf/day of natural gas. Crude oil production results in produced fluids (oil, water, and gas liquids) and natural gases that must be processed to meet buyer and transportation specifications. Once brought to the surface, the oil, water, and gas mixture is processed to recover the salable products (crude oil and natural gas) from the water. Figure 2.6-1 shows the steps involved to process the crude oil produced from the wells.

Directional drilling techniques will be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet within the Dominguez Oil Field. A preliminary plot plan for the proposed Project is shown in Figure 2.6-2. The Facility will be located in a 30-foot high, walled compound with an enclosed drill rig mast. An artistic rendering is shown in Figure 2.6-3. The Facility will be equipped with two main gates, one located at the northwest corner accessed from Charles Willard Street, and one located on the southeast corner accessed from Bishop Avenue.

2.6.1 Oil and Gas Production

The oil and gas production facilities will include up to 200 wells, well cellars, and a well drilling rig. Of the 200 wells to be installed during the life of the project, approximately 130 will be production wells, 65 salt water injection wells, four salt water production wells, and one slurry injection well. Approximately 90 percent of the produced fluids



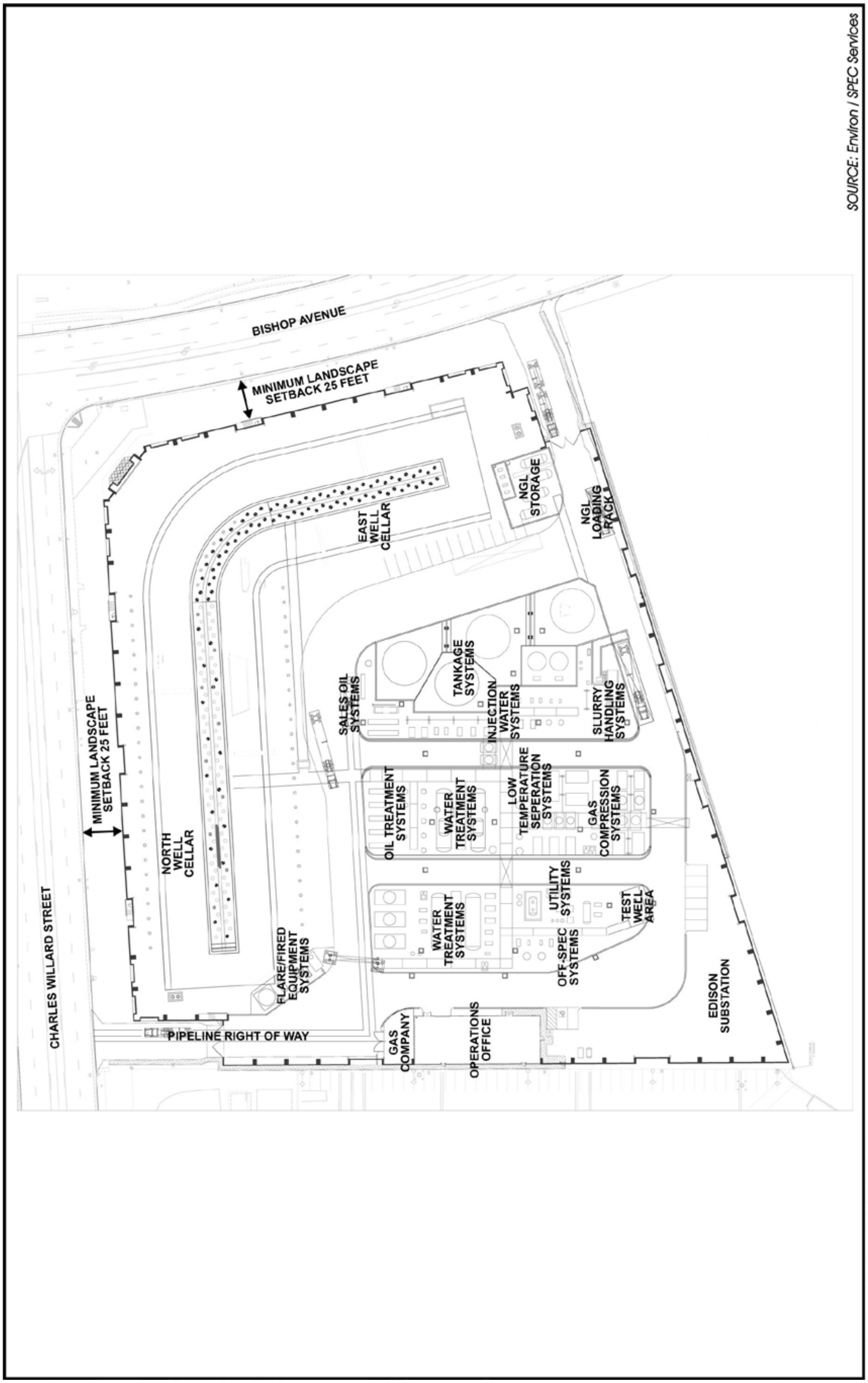
SOURCE: Environ / SPEC Services

ENVIRONMENTAL AUDIT, INC.

BLOCK FLOW DIAGRAM
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 2.6-1

Project No. 2757
N:\2757\Chapter 2\Block Flow Diagram.cdr



PRELIMINARY PLOT PLAN
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 2.6-2

Project No. 2757
N:\2757\Chapter 2\Preliminary Plot Plan.cdr

SOURCE: Environ

ENVIRONMENTAL AUDIT, INC.

ARTISTIC RENDERING
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 2.6-3

Project No. 2757
N:\2757\Chapter 2\Artistic Rendering.cdr

from oil and gas production are expected to be water, which will be reintroduced to the oil reservoir to improve oil recovery and maintain reservoir pressure. The slurry injection well will be used to inject waste drilling solid and fluids into the formation. If the slurry injection well is not constructed, cuttings and solids from well installations will be transported off-site to an appropriately licensed disposal facility. It is expected that up to approximately 20 wells per year will be installed. The wells will be constructed to current specifications at the time the permits are issued by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR).

All wells (except for the two existing test wells) will be located in well cellars on the north and east side of the Facility (see Figure 2.6-2). The well cellars are below grade and contain the wellhead, piping, and pumps. The below-grade cellars allow equipment to position over the wells with no obstructions. The below-grade cellars are expected to be similar to existing well cellars (see Photo 2.6-1). The well cellars will be approximately eight feet deep and equipped with storm water management collection sumps and pumps.

Photo 2.6-1 Typical Below-Grade Well Cellar

A drill rig equipped with a 2,000-horsepower (hp) electric motor will reside at the Facility to install the wells. The drill rig will be equipped with an approximately 145-foot high mast enclosed in sound proofing material (see Figure 2.6-3). Support equipment including pumps and compressors will be located at the base of the mast. The drill rig will move from one well location to another along the well cellars. The drill rig will be enclosed and the enclosure will be designed to be visually compatible with buildings in the surrounding industrial park.

A truck-mounted maintenance rig (referred to as a workover rig) will reside at the Facility up to approximately 210 days per year for routine maintenance of the wells. The rig is mobile and used when needed to perform maintenance necessary to sustain production from the wells including such tasks as pulling tubing and replacing down-hole pumping equipment. The workover rig will not drill new wells.

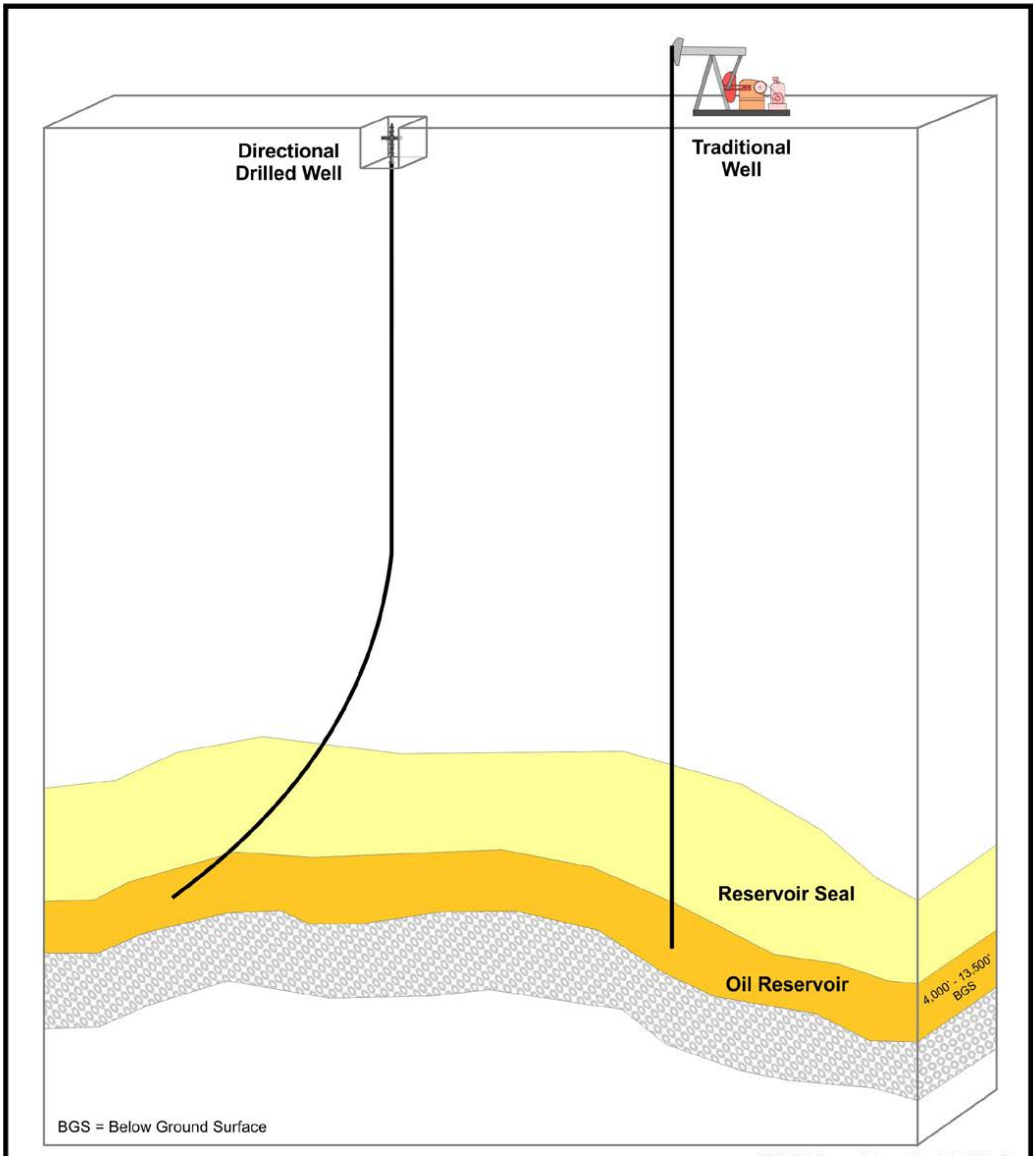
2.6.1.1 Drilling Activities

Each well is expected to take four to six weeks to install with up to approximately 20 wells installed per year. Directional drilling, a common state-of the art drilling technique, will be used to access the oil in the Dominguez Oil Field. Directional drilling techniques allow wellheads to be located in a centralized area with the base (or bottom) of the well located up to three miles laterally away from the wellhead with submersible pumps at the bottom to push produced fluids to the surface. The oil wells could extend to the boundary of the Dominguez Oil Field as defined on Figure 2.5-2 provided OXY has acquired the mineral rights. The previous wells drilled in the Dominguez Oil Field used traditional techniques, which included straight down drilling and a traditional pumpjack at each well location. A comparison of a directionally-drilled well to a traditional well is shown in Figure 2.6-4.

2.6.1.2 Mud Usage and Handling Program

During drilling activities, a liquid slurry of drilling fluids or drilling mud will be used to aid the drilling of boreholes. The main functions of drilling mud are (1) to provide hydrostatic pressure to prevent fluids in the formation from entering the well bore, (2) to keep the drill bit cool and clean during drilling, (3) to carry drill cuttings up to the surface from the bore hole, and (4) suspend the drill cuttings while drilling is paused and when the drilling assembly is brought in and out of the bore hole. The drilling mud composition is selected to avoid damage to the formation and limit corrosion of equipment. The mud system used for the proposed Project will be approved by the U.S. Environmental Protection Agency (U.S. EPA) and DOGGR.

During the drilling of the first ten wells, the drilling mud is expected to require 4,500 gallons per day (gpd) of potable water. The remainder of the wells will be drilled using non-potable water from the produced fluids from the oil and gas production wells. The drilling mud will be collected on-site in steel tanks. The drilling mud will be filtered to remove drill cuttings (i.e., crushed or cut rock generated from the bore hole drilling) and returned for reuse in drilling activities. The drill cuttings will be solidified and transported off-site in plastic-lined bins to an approved off-site commercial disposal site. It is expected that once the slurry injection well is permitted and completed, the drill cuttings will be processed through the slurry injection facility and injected back into the oil reservoir.



NOT TO SCALE

Environmental Audit, Inc.

WELL COMPARISON
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 2.6-4

N:\2757\Chapter 2\Well Comparison(rev.2).cdr

2.6.1.3 Drilling Spill Containment

During drilling operations, produced fluids (oil, gas, and water) will be maintained in closed systems from the wellhead to the distribution location (i.e., point of sale at the pipeline, or, for water, the storage tank for injection into the oil reservoir). While the wells are expected to be low pressure with insufficient pressure to flow reservoir fluids to the surface, blow-out prevention (BOP) systems will be installed as part of the well drilling activities. BOP systems are safety systems used to prevent an uncontrolled release of reservoir fluids and shut off the flow to prevent spills and releases of materials. Once the well is completed, the BOP system is no longer needed and will be removed and replaced with a wellhead.

During drilling operations, the proposed Project will be designed to contain spills of drilling mud and fluids by using a catch pan installed under the rig floor to catch drilling mud. Additional catch pans will be placed under the drill pipe to catch drilling mud left on the inside or outside of the drill pipe. Mud contained in the pans will be placed in the mud tank for reuse during drilling activities. The drilling pad will be constructed to allow fluids spilled around the rig to flow into the well cellars, which will be concrete lined. An 18-inch berm will be placed around the entire drill rig after the drill rig is installed to contain any release and divert the release to the well cellar. Once in the well cellar, a cellar pump will then pump the fluid out of the cellar and back into the mud tank for reuse. Additionally, the Facility will be enclosed by a wall, which will contain releases not captured by the pans, cellars, or berm. For additional spill response, a spill trailer will be equipped with absorbent material, small spill booms, plastic sheets, personal protective equipment, rakes, shovel, and hand tools. An Oil Spill Response Plan will be prepared for the proposed Project, which will identify response procedures and additional third-party resources available for clean-up, if necessary. Stormwater will be diverted to the well cellars where the cellar pump will transfer it to storage tanks.

2.6.2 Oil and Gas Processing Facilities

The Oil and Gas Processing Facilities will remove water and gas from the produced oil. The oil and natural gas will be transported via new pipeline connections to existing nearby pipelines and the produced water will be treated and reinjected to the oil reservoir. The Oil and Gas Processing Facilities will consist of the following and are described in the following subsections:

- Three-Phase Separation System;
- Oil Treatment System;
- Gas Compression and Treatment System; and,
- Water Treatment.

The Oil and Gas Processing Facilities will require permits from the South Coast Air Quality Management District (SCAQMD), as well as other state, regional, and local agencies (see Section 2.9 for further details).

2.6.2.1 Three-Phase Separation System

The first step of oil processing will be designed to separate up to 6,000 bbl/day oil, 3 mmscf/day gas, and 94,000 bbl/day water (called phases). Two horizontal three-phase separator vessels (referred to as Freewater Knockouts) will use the difference in density of the phases (i.e., the gas rises and the majority of the oil floats on the water). This separation typically reduces the water content of the oil to less than 25 percent and the oil content of the water to less than one percent. The three-phase separators will typically operate at pressures between 100 and 150 pound per square inch gauge (psig).

2.6.2.2 Oil Treatment System

The oil from the Three-Phase Separation System will be further treated to remove additional water in order to make it salable. The Oil Treatment System will reduce the water content of the oil from approximately 25 percent to between one and three percent. Water removal will be accomplished by using an electric field produced by grids placed perpendicular to the flow of fluids in the treatment vessel. The electric field will help break up the oil/water emulsion to provide better separation.

Oil produced for sale will be stored in a fixed-roof, gas-blanketed, 5,000-barrel oil storage tank. An additional fixed-roof, gas-blanketed, 5,000-barrel storage tank referred to as the Wet Oil Tank will be used for off-specification oil (i.e., too much water or solids) diverted from the Oil Treatment System or the Oil Sales Custody Transfer Equipment. The oil from the Wet Oil Tank will be reprocessed or processed in the Slops Separation System.

Pumps (referred to as Sales oil charge pumps) will be used to transfer the oil from the oil storage tank to the customer in either a batch mode, where the oil accumulates in the storage tank until almost full, or a continuous mode, where the tank level will be kept relatively constant with oil being withdrawn at a rate about equal to that being placed in the tank. The operating pressure of the pumps will be compatible with the existing Crimson Pipeline, which operates at up to 720 psig.

Oil custody transfer equipment (i.e., metering and controls) necessary to sell the oil in the pipeline will be installed. Both OXY and the customer will have the ability to shut down oil shipment either on-site or remotely.

2.6.2.3 Gas Compression and Treatment System

Gas compressors will be used to raise the pressure of the gas from 70 psig to 550 psig. Once compressed, the gas will be treated to remove hydrogen sulfide (H_2S). The system will be designed to remove up to 75 parts per million (ppm) H_2S, which is well above the expected concentrations of H_2S (less than 10 ppm). The H_2S removal will be accomplished by using a catalyst in a SulfaTreat vessel. The system will be equipped with two 25-foot tall SulfaTreat vessels in series. When the first vessel is at capacity, the gas stream will be diverted from the first vessel to the second vessel. The catalyst will be changed in the first vessel and will be returned to service as the second vessel. This allows the system to remain online continuously.

The final step before gas transfer of into the sales pipeline will be to remove any heavy hydrocarbons and water by using a combined refrigeration/dehydration system. Ethylene glycol will be injected to prevent freezing at low temperatures before the gas is chilled to sub-zero temperatures in the Low Temperature Separator. At sub-zero temperatures, the heavy hydrocarbons (i.e., propane, butane, etc. (referred to as C3+ for the number of carbon atoms in the compounds)) will condense to liquids and be removed in a three-phase Low Temperature Separator. The gas, which now meets the specifications for natural gas, will then be transferred into the sales pipeline.

Gas custody transfer equipment will be installed to odorize the natural gas, filter, meter, and regulate pressure. A shutdown valve will also be installed. The custody transfer facility will be monitored from the Operations Building and remotely by the Southern California Gas Company (SCGC).

The glycol/water mixture will be separated by boiling off the water in the Glycol Reboiler and the glycol will be recycled back to the gas chiller. The removed water will be sent to the Vapor Recovery Compressors or to the water treatment system.

The heavy hydrocarbons (also called natural gas liquids (NGLs)), which were separated in the three-phase Low Temperature Separator, will be sent to the NGL System to remove entrained methane, ethane, and propane, so as to meet the specification for NGLs to be allowed to be included in the crude oil for sale. The methane, ethane, and propane will be used on-site as fuel gas to produce process heat with any excess blended into the sales gas stream as specification allows. If no additional gas can be blended into the sales gas stream, the gas will be consumed using an existing dedicated process flare. The existing process flare was installed as part of the test well drilling activities and will be incorporated into the Oil and Gas Processing Facilities to serve the same function.

NGLs will be accumulated in storage vessels and injected into the crude oil stream as possible. Excess NGLs, up to approximately 150 bbl/day, will be produced and stored in a separate NGL Storage Vessel and transported from the Facility by truck from a truck loading rack.

A portion of the gas produced from the wells will be used to blanket the storage tanks. The fixed-roof gas blanket design eliminates the direct emissions from tanks, by venting the vapors to a vapor recovery system, and then using those vapors to fuel the on-site combustion equipment. As the fixed-roof tanks are filled, any vapors present will be pushed to the vapor recovery system. As the tanks are emptied, gas will be pulled from the vapor recovery system. Therefore, the gas blanketing will minimize the tank emissions as well as prevent outside air, moisture, and other contaminants from entering the tanks.

2.6.2.4 Water Treatment Facilities

Water produced from the Three-Phase Separation System will be further cleaned before it can be injected into the oil reservoir. The Water Treatment Facilities will remove oil and solids from the water that is generated as a byproduct of oil production (up to 94,000 bbl/day). All water produced as well as storm water captured on-site (up to 26,000 bbl/day) will be treated and injected into the oil reservoir using the salt water injection wells. The Water Treatment Facilities will consist of Primary Water Treatment, Secondary Water Treatment, and Final Water Filtration.

Primary Water Treatment will remove the sand and oil droplets using four hydrocyclones – two for sand removal and two for oil removal. Secondary Water Treatment will treat the effluent water from the hydrocyclones by using induced gas floatation (IGF) in two IGF vessels, which will reduce the total oil and grease to approximately 10 - 20 milligrams per liter (mg/l) and total suspended solids to 10 - 20 mg/l. Final Water Filtration will consist of Nutshell Filter Vessels to further reduce the oil and grease concentration of the water if additional treatment is necessary to meet injection specifications.

A fixed-roof, gas-blanketed, 5,000-barrel water storage tank will be used as a surge tank between the water treatment system and the water injection pumps. The surge tank will allow for a consistent flow rate to be produced by the water injection pumps. Up to 120,000 bbl/day of water will be injected into the oil reservoir.

2.6.3 Other Support Systems

2.6.3.1 Slop Oil Systems

Oil-water emulsions from primary separation equipment (commonly referred to as "Slops") will require further treatment to separate the oil from water. Slops (up to 500 bbl/day) that accumulate in the Wet Oil Tank will be processed through a heat exchanger to heat the emulsion. The heated emulsion will be separated in two, vertical pressure vessels. The recovered oil will be transferred to the Sales Oil Tank, water will be transferred to the Slurry System or the Secondary Water Treatment System, and gas will be incorporated into the Vapor Recovery System.

2.6.3.2 Slurry Injection System

Solids (up to approximately 250 bbl/day) generated during drilling operations and from wells during production may be re-injected into the oil reservoir via a dedicated slurry injection well. Alternatively, the solids generated may be collected in plastic lined bins and transported off-site to a licensed commercial disposal facility.

2.6.3.3 Electrical Connection

Electrical service for the Facility will be provided by Southern California Edison (SCE). The Facility will have an electrical switch gear to provide power for motor control centers, power and control conduits, motor operated valves, and heating, ventilation, air conditioning, and lighting for buildings. An uninterruptible power supply (UPS) and emergency generator will be installed for critical systems such as control systems, critical valves, lights, etc.

SCE will provide 25 megavolt-amps (MVA) of power for the Facility. SCE will use the existing Jersey 66-16 kilovolt (kV) Substation, and three new 16 kV circuits would be installed below grade for approximately 8,000 feet, and come overhead onto the Facility (see Figure 2.6-5).

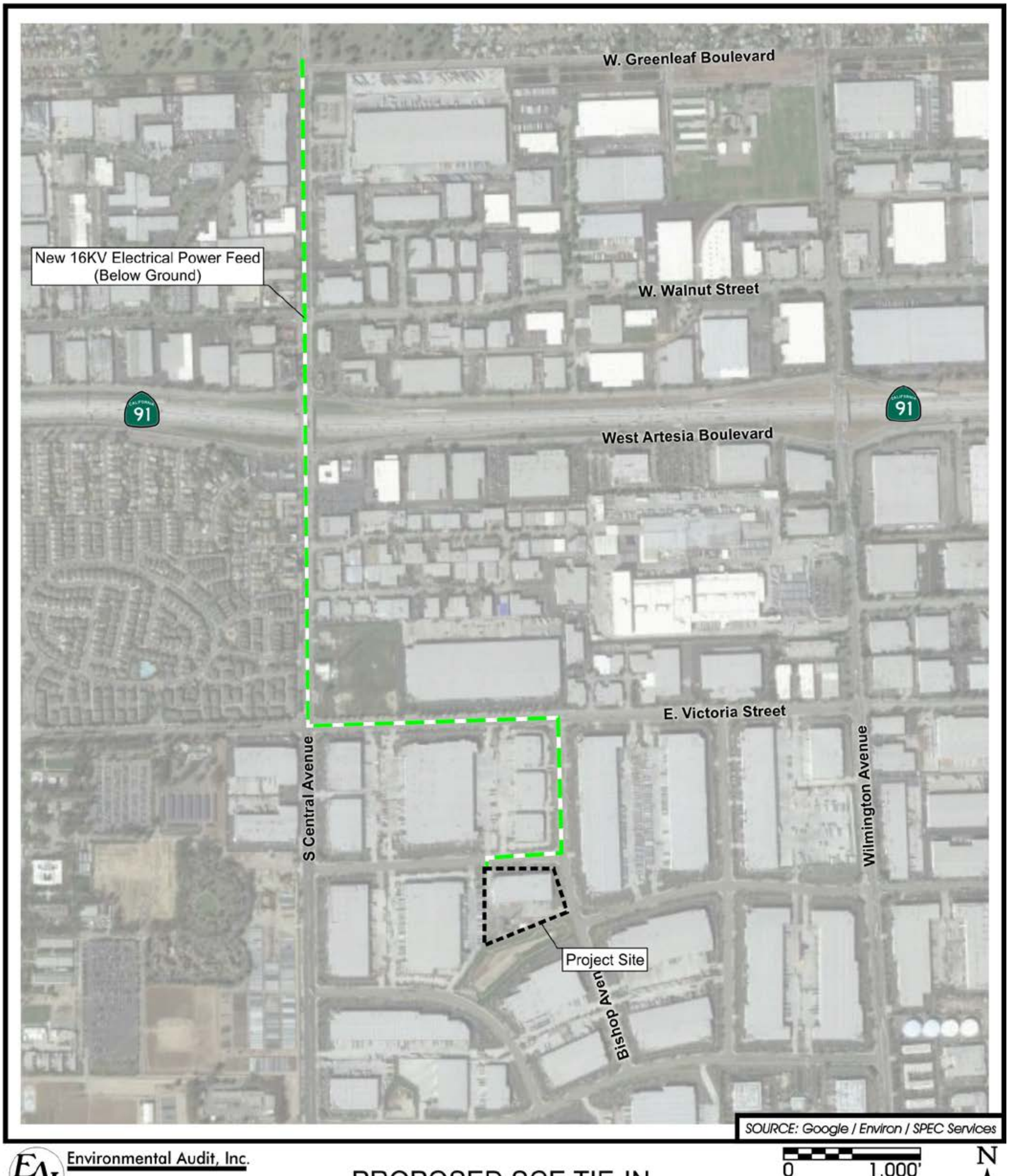
2.6.3.4 Emergency Ground Flare

An emergency ground flare will be installed to combust gas that may be potentially released from pressure vessels during a process upset. The emergency ground flare will be a maximum of 60-feet tall.

2.6.4 Pipeline Connections

2.6.4.1 Crude Oil Pipeline

Crude oil will be transferred to the Phillips 66 Company (formerly known as ConocoPhillips) refinery or other local refineries via the existing six-inch Crimson Pipeline (see Figure 2.6-6). The proposed Project will install approximately 2,000 feet of six-inch pipeline under Charles Willard Street to tie into the existing six-inch Crimson Pipeline under South Central Avenue. An additional section of six-inch pipeline, approximately 1,000 feet long, will be installed at the corner of South Central Avenue and University Avenue to replace a section that was previously removed. Also, a new section of six-inch pipeline, approximately 500 feet long, and a new valve box will be installed near the intersection of 223rd Street and Wilmington Avenue to tie the existing six-inch Crimson Pipeline to the existing ten-inch Crimson East Crude Pipeline. The proposed Project will also assess the existing six-inch Crimson Pipeline to determine if additional repair or maintenance work may be required. Additional maintenance work may include short-term construction in localized areas. A "pigging" station will be installed at the Facility and a temporary "pig" receiver will be installed at the junction of the Crimson and Crimson East Crude Pipelines. "Pigs" are internal instrumented inspection tools used for pipeline data acquisition as well as line cleaning. Typically, there is a launcher at one end of the pipeline and a receiver at the other end of the pipeline. Figure 2.6-6 shows the locations of the proposed and existing crude oil pipelines.



PROPOSED SCE TIE-IN
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 2.6-5

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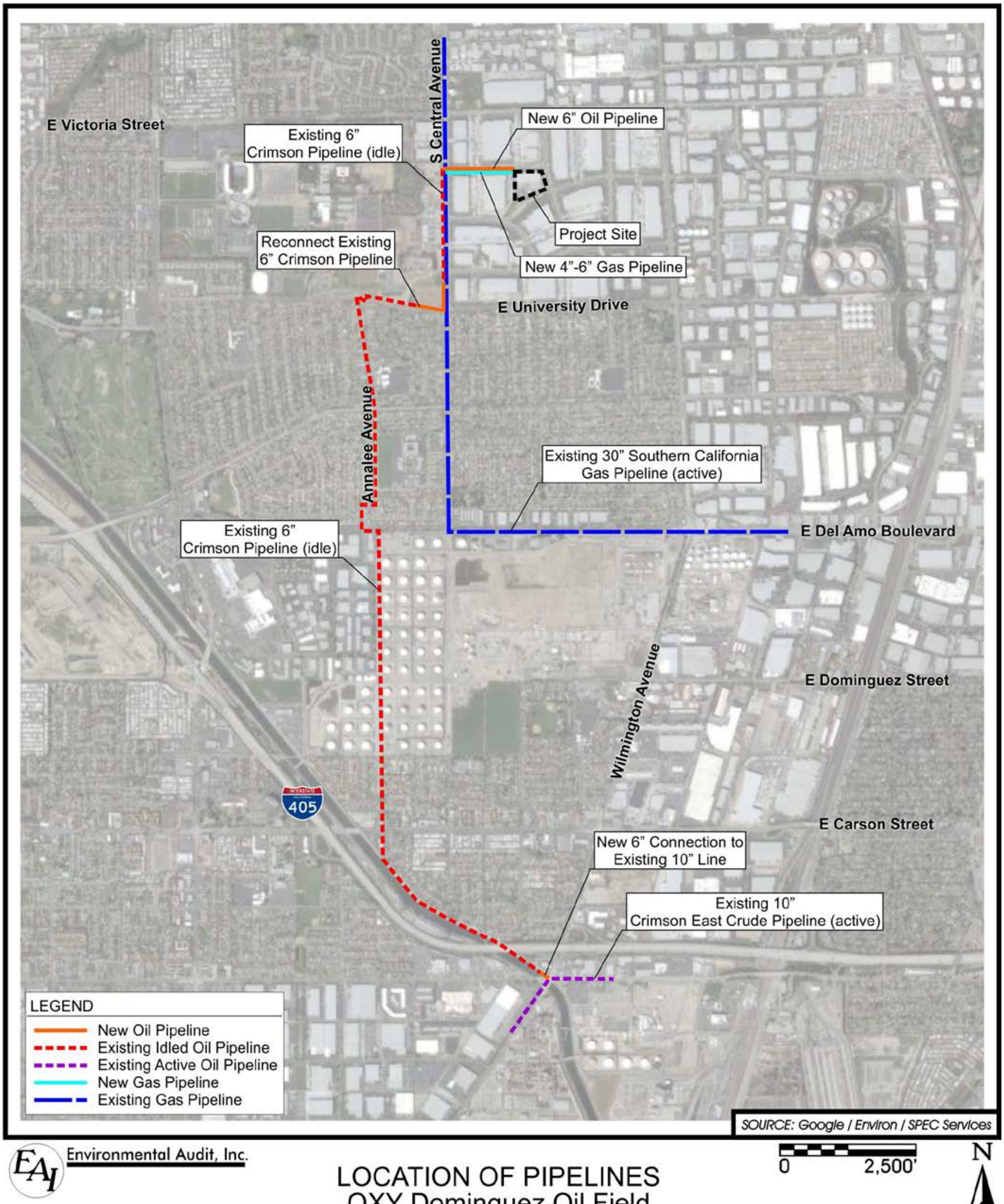


LOCATION OF PIPELINES
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 2.6-6

N:\2757\Chapter 2\Pipelines (rev.2).cdr

2.6.4.2 Natural Gas Pipeline

A new four- to six-inch pipeline approximately 2,000 feet in length under Charles Willard Street will connect the Facility to the existing 30-inch SCGC Line 1014 under South Central Avenue to transfer natural gas from the proposed Project site (see Figure 2.6-6). The pipeline will operate at up to 200 psig and will carry odorized natural gas. Temporary pig launcher and receiver stations will be installed at the Facility and the intersection with the 30-inch SCGC Line 1014. Figure 2.6-6 shows the location of the proposed natural gas pipeline.

2.6.5 Project Design Features

The proposed Project has been designed to comply with existing regulations and use state-of-the art technology. Some design features reduce the environmental impacts and were included as part of the proposed Project in the environmental analysis. This section identifies the proposed Project design features for both the construction and operation phases to meet or exceed regulatory requirements.

2.6.5.1 Construction Design Features

- Fugitive dust emissions will be minimized during construction in compliance with SCAQMD Rule 403, including watering active construction areas with exposed soil at least three times daily (Rule 403 requires watering twice daily) and maintaining soil stabilization of inactive construction areas.

- The Facility will have and implement a Stormwater Pollution Prevention Plan (SWPPP) and permit for both construction and operation of the Facility as required by the RWQCB.

- Sediment and erosion will be controlled to reduce erosion in unpaved areas, control sedimentation, minimize erosion, and maintain vegetation buffers as required by the SWPPP for construction. Soil stabilization measures such as geotextiles, erosion control blankets, bonded fiber matrix, visqueen, hydroseeding, wood mulch, fiber rolls, or other measures approved by the Director of Public works will be employed.

- Storm drain inlet protection, gravel bag berms to dissipate flow, and silt fence along the perimeter will be utilized to minimize sediment runoff into the storm drains.

- Construction equipment will be inspected daily for leaks and, if found, leaks will be repaired prior to future use of equipment.

- Refueling of construction vehicles and equipment will be in a designated, contained area.

- Drip pans will be used under stationary construction equipment (e.g., diesel fueled generators) during refueling, and when equipment is maintained.
- During construction, drip pans will be covered during rainfall to prevent washout of pollutants.
- Appropriate containment structures and Best Management Practices (BMPs) will be implemented or built and maintained to prevent offsite transport of pollutants from spills and construction debris.
- Wastewater generated during construction will be stored onsite and periodically disposed of offsite at a permitted facility, including water from washing down trucks, equipment, and concrete construction pads, and stormwater.
- The existing fence will be maintained with sound blankets on west and south property boundaries during demolition and site preparation.

2.6.5.2 Operations Design Features

- Drilling rig will be electric.
- All pumps and compressors will be electric.
- New stationary sources of air emissions will be permitted pursuant to SCAQMD regulations including, but not limited, to Regulations II, IV, XI, XII, and XIV, which require the use of best available control technology (BACT).
- H_2S will be removed from the gas stream using a Sulfa Treat vessel.
- Oil and gas production facilities are required to use aboveground leak-proof drilling mud storage containers as required by DOGGR and the RWQCB requirements.
- The Facility will have a Hazardous Materials Business Plan as required by the California Emergency Management Agency.
- The Facility will have a Spill Prevention, Control, and Countermeasure (SPCC) Plan as required by the Oil Pollution Prevention regulations.
- The proposed Project will be equipped with computerized control, monitoring, and communication systems. In general, these systems will be designed to monitor and control all process equipment that will operate within the Facility. The on-site Operations Building will house the operator control console and the supervisory control and data acquisition (SCADA) systems used to operate the facilities.

- The Facility, including the operator control console, will be manned 24-hours a day.

- The building will be provided with two uninterruptible power supplies and a diesel emergency generator to provide continuous power in the event of an external power failure. It will also be equipped with gas and fire detection systems and a fire suppression system.

- An Emergency Response Plan will be prepared to specify measures to be taken in emergency scenarios. This document will identify the responsible parties for the incident command and the supporting organizations/agencies.

- The Facility will contain firefighting and other emergency equipment. Firefighting equipment will include carbon dioxide and/or halon fire extinguishers inside the control rooms for electrical fires around panels and switch gear. Dry powder fire extinguishers will be available for hydrocarbon fires. Fire suppressant foaming agents and related foam generation equipment will also be installed at the Facility. Emergency call lists will be posted within the Facility.

- No liquids other than rain water will be allowed to run onto or run off of the enclosed area of the site. The proposed Project site will be completely covered with concrete or asphalt except for the green belt located outside the walls on the north and east side of the site.

- The proposed Project will capture and treat stormwater that falls on the site within the enclosed area and all water produced by on-site wells. The stormwater and produced water will be treated to prevent corrosion of the wells and injected into the subsurface as part of the mineral extraction process.

- All wells will be located within well cellars, which will contain any spilled liquids or rainwater that falls within the enclosed area of the proposed Project site. Well cellars will be pumped as necessary to remove accumulated fluids. All pumped fluids will be transferred to on-site tanks for treatment and reinjected to enhance production.

- During drilling operations, a liquid slurry of drilling "mud" will be collected on-site within enclosed tanks surrounded by berms. Much of the mud will be reused on-site with some treated on-site and disposed at an approved off-site commercial disposal site or injected into the on-site slurry injection well and into the oil reservoirs.

- A pollution pan will be installed under the rig floor and catch pans will be installed under the drill pipe to catch drilling mud. The drilling pad will be constructed to allow fluids spilled directly around the rig to flow into the well cellar. In addition, a berm will be placed around the entire drilling rig after the drilling rig is installed.

- Rainwater and accumulated run-off within the bermed area around the drilling rig will flow into the well cellars and be pumped into on-site tanks.

- A spill trailer at the drilling area will be equipped with absorbent material, small spill booms to contain and direct flow, plastic sheets, personal protective equipment, rakes, shovels, and hand tools. This equipment is designed for use in the event of an oil spill.

- Process equipment will be surrounded by curbed areas to contain spills. The storage tanks will be equipped with full encirclement walls designed to provide for full containment as required by the design code and the Los Angeles County Fire Department.

- Stormwater that accumulates within the curbed areas around process equipment will be held within the curbed area until it can be visually inspected before being drained to the well cellars. If the water appears to be impacted, a vacuum truck will be used to move the water to the slop separation area for treatment.

- Drains will be routed to the well cellars to the north and east side of the property, which are sized to contain a 25-year 24-hour rainstorm. Property features will contain the 50-year storm event. The water will then be pumped to the on-site water treatment system and injected through the on-site wells into the oil reservoirs.

- The proposed Project includes periodic inspections of the crude oil and natural gas pipelines with the use of pigging and hydrostatic testing as required by the governing regulations.

- The proposed Project is subject to DOGGR regulations under California Code of Regulations, Title 14, Division 2, Chapter 4. The proposed Project will be required to adhere to the requirements for installing new wells, altering existing wells, locating structures over existing abandoned wells, protecting all subsurface hydrocarbons and fresh waters, using adequate blowout prevention equipment, and utilizing approved drilling and cementing techniques.

- The proposed Project includes a 30-foot high concrete wall around the majority of the site perimeter (excluding one driveway to the north and one driveway to the east) to provide security and noise control as well as aesthetic continuity with the Dominguez Technology Centre.

- The drill rig will be equipped with sound dampening material and will be enclosed and designed to look similar to the perimeter wall to provide noise control and aesthetic continuity with the Facility.

2.7 CONSTRUCTION OF THE PROPOSED PROJECT

There are two primary components to the construction phase, the construction of the walled oil and gas facility and off-site pipeline improvements (installation of oil wells has been considered as operations). There will be two construction work crews, one for the oil and gas facility development, and one for pipeline development. The proposed Project is expected to use between 70 and 140 construction workers (up to 120 for facility construction and 20 for pipeline installation). A majority of the work force will likely originate in Southern California, mainly from the Los Angeles Basin. It is expected that most construction workers will meet in a staging yard expected to be located within one mile of the proposed Project and go to the construction site in work buses due to the limited space at the proposed Project site. OXY will prepare the location for the installation of the electrical switch equipment, which will be installed and connected by an SCE crew.

The specific equipment expected for the proposed Project and off-site construction will be determined after preliminary designs are completed. The major material components of the proposed Project will be concrete, pipe and piping components, tank and structural steel, pumps, electrical equipment, and potential soil stabilization materials.

The existing industrial warehouse building located at the proposed Project location will be demolished as part of the proposed Project. Demolition operations will be performed in accordance with SCAQMD Rule 403 for Fugitive Dust. Construction wastes might include soils, asphalt, and concrete. The non-hazardous wastes will be hauled to a sanitary landfill or recycled. Water will be used as necessary to control fugitive dust, which will include dust suppression and street washing and sweeping no less than three times per day.

The two existing test wells are expected to remain on-site once the proposed Project is complete. However, they may be plugged and abandoned under a permit from DOGGR.

The construction site will require on-site diesel fuel generators for a temporary supply of electricity. Temporary connections to the existing power distribution system will also be used whenever possible.

The proposed Project will include the installation of separate oil and gas shipping pipelines from the facility to their respective tie-in points, both located at the intersection of Charles Willard Street and South Central Avenue. Both pipelines are expected to be constructed in parallel at the same time. The proposed crude oil pipeline will be designed, constructed, and operated per the requirements of the U.S. Department of Transportation (U.S. DOT) found in Title 49, Code of Federal Regulations (CFR), Part 195. The natural gas pipeline will be designed, constructed, and operated per the U.S. DOT requirements of 49 CFR Part 192.

Pipeline routes are expected to be under existing streets with right-of-way agreements arranged with the City of Carson. Asphalt and soil will be excavated to trench for the installation of the pipelines. Traffic control will be necessary and coordination with affected businesses along the route will occur to maintain access to the affected establishments.

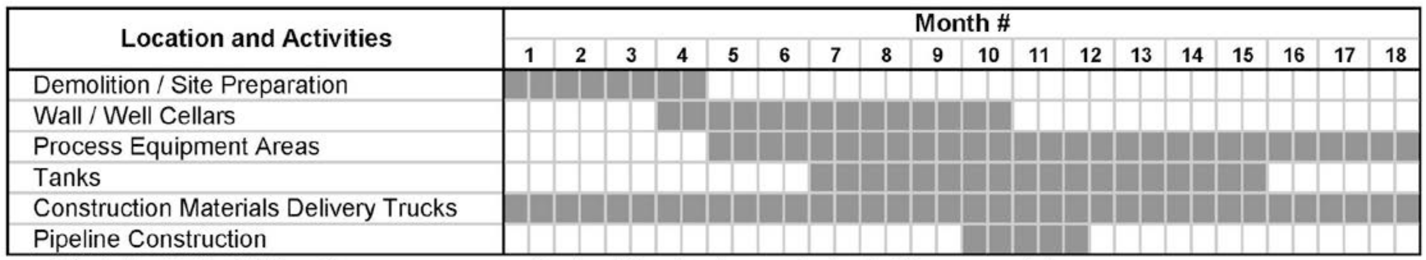
Excavation of 36-inch wide ditches at various locations will be performed by backhoes and track hoes with soft digging used to locate buried utilities. Soils removed from the ditch will be used to backfill the trench to the extent practicable or will be removed and the ditch will be backfilled with slurry material, as required by the City. Materials not used for backfill will be disposed of at an appropriate landfill. Compaction of the trench will be performed as required. Steel plates will cover the open trench at the end of each workday. Upon completion of the pipeline installation, the affected areas will be repaved and returned to their pre-construction condition.

Pipeline testing will include visually inspecting and x-raying all welds and hydrostatic testing of the pipeline following completion of construction, prior to startup. Hydrostatic testing water will be reused or trucked off-site for disposal.

The proposed construction schedule for the proposed Project is approximately 12 to 18 months and is anticipated to begin upon project approval and receipt of all necessary permits. The construction will include demolition of the existing structures at the proposed Project site, which is expected to take approximately three months, followed by construction of the facility and off-site improvements. An estimated construction schedule is included as Figure 2.7-1.

Well drilling is estimated to begin approximately five to six months following Project approval and will continue as part of the proposed Project operations since it is anticipated that the facility will operate during the time wells are being drilled. The final phases of construction may overlap with the initial well drilling in the early months of the proposed Project. For the purposes of analysis, it is assumed that all construction is occurring within 12 to 18 months; however, some equipment may be put in place later.

Given the uncertainty and coordination required with SCE for the SCE switch, it is assumed that the SCE construction may occur at anytime during the proposed Project construction schedule.



Production Well installation will commence once construction of the oil and gas production facilities are complete, anticipated to occur approximately at month 16 and be ongoing following facility construction.

ENVIRONMENTAL AUDIT, INC.®

ESTIMATED CONSTRUCTION SCHEDULE SUMMARY
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757
N:\2757\Chapter 2\Construction Schedule (rev.1).cdr

Figure 2.7-1

2.8 OPERATION OF THE PROPOSED PROJECT

The proposed Project will operate 24-hours per day, 365 days per year. Operations will consist of drilling wells, maintaining wells, and operating and maintaining the production and transportation systems.

2.8.1 Drilling Activities

Each new well is expected to take four to six weeks to install with up to approximately 20 wells installed per year. Over time, re-drilling of wells will need to take place to maintain operating parameters of the wells and it is expected that up to approximately 20 re-drills per year will be performed. Re-drilling occurs when a drilling rig is used to drill a new hole or lateral from an existing surface well site (wellhead). A re-drill does not add to the number of wells, but changes the down-hole properties of the well. The on-site electric drill rig would be utilized for re-drilling using directional drilling techniques.

Non-potable water from the oil reservoir will be used for drilling all but the first ten wells. The first ten wells will use approximately 4,500 gpd of potable water. Slurry used for drilling (referred to as drilling mud) will be collected on-site in steel tanks located within secondary containment berms and reused, injected back into the oil reservoir or trucked off-site to an appropriate disposal facility by truck. An estimated one truck per day of slurry will be generated.

BOP systems will be employed to prevent an uncontrolled release of reservoir fluids and shut off the flow to prevent spills and releases of materials. A BOP system will be placed on each wellhead during drilling and will be replaced by a wellhead after the well has been drilled. BOP systems are composed of a stack, actuation systems, a choke manifold, stop systems, and other equipment. The BOP system will be designed to handle the maximum possible pressure expected at the wellhead.

Based on test wells and previous oil drilling activities in the Dominguez Oil Field, H_2S concentrations from the produced fluids have been monitored and are below 10 ppm. In order to be conservative and prevent odors, the proposed Project will be designed to handle H_2S concentrations up to 75 ppm, which is above the 20 ppm DOGGR limit imposing more stringent safety requirements. A contingency plan required by Los Angeles County Fire Department will be developed that addresses safety equipment, personnel responsibilities, first aid, and evacuation procedures. H_2S detection equipment will be used to monitor the air during drilling activities and additional permanent monitors will be located on-site.

When the NOP/IS was prepared, hydraulic fracturing was not proposed but might have been required to improve oil extraction as well as water injection. OXY has since removed hydraulic fracturing from the proposed Project. Therefore, the proposed Project will not use hydraulic fracturing, so no further details or analysis regarding hydraulic fracturing is required to be provided in this EIR.

2.8.2 Production Activities

Once constructed, the proposed Project will be operated and maintained as an oil and gas production facility, and designed to current oil field technology standards. Operations will be designed to utilize automated equipment for emergency shutdowns due to major equipment and system malfunctions, as well as natural disasters, such as earthquakes. Oil field operators will be present on-site 24 hours per day to monitor activity and check for safety and security of operations.

Well maintenance and workover operations will be periodically necessary to sustain production from the wells. A workover rig will be used for repairs to help pull tubing and replace downhole pumping equipment.

It is anticipated that during peak production, one to two trucks per day may be required to remove excess NGLs from the facility. The NGLs will be loaded at the proposed truck loading rack and trucked to a local refinery or as far away as Bakersfield, California.

Periodic inspections of the crude oil and natural gas pipelines will be required a part of routine maintenance activities. Pigging and hydrostatic testing will be conducted as required by the governing regulations.

Domestic wastewater (i.e., water used in restroom and break facilities) and operational wastes will be generated as on-going waste streams from the Facility. Domestic wastewater will be discharged to the public sewer system. Operational wastes will be disposed of at the appropriate waste handling facilities.

2.9 PERMITS AND APPROVALS

The proposed Project will require approvals or permits from a variety of federal, state, and local agencies (see Table 2.9-1), which will use this EIR in their decision-making. Examples of general permits and approvals required for the Facility are summarized in the following subsections. The following discussion summarizes representative permits required for the Facility but is not necessarily exhaustive.

2.9.1 Federal Approvals

No federal agency approvals for the proposed Project are expected to be required although the project applicant is required to notify and receive concurrence on some issues (e.g., U.S. DOT pipeline numbers). Many of the U.S. EPA regulations and requirements are implemented by state or local agencies. For example, New Source Performance Standards (NSPS) are implemented by the SCAQMD and hazardous waste regulations are enforced by the California Department of Toxic Substances Control (DTSC).

TABLE 2.9-1

Federal, State and Local Agency Permits and Applications

Agency Permit or Approval	Requirement	Applicability to Project
Federal		
Environmental Protection Agency (U.S. EPA)	Resource Conservation and Recovery Act (RCRA), 40 CFR Parts 260 – 279	Hazardous waste generator ID number.
		Requires proper handling of hazardous waste material.
U.S. Department of Transportation (U.S. DOT)	Pipeline Identification Numbers	Oil and gas pipelines.
	Pipeline construction and operations inspections	Oil and gas pipelines.
	Hazardous and flammable materials certificate	Oil, gas, and NGLs.
Occupational Safety and Health Administration (OSHA)	General Industry Standards OSHA 29 CFR Part 1910	Worker process safety standards.
State		
California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)	Permits to drill wells	Oil, gas, and water wells.
	Permits to conduct well operations	Oil, gas, and water wells.
	Class II underground injection control permit	Water injection wells and slurry injection well.
California Division of Occupation Safety and Health (CalOSHA)	Construction - related permits	Excavation, construction, and demolition.
	Boiler and pressure vessel permits	Separation pressure vessels and NGL storage tank.
State Fire Marshall	Pipeline review and approval	Oil and gas pipelines.
	Pipeline hydrotest review and approval	Oil and gas pipelines.
	Periodic inspection and hyrotesting	Oil and gas pipelines.
Department of Toxic Substances Control (DTSC)	Hazardous Waste Control Law (HSC, Division 20, Chapter 6.5)	Required if facility stores, treats or disposes of hazardous waste as described in the regulation.
Regional		
Regional Water Quality Control Board (RWQCB)	Stormwater Pollution Prevention Plan	Facility-wide plan.
South Coast Air Quality Management District (SCAQMD)	Various Rules for New Stationary Sources under Regulations II, IV, XI, XIII, and XIV.	Equipment such as flares, tanks, wastewater separators, and process heater.
		Permit to Construct for stationary sources.
		Permit to Operate for stationary sources.
		Prohibits visible emissions from single emission sources.
		Prohibits discharges (e.g., odors) which cause a nuisance to the public.
		Requires control of fugitive dust from earth moving.

TABLE 2.9-1 (concluded)

Federal, State and Local Agency Permits and Applications

Agency Permit or Approval	Requirement	Applicability to Project
Local		
City of Carson	Development Agreement	Oil and gas exploration.
	Specific Plan Amendment	To change oil and gas exploration from an allowable land use to an activity requiring a Development Agreement
	Business License	Facility wide.
	Building and Occupancy Permits	Facility wide.
	Grading Permit	Facility development.
	Encroachment Permits	Pipelines.
	Traffic Control Permit	Pipeline construction.
Los Angeles County Fire Department	Various Plans including: Spill Prevention, Control, and Countermeasure Plan Hazardous Materials Business Plan CalARP Risk Management Plan Hazardous Waste Permit	Facility wide.

2.9.2 State Approvals

DOGGR permits and regulates the installation, operation, and abandonment of wells (production and injection), requires notices, recordkeeping, and reporting during operation of the wells, and inspects operations of the oil and gas production facility. The State Fire Marshall regulates pipelines within California. Construction-related permits may be required from the California Occupational Safety and Health Administration (CalOSHA) for demolition, construction, excavation, and pressure vessels. Any transport of heavy construction equipment, which requires the use of oversized transport vehicles on state highways, will require a California Department of Transportation (Caltrans) transportation permit. DTSC regulates the generation, transport, treatment, and disposal of hazardous wastes. Hazardous wastes generated by the proposed Project activities are governed by rules and regulations enforced by DTSC.

2.9.3 Regional Approvals

The Regional Water Quality Control Board (RWQCB) is responsible for implementing the construction and operational storm water management requirements including plans, monitoring, and inspections.

The SCAQMD has responsibility for issuing air quality Permits to Construct/Operate for new equipment. Certain components of the proposed Project would also be subject to existing SCAQMD rules and regulations.

2.9.4 Local Approvals

The November 1990 Final Specific Plan for the Dominguez Technology Centre included oil operations as an anticipated use. However, the City of Carson has determined that the scope of the proposed Project was not adequately addressed and a specific plan amendment is required to carry out the project which requires a development agreement for approval of oil well operations. Therefore, a Development Agreement will be needed for the proposed Project.

The City of Carson is also responsible for permits including building, grading, encroachment, and traffic control.

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CHAPTER 3

EXISTING ENVIRONMENTAL SETTING

Introduction
Air Quality
Geology and Soils
Greenhouse Gases
Hazards and Hazardous Materials
Hydrology and Water Quality
Noise
Transportation and Traffic

3.0 EXISTING ENVIRONMENTAL SETTING

3.1 INTRODUCTION

OXY USA Inc. (OXY) is proposing the construction and operation of a new oil and gas production facility to develop a portion of the Dominguez Oil Field that has been out of production for many years. The proposed Project will be designed and constructed to incorporate an existing oil and gas test well facility and to be visually compatible with the existing industrial and commercial buildings at the Dominguez Technology Centre.

OXY proposes to construct a production facility consisting of up to 200 wells, an oil and gas processing facility, water treatment, water injection operations, slurry injection or disposal operations, an electrical connection, emergency flare, and shipping and pipeline facilities to produce and transport approximately 6,000 barrels per day of oil and three million standard cubic feet per day of natural gas. Directional drilling techniques will be used in order to pinpoint oil reservoirs at depths of 4,000 to 13,500 feet. The Facility will be located in a 30-foot high walled compound with the drill rig mast enclosed.

CEQA Guidelines §15125 requires that an EIR include a description of the environment within the vicinity of a proposed project as it exists at the time the NOP/IS is published, or if no NOP/IS is published, at the time the environmental analyses commences, from both a local and regional perspective. The environmental baseline for the EIR is the environment as it existed at the time the NOP/IS was published (March 2012). The environmental baseline for the proposed Project is generally the 2010 – 2011 timeframe. Chapter 3 presents the existing environmental setting for the proposed Project against which potential impacts of the Project have been evaluated. The environmental analyses in this EIR are focused only on the environmental topics identified in the NOP/IS (see Appendix A) that could be significantly adversely affected by the proposed Project. The reader is referred to the NOP/IS (Appendix A) for discussion of environmental topics not considered in this EIR, and the rationale for inclusion or exclusion of each environmental topic. The environmental topics identified in this chapter include both a regional and local setting.

3.2 AIR QUALITY

The NOP/IS (see Appendix A of this EIR) concluded that the proposed Project could potentially result in significant adverse air quality impacts for criteria pollutants and toxic air contaminant (TAC) emissions associated with construction and operations. Additionally, impacts to sensitive receptors and odor impacts will be evaluated. Also, other air quality topics such as compliance with air quality plans and air quality rules and regulations will be evaluated.

The proposed Project site is located in the southern portion of Los Angeles County, within the South Coast Air Basin (Basin). The Basin consists of the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County, and is under the jurisdiction of the SCAQMD. The air basin covers an area of approximately 6,700 square miles and is bounded on the west by the Pacific Ocean; on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains; and on the south by the San Diego County line.

3.2.1 METEOROLOGICAL CONDITIONS

The climate in the Basin generally is characterized by sparse winter rainfall and hot summers tempered by cool ocean breezes. A temperature inversion, a warm layer of air that traps the cool marine air layer underneath it and prevents vertical mixing, is the prime factor that allows contaminants to accumulate in the Basin. The mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. The climate of the area is not unique but the high concentration of mobile and stationary sources of air contaminants in the western portion of the Basin, in addition to the mountains, which surround the perimeter of the Basin, contribute to poor air quality in the region.

3.2.2 TEMPERATURE AND RAINFALL

Temperature affects the air quality of 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 Basin 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 little throughout the Basin, averaging 75^{o}F. The coastal areas show little variation in temperature on a year round basis due to the moderating effect of the marine influence. On average, August is the warmest month while January is the coolest month. Most of the annual rainfall in the Basin falls between November and April. Annual average rainfall varies from nine inches in Riverside to 14 inches in downtown Los Angeles.

3.2.3 WIND FLOW PATTERNS

Wind flow patterns play an important role in the transport of air pollutants in the Basin. 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 Basin.

The normal wind patterns in the Basin 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 Basin.

3.2.4 EXISTING AIR QUALITY SETTING

Local air quality in the Basin is monitored by the SCAQMD, which operates a network of monitoring stations throughout the Basin. The California Air Resources Board (CARB) operates additional monitoring stations.

3.2.4.1 Criteria Pollutants

The sources of air contaminants in the Basin vary by pollutant but generally include on-road mobile sources (e.g., automobiles, trucks, and buses), off-road mobile sources (e.g., airplanes, ships, trains, construction equipment, etc.), residential/commercial sources, and industrial/manufacturing sources. Mobile sources are responsible for a large portion of the total Basin emissions of several pollutants.

Mobile sources represent 59 percent of VOC emissions, 88 percent of nitrogen oxides (NOx) emissions, and 75 percent of sulfur oxides (SOx) emissions. For directly emitted PM2.5, mobile sources represent 40 percent of the emissions with another 10 percent due to vehicle-related entrained road dust (SCAQMD, 2012).

Criteria air pollutants are those pollutants for which the federal and state governments have established ambient air quality standards or criteria for outdoor concentrations in order to protect public health with a margin of safety (see Table 3.2-1). National Ambient Air Quality Standards (NAAQS) were first authorized by the federal Clean Air Act of 1970 and have been set by the U.S. EPA. California Ambient Air Quality Standards (CAAQS) were authorized by the state legislature in 1967 and have been set by the CARB. Air quality of a region is considered to be in attainment of the standards if the measured concentrations of air pollutants are maintained at equal to or less than the standards.

TABLE 3.2-1

Ambient Air Quality Standards

Air Pollutant	State Standard Concentration/ Averaging Time	Federal Primary Standard Concentration/ Averaging Time	Most Relevant Effects
Ozone	0.09 ppm, 1-hr. avg. 0.070 ppm, 8-hr	0.075 ppm, 8-hr avg.	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	20 ppm, 1-hr avg. 9.0 ppm, 8-hr avg.	35 ppm, 1-hr avg. 9 ppm, 8-hr avg.	(a) Aggravation of angina pectoris and other coronary heart disease; (b) Decreased exercise tolerance in persons with 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 avg. 0.03 ppm, ann. avg.	0.100 ppm, 1-hr avg.[(a)] 0.053 ppm, ann. avg.	(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. avg. 0.04 ppm, 24-hr avg.	75 ppb, 1-hr avg.[(b)] 0.5 ppm, 3-hr avg. (secondary)	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	50 µg/ m^3, 24-hr avg. 20 µg/m^3, ann. arithmetic mean	150 µg/ m^3, 24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function in children
Suspended Particulate Matter (PM2.5)	12 µg/ m^3, ann. Arithmetic mean	35 µg/ m^3, 24-hr avg. 15.0 µg/ m^3, annual arithmetic mean	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/ m^3, 24-hr avg.	Not applicable	(a) Decrease in ventilatory 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 avg.	1.5 µg/ m^3, calendar quarter 0.15 µg/ m^3, rolling 3-month avg.	(a) Increased body burden; (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-hour average (10am – 6pm PST)	Not applicable	Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent
Hydrogen Sulfide	0.03 ppm, 1-hr avg.	Not applicable	Breathing H2S at levels above the standard will result in exposure to a very disagreeable odor.
Vinyl Chloride	0.01 ppm, 24-hour avg.	Not applicable	Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes in liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.

Footnotes:
(a) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm.
(b) Based on the 3-year average of the 99th percentile of the 1-hour daily maximum concentrations.

Health-based air quality standards have been established by the U.S. EPA and CARB for ozone, CO, nitrogen dioxide (NO_2), PM10, PM2.5, sulfur dioxide (SO_2), and lead. The California standards are equivalent to or more stringent than the federal air quality standards. California also has established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. Hydrogen sulfide and vinyl chloride currently are not monitored in the Basin because they are not a regional air quality problem but are generally associated with localized emission sources. The Basin is designated as non-attainment for PM2.5, and ozone for both state and federal standards. The Basin, including the project area, is classified as attainment for both the state and federal standards for SO_2, CO, sulfates, and lead and is classified as attainment for the federal for NO_2 and PM10 but non-attainment for the state standards.

3.2.4.2 Regional Air Quality

The SCAQMD monitors levels of various criteria pollutants at 38 monitoring stations located throughout the District. Based on the most recent monitoring data published for 2012, the District exceeded the federal and state standards for ozone at most monitoring locations on one or more days. The federal one-hour ozone standard was revoked and replaced by the eight-hour average ozone standard effective June 15, 2005. The state one-hour ozone standard was exceeded 98 days in 2012. The East San Bernardino Valley and Central San Bernardino Valley the exceeded standards most frequently. The federal and state eight-hour ozone standard was exceeded on 111 and 138 days in the Basin, respectively (SCAQMD, 2013).

In 2012, the state and federal maximum concentrations of CO were not exceeded in the Basin. Because of improving CO air quality, in 2005 the SCAQMD adopted and submitted to U.S. EPA a CO attainment re-designation request and CO maintenance plan. U.S. EPA declared the Basin as a maintenance area for CO in 2007 (SCAQMD, 2013).

The federal PM10 standards were not exceeded in the Basin in 2012. Because of improving PM10 air quality over the last several years, in 2010 the SCAQMD adopted and submitted to the U.S.EPA a PM10 attainment re-designation request and PM10 maintenance plan. U.S. EPA declared the Basin as a maintenance area for PM10 on June 26, 2013. The state PM10 standards were exceeded at many of the monitoring locations in the Basin including the Los Angele County, Riverside County, the Coachella Valley, and San Bernardino County. The state PM10 standard was exceeded 35 times in the Basin in 2011 (note: 2012 data not currently available). The federal PM2.5 standard was exceeded 15 percent of the time in 2012.

In 2012, neither federal nor state standards for NO_2, SO_2, CO, and in 2011(note: 2012 data not currently available), lead and sulfates standards were not exceeded. Currently, the District is in attainment with the ambient air quality standards for NO_2, SO_2, CO, and lead (SCAQMD, 2013).

3.2.4.3 Local Air Quality

The project site is located within the SCAQMD's South Coastal Los Angeles County 1 Monitoring Station No. 072 monitoring area. Recent background air quality data for criteria pollutants for the South Coastal Los Angeles County 1 Monitoring Station No. 072 are presented in Table 3.2-2. The area has shown a general improvement in air quality with decreasing or consistent concentrations of most pollutants. Air quality in the South Coastal Los Angeles County 1 Monitoring Station No. 072 monitoring area complies with the state and federal ambient air quality standards for CO, NO_2, SO_2, PM10, lead, and sulfate. The air quality in the area was also in compliance with the federal eight-hour and state one-hour ozone standards. The air quality in the South Coastal Los Angeles County 1 Monitoring Station No. 072 area is not in compliance with the state annual PM10 standards in 2008 and 2009, but has been in compliance from 2010 – 2012. The air quality in the South Coastal Los Angeles County 1 Monitoring Station No 072 is not in compliance with the state or federal PM2.5 standards.

3.2.4.4 Toxic Air Contaminants

TACs are air pollutants which may cause or contribute to an increase in mortality or severe illness, or which may pose a potential hazard to human health. The California Health and Safety Code (§39655) defines a TAC as an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. Under California's TAC program (Assembly Bill (AB) 1807, Health and Safety Code §39650 et seq.), CARB, with the participation of the local air pollution control districts, evaluates and develops any needed control measures for TACs. The general goal of regulatory agencies is to limit exposure to TACs to the maximum extent feasible.

Monitoring for TACs is limited compared to monitoring for criteria pollutants because toxic pollutant impacts are typically more localized than criteria pollutant impacts. CARB conducts air monitoring for a number of TACs every 12 days at approximately 20 sites throughout California. The proposed Project is located closest to the North Long Beach TAC monitoring station. A summary of the data from the Long Beach station for various TACs is considered to be an appropriate estimate of the TAC concentration in the vicinity of the proposed Project (see Table 3.2-3).

The SCAQMD measured TAC concentrations as part of its Multiple Air Toxics Exposure Study (MATES). The purpose of the study was to provide an estimate of exposure to TACs to individuals within the Basin. The most recent study, MATES IV, is underway. In 2008 the SCAQMD concluded a third MATES, referred to as MATES-III, that includes monitoring for 21 TACs at ten fixed, and five temporary sites within the Basin in neighborhoods near toxic emission sources or in areas where community members are concerned about health risks from air pollution. The scope of the monitoring was from April 2004 through March 2006. The MATES-III found about 94 percent of the cancer

TABLE 3.2-2
South Coastal Los Angeles County 1 Monitoring Station No. 072
(2008-2012) Maximum Observed Concentrations

Constituent		2008	2009	2010	2011	2012
Ozone:	1-Hour (ppm)	0.093	0.089	0.101	0.073	0.084
	Days Exceeding Federal Standard	0	0	0	0	0
	Days Exceeding State Standard	0	0	1	0	0
	8-Hour (ppm)	0.074	0.068	0.084	0.061	0.067
	Days Exceeding Federal Standard	0	0	1	0	0
	Days Exceeding State Standard	1	0	1	0	0
CO[(a)]:	1-Hour (ppm)	3	3	3	--	--
	8-Hour (ppm)	2.6	2.2	2.1	2.6	2.2
NO_2[(b)]:	1-Hour (ppm)	0.13	0.11	0.0928	0.1064	0.0772
	Annual (ppm)	0.0208	0.0212	0.0198	0.0177	0.0208
PM10:	24-Hour ($\mu g/m^3$)	62	62	44	43	45
	Percent of Samples Exceeding Federal Standard	(0)	(0)	(0)	(0)	(0)
	Percent of Samples Exceeding State Standard	(2%)	(5.3%)	(0%)	(0%)	(0%)
	Annual Arithmetic Mean ($\mu g/m^3$)	29.1	30.5	22.0	24.2	23.3
PM2.5:	24-Hour ($\mu g/m^3$)	57.2	63.0	35.0	35.0	49.8
	Percent of Samples Exceeding Federal Standard	(2.3%)	(1.8%)	(0%)	(0%)	(4%)
	Annual Arithmetic Mean ($\mu g/m^3$)	14.2	13.0	10.5	10.5	10.4
SO_2:	1-Hour (ppm)	0.09	0.02	0.04	0.0148	0.0222
	24-Hour (ppm)	0.012	0.005	0.006	--	--
	Annual Arithmetic Mean (ppm)	0.0022	--	--	--	--
Lead:	30-Day ($\mu g/m^3$)	0.01	0.01	0.01	0.01	--[(j)]
	Quarter ($\mu g/m^3$)	0.01	0.01	0.01	0.007	--[(j)]
Sulfate:	24-Hour ($\mu g/m^3$)	11.0	13.6	11.8	6.1	--[(j)]
	State Standard	(0%)	(0%)	(0%)	(0%)	--[(j)]

Source: SCAQMD Air Quality Data Annual Summaries 2008-2012.

Notes: ppm = Parts Per Million parts of air, by volume; ppb = Parts Per Billion parts of air, by volume; -- = Pollutant not monitored; AAM = Annual Arithmetic Mean

a) - The federal 8-hour standard (8-hour average CO > 9 ppm) and state 8-hour standard (8-hour average CO > 9.0 ppm) were not exceeded. The federal and state 1-hour standards (35 ppm and 20 ppm) were not exceeded either.

b) - The NO_2 federal 1-hour standard is 100 ppb and the annual standard is annual arithmetic mean NO_2 > 0.0534 ppm (53.4 ppb). The state 1-hour and annual standards are 0.18 ppm (180 ppb) and 0.030 ppm (30 ppb).

c) - The federal SO_2 1-hour standard is 75 ppb (0.075 ppm). The state standards are 1-hour average SO_2 > 0.25 ppm (250 ppb) and 24-hour average SO_2 > 0.04 ppm (40 ppb).

d) Federal Reference Method (FRM) PM10 samples were collected every 6 days. PM10 statistics listed above are for the FRM data only.

e) - Federal annual PM10 standard (AAM > 50 $\mu g/m^3$) was revoked in 2006. State standard is annual average (AAM) > 20 $\mu g/m^3$.

f) - PM2.5 samples were collected daily. PM2.5 statistics listed above are for the FRM data only. U.S. EPA has revised the annual PM2.5 standard from annual average (AAM) 15.0 $\mu g/m^3$ to 12.0 $\mu g/m^3$, effective March 18, 2013. State standard is annual average (AAM) > 12.0 $\mu g/m^3$.

g) High PM10 and PM2.5 data samples excluded in accordance with the EPA Exceptional Event Regulation are as follows: None excluded for Station 072.

h) – Federal lead standard is 3-months rolling average > 0.15 $\mu g/m^3$; state standard is monthly average 1.5 $\mu g/m^3$. Lead statistics listed above are for population-oriented sites only; standards were not exceeded at any of these sites.

i) – State sulfate standard is 24-hour 25 $\mu g/m^3$. There is no federal standard for sulfate.

j) – Data not yet available.

TABLE 3.2-3

Ambient Air Quality
Toxic Air Contaminants – North Long Beach
Peak 24-Hour Concentration 2012(1)

Pollutant	Peak 24-hour Concentration	Pollutant	Peak 24-hour Concentration
VOCs	**ppbv**		**ppbv**
Acetaldehyde	1.3	Formaldehyde	3.8
Acetone	11	Methyl Bromide	0.06
Acetonitrile	11	Methyl Chloroform	0.02
Acrolein	4.2	Methyl Ethyl Ketone	0.4
Benzene	1.2	Methylene Chloride	1.1
1,3-Butadiene	0.33	Perchloroethylene	0.11
Carbon Tetrachloride	0.10	Styrene	0.3
Chloroform	0.25	Toluene	3.0
cis-1,3-Dichloropropene	0.05	Trichloroethylene	0.67
trans-1,3-Dichloropropene	0.05	meta/para-Xylene	1.7
Ethyl Benzene	0.5	ortho-Xylene	0.7
Inorganic compounds	**nanograms/m^3**		**nanograms/m^3**
Antimony	9	Nickel	93
Arsenic	1.8	Platinum	0.5
Cadmium	1.6	Selenium	3.4
Chromium	7	Strontium	11
Cobalt	0.75	Sulfur	2000
Copper	53	Tin	3.7
Hexavalent Chromium	0.07	Titanium	50
Iron	1400	Vanadium	7.4
Lead	13	Zinc	120
Manganese	31	Zirconium	3.2
Molybdenum	4.7		

Source: CARB, 2013. Annual Ambient Toxic Monitoring Sites, North Long Beach,
Notes: ppbv = parts per billion by volume; nanograms/m^3 = nanograms per cubic meter
(a) Data presented are for chemicals monitored in the last five years. Chemicals previously monitored by CARB include carbon disulfide, ortho- and para-dichlorobenzene, aluminum, barium, bromine, calcium, chlorine, mercury, phosphorus, polycyclic aromatic hydrocarbons (PAHs), potassium, rubidium, silicon, uranium, and yttrium.

risk is attributed to emissions associated with mobile sources and about six percent of the cancer risk is attributed to toxics emitted from stationary sources (e.g., industrial sources). The results indicate that diesel exhaust is the major contributor to cancer risk, accounting for about 84 percent of the total. Compared to previous studies of air toxics in the Basin, the MATES-III study found a decreasing cancer risk for air toxics exposure, with the population-weighted risk down by eight percent from the analysis in MATES-II, which was based on monitoring in 1998 and 1999. The highest risks are found near the Port area, an area near central Los Angeles, and near transportation corridors. The average carcinogenic risk in the Basin is about 1,200 per million people. This means that 1,200 people out of a million are susceptible to contracting cancer from exposure to the known TACs over a 70-year period of time (SCAQMD, 2008). Of the monitoring sites in the MATES-III study, the North Long Beach study site is the closest to the proposed Project site. The estimated cancer risk at the North Long Beach station was about 1,455 per million (SCAQMD, 2008). Areas near the ports had the highest cancer risk in the Basin, ranging from 1,100 to 3,700 per million. An area of elevated risk was also found near Central Los Angeles with risks ranging from 1,400 to 1,900 per million. The areas projected to have higher risk followed transportation corridors, including freeways and railways (SCAQMD, 2008).

3.2.4.5 Air Emissions at Existing Site

The Dominguez Technology Centre is zoned as light industrial and commercial. The proposed Project site currently contains an industrial warehouse building located at 1450-1480 Charles Willard Street and an oil and gas production test facility on the south end of the site. The industrial warehouse on the north side of the proposed Project site is currently leased by a retail hardware and merchandise distributor, an electronic equipment manufacturer, and a global freight forwarder. The operations consist of freight warehousing and distribution operations, which include tractor-trailer traffic associated with such operations.

Current oil and gas site operations include two production test wells and production testing equipment. Existing site operations have included the drilling of the two test wells and currently include production testing. A process flare, an emergency flare, electrical generators, and several tanks are also used during testing operations.

The maximum average emissions over a 30-day period were used to describe the existing conditions at the proposed Project site when the environmental review process began. These emissions are then compared to maximum expected daily emissions during operation of the proposed Project (see subchapter 4.2) to estimate the incremental Project emissions for comparison to the CEQA thresholds. Because maximum future emissions are compared to 30-day average emissions, this represents a conservative comparison. The highest 30-day average daily baseline emissions shown in Table 3.2-4 correspond to the drilling operations on the test well site and the warehouse operations (see Appendix B for detailed calculations).

3.2.5 REGULATORY BACKGROUND

Ambient air quality standards in California are the responsibility of, and have been established by, both the U.S. EPA and CARB. These standards have been set at concentrations which provide margins of safety for the protection of public health and welfare. Federal and state air quality standards are presented in Table 3.2-1. The SCAQMD has established levels of episodic criteria and has indicated measures that must be initiated to immediately reduce contaminant emissions when these levels are reached or exceeded. The federal, state, and local air quality regulations are identified below in further detail.

TABLE 3.2-4

Highest 30 - Day Average Daily Baseline Emissions [a]

Emission Source	Daily Emissions (lbs/day)					
	CO	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**
Onsite Emissions						
Warehouse [b]	<0.1	2.0	<0.1	<0.1	<0.1	<0.1
Drilling Electrical Generator [c]	123.5	92.2	584.6	11.8	13.1	12.8
Sub-total	123.5	94.2	584.6	11.8	13.1	12.8
Offsite Emissions[d]						
Warehouse Worker and Contractor Vehicles [e]	9.2	1.0	2.5	<0.1	1.8	0.2
Drilling Worker and Contractor Vehicles[e]	5.4	0.6	1.4	<0.1	0.8	0.1
Drilling Slurry Trucks [e]	6.9	1.3	13.8	<0.1	1.1	0.7
Sub-total	21.5	2.9	17.7	<0.1	3.7	1.0
Total	**145.0**	**97.1**	**602.3**	**11.8**	**16.8**	**13.8**

Source: See Appendix B. All values of <0.1 are rounded down to zero for a conservative impact analysis. All differences from Appendix B are due to rounding.

Notes: (a) 30-day average emissions represent the highest average emissions over 30 days of operation at the proposed Project site.

(b) Warehouse emissions are modeled using CalEEMod and assuming a 77,360 ft^2 building with 167 trips per day of vehicle activity associated with warehouse activities, based on traffic data collected and presented in Table 3.8.1.

(c) The two electrical generators used to power the drilling rig assume a maximum load of 1,477 bhp and 100 percent load 24 hours per day.

(d) CalEEMod output emissions are multiplied by two to account for round trips.

(e) Warehouse worker and contractor emissions are modeled using CalEEMod and actual traffic data with 167 trips associated with warehouse activities, 85 contractor and worker trips associated with test well activities, and 4 trips associated with slurry transfer offsite.

The CAA establishes federal NAAQS and specifies future dates for achieving compliance. Two types of ambient air quality standards have been established: primary (to protect the public health with an adequate margin of safety) and secondary (to protect the public welfare against adverse non-health-related environmental effects). Primary NAAQS, as well as primary CAAQS, are limits set to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.(U.S. EPA, 2011) The CAAQS define clean air, and are established to protect even the most sensitive individuals in our communities (CARB, 2011). Table 3.2-1 includes the NAAQS and CAAQS currently in effect for each of the criteria pollutants as well as other pollutants recognized and includes a summary of the health effects of the various criteria pollutants.

Under the CAA, the U.S. EPA is responsible for setting and enforcing the NAAQS and regulating emission sources that are under the exclusive authority of the federal

government (e.g., aircraft, ships, and certain locomotives). The U.S. EPA also has jurisdiction over emissions sources outside of state waters (outer continental shelf) and establishes various emissions standards for vehicles sold in states other than California.
The CAA mandates that the state submit and implement a State Implementation Plan (SIP) for areas not meeting these standards (i.e., nonattainment areas). The SIP must integrate federal, state, and local actions and regulations to identify specific control measures to reduce pollution to attain the NAAQS by the required compliance date. The proposed Project is within the Basin, which is an area designated as non-attainment for certain pollutants regulated under the CAA, as described above in Section 3.2.4. The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or to meet interim milestones.

The CAA Amendments of 1970 required the U.S. EPA to identify and list all air pollutants (not already identified as criteria pollutants) that "may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible or incapacitating reversible illness." For each pollutant identified, U.S. EPA was to then promulgate national emissions standards for hazardous air pollutants (NESHAPs) at levels that would ensure the protection of the public health with an ample margin of safety and to prevent any significant and adverse environmental effects, which may reasonably be anticipated, on wildlife, aquatic life, or other natural resources.

The U.S. EPA also promulgated New Source Performance Standards (NSPS) for major and minor sources on a category-by-category basis. NSPS are national emission standards that are progressively tightened over time to achieve a steady rate of air quality improvement without unreasonable economic disruption. The NSPS imposes uniform requirements on new and modified sources through the nation. These standards are based on the best demonstrated technology (BDT). BDT refers to the best system of continuous emissions reduction that has been demonstrated to work in a given industry, considering economic costs and other factors, such as energy use. In other words, any new source of air pollution must install the best control system currently in use within that industry. The facility is expected be subject to two NSPS – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants (40, Code of Federal Regulations (40 CFR), Part 60, Subpart KKK) and possibly the Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

3.2.5.2 State Regulations

The California Clean Air Act (CCAA) requires all areas of the state to achieve and maintain the CAAQS by the earliest practicable date. CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both state and federal air pollution control programs within California. In this capacity, the CARB conducts research, sets CAAQS, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

Table 3.2-1 includes the CAAQS currently in effect for each of the criteria pollutants as well as other pollutants recognized by the State. As shown in Table 3.2-1, the CAAQS include more stringent standards than the NAAQS for many pollutants.

3.2.5.3 Local Regulations

The Basin is under the jurisdiction of the SCAQMD which has regulatory authority over stationary source air pollution control and limited authority over mobile sources. The SCAQMD is responsible for air quality planning in the Basin and development of the Air Quality Management Plan (AQMP). The AQMP establishes the strategies that will be used to achieve compliance with NAAQS and CAAQS. The SCAQMD generally regulates stationary sources of air pollutants. SCAQMD permits are required for the construction and operation of some of the equipment associated with the oil field operation and production. There are a number of SCAQMD regulations that may apply to the proposed Project including Regulation II – Permits, Regulation III – Fees, Regulation IV – Prohibitions, Regulation IX – New Source Performance Standards, Regulation X – NESHAPS Regulations, Regulation XI – Source Specific Standards, Regulation XIII – New Source Review (NSR), Regulation XIV – New Source Review of Carcinogenic Air Contaminants (including Rule 1401, New Source Review of Toxic Air Contaminants and Rule 1403, Asbestos Emissions from Demolition/Renovation Activities), Regulation XVII – Prevention of Significant Deterioration (PSD), Regulation XX – Regional Clean Air Incentives Market (RECLAIM) Program, and Regulation XXX – Title V Permits. SCAQMD permits are required for the construction and operation of the equipment associated with the oil field operation and production.

Permitted equipment is required to be evaluated under the SCAQMD NSR regulation. NSR is a preconstruction review required under both federal and state statutes for new and modified sources located in areas that do not meet the CAA standards for healthy air ("non-attainment" areas). NSR applies to both individual permits and entire facilities. Any permit that has a net increase in emissions is required to apply Best Available Control Technology (BACT) (equivalent to federal Lowest Achievable Emission Rate (LAER)). Facilities with a net increase in emissions are required to offset the emission increase by use of Emission Reduction Credits (ERCs).

The proposed Project will be evaluated for applicability of the PSD, RECLAIM, and Title V regulations.

3.3 GEOLOGY AND SOILS

3.3.1 EXISTING SETTING

The proposed Project area is located on the coastal plain on the western portion of the Los Angeles Basin, near the northern end of the Peninsular Ranges physiographic province. The Peninsular Ranges physiographic province, which includes most of the western portion of southern California, is typified by northwest trending faults - bounded by mountain ranges and hills separating elongated basins, including the Los Angeles Basin.

The mountain ranges are underlain by basement rocks consisting of pre-Cretaceous metasedimentary rocks, Jurassic metavolcanic rocks, and Cretaceous plutonic rocks. In the proposed Project site area, deposition occurred during the Cretaceous Period and Cenozoic Era in the continental margin of a forearc basin. Several thousand feet of sediments, derived from Cretaceous-age plutonic rocks and Jurassic-age volcanic rocks, were deposited into the narrow, steep, coastal plain and continental margin of the basin. These rocks have been tectonically folded, uplifted, eroded, and deeply incised. Reflecting the proximity of the Newport-Inglewood fault zone, Dominguez Hill rises up to about 190 feet from the floor of the basin, and may be characterized as a faulted anticline (a type of fold that is favorable for oil and gas accumulation). This deformation increases with depth, and thus age of the rocks, indicating a relatively long geologic history of regional tectonism (faulting). During early Pleistocene time, the deposition of terrestrial and marine terrace deposits occurred in response to eustatic fluctuations in sea level, and local tectonism. During mid to late Pleistocene time, the area was uplifted, eroded, and incised. Alluvial deposits have since filled the lower valleys, and young marine sediments are currently being deposited/eroded within coastal and beach areas. The proposed Project site is situated in an area underlain by old alluvial flood plain deposits (GeoSoils, Inc., 2011).

3.3.1.1 Faulting and Regional Seismicity

Based on geological studies, there are no known active faults crossing the Project site and proposed pipelines are not within an Alquist-Priolo Earthquake Fault Zone (GeoSoils, 2012). Even though the proposed Project site is not located on or adjacent to any identified active fault traces, regional faults are capable of earthquakes producing strong ground shaking over the life of the facility. Known faults within the proposed Project area include but are not limited to: the San Andreas; the San Jacinto; the nearby Newport-Inglewood (Offshore and L.A. Basin segments); the Palos Verdes; the Puente Hills Blind Thrust; the Upper Elysian Park Blind Thrust; the Whittie; the Santa Monica; the Hollywood; the Raymond; and, the Malibu Coast. Major active fault zones that may have a significant affect on the site, should they experience activity, are listed in Table 3.3-1, along with the distance and maximum credible earthquake magnitude predicted for each of these faults. The closest active fault to the proposed Project site is the Newport-Inglewood Fault, located about 1.9 miles from the site.

TABLE 3.3-1

Regional Earthquake Faults

Abbreviated Fault Name	Approximate Distance from Project Site (miles (km))	Estimated Max. Earthquake Event		
		Maximum Earthquake Magnitude (M_w)	Peak Site Accel. (g)	Est. Site Intensity Modified (Merccali)
Newport-Inglewood (L.A. Basin)	1.9 (3.0)	7.1	0.797	XI
Palos Verdes	7.3 (11.7)	7.3	0.539	X
Puente Hills Blind Thrust	9.0 (14.5)	7.1	0.601	X
Upper Elysian Park Blind Thrust	14.2 (22.9)	6.4	0.262	IX
Whittier	16.0 (25.7)	6.8	0.212	VIII
Santa Monica	17.5 (28.2)	6.6	0.240	IX
Hollywood	18.2 (29.3)	6.4	0.203	VIII
Raymond	18.5 (29.7)	6.5	0.213	VIII
Malibu Coast	20.5 (33.0)	6.7	0.218	IX
Newport-Inglewood (Offshore)	26.7 (43.0)	7.1	0.154	VIII
Elsinore (Glen Ivy)	34.9 (56.1)	6.8	0.096	VII
San Andreas	46.0 (74.1)	7.8	0.146	VIII
San Jacinto-San Bernardino	49.8 (80.1)	6.7	0.062	VI

Source: Geosoils, Inc., 2011.
Note: km = kilometer; M_w = momentum magnitude scale; g = gravity

Seismic records have been available for the last 200 years, with improved instrumental seismic records available for the past 50 years. Based on a review of earthquake data, most of the earthquake epicenters occur along the Whittier-Elsinore, San Andreas, Newport-Inglewood, Malibu-Santa Monica-Raymond Hills, Palos Verdes, Sierra Madre, San Fernando, Elysian Park-Montebello, and Torrance-Wilmington faults (Jones and Hauksson, 1986). All these faults are elements of the San Andreas Fault system. Table 3.3-2 identifies the historic earthquakes over magnitude 5.5 in southern California, between 1915 and the present, along various faults in the region. Table 3.3-2 also includes earthquakes over 4.5 that occurred in the vicinity of the proposed Project.

The fault zones in the region with potential for future activity that may affect the facility are described below. These faults have been identified under the Alquist-Priolo Earthquake Fault Zone Act.

TABLE 3.3-2

Significant Historical Earthquakes in Southern California

Date	Location (epicenter)	Magnitude
1915	Imperial Valley	6.3
1918	San Jacinto	~6.8
1923	North San Jacinto Fault	6.3
1925	Santa Barbara	6.3
1927	Lompoc	7.1
1933	Long Beach	6.4
1937	San Jacinto Fault	6.0
1940	Imperial Valley	6.9
1941	Santa Barbara	5.5
1941	Torrance-Gardena	4.8
1942	Fish Creek Mountains	6.6
1946	Walker Pass	6.0
1947	Manix	6.5
1948	Desert Hot Springs	6.0
1952	Kern County	7.5
1952	Bakersfield	5.8
1954	San Jacinto Fault	6.4
1966	Parkfield	6.0
1968	Borrego Mountain	6.5
1971	San Fernando (Sylmar)	6.5
1979	Imperial Valley	6.4
1980	White Wash	5.5
1986	North Palm Springs	5.6
1987	Whittier	5.9
1987	Elmore Ranch/Superstition Hills	6.2
1991	Sierra Madre	5.8
1992	Joshua Tree	6.1
1992	Landers	7.3
1992	Big Bear	6.4
1992	Mojave (Garlock)	5.7
1994	Northridge	6.7
1995	Ridgecrest	5.4
1999	Hector Mine	7.1
2002	Laguna Salada	5.7
2009	Northern Baja California	5.8
2010	Sierra El Mayor (No. Baja Calif.)	7.2

Source: SCEC, 2013.

Whittier-Elsinore Fault Zone: The Whittier-Elsinore Fault is one of the more prominent structural features in the Los Angeles Basin. It extends from Turnbull Canyon near Whittier, southeast to the Santa Ana River, where it merges with the Elsinore fault. Yerkes (1972) indicated that vertical separation on the fault in the upper Miocene strata increases from approximately 2,000 feet at the Santa Ana River northwestward to approximately 14,000 feet in the Brea-Olinda oil field. Farther to the northwest, the vertical separation decreases to approximately 3,000 feet in the Whittier Narrows of the San Gabriel River. The fault also has a major right-lateral strike slip component. Yerkes (1972) indicates streams along the fault have been deflected in a right-lateral sense from 4,000 to 5,000 feet. The fault is capable of producing a maximum credible earthquake event of about magnitude 7.0 every 500 to 700 years.

San Andreas Fault Zone: The San Andreas fault is located on the north side of the San Gabriel Mountains trending east-southeast as it passes the Los Angeles Basin. This fault is recognized as the longest and most active fault in California. It is generally characterized as a right-lateral strike-slip fault which is comprised of numerous sub-parallel faults in a zone over two miles wide. There is a high probability that southern California will experience a magnitude 7.0 or greater earthquake along the San Andreas or San Jacinto fault zones, which could generate strong ground motion in the project area. The most dangerous fault is the southern part of the San Andreas, which has a 59% probability of generating a magnitude 6.7 earthquake in the next 30 years (USGS, 2008).

The Newport-Inglewood Fault Zone: The Newport-Inglewood fault is a major tectonic structure within the Los Angeles Basin. This fault is best described as a structural zone comprising a series of echelon and sub-parallel fault segments and folds. The faults of the Newport-Inglewood uplift in some cases exert considerable barrier influence upon the movement of subsurface water (California Department of Water Resources (CDWR), 1961). Offsetting of sediments along this fault usually is greater in deeper, older formations. Sediment displacement is less in younger formations. The Alquist-Priolo Act has designated this fault as an earthquake fault zone. The purpose of designating this area as an earthquake fault zone is to mitigate the hazards of fault rupture by prohibiting building structures across the trace of the fault.

This fault poses a seismic hazard to the Los Angeles area, although no surface faulting has been associated with earthquakes along this structural zone during the past 200 years. Since this fault is located within the Los Angeles Metropolitan area, a major earthquake along this fault would produce more destruction than a magnitude 8.0 on the San Andreas fault. The largest instrumentally recorded event was the 1933 Long Beach earthquake, which occurred on the offshore portion of the Newport-Inglewood structural zone with a magnitude of 6.3. A maximum credible earthquake of magnitude 7.0 has been assigned to this fault zone (see Ziony and Yerkes, 1985).

Malibu-Santa Monica-Raymond Hills Fault Zone: The Raymond Hills fault is part of the fault system that extends from the base of the San Gabriel Mountains westward to beyond the Malibu coast line. The fault has been relatively quiet, with no recorded seismic events in historic time (see SCEC, 2013a, 2013b, 2013c, and 2013d); however, recent studies indicate movement can occur with a recurrence interval from 740 years for the Santa Monica Mountains Thrust Fault up to 3,290 years for the Hollywood-Santa Monica-Malibu Coast system to rupture (see Dolan, 1995).

The Palos Verdes Fault Zone: The Palos Verdes fault extends for about 50 miles from the Redondo submarine canyon in Santa Monica Bay to south of Lausen Knoll and is responsible for the uplift of the Palos Verdes Peninsula. This fault is both a right-lateral strike-slip and reverse separation fault. The Gaffey anticline and syncline are reported to extend along the northwestern portion of the Palos Verdes hills. These folds plunge southeast and extend beneath recent alluvium east of the hills and into the San Pedro Harbor, where they may affect movement of ground water (see CDWR, 1961). The probability of a moderate or major earthquake along the Palos Verdes fault is low compared to movements on either the Newport-Inglewood or San Andreas faults. However, this fault is capable of producing strong to intense ground motion and ground surface rupture. This fault zone has not been placed by the California State Mining and Geology Board into an Alquist-Priolo special studies zone.

Sierra Madre Fault System: The Sierra Madre fault system extends for approximately 60 miles along the northern edge of the densely populated San Fernando and San Gabriel valleys (Dolan, et al., 1995) and includes all faults that have participated in the Quaternary uplift of the San Gabriel Mountains. The fault system is complex and appears to be broken into five or six segments each 10 to 15 miles in length (see Ehlig, 1975). The fault system is divided into three major faults by Dolan, et al. (1995), including the Sierra Madre, the Cucamonga and the Clamshell-Sawpit faults. The Sierra Madre fault is further divided into three minor fault segments the Azusa, the Altadena and the San Fernando fault segments. The Sierra Madre fault is capable of producing a 7.3 magnitude fault every 805 years (Dolan, et al., 1995).

San Fernando Fault: The westernmost segment of the Sierra Madre fault system is the San Fernando segment. This segment extends for approximately 12 miles beginning at Big Tujunga Canyon on the east to the joint between the San Gabriel Mountains and the Santa Susana Mountains on the west (Ehlig, 1975). The 1971 Sylmar earthquake occurred along this segment of the Sierra Madre fault system, resulting in a 6.4 magnitude fault. Dolan, et al. (1995) indicates the San Fernando fault segment is capable of producing a 6.8 magnitude fault every 455 years.

Elysian Park-Montebello System: The Elysian Park fault is a blind thrust fault system, i.e., not exposed at the surface, whose existence has been inferred from seismic and geological studies. The system as defined by Dolan, et al. (1995) comprises two distinct thrust fault systems; 1) an east-west-trending thrust ramp located beneath the Santa Monica Mountains; and 2) a west-northwest-trending system that extends from Elysian Park Hills through downtown Los Angeles and southeastward beneath the Puente Hills. The Elysian Park thrust is capable of producing a magnitude 7.1 earthquake every 1,475 years.

Torrance-Wilmington Fault Zone: The Torrance-Wilmington fault has been reported to be a potentially destructive, deeply buried fault, which underlies the Los Angeles Basin. Kerr (1988) has reported this fault as a low-angle reverse or thrust fault. This proposed fault could be interacting with the Palos Verdes hills at depth. Little is known about this fault, and its existence is inferred from the study of deep earthquakes. Although information is still too preliminary to be able to quantify the specific characteristics of this fault system, this fault appears to be responsible for many of the small to moderate earthquakes within Santa Monica Bay and easterly into the Los Angeles area. This fault itself should not cause surface rupture, only ground shaking in the event of an earthquake.

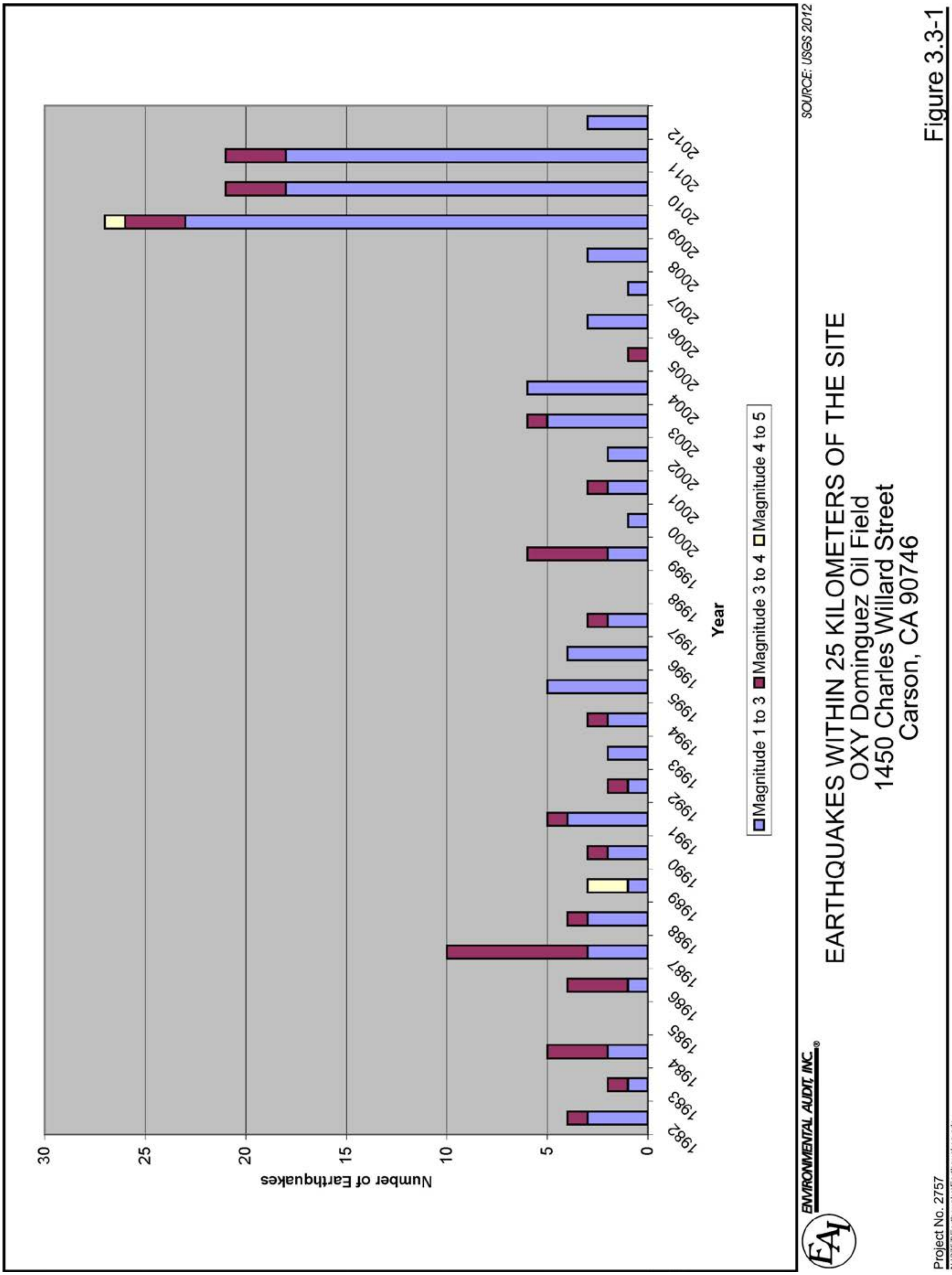
In addition to the known surface faults, shallow-dipping concealed “blind” thrust faults have been postulated to underlie portions of the Los Angeles Basin. Because there exist few data to define the potential extent of rupture planes associated with these concealed thrust faults, the maximum earthquake that they might generate is largely unknown.

The Southern California region is subject to earthquakes on a frequent basis. Data from the U.S. Geological Survey indicates that there has been an average of about 5 earthquakes per year less than a magnitude of 5, over the last 20 years within 25 kilometers of the proposed Project site (see Figure 3.3-1) (USGS, 2012). Over the past three years, there has been an increase in the number of small earthquakes (less than magnitude 5) within 25 kilometers of the proposed Project site, ranging from 27 per year in 2009 to 21 per year in 2010 and 2011 (see Figure 3.3-1).

3.3.1.2 Local Seismicity

An evaluation of potential ground shaking was conducted for the proposed Project site, using the computer program EQFAULT. EQFAULT is a computer program which performs deterministic seismic hazard analyses using digitized California faults as earthquake sources. The program estimates the closest distance between each fault and a given site and estimates the peak horizontal ground acceleration that may occur at the site from an upper bound (formerly “maximum credible earthquake”), on that fault. Based on the EQFAULT program, a peak horizontal ground acceleration from an upper bound event at the proposed Project site may be on the order of 0.80 g (GeoSoils, 2012).

Historical site seismicity was evaluated with the computer program EQSEARCH. This program performs a search of the historical earthquake records for magnitude 5.0 to 9.0 seismic events within a 100-kilometer radius, between the years 1800 through December 2010. Based on the selected acceleration-attenuation relationship, a peak horizontal ground acceleration is estimated, which may have affected the site during the specific event listed. Based on the available data and the attenuation relationship used, the estimated maximum (peak) site acceleration during the period 1800 through December 2010 was 0.24 g (GeoSoils, 2012).


Number of Earthquakes
Year
Magnitude 1 to 3
Magnitude 3 to 4
Magnitude 4 to 5
SOURCE: USGS 2012
ENVIRONMENTAL AUDIT, INC.
EARTHQUAKES WITHIN 25 KILOMETERS OF THE SITE
OXY Dominguez Oil Field
1450 Charles Willard Street
Carson, CA 90746
Figure 3.3-1
Project No. 2757

A probabilistic seismic hazards analysis was performed using the 2008 Interactive Deaggregations Seismic Hazard Analysis tool available at the USGS website (https://geohazards.usgs.gov/deaggnit/2008/) which evaluates the site specific probabilities of exceedance for selected spectral periods. Based on a review of these data, and considering the relative seismic activity of the southern California region, a probabilistic horizontal ground acceleration (PHGA) of 0.59g and 0.39g were calculated. The calculated values are within the range typical for the southern California region. These values were chosen as they correspond to a 2 and 10 percent probability of exceedance in 50 years, respectively (GeoSoils, 2012).

Based on the site conditions, Table 3.3-3 summarizes the site-specific design criteria obtained from the 2010 California Building Code (CBC), Chapter 16 Structural Design, Section 1613, Earthquake Loads. The computer program Seismic Hazard Curves and Uniform Hazard Response Spectra, provided by the USGS was utilized for design. The short spectral response utilizes a period of 0.2 seconds (GeoSoils, 2012).

TABLE 3.3-3

California Building Code Seismic Design Parameters

Parameter	Value	2010 CBC Reference
Site Class	D	Table 1613.5.2
Spectral Response (0.2 sec), S_s	1.73g	Figure 1613.5(1)
Spectral Response (1 sec), S_1	0.66g	Figure 1613.5(2)
Site Coefficient, F_a	1.0	Table 1613.5.3(1)
Site Coefficient, F_v	1.5	Table 1613.5.3(2)
Maximum Considered Earthquake Spectral Response Acceleration (0.2 sec), S_{Ms}	1.73g	Section 1613.5.3 (Eqn 16-36)
Maximum Considered Earthquake Spectral Response Acceleration (1 sec), S_{M1}	1.00g	Section 1613.5.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (0.2 sec), S_{DS}	1.16g	Section 1613.5.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.66g	Section 1613.5.4 (Eqn 16-39)
General Seismic Parameters		
Distance to Seismic Source (Newport-Inglewood [L.A. Basin] Fault)	1.9 mi (3.0 km)	
Upper Bound Earthquake (Newport-Inglewood [L.A. Basin] Fault)	M_w 7.1	
Probabilistic Horizontal Ground Acceleration ([PHGA] 2%/10% probability of exceedance in 50 years, respectively)	0.59g/0.39g	

Source: GeoSoils, 2012

The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes.

3.3.1.3 Anthropogenic Seismicity

The possibility that earthquakes can be a result of anthropogenic (manmade), activities has been known since at least 1966, as pointed out by Mereu, et al. (Mereu, 1986). Mechanisms that trigger such microearthquakes (mainly in the one to three magnitude range) include; above ground dams (with significant water retention capacity and height); chemical waste injection; water-flooding in oil fields (Raleigh, 1972); water injection (Rothe and Lui, 1983); hydraulic fracturing (Kanamori and Hauksson, 1992); and fluid withdrawal of oil and gas with associated subsidence (Davis, et al., 1995; Kovach, 1974). It is often difficult if not possible to distinguish between natural seismicity as a result of a geologically growing anticlinal structure (such as at the subject site), and that which is induced by human activity. It is reasonable to expect microseismicity near an oil field because tectonic forces (released as earthquakes) created the stratigraphic trap for oil and gas in the first place. Typically, practices such as maintaining an essentially static normal pressure in the producing formation (i.e., not significantly pressuring-up formations with low natural pressure, and not significantly lowering the pressure of formations that are over-pressured), avoiding faults with injection wells, etc., serve to reduce this potential so that the field pressure is similar to background levels in seismically active areas. Further, the State Division of Oil, Gas, and Geothermal Resources (DOGGR), requires planning and monitoring such that the injection fluid is confined to the intended zone, ensuring to minimize damage.

Although larger earthquakes (M5.9 at Whittier Narrows to M6.5 at Coalinga) have occurred as a result of oil extraction at major oil fields (McGarr, 1991), this is due to a net liquid mass depletion. Net extraction of oil and water reduces the average density of the upper crust, causing an isostatic imbalance. The ductile lower crust deforms in response to this imbalance, thus increasing the load on the seismogenic layer, which fails seismically to thicken the crust so as to restore static equilibrium locally. No earthquakes have been attributed to oil production activities in the Dominguez Oil Field. The nearest earthquakes known to occur in the vicinity of the proposed Project site occurred in 1941 south and southeast of the Dominguez Oil Field, (magnitude 4.8) over 3.5 miles from the site (USGS, 2012).

3.3.1.4 Groundwater

Groundwater setting is addressed in Chapter 3.5 – Hydrology and Water Quality.

3.3.2 REGULATORY BACKGROUND

3.3.2.1 Federal Regulations

Underground Injection Control Program: The Underground Injection Control (UIC) Program is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal. This program is designed for owners and operators of injection wells and state regulators to safely operate injection wells to prevent contamination of underground drinking water resources (see Sections 3.5.5.1.5 and 3.6.3.1.3 for additional information). In the State of California, this program has been delegated to the DOGGR.

3.3.2.2 State Regulations

California Building Code: The California Building Standards Commission provides a minimum standard for building design with the 2010 California Building Code (2010 CBC), which is based on the International Code Council but has been modified for California conditions. Chapter 16 of the 2010 CBC contains specific requirements for seismic safety. Chapter 18 of the 2010 CBC regulates excavation, foundations, and retaining walls. Appendix J of the 2010 CBC contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials, and also regulates grading activities, including drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching, as specified in California Occupational Health and Safety Administration (8 California Code of Regulations (8 CCR)).

Alquist-Priolo Earthquake Fault Zone Act of 1994: The Alquist-Priolo Earthquake Fault Zone Act addresses only surface fault-rupture hazards. These legislative guidelines determine fault activity status and are based on the age of the youngest geologic unit offset by the fault. An active fault is described by the California Geological Survey as a fault that has “had surface displacement within Holocene time,” or about the last ±11,000 years. A potentially active fault is defined as “any fault that showed evidence of surface displacement during Quaternary time (within the last 1.6 million years).” This legislation prohibits the construction of buildings used for human occupancy on active and potentially active surface faults. However, only those potentially active faults that have a relatively high potential for ground rupture are identified as Alquist-Priolo Earthquake Fault Zones. Therefore, not all active or potentially active faults are zoned under the Alquist-Priolo Earthquake Fault Zone Act (California Geologic Survey, 2007). The proposed Project site is not within an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act: The Seismic Hazards Mapping Act was created to map and address non-surface fault rupture hazards, including liquefaction and earthquake-induced landslides, pursuant to the Seismic Hazards Mapping Act (Public Resources Code, Chapter 7.8, Section 2690 et seq.). The purpose of the Seismic Hazards Mapping Act is to reduce the threat of seismic hazards to public safety and to minimize the loss of life and property, by identifying and mitigating these seismic hazards.

Once Official Seismic Hazard Zones Maps are released, cities and counties affected by the Official Seismic Hazard Zone Maps must require a site-specific geotechnical investigation be conducted within the Zones of Required Investigation, to identify and evaluate seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy.

A copy of each approved geotechnical investigation, including the mitigation measures, is required to be submitted to the California Geological Survey within 30 days of approval of the investigation. Additional guidance regarding the responsibilities of local agencies, guidelines for evaluating and mitigating seismic hazards, as well as the text of the Seismic Hazards Mapping Act, are contained within Special Publication 117 - Guidelines for Evaluating and Mitigating Seismic Hazards in California (CDMG, 1997). In addition, local agencies are to incorporate the Seismic Hazard Zone Maps into their Safety Element and the Natural Hazard Disclosure Statement. The Seismic Hazards Mapping Act also requires sellers of real property to disclose to buyers if the property is within a Zone of Required Investigation. The Project site is not located in zones identified by the Seismic Hazards Mapping Act.

California Division of Oil, Gas, and Geothermal Resources: DOGGR regulates production of oil and gas, as well as geothermal resources, within the State of California. DOGGR regulations, defined in 14 CCR Chapter 4, include well design and construction standards, surface production equipment and pipeline requirements, and well abandonment procedures and guidelines.

- DOGGR oversees the drilling operation and maintenance of onshore and offshore oil, gas, and geothermal wells. DOGGR enforces regulations addressing well spacing, blow-out prevention devices, casing requirements, and other safety systems..

- DOGGR oversees well operations. When an operator ceases well operation or production, state law requires the well to be abandoned within a reasonable time period.

- DOGGR regulates well abandonment procedures to ensure effectiveness in preventing migration of oil and gas from a producing zone to shallower zones, including potable groundwater zones.

Regulations require well operators to maintain detailed records of abandonment operations and file copies with DOGGR. In addition, DOGGR regulates environmentally sensitive pipelines, which are defined under 14 CCR 1760 as:

- A pipeline located within 300 feet of any public recreational area, or a building intended for human occupancy, that is not necessary to the operation of the production operation, such as residences, schools, hospitals, and businesses;
- A pipeline located within 200 feet of any officially recognized wildlife preserve or environmentally sensitive habitat that is designated on a United States Geological Survey topographic map, designated waterways, or other surface waters, such as lakes, reservoirs, rivers, canals, creeks, or other water bodies that contain water throughout the year;
- A pipeline located within the coastal zone, as defined in Section 30103(b) of the Public Resources Code;
- Any pipeline for which the Supervisor determines there may be a significant potential threat to life, health, property, or natural resources, in the event of a leak, or that has a history of chronic leaks.

3.3.2.3 Local Regulations

City of Carson: The Carson Municipal Code, Article VI, Chapter 8, includes requirements for pipelines. These requirements include insurance, bonds, construction and repair, abandonment, etc. for water, oil or other liquid, gas, or electricity, as well as special provisions for oil pipelines which may transport oil, gas, gasoline, petroleum, wet gas, hydrocarbon substances, water, waste water, mud, and other liquid substances through the pipelines. All pipelines used or to be used for the transportation of oil, gas, gasoline, petroleum, wet gas hydrocarbon substances or other flammable liquid shall be first class and standard material as set forth by current American Petroleum Institute pipeline specifications, as indicated in Part 4, §6861. Additional construction provisions for gas pipelines are provided in Part 6, §6881.

Article IX, Chapter 1, § 9128.6 provides requirements specific to oil wells, including oil production equipment, structures, walls, driveways, signs, utilities, landscaping, well maintenance, bonds, safety, and noise.

3.4 GREENHOUSE GASES

3.4.1 EXISTING SETTING

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). The term GHGs includes gases that contribute to the natural greenhouse effect, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), as well as gases that are only manmade, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These last three families of gases, while not naturally present in the atmosphere, have properties that also cause them to trap infrared radiation when they are present in the atmosphere. Together, these six gases comprise the major GHGs that are recognized by the Kyoto Protocol. The GHGs absorb longwave radiant energy reflected by the earth, which warms the atmosphere. GHGs also radiate longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation absorbed by the atmosphere is known as the "greenhouse effect."

Because greenhouse gas emissions are generally considered to affect global climate, applicable impacts are considered to be cumulative impacts. Global climate change refers to changes in average climatic conditions on earth as a whole, including temperature, wind patterns, precipitation, and storms. Global warming, a related concept, is the observed increase in average temperature of the earth's surface and atmosphere. One identified cause of global warming is an increase of GHGs in the atmosphere.

The most common GHG is CO_2. CO_2 is an odorless, colorless natural greenhouse gas. Natural sources of CO_2 include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO_2 are from burning coal, oil, natural gas, wood, butane, propane, etc. CH_4 is a flammable gas and is the main component of natural gas. N_2O, also known as laughing gas, is a colorless greenhouse gas. Some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to the atmospheric load of GHGs. HFCs are synthetic man-made chemicals that are used as a substitute for chlorofluorocarbons (whose production was stopped as required by the Montreal Protocol) for automobile air conditioners and refrigerants. The two main sources of PFCs are primary aluminum production and semiconductor manufacture. SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

The effect each of these gases has on global warming is a combination of the volume of their emissions and their global warming potential (GWP). Global warming potential indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of carbon dioxide. It is a unitless quantity. Methane and nitrous oxide are substantially more potent than carbon dioxide, with global warming potentials (100 year) of 21 and 310, respectively.

However, these natural GHGs are nowhere near as potent as SF_6 and various HFCs and PFCs. SF_6 has a 100 year GWP of 23,900 and PFCs and HFCs have GWPs ranging from 140 to 11,700. In emissions inventories, GHG emissions are typically reported in terms of pounds (lbs) or metric tons (MT) of carbon dioxide equivalents (CO_2e), which are calculated as the product of the mass emitted of a given GHG and its specific GWP.

Events and activities, such as the industrial revolution and the increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.), have reportedly contributed to the increase in atmospheric levels of GHGs. The GHG inventory for California is presented in Table 3.4-1 (CARB, 2012). Approximately 85 percent of GHGs in California are from fossil fuel combustion (see Table 3.4-1) and over 70 percent of GHG emissions are CO_2 emissions.

The analysis of GHGs is a much different analysis than the analysis of criteria pollutants. GHGs differ from criteria pollutants in that GHG emissions do not cause direct adverse human health effects. Rather, the direct environmental effect of GHG emissions is the potential to increase global temperatures, which in turn has numerous indirect effects on the environment and humans. Some studies indicate that the potential effects of global climate change may include rising surface temperatures, loss in snow pack, sea level rise, more extreme heat days per year, and more drought years.

GHG emissions from a single project will not necessarily have an adverse environmental effect. Rather, it is the increased accumulation of GHGs from more than one project and many sources in the atmosphere that may result in global climate change. The resultant consequences of that climate change can cause adverse environmental effects. In virtually every project subject to CEQA review, a project's GHG emissions will be relatively small, even infinitesimal, within the scope of global or even statewide GHG emissions, and, as such, will almost certainly have no significant direct impact on climate change. Due to the complex physical, chemical, and atmospheric mechanisms involved in global climate change, it is likely impossible to identify the specific impact, if any, to global climate change from one project's incremental increase in global GHG emissions. As such, the proposed Project GHG emissions and the resulting significance of potential impacts are more properly assessed on a cumulative basis. Therefore, the environmental setting and the significance of potential impacts from the proposed Project's GHG emissions is addressed as a cumulative impact.

3.4.2 BASELINE EMISSIONS FROM EXISTING OPERATIONS

Current oil and gas site operations include two production test wells and production testing equipment. The drilling of the two test wells began November 2010 and was completed in May 2011. The production testing began in August 2011 and is ongoing. A process flare, an emergency flare, a backup generator, and several tanks are used during testing operations.

TABLE 3.4-1

California GHG Emissions and Sinks Summary (Million metric tons of CO_2 equivalence)

Categories Included in the Inventory	1990	2009
ENERGY	**386.41**	**389.05**
Fuel Combustion Activities	381.16	383.86
Energy Industries	157.33	148.87
Manufacturing Industries & Construction	24.24	18.24
Transport	150.02	172.07
Other Sectors	48.19	44.68
Non-Specified	1.38	0
Fugitive Emissions from Fuels	5.25	5.20
Oil and Natural Gas	2.94	3.76
Other Emissions from Energy Production	2.31	1.44
INDUSTRIAL PROCESSES & PRODUCT USE	**18.34**	**28.07**
Mineral Industry	4.85	3.63
Chemical Industry	2.34	0.12
Non-Energy Products from Fuels & Solvent Use	2.29	1.70
Electronics Industry	0.59	0.78
Product Uses as Substitutes for Ozone Depleting Substances	0.04	14.51
Other Product Manufacture & Use Other	3.18	1.65
Other	5.05	5.68
AGRICULTURE, FORESTRY, & OTHER LAND USE	**19.11**	**29.67**
Livestock	11.67	19.64
Land	0.19	0.19
Aggregate Sources & Non-CO_2 Emissions Sources on Land	7.26	9.84
WASTE	**9.42**	**9.98**
Solid Waste Disposal	6.26	6.70
Biological Treatment of Solid Waste	0	0.62
Wastewater Treatment & Discharge	3.17	2.66
EMISSION SUMMARY		
Gross California Emissions	**433.29**	**456.77**
Sinks and Sequestrations	**-6.69**	**-3.80**
Net California Emissions	**426.60**	**452.97**

Source: CARB, 2011a – California Greenhouse Gas Inventory for 2000-2009 – by IPCC category

Current operations at the test site occur 24 hours a day, seven days a week, with two 12-hour shifts per day. Up to five car/delivery trucks may visit the site daily. There are currently no sewer or water connections for the test site. Wastes (e.g., cuttings and produced water) are contained on-site until they can be removed via truck for disposal. Currently, there may be as many as 16 trucks a day removing the oil and produced water. The Table 3.4-2 summarizes baseline emissions from existing operations. This annual emission estimate represents the period from November 2010 to November 2011. Refer to Appendix C for detailed calculations for each of these source categories.

TABLE 3.4-2

Baseline (Existing OXY Operations and Warehouse) GHG Emissions

Baseline Emission Source	Annual Emissions (MT/yr)			
	CO_2	CH_4	N_2O	CO_2e
Direct Emissions - Stationary Sources				
Process flare	12,638	0.21	0.02	12,650
Emergency flare	417	6.62	0.66	761
Electrical generator	635	0.03	0.01	637
Drilling Rig Generators	2,974	0.12	0.02	2,984
Well Workover	7	0.00	0.00	7
Subtotal, Stationary Sources				17,039
Direct Emissions - Mobile Sources[(a)]				
Workers & Contractors[(b)]	500	0.03	0.00	501
Drilling Slurry Trucks	453	0.02	0.00	454
Trucks (oil and gas)	29	0.00	0.00	30
Workover Rig	0.07	0.00	0.00	<1
Subtotal, Mobile Sources				986
Total Direct Emissions				**18,025**
Indirect Emissions				
Warehouse[(c)]	3,150	21.7	0.31	3,701
Total Baseline Emissions	**20,805**	**29**	**1**	**21,726**

NOTES:
(a) CalEEMod output emissions are multiplied by two to account for round trips.
(b) Include workers and contractor commute trips related to warehouse operation, drilling, and well production activities.
(c) Warehouse operational emissions modeled by CalEEMod, including emissions from energy, water use, and waste.

3.4.3 REGULATORY BACKGROUND

3.4.3.1 Federal Regulations

April 2007 Supreme Court Ruling: In Massachusetts et al. vs. Environmental Protection Agency et al. (April 2, 2007), the U.S. Supreme Court ruled that GHGs were air pollutants within the meaning of the Clean Air Act and that the Act authorizes the

U.S. EPA to regulate CO_2 emissions from new motor vehicles, should those emissions endanger the public health or welfare. The Court did not mandate that the U.S. EPA enact regulations to reduce GHG emissions, but found that the only instances where the U.S. EPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change. On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under §202(a) of the CAA.

- Endangerment Finding: The U.S. EPA Administrator found that the current and projected concentrations of the six key GHGs – CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 – in the atmosphere threatened the public health and welfare of current and future generations.

- Cause or Contribute Finding: The U.S. EPA Administrator found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

The finding itself did not impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the U.S. EPA's proposed GHG emissions standards for light-duty vehicles.

Corporate Average Fuel Efficiency Standards: On May 19, 2009, the President of the United States announced a national policy for fuel efficiency and emissions standards in the U.S. auto industry. The policy was implemented through a joint rulemaking between the U.S. DOT and U.S. EPA. The new federal standards apply to passenger cars, light-duty trucks, and medium duty passenger vehicles built in model years 2012 through 2016. The agencies issued Final Rulemaking establishing standards for 2012 through 2016 model year vehicles on April 1, 2010. The final regulations require an average fuel economy standard of 35.5 miles per gallon and an average GHG emission level of 250 grams per mile in 2016. This average standard includes light duty automobiles, sport utility vehicles, and light duty pickup trucks. These agencies are now in the process of developing a rulemaking to set even higher standards for model years 2017 - 2025. On November 16, 2011, the agencies proposed new regulations calling for an average fuel economy standard of 54.5 miles per gallon and an average GHG emission level of 163 grams per mile in 2025. On August 9, 2011, U.S. EPA and National Highway Transportation Safety Administration finalized regulations to reduce GHG emissions and improve fuel efficiency of medium- and heavy-duty vehicles, including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses. The regulations incorporate all on-road vehicles rated at a gross vehicle weight at or above 8,500 pounds, and the engines that power them. These vehicles make up the transportation segment's second largest contributor to oil consumption and GHG emissions. Under the regulations, fuel economy will be improved and GHG emissions will be reduced in model years 2014 - 2018.

Energy Independence and Security Act of 2007: The Energy Independence and Security Act of 2007 was signed into law on December 19, 2007, and includes provisions covering: Renewable Fuel Standard (Section 202); Appliance and Lighting Efficiency Standards (Section 301–325); and Building Energy Efficiency (Sections 411–441). Additional provisions of the Energy Independence and Security Act address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

The Renewable Fuel Standard regulations require annual increases in biofuels sold – both biodiesel and bioethanol – from the years 2010 - 2022. By year 2022, the Renewable Fuel Standard will require at least 74 billion gallons of biofuel to be sold in the U.S., as compared to a current (2010) level of approximately 14.5 billion gallons.

Reporting Requirements: The U.S. Congress passed "The Consolidated Appropriations Act of 2008" (HR 2764) in December 2007, which requires reporting of GHG data and other relevant information from large emission sources and suppliers in the United States. The Rule is referred to as 40 CFR Part 98 - Greenhouse Gas Reporting Program (GHGRP). The stated purpose of the rule is to collect accurate and timely GHG data to inform future policy decisions. Facilities that emit 25,000 MT or more per year of GHGs are required to submit annual reports to U.S. EPA. The emissions counted towards the threshold are direct emissions from on-site sources. Suppliers of certain products that result in GHG emissions if released, and facilities that inject CO_2 underground for geologic sequestration, are also covered.

Clean Air Act Permitting for GHG Emissions: GHG emissions from the largest stationary sources are now covered by the PSD and Title V Operating Permit Programs. The PSD program applies to new major sources and major modifications to existing major sources. The Title V program requires major sources to obtain and operate in compliance with a facility-wide operating permit. However, the thresholds established in the Act for determining when emissions of pollutants make a source "major", i.e. subject to these permitting programs (100 and 250 tons per year), were based on traditional pollutants and were not originally intended to be applied to GHGs.

To address this issue, U.S. EPA's GHG Tailoring Rule, issued in May 2010, established a phased approach to incorporating GHG emissions into these programs. Under the rule, GHG permitting will focus initially on the largest industrial sources. Effective July 1, 2011, PSD permitting requirements cover projects that emit GHG emissions of at least 100,000 tons/year even if they do not exceed the PSD permitting thresholds for any other pollutant. Modifications at existing facilities that increase GHG emissions by at least 75,000 tons/year are subject to PSD permitting requirements, even if they do not significantly increase emissions of any other pollutant. Facilities that emit at least 100,000 tons/year CO_2e are also subject to Title V permitting requirements. While phasing in the Tailoring Rule, U.S. EPA has stated that it will also make an assessment of administrative issues and examine GHG permitting for smaller sources in a five-year study expected to be completed by April 2015; results are expected by April 2016 to determine if successful streamlining will allow further phase-in or exclude smaller sources from permit requirements. U.S. EPA is working with State and Local permitting authorities to ensure that the new requirements are implemented. The proposed Project is not projected to exceed the thresholds set forth above, so CAA permitting for GHGs will not be applicable.

Oil and Gas Sector NSPS and NESHAPS: On July 28, 2011, the U.S. EPA proposed a suite of regulations intended to reduce emissions from the oil and natural gas industry. These regulations were finalized and approved on April 17, 2012, and include NSPS provisions covering hydraulically-fractured and refractured natural gas wells (Subpart OOOO), as well as the NESHAPS regulations covering small glycol dehydrators at oil and gas facilities (Subpart HH) and natural gas transmission facilities (Subpart HHH). EPA intends to cut VOCs emitted from new and modified hydraulically-fractured gas wells. U.S. EPA estimates that implementation of these amendments will result in annual reductions of 540,000 tons of VOCs, and 3.4 million tons of methane, which is equal to 65 million MT of CO_2e, a reduction of about 26 percent. The regulations will affect emissions from a variety of fugitive and process emissions from oil and gas production as well as from natural gas processing plants. While this NSPS standard is expected to apply to the proposed Project, the SCAQMD has had Rule 1148.1 in place since 2004, which requires reducing VOC emissions at oil and gas production facilities and is applicable to the proposed Project. In addition, effective June 4, 2013, the SCAQMD requires under Rule 1148.2 the operator of onshore oil and gas wells notify the SCAQMD prior to the start of drilling, well completion, or rework of an onshore oil or gas well and report the use of combustion equipment, dry materials, drilling fluids, well completion fluids, and flowback fluid.

3.4.3.2 Regional Arrangements

Western Regional Climate Action Initiative: The Western Regional Climate Action Initiative was a partnership among seven states, including California, and four Canadian provinces interested in implementing a regional, economy-wide cap-and-trade system to reduce global warming pollution. The Western Regional Climate Action Initiative's intent was to cap the region's electricity, industrial, and transportation sectors with the goal of reducing the GHG emissions that cause global warming 15 percent below 2005 levels by 2020. However, by late 2011 all of the states had withdrawn from the Initiative leaving California and four Canadian provinces. California is working with the remaining provinces to design a regional GHG reduction program that includes a cap-and-trade approach. CARB has developed a cap-and-trade program that could eventually link California and other states and provinces.

3.4.3.3 California Regulations

California has enacted a variety of legislation that relates to climate change, much of which sets aggressive goals for GHG reductions within the state. The discussion below provides a brief overview of the CARB and Office of Planning and Research documents and of the primary legislation that relates to climate change which may affect the GHG emissions associated with the proposed Project.

Executive Order S-3-05 (Statewide GHG Targets): California Executive Order S-03-05 (June 1, 2005) mandates a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. Although the 2020 target has been incorporated into legislation (AB32), the 2050 target remains the goal of the Executive Order.

Assembly Bill 32 (Statewide GHG Reductions): The California Global Warming Solutions Act of 2006, widely known as AB32, requires CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed to set a greenhouse gas emission limit, based on 1990 levels, to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving greenhouse gas reductions in a technologically and economically feasible manner.

The heart of the bill is the requirement that statewide GHG emissions must be reduced to 1990 levels by 2020. California needs to reduce GHG emissions by approximately 16 percent below business-as-usual predictions of year 2020 GHG emissions to achieve this goal. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

On December 11, 2008, CARB adopted the AB32 Scoping Plan, which sets forth the framework for facilitating the state's goal of reducing GHG emissions to 1990 levels by 2020. The following is a discussion of applicable requirements that were set forth in the plan and that may be applicable to the Project.

AB32 Cap and Trade Requirements: On October 20, 2011, CARB adopted the final cap-and-trade regulation. As part of finalizing the regulation, CARB considered the related environmental analysis (i.e., functional equivalent document to an EIR (CARB, 2011b)) and written responses to environmental comments. CARB also approved an adaptive management plan which will monitor progress of reductions and recommend corrective actions if progress is not as planned or there are unintended consequences in other environmental areas – e.g. concentration of local criteria pollutants. Oil and gas production facilities are potentially subject to declining emission caps under the AB32 cap and trade requirements. The cap and trade program covers stationary sources that emit over 25,000 MT of CO_2e of direct operational emissions. The approved Scoping Plan notes that combustion-related emissions from oil and gas production operations are proposed to be covered by the cap and trade program, but fugitive emissions are not proposed to be covered. CARB also noted that they would evaluate the future inclusion of fugitive methane emissions into the cap and trade program if adequate quantification methods are determined to exist. Electrical generation facilities are subject to cap and trade. The proposed Project is not projected to exceed 25,000 MT of direct operational emissions so the proposed Project would not be subject to these requirements. Should actual emissions rise above this threshold in the future, the cap and trade requirements of AB32 would become applicable.

AB32 – Other Measures Affecting Oil and Gas: The AB32 Scoping Plan also contains a control measure (Measure I-2: Oil and Gas Extraction GHG Emissions Reduction) for oil and gas facilities to further reduce their methane emissions from equipment leaks and vents. To date, CARB specified in December 2010 that enhanced measurements be undertaken by existing oil and gas facilities in advance of a potential requirement to further reduce methane emissions from operations. Two draft protocols were released covering the measurement of fugitive and vented gas emissions, and flash gas emissions. If finalized, these measurement protocols would apply to the proposed Project.

AB32 GHG Reporting Requirements: AB32 also specified mandatory reporting of GHG emissions from certain facilities in California. CARB's mandatory GHG reporting regulation, 17 CCR 95100-95133, is a set of rules that establishes who must report GHG emissions to CARB and sets forth the requirements for measuring, calculating, reporting and verifying those emissions. Industrial facilities are generally required to report their GHG emissions to the State annually, if they exceed 10,000 MT of direct CO_2e emissions from operations. The proposed Project is not expected to exceed this level of direct operational emissions, so the proposed Project would not be subject to these requirements.

Low Carbon Fuel Standard: Executive Order S-01-07 (January 18, 2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the Low Carbon Fuel Standard (LCFS) as a Discrete Early Action item under AB32, and the final regulation was adopted on April 23, 2009. The regulation went into effect on April 15, 2010, and requires a reduction in the carbon intensity of transportation fuels used in California by at least 10 percent by 2020.

The LCFS baseline of GHG emissions from transportation fuels was based on 2006 assumptions about life cycle carbon intensity values for gasoline and diesel fuel in the State as presented in CARB's LCFS rule justification package (Initial Statement of Reasons) from March 2009. The life cycle emissions for gasoline and diesel fuel were determined based on the mix of crude oil feedstocks sent to the refineries in California from oil produced in California, Alaska, and other foreign import sources. The proposed Project will incrementally increase California oil production and will potentially displace other higher carbon intensity imported crude oils at local refineries.

Senate Bill 1368 (GHG Emissions Standard for Baseload Generation): Senate Bill (SB) 1368 prohibits any retail seller of electricity in California from entering into a long-term financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant. This performance standard applies to electricity generated out-of-state as well as in-state, and to publicly-owned as well as investor-owned electric utilities. This requirement, along with renewable energy generation requirements, will substantially reduce utility sector GHG emissions by 2020.

Senate Bills 1078, 107, and 2 (Renewables Portfolio Standard): Established in 2002 under SB1078 and accelerated in 2006 under SB107, and again in 2011, California's Renewables Portfolio Standard requires retail suppliers of electric services to increase procurement from eligible renewable energy until they reach 33 percent by December 31, 2020.

Senate Bill 375 (Land Use Planning): SB375 provides for a new planning process to coordinate land use planning and regional transportation plans and funding priorities in order to help California meet the GHG reduction goals established in AB32. SB375 requires regional transportation plans, developed by Metropolitan Planning Organizations (including the Southern California Association of Governments (SCAG)) to incorporate a "sustainable communities strategy" in their regional transportation plans that will achieve GHG emission reduction targets set by CARB. SB375 also includes provisions for streamlined CEQA review for some infill projects such as transit oriented development. SB375 will be implemented over the next several years. SCAG adopted their 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and certified the Programmatic EIR supporting the RTP/SCS on April 4, 2012 (SCAG, 2012 and 2012a).

Energy Conservation Standard: Energy Conservation Standards for new residential and commercial buildings were originally adopted by the California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2008 (24 CCR Part 6). In general, Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR proposed Part 11) was adopted as part of the California Building Standards Code (24 CCR). Part 11 establishes voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. Some of these standards have become mandatory in the 2010 edition of Code.

Senate Bill 97 (CEQA Guidelines): SB97 required that the California Natural Resources Agency (CNRA) coordinate on the preparation of amendments to the CEQA Guidelines regarding feasible mitigation of GHG emissions or the effects of GHG emissions. Pursuant to SB 97, CNRA adopted CEQA Guidelines amendments on December 30, 2009, which became effective on March 18, 2010.

3.4.3.4 Local Regulations

Local Air Quality Management District (SCAQMD) Interim GHG Thresholds: On December 5, 2008, the SCAQMD Governing Board adopted a staff proposal for an interim GHG significance threshold using a tiered approach for stationary source and industrial projects where the SCAQMD is lead agency. The tiers are as follows:

Tier 1: Determine if CEQA categorical exemptions are applicable. If not move to Tier 2;

Tier 2: Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan (often called a Climate Action Plan) that has gone through public hearings and CEQA review, that has an approved inventory, includes monitoring, etc. If not move to Tier 3;

Tier 3: If a stationary source/industrial project's GHG emissions are less than or mitigated to less than 10,000 MT of CO_2e per year ($MTCO_2eq$/yr) the project is presumed to be less than significant for GHGs. If the project exceeds 10,000 $MTCO_2eq$/yr; move to Tier 5;

Tier 4: Was not adopted, remains under consideration;

Tier 5: Off-site mitigation for life of project (30 years), if this threshold is to be used, GHG emissions must be mitigated to less than the Tier 3 screening significance threshold. SCAQMD clarified that offsets should have a 30 year project life, should be real, quantifiable, verifiable, and surplus and will be considered in the following prioritized manner: (1) project design feature/onsite reduction measures; (2) offsite within neighborhood; (3) offsite within District; (4) offsite within state; (5) offsite out of state; and (6) substitution allowed via enforceable commitment (e.g., when an offset project ends prematurely).

If the proposed project cannot meet any of the Tiers, it is presumed to be significant for GHG emissions.

In addition to establishing interim GHG Thresholds, the SCAQMD has permitting authority for PSD of GHG sources as of January 2013 and has established regulations for GHG reduction programs. The proposed Project is not expected to be subject to GHG PSD permitting.

City of Carson: The City of Carson completed GHG inventories for municipal operations (October 2009) and for community wide emissions (March 2011). These inventories were prepared by the South Bay Cities Council of Governments (SBCCOG). SBCCOG is a joint powers authority of 16 local governments and the County. The SBCCOG, through its South Bay Environmental Services Center (SBESC), coordinates common environmental issues in the area, including energy efficiency, water conservation, and recycling. The SBESC has various alliances with the Los Agneles County Metropolitan Transportation Authority, West Basin Municipal Water District, Sanitation Districts of Los Angeles County, Southern California Edison, Los Angeles County Energy Program, The Gas Company of Southern California, and the Torrance Water Department. Through these alliances, the SBESC offers home energy-efficiency workshops, rebates and incentive programs to residents and businesses; assists cities in identifying and implementing energy and water savings projects; and promotes vanpooling and recycling programs.

The GHG inventories have noted the potential development of a Climate Action Plan to reduce emissions from municipal operations and from city wide activities. The issue of a Climate Action Plan was discussed by the City's Environmental Commission but to date, no policies specific to GHG emissions reductions have been adopted.

3.5 HAZARDS AND HAZARDOUS MATERIALS

3.5.1 INTRODUCTION

The NOP/IS (Appendix A of this EIR) concluded that the proposed Project could result in a potentially significant hazard impacts associated with the construction and operation of the oil and gas production facility, as well as the new pipelines that will transport hazardous materials.

Hazards at a facility can occur due to natural events, such as earthquakes, and non-natural events, such as mechanical failure or human error. A hazard analysis generally considers compounds or physical forces that can migrate off-site and result in acute health effects to individuals outside of the proposed Project site. The risk associated with a facility is defined by the probability of an event and the consequence (or hazards) should the event occur. The hazards can be defined in terms of the distance that a release would travel or the number of individuals of the public potentially affected by a maximum single event defined as a "worst-case" scenario. This section discusses existing hazards to the community from potential upset conditions associated with current operations in order to provide a basis for evaluating the changes in hazards posed by the proposed Project.

3.5.2 TYPES OF HAZARDS

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facility. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions. Typical industrial hazards are defined in the following subsections.

3.5.2.1 Toxic Gas Clouds

Toxic gas clouds may result from releases of chemicals (e.g., hydrogen sulfide) that could form a vapor cloud and migrate off-site, thus exposing individuals. Conditions that result in "worst-case" impacts tend to arise when very low wind speeds coincide with accidental releases, which can allow the chemicals to accumulate rather than disperse.

3.5.2.2 Torch Fires (gas and liquefied gas releases), Flash Fires (liquefied gas releases), Pool Fires, and Vapor Cloud Explosions (gas and liquefied gas releases)

The rupture of a storage tank containing a flammable gaseous material (like natural gas), without immediate ignition, can result in a vapor cloud explosion. The "worst-case" upset assumes that a release occurs and produces a large aerosol cloud with flammable properties. If the flammable cloud does not ignite after dispersion, the cloud would simply dissipate. If the flammable cloud were to ignite during the release, a flash fire or vapor cloud explosion could occur. If the flammable cloud were to ignite immediately upon release, a torch fire would ensue.

3.5.2.3 Thermal Radiation

Thermal radiation is the heat generated by a fire and the potential impacts associated with exposure. Exposure to thermal radiation would result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual from the fire.

3.5.2.4 Explosion/Overpressure

Explosions may occur if the flammable/explosive vapors came into contact with an ignition source (e.g., process vessels containing flammable explosive vapors that would come into contact with an ignition source.) An explosion could cause impacts to individuals and structures in the area due to overpressure.

3.5.2.5 Boiling Liquid-Expanding Vapor Explosion (BLEVE)

Explosions may occur if a pressurized vessel containing a liquid is above the boil point of the liquid. The pressure created from gas generated during boiling increase the pressure within the vessel until the vessel ruptures causing all of the liquid to boil and expand so quickly to be classified as an explosion.

3.5.3 FACILITY HAZARDS

3.5.3.1 Oil Drilling and Production Well Hazards

The potential hazards associated with oil drilling and production well activities are a function of the oil field conditions (e.g., reservoir pressure, prior production activity), procedures used, and maintenance of the equipment used. The types of hazards associated with oil drilling are described below.

3.5.3.1.1 Loss of Control of Produced Fluids

When drilling an oil well, control of the fluids produced from the oil reservoir is primary source of potential hazards. When fluids associated with drilling are not controlled potential hazards similar to pipeline and process hazards can occur.

A common image associated with oil drilling is a geyser of oil and gas mixture rising from the drilling location (referred to as a blow-out). The potential hazards associated with a blow-out include a torch fire from the produced gas or a pool fire from the produced oil. Historical records indicate that early in the development of the Dominguez Oil Field, prior to 1926, five blowouts occurred (Mearns, 2013). No other blowouts have been documented. For a blow-out to occur, the pressure in the formation has to be great enough to force fluids to the surface. For oil fields that have been extensively operated, as in the case of the Dominguez Oil Field, the pressure in the reservoir drops, such that pressure is below that of hydrostatic pressure and pumps are required to produce fluids from the well; therefore, a blow-out would not be expected to occur.

Additionally, blow-out preventers (ram type) have been used in oil exploration since the early 1920's with advances in the technology occurring in the 1950's (annular type) and the 1970's (spherical type). Wells installed today are equipped with a blow-out prevention system, which is a combination of different types (usually consisting of a shear ram, a blind ram, and an annular) (American Oil and Gas Historical Society, 2013). The blow-out prevention system serves a number of functions besides the emergency shutoff of the well, including confining fluids in the well allowing for a contained system for adding or withdrawing fluids during well drilling.

3.5.3.1.2 Soil and Groundwater Contamination

Historically, drilling muds used to install oil wells were stored in open pits (referred to as mud sumps) adjacent to the drilling rig. The RWQCB established regulations prohibiting this practice (14 CCR 1775). In compliance with DOGGR and RWQCB regulations, drilling muds, which can contain petroleum hydrocarbons from the subsurface, are required to be stored in aboveground leak-proof containers. Prior to development of the Dominguez Technology Centre, historical drilling mud sumps were excavated and remediated under the oversight of the RWQCB. The two test wells installed in 2011 included the use of aboveground tanks to store the drilling muds. Once drilling was complete the drilling muds were transported from the site to an appropriate disposal facility. Use of aboveground storage for drilling mud eliminates the potential for subsurface contamination.

3.5.3.1.3 Damage to Existing Abandoned Oil Wells

According to DOGGR records, there are 600 abandoned oil wells associated with the Dominguez Oil Field. The potential hazard associated with damaging existing abandoned oil wells would be to compromise the abandoned well such that natural gas or oil/water could migrate from the oil reservoir via the abandoned oil well.

3.5.3.2 Pipeline Hazards

The U.S. DOT Pipeline and Hazardous Material Safety Administration (PHMSA), keeps detailed pipeline incident and mileage reports to chart fatalities, injuries, property damage, and loss of barrels of product resulting from pipeline incidents.

Pipeline accident events, referred to as “significant incidents” by the PHMSA, include all incidents reported by a pipeline operator when any of the following conditions are met: (1) fatality or injury requiring in-patient hospitalization (also referred to as a “serious incident”); (2) $50,000 or more in total costs; (3) highly volatile liquid releases of five barrels or more or other liquid releases of 50 barrels or more; and/or (4) liquid releases resulting in an unintentional fire or explosion.

Table 3.5-1 shows the total number of incidents each year between 2003 and 2012 for onshore hazardous liquid pipelines, including crude oil and petroleum products, in California. The 10-year total (2003 - 2012) reported 268 incidents, one of which resulted in fatalities and two of which resulted in serious injuries. These 268 significant incidents resulted in 36,161 gross barrels spilled, and a net loss of 12,105 barrels (barrels not recovered). According to the U.S. DOT Incident and Mileage Reports, California contains 6,525 miles of hazardous liquid pipeline, transporting primarily crude oil and petroleum products.

As shown in Table 3.5-1, over a 10-year period (2003 - 2012), the U.S. DOT reported 87 “significant” accidents over 6,525 miles of hazardous liquid pipeline in California. Therefore, the accident rate was 0.00133 accidents per mile of hazardous liquid pipeline per year.[1] “Serious” incidents (those resulting in fatality or serious injury) accounted for two accidents (resulting in five fatalities and four injuries) over the 10-year period (2003 - 2012) over 6,525 miles of hazardous liquid pipeline in California, or an accident rate of 0.000031 per mile of hazardous liquid pipeline per year. The data demonstrates that the rate of risk of hazardous liquid pipeline accidents resulting in serious injury, or fatality is very low.

Table 3.5-2 shows the number of incidents each year between 2003 and 2012 for natural gas pipelines in California. The 10-year total (2003 - 2012) reported 212 total incidents, and 91 “significant” incidents, 14 of which resulted in fatalities. According to the U.S. DOT Incident and Mileage Reports, California contains about 115,000 miles of pipeline in natural gas service (including gas transmission, gas gathering, and gas distribution). Therefore, the accident rate was 0.000079 accidents per mile of hazardous liquid pipeline per year.

[1] The significant and serious accident rates associated with hazardous liquid pipelines are calculated by dividing the total number of incidents by the duration of the study divided by the total number of hazardous liquid pipelines miles (e.g., [87/10]/6,525 = 0.00133)

"Serious" incidents (those resulting in fatality or serious injury) accounted for 18 accidents (resulting in 14 fatalities and 68 injuries) over the 10-year period (2003-2012) over about 115,000 miles of pipeline in California, or an accident rate of 0.000016 per mile of hazardous liquid pipeline per year. The data demonstrates that the rate of risk of pipeline accidents resulting in serious injury, or fatality is very low.

TABLE 3.5-1

California Hazardous Liquid Onshore Pipeline Incidents (2003 – 2012)

Year	Number	Serious	Significant	Fatalities	Injuries	Gross Barrels Spilled	Net Barrels Lost
2003	31	1	12	0	1	4,260	889
2004	34	1	9	5	3	8,543	4,655
2005	28	0	13	0	0	7,265	3,468
2006	33	0	13	0	0	3,954	1,704
2007	32	0	7	0	0	1,214	193
2008	30	0	11	0	0	8,596	854
2009	19	0	2	0	0	294	26
2010	15	0	6	0	0	981	162
2011	24	0	8	0	0	272	127
2012	22	0	6	0	0	777	22
Totals	268	0	87	5	4	36,161	12,105
2013 YTD	7	2	1	0	0	21	1
3 Year Average (2010 – 2012)	**20**	**0**	**7**	**0**	**0**	**677**	**104**
5 Year Average (2008 – 2012)	**22**	**0**	**7**	**0**	**0**	**2,185**	**239**
10 Year Average (2003 – 2012)	**27**	**0**	**9**	**1**	**0**	**3,616**	**1,211**

Source: U.S. DOT, PHMSA, 2013.

Notes: Net Barrels Lost applies only to Liquid incidents and is the difference between Gross Barrels Spilled and Barrels Recovered

TABLE 3.5-2

California Natural Gas Pipeline Incidents (2003 – 2012)

Year	Number	Serious	Significant	Fatalities	Injuries
2003	18	4	13	2	3
2004	14	0	6	0	0
2005	21	1	14	0	1
2006	24	2	9	0	2
2007	23	4	13	0	5
2008	29	4	10	1	5
2009	29	0	6	0	0
2010	21	1	5	8	51
2011	12	0	6	0	0
2012	21	2	9	3	1
Totals	212	18	91	14	68
2013 YTD	11	0	8	0	0
3 Year Average (2010 – 2012)	**18**	**1**	**6**	**4**	**17**
5 Year Average (2008 – 2012)	**22**	**1**	**7**	**3**	**11**
10 Year Average (2003 – 2012)	**22**	**2**	**9**	**2**	**7**

Source: PHMSA, 2013.

The PHMSA Pipeline Safety Program reported that “serious” incidents on pipeline systems throughout the nation, between 1993 and 2012, were caused by numerous factors. Various incidents resulted from corrosion (5.6 percent), excavation damage (33.2 percent), incorrect operation (12.3 percent), weld/equipment failure (6.7 percent), natural force damage (5.5 percent), other outside force damage (7.7 percent), and all other causes (28.6 percent). To assist states in reducing the risk of significant and serious pipeline incidences, the PHMSA has developed guidance entitled “Strengthening State Damage Prevention Programs.” The guidance draws on the nine elements of effective damage prevention specified in the Pipeline Integrity, Protection, Enforcement, and Safety Act of 2006, and provides grant opportunities and public awareness programs to states to implement damage prevention programs. Stringent safety measures, technological advancements, and careful regulation are reported to account for the low risk of a “significant” or “serious” accident associated with pipelines today.

3.5.3.3 Transportation Hazards

The transportation of hazardous substances poses a potential for fires, explosions, and hazardous materials releases. In general, the greater the vehicle miles traveled, the greater the potential for an accident. Statistical accident frequency varies, (especially for truck transport), and is related to the relative accident potential for the travel route since some freeways and streets are safer than others. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure, e.g., rupture or leak. The potential consequences of the accident are related to the size of the release, the population density at the location of the accident, the specific release scenario, the physical and chemical properties of the hazardous material, and the local meteorological conditions.

The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway; presence of road hazards; vehicle type; maintenance and physical condition; and driver training. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality.

Every time hazardous materials are moved from the site of generation, there are opportunities for accidental (unintentional) releases. The U.S. DOT conducted a study on the comparative risks of hazardous materials and non-hazardous materials and non-hazardous materials truck shipment accidents and incidents. The Federal Motor Carrier Safety Administration (FMCSA) compared risks of hazardous materials truck shipment accidents and incidents to non-hazardous materials truck shipment accidents and incidents (FMCSA, 2001). The estimated accident rate for trucks (shipping non-hazardous materials) was 0.73 per million miles traveled. The average accident rate for trucks transporting hazardous materials (all hazard classes) was estimated to be 0.32 per million miles traveled (FMCSA, 2001, Table 24). Not all accidents involving hazardous materials transport result in releases of hazardous materials. For flammable materials (hazard class 2.1), only 47 involved releases (FMCSA, 2001, Table 10). The average accident rate for trucks carrying flammable materials involving a release (hazard class 2.1), such as NGLs, was estimated to be 0.06 per million miles traveled (47/805,000,000) (FMCSA, 2001, Table 10 and 24). Though it is difficult to compare hazardous and non-hazardous transport risk, the differences appear to be significant enough to conclude that the magnitude of non-hazardous transport accidents dominates highway transport risk. The specific hazardous material trucking regulations and additional care provided by carriers and shippers of hazardous materials appear to be reducing the accident rate for hazardous material shipments (FMCSA, 2001).

The County of Los Angeles has developed criteria to determine the safest transportation routes. Some of the factors which need to be considered when determining the safest direct routes include traffic volume, vehicle type, road capacity, pavement conditions, emergency response capabilities, spill records, adjacent land use, and population density. In managing the risk involved in the transportation of hazardous materials, all these factors must be considered.

The actual occurrence of an accidental release of a hazardous material associated with a traffic accident cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and residential areas into account.

3.5.4 SENSITIVE RECEPTORS

Sensitive receptors are those land uses that are more susceptible to hazards, or are more acutely impacted by potential hazards. In general, children, medical patients, and residents fall into this category. Therefore, residential areas, schools, and healthcare facilities are the most sensitive land uses with respect to hazards relating to hazardous materials and wastes. The nearest sensitive receptors to the facility are a residential development to the northwest and California State University Dominguez Hills student housing to the west approximately 1,800 feet from the facility.

3.5.5 REGULATORY BACKGROUND

Incidents of harm to human health and the environment associated with hazardous materials have created a public awareness of the potential for adverse effects from careless handling and/or use of these substances. As a result, a number of federal, state, and local laws have been enacted to regulate the use, storage, transportation, and management of hazardous materials and wastes. The following subsections outline pertinent regulations and agency oversight that direct the use, handling, transportation, storage, and remediation of hazardous materials and wastes, including petroleum products.

3.5.5.1 Federal Regulations

3.5.5.1.1 Emergency Planning and Community Right-to-Know Act (EPCRA)

The objective of the Emergency Planning and Community Right-To-Know Act (EPCRA) is to: (1) allow state and local planning for chemical emergencies, (2) provide for notification of emergency releases of chemicals, and (3) address communities' right-to-know about toxic and hazardous chemicals. EPCRA Section 302 requires facilities to notify the State Emergency Response Commission and any Local Emergency Response Committees of the presence of any "extremely hazardous substance" (the list of such substances is in 40, CFR Part 355) if it has such a substance in excess of the substance's threshold planning quantity, and directs the facility to appoint an emergency response coordinator. Implementation of the Act has been delegated to the State of California. The California Emergency Management Agency requires businesses to develop a Hazardous Materials Business Plan if they handle (including storage) hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Plan includes inventories of hazardous materials, an emergency plan, and implements a training program for employees. This plan is provided to State and local emergency response agencies.

3.5.5.1.2 Hazardous Materials Transportation Act

The Hazardous Material Transportation Act (HMTA) was published in 1975 and is implemented by the U.S. EPA. Its primary objective is to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce by improving the regulatory and enforcement authority of the Secretary of Transportation. A hazardous material, as defined by the Secretary of Transportation is, any "particular quantity or form" of a material that "may pose an unreasonable risk to health and safety or property." U.S. EPA regulates this program and requires notification of transport of hazardous materials and sets standards for transport.

3.5.5.1.3 Hazardous Materials and Waste Regulations

Resource Conservation and Recovery Act: The Resource Conservation and Recovery Act of 1976 authorizes the U.S. EPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. In 1984, the Resource Conservation and Recovery Act was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by the U.S. EPA, more strict hazardous waste standards, and a comprehensive underground storage tank program. Likewise, the Hazardous and Solid Waste Amendments focused on waste reduction and corrective action for hazardous releases. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Amendments. Individual states may implement their own hazardous waste programs under the Resource Conservation and Recovery Act, with approval by the U.S. EPA.

Occupational Safety and Health Administration Regulations: The Occupational Safety and Health Administration regulations, intended to create a safe workplace, are found at 29 CFR Part 1910, Subpart H, and include procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste. Pertinent sections of Subpart H include § 1910.106 (Flammable and Combustible Liquids) and § 1910.120 (Hazardous Waste Operations and Emergency Response).

The Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning, for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities as specified by §§ 1910.120(a)(1)(i-v) and 1926.65(a)(1)(i-v).

Comprehensive Environmental Response, Compensation and Liability Act: The Comprehensive Environmental Response, Compensation, and Liability Act, which is often commonly referred to as Superfund, is a federal statute that was enacted in 1980 to address abandoned sites containing hazardous waste and/or contamination. The Comprehensive Environmental Response, Compensation, and Liability Act was amended in 1986 by the Superfund Amendments and Reauthorization Act, and by the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

The Comprehensive Environmental Response, Compensation, and Liability Act establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; establishes liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified. The trust fund is funded largely by a tax on the chemical and petroleum industries. The Comprehensive Environmental Response, Compensation, and Liability Act also provides federal jurisdiction to respond directly to releases or impending releases of hazardous substances that may endanger public health or the environment.

3.5.5.1.4 Oil Production and Pipeline Regulations and Oversight

Oil Pollution Act: The Oil Pollution Act was signed into law in 1990 to give the federal government authority to better respond to oil spills. The Oil Pollution Act improved the federal government's ability to prevent and respond to oil spills, including provision of money and resources. The Oil Pollution Act establishes polluter liability, gives states enforcement rights in navigable waters of the State, mandates the development of spill control and response plans for all vessels and facilities, increases fines and enforcement mechanisms, and establishes a federal trust fund for financing clean-up.

The Oil Pollution Act also establishes the National Oil Spill Liability Trust Fund to provide financing for cases in which the responsible party is either not readily identifiable, or cannot pay the cleanup/damage costs. In addition, the Oil Pollution Act expands provisions of the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan, requiring the federal government to direct all public and private oil spill response efforts. It also requires area committees, composed of federal, state, and local government officials, to develop detailed, location-specific area contingency plans. In addition, the Oil Pollution Act directs owners and operators of vessels, and certain facilities that pose a serious threat to the environment, to prepare their own specific facility response plans. The Oil Pollution Act increases penalties for regulatory non-compliance by responsible parties; gives the federal government broad enforcement authority; and provides individual states the authority to establish their own laws governing oil spills, prevention measures, and response methods.

U.S. Department of Transportation, Office of Pipeline Safety: The Office of Pipeline Safety, within the U.S. DOT, PHMSA, has jurisdictional responsibility for ensuring the safe and secure movement of hazardous liquid and gas pipelines under its jurisdiction in the United States. Title 49 of the U.S.C. relates to the role of transportation, including pipelines, in the United States. 49 CFR Parts 190-199 establishes minimum pipeline safety standards. The Office of the State Fire Marshal works in partnership with the Federal Pipeline and Hazardous Materials Safety Administration to assure pipeline operators are meeting requirements for safe, reliable, and environmentally sound operation of their facilities for intrastate pipelines within California.

49 CFR Part 190 – Pipeline Safety Procedures: 49 CFR Part 190 outlines the pipeline safety programs and rule making procedures utilized by the Pipeline and Hazardous Materials Safety Administration under Title 49 U.S.C. 60101 et seq. (pipeline safety laws) and Title 49 U.S.C. 5101 et seq. (hazardous material transportation laws).

49 CFR Part 194 – Response Plans for Onshore Oil Pipelines: 49 CFR Part 194 outlines requirements for oil spill response plans to reduce/mitigate the environmental impact of oil discharges from onshore oil pipelines. 49 CFR Part 194 covers general response plan requirements as well as reporting and approval procedures for onshore oil pipelines.

49 CFR Part 195 – Transportation of Hazardous Liquids by Pipeline 49 CFR Part 195 contains regulations authorized by the Hazardous Liquid Pipeline Safety Act of 1979 for the design, construction, testing, operation, and maintenance of pipelines, including pressure testing requirements for pipeline components (valves, pumps, and tie-ins) as well as above ground breakout tanks. 49 CFR Part 195 also prescribes safety standards and reporting requirements for pipeline facilities used in the transportation of hazardous liquids or carbon dioxide, and outlines procedures for pipeline facility operations and maintenance, including but not limited to, qualifications of pipeline personnel and pipeline corrosion control. Because the requirements found within 49 CFR Part 195 are applicable only to interstate pipelines, the proposed pipelines would be regulated by the California Pipeline Safety Act and the Pipeline Safety Division of the Office of the State Fire Marshal.

49 CFR Part 195(b) – Hazardous Liquid Accident Database: 49 CFR Part 195(b) requires liquid pipeline operators to report any spills and/or accidents to the U.S. DOT if they meet one or more of the following criteria: (1) explosion or fire not intentionally set by the operator; (2) loss of 50 or more barrels of hazardous liquid or carbon dioxide; (3) escape to the atmosphere of more than 5 barrels a day of highly volatile liquids; (4) death of any person; (5) bodily harm to any person resulting in loss of consciousness, a person is required to be carried from the scene, a person requires medical treatment; or a person is disabled and prevented from normal duties or the pursuit of normal activities beyond the day of the accident; or (6) estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding $50,000.

3.5.5.1.5 Other Federal Regulations

Chemical Facility Anti-Terrorism Standards: The Federal Department of Homeland Security established the chemical facility anti-terrorism standards in 2007. This rule established risk-based performance standards for the security of chemical facilities. It requires covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement Site Security Plans.

Underground Injection Control Program: Underground Injection Control Program administered by the U.S. EPA regulates the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal. In 1974, Congress passed the Safe Drinking Water Act, part of which required EPA to report back to Congress on waste disposal practices, and develop minimum federal requirements for injection practices that protect public health by preventing injection wells from contaminating underground sources of drinking water. Oil and gas production injection wells (Class II wells) are regulated and DOGGR has primary authority for implementing and enforcing the regulations, which include construction, operating, monitoring and testing, reporting, and closure requirements for well owners or operators.

Process Safety Management (29 CFR 1910.119): Under this section, facilities that use, store, manufacture, handle, process, or move hazardous materials are required to conduct employee safety training; have an inventory of safety equipment relevant to potential hazards; have knowledge on use of the safety equipment; prepare an illness prevention program; provide hazardous substance exposure warnings; prepare an emergency response plan; and prepare a fire prevention plan. In addition, 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals, specifically requires prevention program elements to protect workers at facilities that have toxic, flammable, reactive, or explosive materials. Prevention program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan.

Emergency Action Plans (29 CFR 1910.38): Under this section, facilities that are required to have fire extinguishers must also have an emergency action plan to ensure the safe response to emergencies. The purpose of an emergency action plan is to facilitate and organize employer and employee actions during workplace emergencies.

Spill Prevention, Control, and Countermeasure (SPCC) Rule (40 CFR Part 112): The SPCC rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans. SPCC Plans require applicable facilities to take steps to prevent oil spills including: (1) using suitable storage containers/tanks; (2) providing overfill prevention, e.g., high-level alarms; (3) providing secondary containment for bulk storage tanks; (4) providing secondary containment to catch oil spills during transfer activities; and (5) periodically inspecting and testing pipes and containers. The SPCC rule is part of the Oil Pollution Prevention regulations.

3.5.5.2 State Regulations

3.5.5.2.1 Hazardous Materials and Waste Regulations

California Hazardous Waste Control Law: The California Hazardous Waste Control Law is administered by the California Environmental Protection Agency (CalEPA) to regulate hazardous wastes within the State of California. While the California Hazardous Waste Control Law is generally more stringent than the Resource Conservation and Recovery Act, both the state and federal laws apply in California. The California Department of Toxic Substances Control (DTSC) is the primary agency in charge of enforcing both the federal and state hazardous materials laws in California. The DTSC regulates hazardous waste, oversees the cleanup of existing contamination, and pursues avenues to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California under the authority of the Resource Conservation and Recovery Act, the California Hazardous Waste Control Law, and the California Health and Safety Code. Under the direction of the CalEPA, the DTSC maintains the Cortese and Envirostor databases of hazardous materials and waste sites as specified under Government Code § 65962.5.

The Hazardous Waste Control Law (22 CCR Chapter 11, Appendix X) also lists 791 chemicals and approximately 300 common materials which may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

California Occupational Safety and Health Administration: The California Occupational Safety and Health Administration (CalOSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. The CalOSHA requires the employer to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. The CalOSHA standards are generally more stringent than federal regulations.

Hazardous Materials Release Notification: Many state statutes require emergency notification of a hazardous chemical release, including:

- California Health and Safety Code §§ 25270.7, 25270.8, and 25507;
- California Vehicle Code § 23112.5;
- California Public Utilities Code § 7673 (General Orders #22-B, 161);

- California Government Code §§ 51018 and 8670.25.5(a);
- California Water Code §§ 13271 and 13272; and,
- California Labor Code § 6409.1(b)10.

California Accident Release Prevention (CalARP) Program: The California Accident Release Prevention Program (19 CCR Division 2, Chapter 4.5) requires the preparation of Risk Management Plans (RMPs). RMPs are documents prepared by the owner or operator of a stationary source containing detailed information including: (1) regulated substances held onsite at the stationary source; (2) offsite consequences of an accidental release of a regulated substance; (3) the accident history at the stationary source; (4) the emergency response program for the stationary source; (5) coordination with local emergency responders; (6) hazard review or process hazard analysis; (7) operating procedures at the stationary source; (8) training of the stationary source's personnel; (9) maintenance and mechanical integrity of the stationary source's physical plant; and (10) incident investigation.

Hazardous Materials Disclosure Program: The Unified Program administered by the State of California consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Materials Release Response Plans and Inventories (business plans), the California Accidental Release Prevention Program, and the Underground Storage Tank Program. The Unified Program is implemented at the local government level by Certified Unified Program Agencies (CUPAs). The Los Angeles County Fire Department is the CUPA for the entire County except in the cities of El Segundo, Glendale, Long Beach, Los Angeles, Santa Fe Springs, Santa Monica, and Vernon, where these cities are CUPAs within their own jurisdictions.

Hazardous Materials Management Act: The State of California (California Health and Safety Code Division 20, Chapter 6.95) requires any business that handles more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a Hazardous Materials Business Plan to its Certified Unified Program Agency. Business plans must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel. The requirements for hazardous materials business plans are specified in the California Health and Safety Code and 19 CCR.

Hazardous Materials Transportation in California: California regulates the transportation of hazardous waste originating or passing through the State in Title 13, CCR. The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams at locations throughout the State.

3.5.5.2.2 Oil Production and Pipeline Regulations and Oversight

Overview of California Pipeline Safety Regulations: State of California laws found at Part 51010 through 51018 of the Government Code provide specific safety requirements, including: (1) periodic hydrostatic testing of pipelines, with specific accuracy requirements on leak rate determination; (2) hydrostatic testing by state-certified independent pipeline testing firms; (3) pipeline leak detection; and, (4) reporting of all leaks. Recent amendments require pipelines to include means of leak prevention and cathodic protection, with acceptability to be determined by the State Fire Marshal. All new pipelines must also be designed to accommodate passage of instrumented inspection devices (smart pigs) through the pipeline.

Department of Conservation Division of Oil, Gas, and Geothermal Resources: DOGGR was formed in 1915 to regulate oil and gas production activities with uniform laws and regulations. DOGGR supervises the drilling, operation, maintenance, and plugging and abandonment of onshore and offshore oil, gas, and geothermal wells, preventing damage to: (1) life, health, property, and natural resources; (2) underground and surface waters suitable for irrigation or domestic use by the infiltration of, or the addition of, detrimental substances; and (3) oil, gas, and geothermal reservoirs. DOGGR regulations address issues such as well spacing, blow-out prevention devices, casing requirements, plugging and abandonment of wells, maintenance of facilities and safety systems, inspection frequency and reporting requirements. In addition, DOGGR publishes a number of instruction manuals related to testing of oil and gas wells (M06), blow-out prevention requirements (M07), and drilling wells in a hydrogen sulfide environment (M10). 14 CCR Division 2, Chapter 4, Section 1774 specifies oilfield maintenance practices related to oil field facilities.

Oil Pipeline Environmental Responsibility Act (California Civil Code Section 3333.4): This Act requires every pipeline corporation qualifying as a public utility and transporting crude oil in a public utility oil pipeline system to be held strictly liable for any damages incurred by "any injured party which arise out of, or are caused by, the discharge or leaking of crude oil or any fraction thereof." This would include the

Crimson Pipeline that the project would utilize to transport crude oil from the facility to area refineries.

3.5.5.3 Local Regulations

South Coast Air Quality Management District – Rule 1166: SCAQMD Rule 1166 establishes requirements to control the emission of VOCs from excavating, grading, handling, and treating soil contaminated from leakage, spillage, or other means of VOCs deposition. Rule 1166 stipulates that any parties planning on excavating, grading, handling, transporting, or treating soils contaminated with VOCs must first apply for and obtain, and operate pursuant to, a mitigation plan approved by the Executive Officer prior to commencement of operation. BACT is required during all phases of remediation of soil contaminated with VOCs. Rule 1166 also sets forth testing, record keeping and reporting procedures that must be followed at all times. Non-compliance with Rule 1166 can result in the revocation of the approved mitigation plan, the owner and/or the operator being served with a Notice of Violation for creating a public nuisance, or an order to halt the offending operation until the public nuisance is mitigated to the satisfaction of the Executive Officer.

City of Carson (Los Angeles County Fire Department): Fire protection services within the City of Carson are provided by the Los Angeles County Fire Department (LACFD). The LACFD employs two units to respond to onsite hazardous materials incidents: a Petroleum Chemical Unit and a Hazardous Materials Division. The Petroleum Chemical Unit employs six inspectors managed by a Captain and Battalion Chief, who are tasked with enforcing the Los Angeles County Fire Code. They provide infrastructure design review and approval, as well as inspection services for oil infrastructure projects. The Petroleum Chemical Unit requires submittal of a Hazardous Materials Business Plan, including a Site Mitigation Plan, during the project approval process. Inspections include ensuring proper operation of all equipment and facilities.

In the event of an explosion onsite, the Health Hazardous Material Division of the LACFD would respond. Historically, the LACFD has dispatched six Hazardous Materials Squads within Los Angeles County that have responded to approximately 2,174 emergency incidents between 2008 and 2010 (LACFD, 2011). All Hazardous Material Specialists employed by the LACFD are sworn and badged Los Angeles County Deputy Health Officers. The Health Hazardous Materials Division of LACFD is responsible for protecting public health and the environment from accidental releases and improper handling, storage, transportation, and disposal of hazardous materials and wastes through coordinated efforts of inspections, emergency response, enforcement, and site mitigation oversight.

The Health Hazardous Materials Division is a Certified Unified Program Agency and can administer the following programs throughout the County: (1) Hazardous Waste Generator Program; (2) Hazardous Materials Release Response Plans and Inventory

Program; (3) California Accidental Release Prevention Program; (4) Above Ground Storage Tank Program, and (5) Underground Storage Tank Program.

City of Carson Safety Element: The City of Carson Safety Element provides guidance on the hazards associated with hazardous materials and oil and gas facilities. The Safety Element also provides an overview of hazardous facility regulation and emergency response procedures.

3.6 HYDROLOGY AND WATER QUALITY

The NOP/IS (see Appendix A of this EIR) concluded that the proposed Project could result in potentially significant surface and ground water quality impacts associated with the handling, storage, treatment and reinjection of water and wastewater. The environmental setting for these topics are included herein. No significant impacts are expected due to alteration of drainage patterns, volume of surface water runoff, flooding, or inundation by seiche, tsunami, or mudflow.

3.6.1 SURFACE WATER HYDROLOGY AND WATER QUALITY

3.6.1.1 Precipitation

The Dominguez watershed is situated within the coastal plain of Los Angeles County with an average annual precipitation of 15.5 inches. The average annual precipitation at the proposed Project site is estimated to be 12.1 inches (Los Angeles County Department of Public Works (LACDPW), 2012). Most precipitation occurs between December and March. Precipitation during summer months is infrequent.

3.6.1.2 Regional Surface Water Hydrology

The proposed Project is located within the Dominguez Watershed of the greater Los Angeles River Drainage Basin in Los Angeles County. This watershed is drained by the Dominguez Channel, located southwest of the proposed Project site. The Dominguez Channel originates in the area of the Los Angeles International Airport and flows southward into the East Channel of the Los Angeles Harbor. The Dominguez Watershed drains approximately 133 square miles in southwestern Los Angeles County. The watershed drains all or portions of the cities of Carson, Compton, El Segundo, Gardena, Hawthorne, Inglewood, Lawndale, Lomita, Long Beach, Los Angeles, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and Torrance (LACDPW, 2004). Permitted discharges from industrial sources are a substantial percentage of the persistent flows in the Dominguez Channel. Development in the watershed is approximately 40 percent residential, and 41 percent mixed industrial, commercial, and transportation uses. The Dominguez Channel drains into the Inner Harbor via the Consolidated Slip and both of these water bodies are on the current list of waters that are impaired (i.e., are water bodies with chronic or recurring monitored violations of the applicable numeric and/or narrative water quality criteria). The reasons for impairment of these water bodies are summarized in Table 3.6-1.

To protect water resources, total maximum daily loads (TMDLs) are being developed on a watershed-wide basis throughout the country. The TMDL program is a federal program under the Clean Water Act that is being implemented jointly by the U.S. EPA and the RWQCBs in California. A TMDL is a number that represents the assimilative capacity of receiving water to absorb a pollutant. The TMDL is the sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, plus an allotment for natural background loading, and a margin of safety. A TMDL is implemented by reallocating the total allowable pollutant load among the different pollutant sources, typically through the NPDES permitting process, to ensure that the water quality objectives in a given water body are achieved. TMDLs are currently being developed for the listed pollutants within the estuary portion of the Dominguez Watershed, including the Los Angeles/Long Beach Harbors (SWRCB, 2010).

TABLE 3.6-1

Description of Impaired Waters

Water Body	Impairments
Dominguez Channel – Unlined Portion Below Vermont Avenue (140 acres)	Benthic Community Effects, Coliform Bacteria, Sediment Toxicity Ammonia, Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, PCBs, Phenanthrene, Pyrene Tissue: Chlordane, DDT, Dieldrin, Lead Sediment: DDT, Zinc
Los Angeles Harbor – Consolidated Slip (36 acres)	Benthic Community Effects, Sediment Toxicity 2-Methylnaphthalene, Benzo(a)pyrene, Benzo(a)anthracene, Chrysene, Dieldrin, Phenanthrene, Pyrene Tissue: Chlordane, DDT, PCBs, Toxaphene Sediment: Cadmium, Chlordane, Chromium, Copper, DDT, Lead, Mercury, PCBs, Zinc

Source: State Water Resources Control Board, 2010

3.6.1.3 Stormwater Runoff

The runoff from the Project site is conveyed into and through the existing storm drains along Bishop Avenue and Charles Willard Street, west and south of the Project site

(LACDPW, 2013). There is a retention basin approximately 1.6 acres in size located south of and adjacent to the site. This retention basin is designed to contain the 100-year flood event and drains approximately 60 acres in the adjacent Industrial Park including the 6.5 acre site. The retention basin has an outlet at its western end and in an extreme storm event, drains south west to the Dominguez Channel, approximately 400 feet downstream.

Estimates of existing stormwater runoff were calculated following the Modified Rational Method outlined in the LACDPW Hydrology Manual (LACDPW, 2006). The LACDPW Time of Concentration spreadsheet was used to estimate time of concentrations and peak runoff rates associated with the on-site runoff rates in a very simplified watershed. The runoff discharge rates were computed as follows:

- The on-site drainage area and the retention basin subwatershed were computed using Google Earth Pro, available topography, and Los Angeles County GIS information on storm-drains, sewer drains, and other outfalls.

- Rainfall information was determined using the LACDPW Hydrology Manual Appendix B isohyetal maps for Torrance, Inglewood, and Southgate (LACDPW 2006).

- The site was assumed to be 100 percent impervious (existing condition), and the overland flow path was characterized with a 600-ft length and one percent slope.

- The peak runoff was calculated using the LACDPW Time of Concentration spreadsheet as:

$$Q = C*I*A$$

where, Q is the peak flow (cfs), C is a dimensionless runoff coefficient, I is the rainfall intensity at a given point in time (inches/hour), and A is the watershed area (acres).

Under existing conditions, the estimated runoff from the proposed Project site area to the storm-drain and retention basin south of the site ranges from 4.51 cubic feet per second (cfs) for a two-year event to 18.13 cfs for a 100-year event (Column 2 of Table 3.6-2). Total runoff from the entire industrial park ranges from 45 to 205 cfs for storms ranging from 2-year to 100-year events. The existing runoff from the proposed Project site is roughly nine percent of the total runoff from the Dominguez Hills Technology Centre that drains to the retention basin south of the site (Column 4 of Table 3.6-2).

3.6.1.4 Surface Water Quality

Surface water quality may be impacted by pollutants discharged directly into receiving waters. Industrial flows discharged from manufacturing, cleaning, or cooling operations, and activities such as dewatering of groundwater encountered during construction can usually be directed to an outfall or pipe and are categorized as "point sources."

TABLE 3.6-2

Estimated Stormwater Runoff from the Proposed Project Site under Existing Conditions

Frequency (years)	Runoff Flow from the Project Site (cfs)	Maximum Runoff Flow Draining to the Retention Basin from the Entire Industrial Park (cfs)	Percentage of Runoff from Project Site Relative to Total Draining from Industrial Park (%)
2	4.51	45	10.0
25	13.31	149	8.9
50	15.21	184	8.3
75	17.16	194	8.8
85	17.46	198	8.8
100	18.13	205	8.8

Source: Environ, 2013.

Water quality may also be affected by pollutants found in surface water runoff originating from a wide range of dispersed sources, or "nonpoint sources." In urban settings, this runoff is typically guided into a storm drain system and ultimately discharged to the receiving waters at a specific location(s). These storm drain system discharges are treated as point sources. Stormwater runoff is part of the natural hydrologic cycle. Recent studies have indicated that stormwater runoff is a significant source of water pollution that may result in impairment of the existing and potential beneficial uses of receiving waters. "Stormwater runoff" encompasses "urban runoff," which includes the discharge of pollutants to water bodies from such non-storm (or dry weather) related activities as irrigation, hosing sidewalks, draining swimming pools, and washing cars. Dry weather flows also include illegal discharges to the storm drain, such as unauthorized connections, leaks, or spills.

The State Water Resources Control Board (SWRCB) and the nine RWQCBs are responsible for the protection and, where possible, the enhancement of the quality of California's waters. The SWRCB sets statewide policy, and together with the RWQCBs, implements state and federal laws and regulations. The proposed Project is located within the Los Angeles Region. The Los Angeles RWQCB has jurisdiction over the coastal drainages between Rincon Point (on the coast of western Ventura County) and the eastern Los Angeles County line (RWQCB, 1994). The Water Quality Control Plan for the Los Angeles Regional Board's Basin Plan (Basin Plan) is the basis for the Regional Board's regulatory programs for the basin. The Basin Plan designates the beneficial uses of the waters of the Region and specifies water quality objectives for ground and surfaces water intended to protect those uses (RWQCB, 1994).

The Basin Plan defines the beneficial and potential beneficial uses of the Dominguez Channel to include the following:

- Municipal and Domestic Supply waters used for community, military, municipal, or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- Water Contact Recreation waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs.
- Non-contact Water Recreation waters used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing and aesthetic enjoyment in conjunction with the above activities.
- Warm Freshwater Habitat waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- Wildlife Habitat waters support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- Rare, Threatened, or Endangered Species waters support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Beneficial uses for the Los Angeles Coastal Plain groundwater management zone include (RWQCB, 1994):

- Municipal and Domestic Supply.
- Agricultural Supply waters used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- Industrial Service Supply waters used for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection and oil well repressurization.
- Industrial Process Supply waters used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.

A number of water quality studies have been conducted near the Consolidated Slip, which conveys the Dominguez Channel water into the harbor, in order to evaluate ambient water quality, identify chemicals of concern, and contribute to a water quality baseline for the Harbor complex. The Port of Los Angeles (POLA) collected water column chemistry data concurrent with their ongoing routine monthly water quality sampling program, which dates back to the later 1960s and includes general water quality characteristics, e.g., dissolved oxygen (DO), water clarity, and temperature at numerous locations throughout the Harbor (AMEC, 2009). During seven of the routine monthly monitoring events, the mid-water column samples were collected at 30 locations to analyze for chemicals of concern identified by the federal Clean Water Act (CWA) section (303(d)). Results from the POLA harborwide studies and similar studies by the Port of Long Beach (POLB) were utilized to develop a water quality baseline, which was presented in the joint Port Water Resources Action Plan (POLA/POLB, 2009).

The monitoring results (Table 3.6-3) indicated that dissolved metal concentrations in Harbor waters near the Consolidated Slip are typically below state water quality criteria, Since this assessment was based on water samples collected throughout the entire harbor over multiple years and during various climatic conditions, the results indicate that, in general, dissolved metal inputs from all sources (upstream discharges, stormwater runoff, in-water maintenance activities, aerial deposition, etc.) are not having a serious adverse impact on Harbor water quality.

Table 3.6-3

Water Quality Monitoring Results for Heavy Metals, Consolidated Slip[(a)]

Heavy Metals	Results[(b)] (micrograms per liter)	Criterion Continuous Concentration (CCC) (micrograms per liter)
Copper	0.5 – 2	3.1
Zinc	2 – 18	81
Silver	ND	1.9[(b)]
Nickel	0.2 – 0.8	8.2
Mercury	0 – 0.001	0.94
Lead	0.1 – 0.9	81
Chromium	ND[(c)]	50
Cadmium	ND – 0.01	8.8
Arsenic	1 – 3	36

(a) AMEC, 2009
(b) No CCC has been developed for silver so the value reported is the Criterion Maximum Concentration or CMC for acute exposures.
(c) ND = Not Detected

Typical organic pollutants of concern in industrial harbors include tributyltin (TBT), chlorinated pesticides, polychlorinated biphenyls (PCBs), PAHs, phenols, and phthalates. Each of these chemicals was analyzed as part of Harbor-wide monitoring program. The analysis for organic compounds in water samples taken at the Consolidated Slip are summarized in Table 3.6-4. In general, the concentrations of organic chemicals were found to be very low and in most cases, below detection limits. Only TBT was detected in concentrations that exceeded National Ambient Water Quality Criteria for non-priority pollutants. TBT was used as a marine antifoulant in hull paints and was banned from use after January 1, 2008.

Table 3.6-4

Water Quality Monitoring Results for Organic Compounds, Consolidated Slip(1)

Organic Compound	Minimum Concentration	Maximum Concentration	Exceedances
PCBs (µg/l)	<0.005	<0.5	NA(2)
Phthalates (µg/l)	<0.02	<5	NA
PAHs (µg/l)	<0.005	<5.0	NA
Phenols (µg/l)	<0.005	<25	0
Pesticides (µg/l)	<0.050(3)	<0.050(3)	0
Tributyltin (TBT) (ng/l)	<3.0	11.7	1

(1) NA = Not applicable because currently there are no aquatic life criteria.
(2) Reporting limit for DDT and derivatives.
Note: µg/l = micrograms/liter, ng/l = nanograms/liter
Source: AMEC, 2009

Dissolved oxygen (DO) is a principal indicator of marine water quality. DO concentrations vary in response to a variety of processes, including oxygen consumption by wastes and production and consumption by natural processes such as photosynthesis, respiration, water circulation, and resuspension of anaerobic sediments. DO concentrations of about 5 to 6 milligrams per liter (mg/l) are necessary for sustaining a healthy environment for aquatic organisms, and the RWQCB has set 5 mg/l as the water quality standard. In the late 1960s it was not uncommon for DO concentrations in the inner portions of the Los Angeles-Long Beach Harbor to average 1 to 2 mg/l. DO levels measured in Los Angeles Harbor in the past decade have generally met or exceeded the 5 mg/l standard. In the Consolidated Slip, DO has averaged between 6 and 6.5 mg/l, but on occasion has dropped to as low as 3.2 mg/l (AMEC, 2009).

Bacteria tests are conducted on ambient water samples in order to identify total and fecal coliform bacteria and enterococcus levels. The concentration of these indicator bacteria determines whether a water body is safe for human contact or should be avoided. The California Department of Health Services (DHS) has developed minimum protective bacteriological standards for waters adjacent to public beaches and water-contact sports areas. Bacteria sampling has detected AB 411 exceedances near several storm drains, including in the Consolidated Slip. The magnitude of the storm and the time lag between the storm event and the actual sample collection correlated directly with the observed concentrations of indicator bacteria (AMEC, 2009).

The only surface water feature located near the proposed Project is the retention basin and stormwater drain located on the south side of the proposed Project site. No water quality information is available for waters draining to that feature, which drains to the Dominguez Channel and subsequently into the Consolidated Slip.

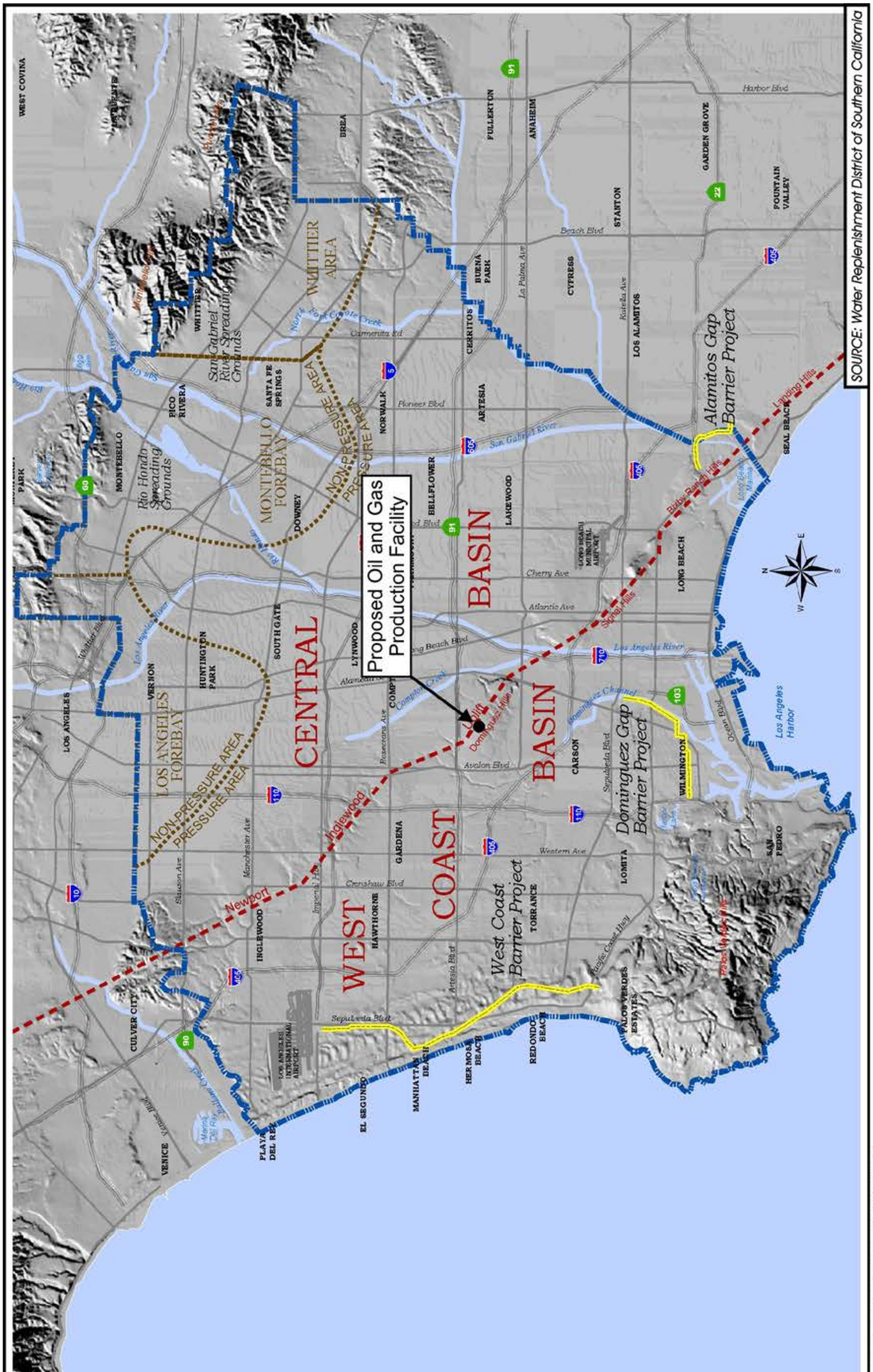
3.6.2 GROUNDWATER HYDROLOGY AND WATER QUALITY

3.6.2.1 Groundwater Hydrology

The proposed Project site is located within the overall South Coast Hydrologic Region (Basin 4.11-03)(CDWR, 2003). This region has 56 delineated groundwater basins, including twenty-one basins in the Los Angeles subregion 4. Groundwater is typically found in unconfined alluvial aquifers in most of the basins of the Los Angeles subregions. Coastal basins in this hydrologic region are prone to intrusion of seawater, and seawater intrusion barriers are maintained along the Los Angeles sections of the coastal plain owing to conjunctive use (see Figure 3.6-1).

The West Coast Groundwater Basin underlies 160 square miles in the southwestern part of the Los Angeles Coastal Plain in Los Angeles County (see Figure 3.6-1). The proposed Project is located on the eastern edge of the West Coast Groundwater Basin. The West Coast Groundwater Basin includes several smaller aquifers. The aquifers underlying the proposed Project site are (in order of shallowest to deepest) the Exposition Aquifer, the Gage/Gardena Aquifer, the Holydale Aquifer, the Lynnwood Aquifer, the Silverado Aquifer, and the Sunnyside Aquifer (see Figure 3.6-2). These aquifers range in depth from less than 100 feet to about 1,000 feet below the ground level. The base of the fresh water is about 1,400 feet deep (see Figure 3.6-2). Additional non-potable brackish and saltwater aquifers are located at greater depths with the source for injection saltwater associated with the proposed Project at about 2,750 to 3,000 feet below mean sea level (MSL).

Groundwater levels are an indication of the amount of groundwater in the basins. The levels indicate areas of recharge and discharge from the basins. The Water Replenishment District (WRD) tracks groundwater levels throughout the year by measuring the depth to water in monitoring wells and production wells located throughout the Central Basin and West Coast Basin. WRD uses groundwater levels to determine when additional replenishment water is required; to calculate groundwater storage changes; and to evaluate the effectiveness of seawater barrier injection wells. Groundwater measurements taken in the Fall 2011 show that in the Central Basin, the highest water levels are in the Montebello Forebay; water levels decrease to the south and west towards the Long Beach area, the Newport Inglewood fault, and the Los Angeles Forebay, respectively (WRD, 2013).



ENVIRONMENTAL AUDIT, INC.

WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 3.6-1

Project No. 2757
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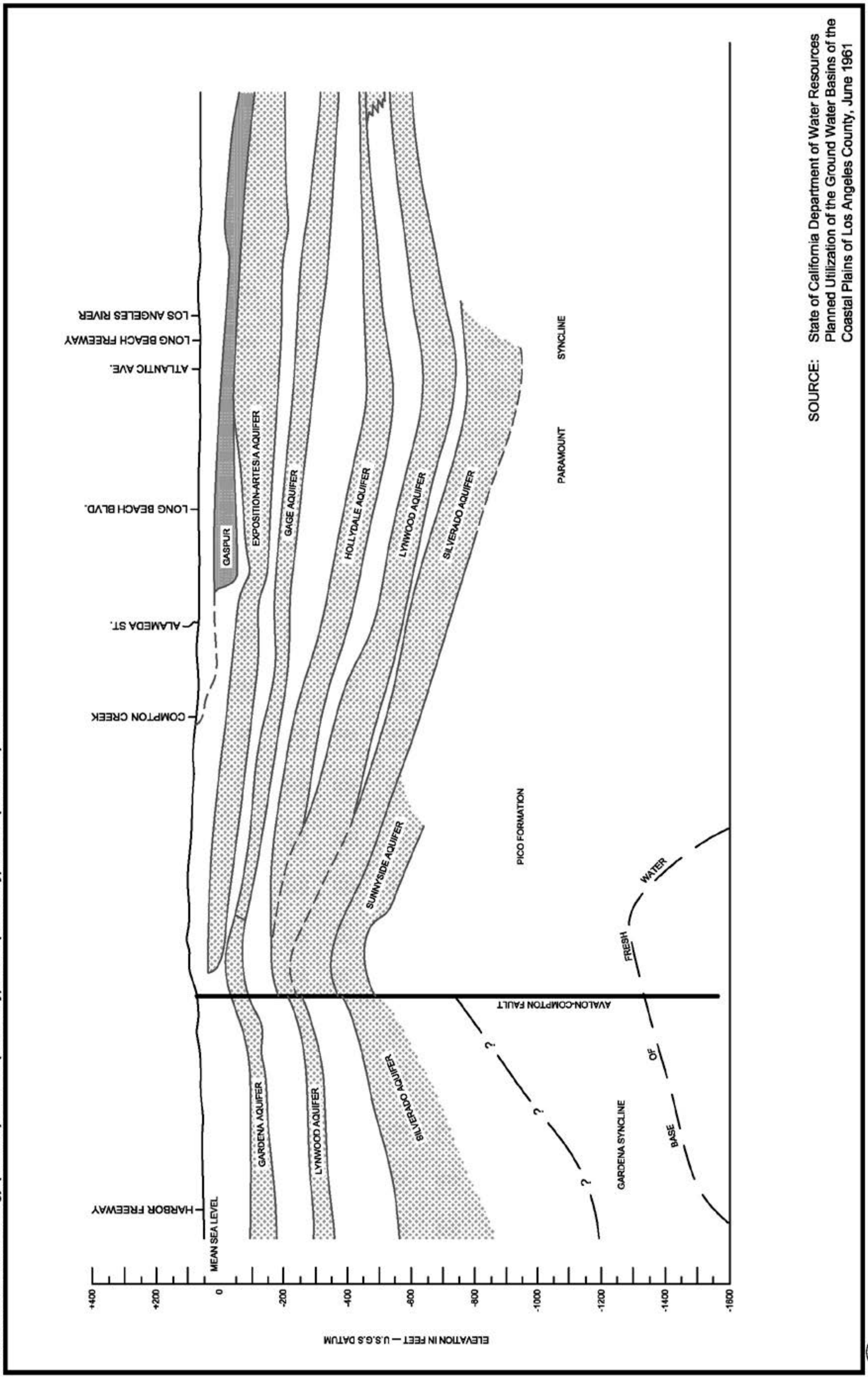


Environmental Audit, Inc.

LOCAL AQUIFERS
OXY Dominguez Oil Field Development Project
Carson, CA 90746

Figure 3.6-2

Project No. 2757

In the West Coast Basin, groundwater levels are highest along the West Coast Basin Barrier Injection Project, and decrease to the east where they are at their lowest elevation in Gardena between the Charnock Fault and Newport-Inglewood fault, both of which are geologic structural features that restrict groundwater flow. Water levels generally decreased across the West Coast Basin during 2011-2012. Water levels increased up to two feet in the Carson and Dominguez Gap areas but decreased up to two feet inland of the West Coast Basin Barrier. Water levels increased up to 30 feet in the Gardena area (WRD, 2013).

3.6.2.2 Groundwater Quality

Groundwater quality throughout the Central Basin and West Coast Basin is monitored by the WRD through monitoring wells, water production wells, and monitoring of the quality of water used for groundwater replenishment. Annually, WRD collects nearly 600 groundwater samples from its monitoring well network and analyzes them for over 100 water quality constituents to produce nearly 60,000 individual data points to help track the water quality in the basins. By analyzing and reviewing the results on a regular basis, any new or growing water quality concerns can be identified and managed effectively (WRD, 2013).

The WRD focuses on 12 key water quality constituents to represent overall groundwater quality in the basins, including total dissolved solids (TDS), iron, manganese, nitrate, chloride, trichloroethylene (TCE), tetrachloroethylene (PCE), arsenic, perchlorate, and hexavalent chromium. The water quality analyses are compared to regulatory thresholds to determine if the water is acceptable for human consumption. A primary Maximum Contaminant Level (MCL) is an enforceable drinking water standard that the California Department of Public Health establishes after health effect, risk assessment, detection capability, treatability, and economic feasibility are considered. A secondary MCL is established for constituents that impact aesthetics of water, such as taste, odor, and color, and do not impact health.

TDS is a measure of the total mineralization of water and is indicative of general water quality. TDS, where elevated, is typically present along with chloride as an indicator of historic seawater intrusion. TDS and chloride concentrations are reasonably low in the Central Basin monitoring wells and production wells, as well as the inland areas of the West Coast Basin. TDS and chloride concentrations for monitoring and production wells located in the coastal areas of the West Coast Basin are elevated, primarily to coastal margin from Redondo Beach to Los Angeles International Airport, and the Inglewood and Dominguez Gap areas. The elevated TDS and chloride concentrations may be caused by seawater intrusion, brines, or possibly oil field brines.

The most recent information regarding groundwater quality in the Central Basin and West Coast Basin is the Regional Groundwater Monitoring Report for Water Year 2011-2012 (WRD, 2013) and the results of this report are discussed below. The most prevalent water quality issue in the Central Basin and West Coast Basin is manganese, a naturally occurring contaminant that requires treatment prior to delivery as drinking water.

Manganese concentrations exceed the MCL in 44 out of 236 (19%) production wells in the Central Basin and 15 out of 30 (50%) production wells sampled in the West Coast Basin. TCE and PCE, volatile organic contaminants that can leak into groundwater from industrial and commercial facilities have also impacted wells in the district and are closely monitored. A total of 14 out of 58 (25%) groundwater samples detected PCE in concentrations that exceeded the MCL in the Central Basin. PCE was not detected in any of the West Coast Basin production wells. During the 2009 through 2012 period, ten production wells of the 235 (4%) tested in the Central Basin had arsenic concentrations close to the MCL. Arsenic was not detected above the MCL in any West Coast Basin production wells (WRD, 2013).

WRD is also investigating perchlorate and hexavalent chromium, which are emerging contaminants of concern (WRD, 2013). Perchlorate was detect above the MCL in two out of 244 (less than 1%) production wells tested in the Central Basin during the 2009 through 2012 period. Perchlorate was not detected in any production wells in the West Coast Basin. Hexavalent chromium occurs naturally in groundwater and can be introduced through industrial and commercial activities. The State of California is in the process of establishing an MCL for hexavalent chromium and, on August 23, 2013, proposed an MCL of 10 micrograms per liter (μg/l) for public comment. Production well sampling for the 2009-2012 period indicate that 53 out of 63 (84%) wells had no detectable hexavalent chromium, four production wells were between 5 and 10 μg/l, and six production wells were between 1 and 5 μg/l.

The WRD maintains a number of monitoring wells in the vicinity of the proposed Project. Approximately five groundwater monitoring wells are located within about one mile of the proposed Project site. Monitoring data from the WRD are only available for three of those wells and the monitoring data are provided in Table 3.6-5. Based on the available monitoring data, the groundwater quality for the three wells meets the applicable MCLs. The locations of these monitoring wells are shown in Figure 3.6-3.

3.6.2.3 Abandoned Oil Wells in the Dominguez Oil Field

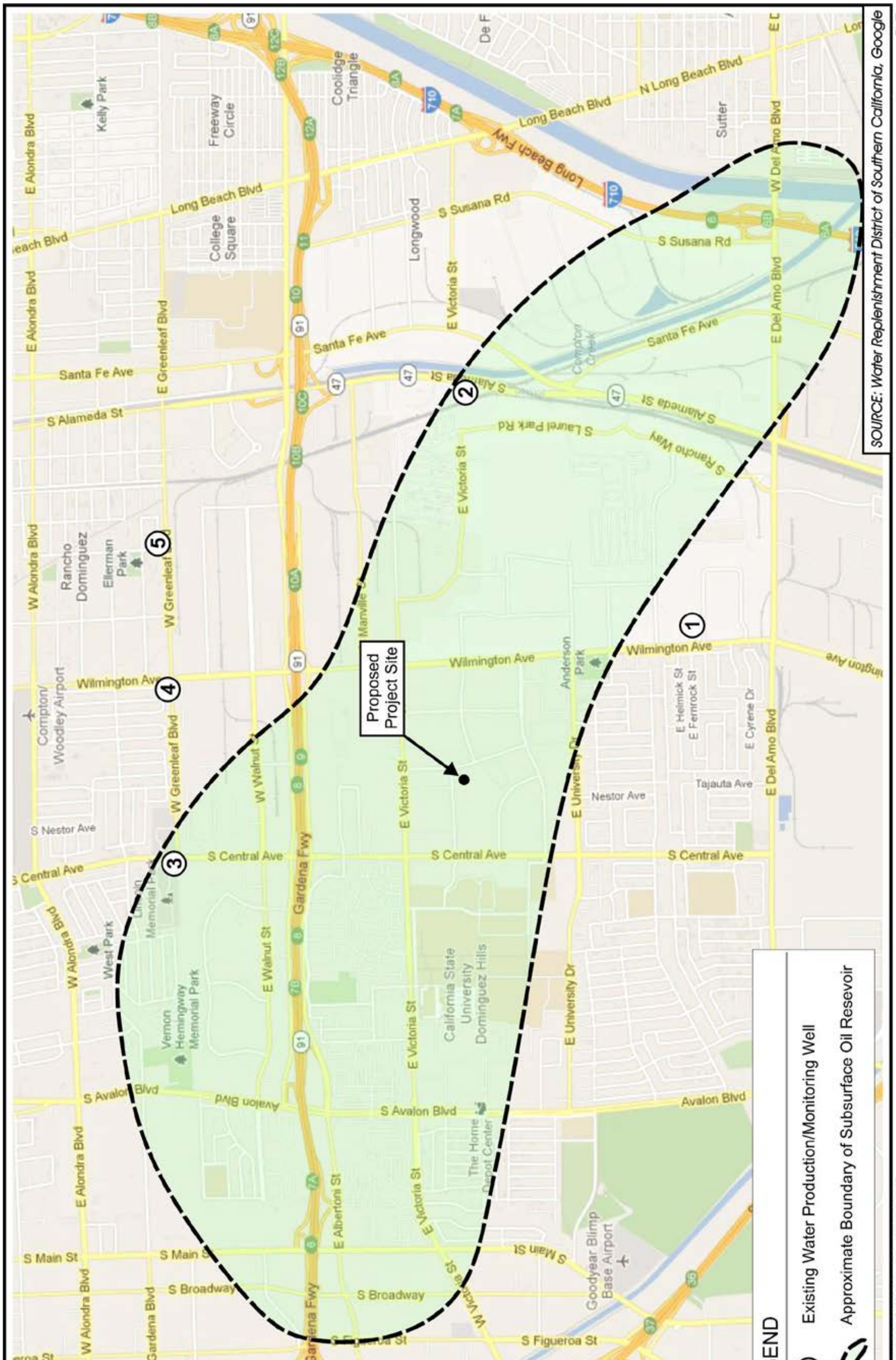
The Dominguez Oil Field was discovered in 1923 by Union Oil Company of California. In the mid-1940s, the Union Oil Company of California began injection of salt water into the oil bearing reservoir to aid in the recovery of oil. A review of DOGGR records indicates a total of 605 oil wells were drilled in the Dominguez Oil Field, 600 of which have been abandoned at various times during the field operation. DOGGR records indicate that 147 of the abandoned wells were used as water injection wells (also referred to as water flood wells) (DOGGR, 2013). A review of the DOGGR records was conducted to determine the abandonment methods used and to identify any wells which have the potential to be adversely influenced by the proposed Project.

TABLE 3.6-5

Groundwater Monitoring Data from WRD Monitoring Wells Within One Mile of the Proposed Project Site[a] (μg/l)

Chemicals	MCL	Well 2 WRD ID # 200479	Well 4 WRD ID # 200468	Well 5 WRD ID# 200469
1,1-Dichloroethylene (1,1-DCE)	6 μg/l	0[b]	0[c]	0[b]
1,2-Dichloroethane (1,2-DCA)	0.5 μg/l	0[b]	0[c]	0[b]
Aluminum	1000 μg/l	0[d]	0[d]	0[e]
Arsenic	10 μg/l	0[d]	0[c]	0[e]
Benzene	1 μg/l	0[b]	0[c]	0[b]
Cadmium	5 μg/l	0[d]	0[d]	0[e]
Carbon Tetrachloride	0.5 μg/l	0[b]	0[c]	0[b]
Chloride	500 mg/l	48 mg/l [d]	39 mg/l [d]	28 mg/l [e]
Chromium (total)	50 μg/l	0[d]	0[d]	0[e]
Copper	1,300 μg/l	0[d]	0[d]	0[c]
Ethyl Benzene	300 μg/l	0[b]	0[c]	0[b]
Fluoride	2 mg/l	0.27 mg/l [d]	0.3 mg/l [d]	0.23[e]
Iron	0.3 mg/l	0[d]	0.96 mg/l [c]	0[e]
Lead	15 μg/l	0[d]	0[c]	0[c]
Manganese	50 μg/l	0[c]	52[d]	0[e]
Mercury	2 μg/l	0[d]	0[d]	0[e]
Methyl tertiary butyl ether (MTBE)	13 μg/l	0[b]	0[c]	0[b]
Nitrate	10 mg/l	0[d]	0[d]	0[e]
NDMA (N-Nitrosodimethylamine)		0[g]	NA[f]	NA[f]
Perchlorate	6 μg/l	0[b]	0[b]	0[b]
pH (unitless)		8.2[d]	8[d]	8.2[e]
Silver	100 μg/l	0[d]	0[d]	0[e]
Sulfate	500 mg/l	100 mg/l [d]	99 mg/l [d]	75 mg/l [e]
Tetrachloroethylene(PCE)	5 μg/l	0[b]	0[c]	0[b]
Toluene	150 μg/l	0[b]	0[c]	0[b]
Trichloroethylene (TCE)	5 μg/l	0[b]	0[c]	0[b]
Xylene(o)		0[b]	0[c]	0[b]
Xylenes(m,p)	1,750 μg/l	0[b]	0[c]	0[b]
1,4 Dioxane		0[c]	0[e]	0[e]

(a) Units are in microgram per liter (μg/l), unless otherwise noted.
(b) Last sampled in 2013
(c) Last sampled in 2012
(d) Last sampled in 2010
(e) Last sampled in 2011
(f) NA = data are not available.
(g) Last sampled in 2003
Source: WRD, 2013a.



LOCATIONS OF WATER REPLENISHMENT DISTRICT
MONITORING WELLS NEAR PROPOSED PROJECT SITE
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 3.6-3

Project No. 2757
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Of the 605 oil wells, 594 abandoned oil well records were available for review (Mearns, 2013). Two wells are active, one is idle, two are test wells on the proposed Project site, and four are applications by OXY pending approval of the proposed Project. All available records were reviewed for wells identified as being located in the Dominguez Oil Field, irrespective of the geographic location relative to the proposed Project.

3.6.2.4 Subsidence

Subsidence is the motion of the Earth's surface as it shifts downward relative to a datum such as sea-level. Ground subsidence has been a concern in certain oil fields where petroleum reserves have been removed and not replaced. Subsidence occurred in the Long Beach/Wilmington area associated with production of the Wilmington Oil Field. Oil and gas have been recovered in the Wilmington Oil Field through primary production, secondary water flooding, and steam flooding. A total of 6,150 wells have been drilled to date. Oil has been produced from five major sand intervals ranging in depths from 2,000 feet to 11,000 feet where over two and one-half billion barrels of oil have been recovered (City of Long Beach, 2012). Subsidence occurred in the Wilmington Oil Field due to the removal of crude oil. In the 1950s and 1960s, water flooding was initiated to increase recovery and control subsidence. In the Dominguez Oil Field, water was added back into the geological formations where crude was removed. This allowed the pressure to be maintained in the geological formations and prevented additional subsidence. As stated in the City of Carson General Plan "There is no documented ground subsidence associated with the Dominguez Oil Field" (Carson, 2004). Therefore, there is no evidence of existing or historic ground subsidence in the Dominguez Oil Field.

3.6.3 REGULATORY BACKGROUND

The regulations applicable to surface water hydrology and groundwater quality are addressed in this section.

3.6.3.1 Federal

3.6.3.1.1 Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. Permit review is the CWA's primary regulatory tool. The permits regulate the discharge of dredged and fill materials (CWA Section 404), prevention and response to spills of hazardous materials, construction-related stormwater discharges (CWA Section 402), and activities that may result in the discharges of pollutants (CWA Section 401) into designated "waters of the United States," which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. The proposed Project site does not have any designated waters of the United States or wetlands located within its boundaries.

Although the proposed Project site does not have any water bodies designated as waters of the United States, and runoff from the proposed Project would not drain directly into any identifiable waters of the United States, CWA sections 401 and 402 are still relevant to the proposed Project, as discharge into downstream water bodies designated as waters of the United States is still possible. Section 402 is enforced through the NPDES permitting process. The authority to implement Clean Water Act provisions has been delegated to the State of California, with oversight by the U.S. EPA. See Section 3.6.3.2 for more information.

Section 311 of the Clean Water Act addresses oil spill prevention. The Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires these facilities to develop and implement SPCC Plans and establishes procedures, methods, and equipment requirements. In 1990, the Oil Pollution Act amended the Clean Water Act to require some oil storage facilities to prepare Facility Response Plans. On July 1, 1994, U.S EPA finalized the revisions that direct facility owners or operators to prepare and submit plans for responding to a worst-case discharge of oil.

3.6.3.1.2 State of California Storm Water Pollution Prevention Plan

NPDES permits are issued to municipal and industrial dischargers. In compliance with Section 402(p) of the CWA, the U.S. EPA also established regulations that require that stormwater discharges from soil disturbance (excavation, demolition, grading, and clearing) of one acre or more be regulated as an industrial activity and covered by a NPDES permit. Stormwater discharges from a construction activity that results in a land disturbance of less than one acre, but which is a part of a larger common plan of development, also require a permit under the CWA. The U.S. EPA has delegated the authority to implement the CWA to the State of California, but continues to monitor the State program for compliance with Federal Rules.

The SWRCB has adopted one statewide general permit for almost all stormwater discharges; with the exception of Indian lands and lands within the Lake Tahoe Hydrologic Unit. This general permit is implemented and enforced by the SWRCB. To comply with the permit, landowners initiating construction activities on their properties must:

- Eliminate or reduce non-stormwater discharges to stormwater sewer systems and other waters of the nation;

- Develop and implement a Stormwater Pollution Prevention Plan emphasizing stormwater "Best Management Practices;" and,

- Perform inspections of stormwater pollution prevention measures to assess their effectiveness.

3.6.3.1.3 Safe Drinking Water Act

The Safe Drinking Water Act sets drinking water standards throughout the country and is administered by the U.S. EPA. These drinking water standards, which are set forth in the Code of Federal Regulations (CFR), are referred to as the National Primary Drinking Water Regulations, 40 CFR Part 141, and the National Secondary Drinking Water Regulations, 40 CFR Part 143. These regulations set MCLs for substances in drinking water.

In addition to setting minimum water quality standards for drinking water, the Safe Drinking Water Act established a Federal-State system of regulation to assure that drinking water sources, actual and potential, are not rendered unfit for such use by underground injection of contaminants. The underground injection of contaminants is regulated by the U.S. EPA's UIC Program. Regulations mandate the consideration of a variety of measures to assure that injection wells will not endanger Underground Sources of Drinking Water (USDW). "Primacy" for the purposes of implementing the regulations has been delegated to several States, including the State of California, with oversight by the U.S. EPA.

U.S. EPA's UIC Program creates five classes of injection wells each based principally on potential for the injection (type of activity and the depth of injection) to result in endangerment of a USDW. The proposed Project is expected to have Class II wells, which are associated with disposal of fluids from oil and gas production and injection to enhance oil and gas production (secondary and tertiary recovery injection wells). The injected fluids are either waste fluids produced from downhole in connection with primary production of oil and gas, some fluids generated in the field in connection with oil and gas production (such as gas sweetening), or fluids used for enhanced recovery of oil or gas. Unused oil field chemicals, waste motor oil from field equipment, or offsite waste fluids are not defined as oil field fluids that are produced from downhole and cannot be disposed of in a Class II well.

Every new Class II (including enhanced recovery) well is required to apply for and receive a permit prior to construction or injection. To obtain a permit for a new Class II well, the owner/operator must file an application with the UIC Director containing specific information listed in 40 CFR 146 or in the applicable State requirements. The information must provide sufficient data to demonstrate that USDWs will be protected. The key areas of information are: 1) geological considerations used in the well siting and design, especially information on all USDWs penetrated by the injection well; 2) the structural integrity of the well; 3) the specific operational considerations used in well design; 4) information on the status of wells in the area of review that penetrate the injection zone; and 5) the proposed monitoring of the facility. The monitoring program must consider quantity and quality of injected fluids and existing reservoir conditions. Operators must submit data on all existing and abandoned wells that penetrate the injection zone within the area of review of all newly drilled or converted injection wells. Information that would allow calculation of the injection pressure curve must be submitted. This submittal must detail the casing and cementing information for all wells in the area of review.

The UIC regulations (and the pertinent state regulations) set standards for construction, casing, disposal of wastes, operating, monitoring, setting maximum injection pressures, and plugging and abandoning wells. Maximum injection pressures are set to protect the containment areas lying between operational areas underground and USDWs. Additional information is provided under Section 3.6.3.2.1 which addresses the State of California's regulations regarding onshore wells.

3.6.3.2 State Regulations

The California Code of Regulations contain rules governing subsurface injection or disposal, environmental protection, and water quality.

3.6.3.2.1 Onshore Well Regulations

All oil and gas wells (development and prospect wells) located on state and private lands in the State of California are permitted, drilled, operated, maintained, plugged, and abandoned under requirements and procedures administered by the DOGGR. Many of the provisions in the regulations relate to protection of ground and surface waters and include permitting, reporting, and well design, testing and operating requirements (17 CCR Section 2, Chapter 4, Subchapter 1.)

3.6.3.2.2 Environmental Protection Regulations

Regulations governing the environmental protection program of DOGGR are provided for in Section 3106 of Division 3 of the Public Resources Code. The requirements of this subchapter cover aboveground and production facilities including sumps; channels; secondary containment; tank construction, maintenance, and testing; pipelines; disposal of oilfield wastes; maintenance and monitoring of production facilities, safety systems, and equipment; and site restoration.

3.6.3.2.3 Porter-Cologne Water Quality Control Act (California Water Code)

The Porter-Cologne Water Quality Control Act, embodied in the California Water Code, establishes the principal California legal and regulatory framework for water quality control. The Porter-Cologne Act protects groundwater and surface water for use by the people of the State. The California Water Code authorizes the SWRCB and the

RWQCBs to implement the provisions of the federal Clean Water Act. Based on the SWRCB procedures, the RWQCBs develop local water quality control plans. Once approved by the SWRCB, these local plans are incorporated into the California Water Plan.

Construction Storm Water General Permit: Dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. The permit is issued by the SWRCB. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must list BMPs the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

Industrial Stormwater General Permit: The Industrial Storm Water General Permit Order 97-03-DWQ (General Industrial Permit) is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. The permit requirement is implemented through the SWRCB. The General Industrial Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable and best conventional pollutant control technology. The General Industrial Permit also requires the development of a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce stormwater pollution are described. The General Industrial Permit requires that an annual report be submitted.

NPDES Permit: The NPDES Permit Program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Individual permits may be issued to users that do not meet the general stormwater permit requirements or intend to discharge waters other than stormwater. The permit will set limits on the concentrations and total quantity of pollutants that can be discharged from any permitted discharge point. The authority to issue and enforce NPDES permits has been delegated to the Regional Boards, with oversight by the SWRCB. The proposed Project is not expected to have operational discharges into waters of the United States.

3.6.3.2.4 Groundwater Quality

The quality of groundwater delivered for public supply is also regulated under the California Domestic Water Quality and Monitoring Regulations found in 22 CCR

Division 4, Chapter 15. These regulations identify primary and secondary drinking water standards for public drinking water supplies in the state.

3.6.3.3 Local

3.6.3.3.1 County NPDES Permit

In compliance with the County of Los Angeles NPDES Permit, Title 12.80 - Environmental Protection Code, and Title 26 - Building Code, all construction sites are required to implement BMPs to control erosion, debris, and construction-related pollutants. BMPs that can potentially be implemented are described in the County of Los Angeles Contractor's Guide to Best Management Practices (County of Los Angeles, 2010).

The NPDES permit requires that a Local Storm Water Pollution Prevention Plan (LSWPPP) and a Wet Weather Erosion Control Plan (WWECP) be developed and implemented on construction projects. LSWPPPs include year-round BMP measures that must be incorporated into the construction plans and activities where the disturbed area is one-acre or more. The LSWPPP plan must include appropriate BMPs for general site management, construction materials and waste management, and erosion and sediment controls.

A WWECP must be developed and submitted (or revised) every year to reflect site conditions at the start of the rainy season (October 15). The WWECP addresses erosion and sediment control during wet season operations. Details for WWECP may be included in the LSWPPP or submitted as separate plans.

3.6.3.3.2 City Standards for Drainage

RWQCB Order Number 01-182, NPDES Permit No. CAS004001 (MS4 Permit) most recently amended April 11, 2011, sets requirements for the Los Angeles County Flood Control District (LACFCD), the County of Los Angeles, and the incorporated cities within the LACFCD, including Carson, for area-wide urban stormwater runoff.

The MS4 Permit requires post-construction BMPs to be implemented for new development and significant redevelopment, for both private and public agency projects. The MS4 Permit requires that BMPs be implemented to meet the requirements of the order and also specifies the maintenance of those BMPs post-construction.

The City of Carson requires that a Standard Urban Storm Water Mitigation Plan (SUSMP) be developed for each construction project which meets the requirements under the Los Angeles County NPDES permit through implementation of the City's Subdivision and Engineering Design Manual, Division Two, Standards for Drainage (Chapter 2.1, General). The general purpose of the standards is to convey and dispose of water generated by storms, springs, or other sources in such a manner that adjacent improvements, existing or projected, would be free from 10-, 25-, or 100-year storm events. The standards require that each improvement be designed so as not to increase the flow of water onto adjacent properties except as otherwise provided by the standards. Increased flow is permissible by the standards if the City Engineer finds that the developer has furnished downstream facilities of adequate design.

Additionally, the County NPDES permit requires that stormwater runoff be infiltrated or treated. The design volume for infiltration or treatment can be measured several ways. Each of the alternative measures is roughly equivalent to the 0.75 inch storm event (the 85-year storm event). The City of Carson Development Permit application specifies that projects be designed to treat or retain on site the first 0.75 inch of rain that falls in a 24-hour period (City of Carson, 2011).

3.6.3.3.3 City of Carson General Plan

Specific goals and policies in the City of Carson General Plan are related to water conservation, balancing competing demands for water, and protecting the quality of groundwater and surface water resources. Implementation programs that are relevant to the proposed Project comprise: (1) supporting the provision of adequate wastewater collection systems and treatment reclamation and disposal facilities that would prevent groundwater degradation by onsite wastewater systems, and (2) supporting additional water conservation measures and programs of benefit to the planning area.

3.7 NOISE

3.7.1 INTRODUCTION

Noise is a by-product of urbanization and there are numerous noise sources and receptors in an urban community. Noise is generally defined as unwanted sound. The range of sound pressure perceived as sound is extremely large. Technical acoustical terms commonly used in this section are defined in Table 3.7-1.

The decibel is the preferred unit for measuring sound since it accounts for these variations using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel or dBA). The A-weighted decibel is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold for pain. Examples of noise and their A-weighted decibel levels are shown in Figure 3.7-1.

In addition to the actual instantaneous measurements of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. To analyze the overall noise levels in an area, noise events are combined for an instantaneous value or

TABLE 3.7-1

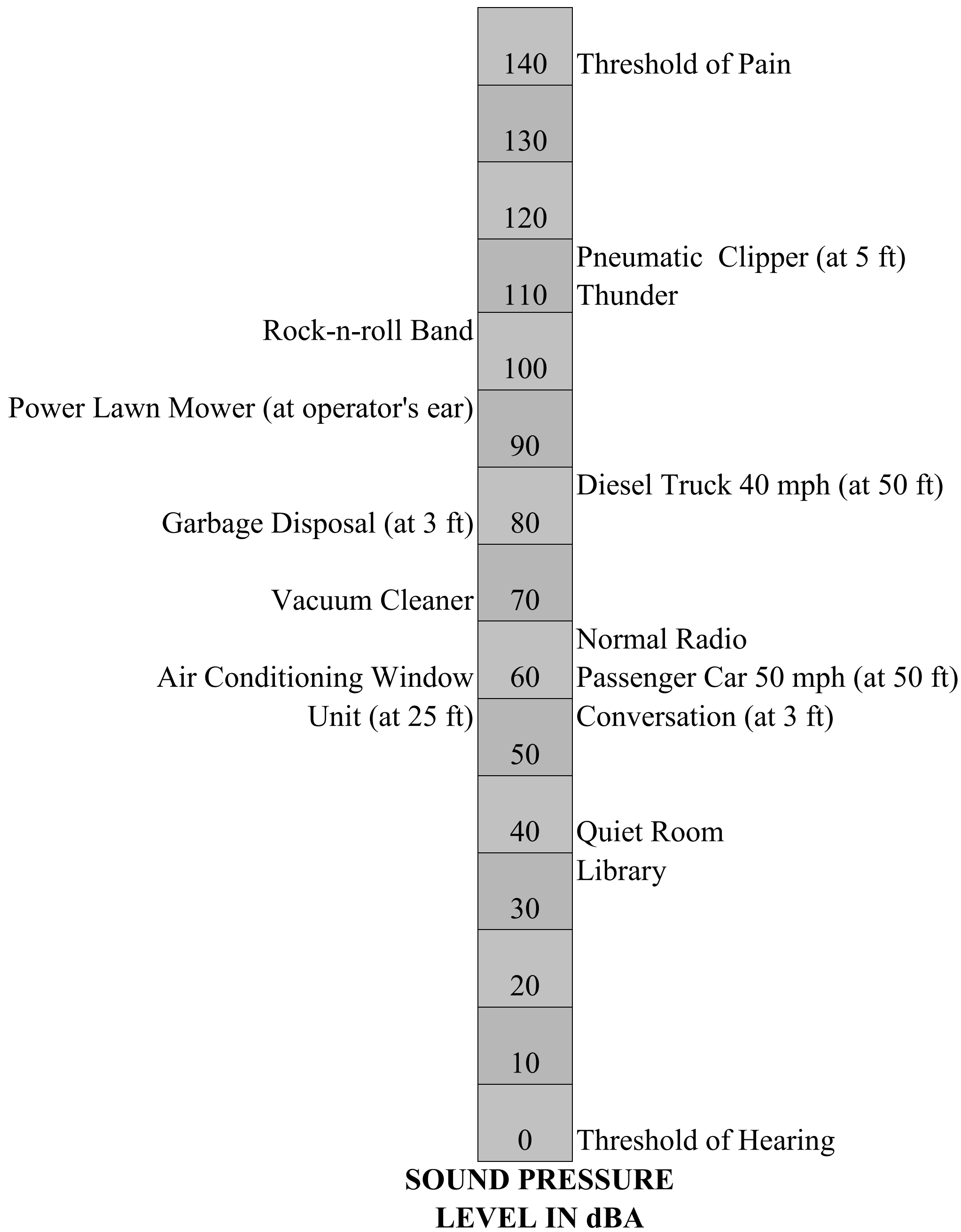
Definition of Acoustical Terms

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm. and 7:00 am.
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
L_{max}, L_{min}	The maximum and minimum noise levels during the measurement period.
Loudness	The amplitude of sound waves combined with the reception characteristics of the human ear.
Sound Pressure	Sound pressure or acoustic pressure is the local pressure deviation from the ambient atmospheric pressure caused by a sound wave. Sound pressure can be measured using a microphone. The unit for sound pressure (p) is the pascal [symbol: Pa or 1 Newton exerted over an area of 1 square meter (N/m^2).
Sound Pressure Level	The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals in air). Sound pressure level is the quantity that is directly measured by a sound level meter.

averaged over a specific time period. The time-weighted measure is referred to as equivalent sound level and represented by energy equivalent sound level (L_{eq}). The percentage of time that a given sound level is exceeded also can be designated as L_{10}, L_{50},

FIGURE 3.7-1

General Noise Sources and Associated Sound Pressure Levels



Sources: Industrial Noise Manual, 3rd Edition, AIHA, 1975, City of Long Beach, 1975

L_{90}, etc. The subscript notes the percentage of time that the noise level was exceeded during the measurement period. Namely, an L_{10} indicates the sound level is exceeded 10 percent of the time and is generally taken to be indicative of the highest noise levels experienced at the site. The L_{90} is that level exceeded 90 percent of the time and this level is often called the base level of noise at a location. The L_{50} sound (that level exceeded 50 percent of the time) is frequently used in noise standards and ordinances.

The sound pressure level is measured on a logarithmic scale with the 0 dBA level based on the lowest detectable sound pressure level that people can perceive. Decibels cannot be added arithmetically, but rather are added on a logarithmic basis. A doubling of sound energy is equivalent to an increase of three dBA. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged twice as loud. In general, a three to five dBA change in community noise levels starts to become noticeable, while one or two dBA changes are generally not perceived.

The State Divison of Aeronautics and the California Commission of Housing and Community Development have adopted the Community Noise Exposure Levels (CNEL) to measure and regulate noise sources within communities. The CNEL is the adjusted noise exposure level for a 24-hour day and accounts for noise source, distance, duration, single event occurrence frequency, and time of day. The CNEL considers a weighted average noise level for the evening hours, from 7:00 pm to 10:00 pm, increased by five dBA (i.e., an additional five dBA is added to all actual noise measurements), and the late evening and morning hour noise levels from 10:00 pm to 7:00 am, increased by 10 dBA (an additional 10 dBA is added to all actual noise measurements). The daytime noise levels are combined with these weighted levels and averaged to obtain a CNEL value. Using this formula, the CNEL weighted average noise level weights noise measurements taken in the evening and nighttime hours more heavily than noise during the daytime. The adjustment accounts for the lower tolerance of people to noise during the evening and nighttime period relative to the daytime period.

3.7.2 EXISTING NOISE SOURCES

3.7.2.1 Onsite Noise

To characterize the existing noise environment, Acoustics Group, Inc. (AGI) measured sound levels at locations near the proposed Project site in April 2011. For these measurements, AGI used three Larson Davis 870 Type I sound level meters to document hourly sound levels over a 24-hour period at three locations representing the residential receptors nearest the site (see Appendix D).

Observations during the sound measurements indicated the existing sound environment in the proposed Project vicinity is composed primarily of noise from traffic. Other noise sources include birds, aircraft, parking noises, residential activities, and other localized noise sources. The sound level measurement locations (SLM) are described in Table 3.7-

2, and the measured sound levels are summarized in Table 3.7-3, while the SLM locations are shown in Figure 3.7-2.

TABLE 3.7-2

Sound Level Measurement Location Descriptions

Location	Description
SLM1	Taken at 1278 Redwood Court, this location represents residences in the Dominguez Village community northwest of the proposed Project site. Noted noise sources included traffic, birds, residential activity, and parking lot activity.
SLM2	Taken at Cal State University Dominguez Hills to represent student housing due west of the proposed Project site. Noted noise sources included traffic, birds, an adjacent commercial nursery, and parking lot activity.
SLM3	Taken at 19063 Tajauta Avenue, this location represents single-family residences south of the proposed Project site and University Drive. Noted noise sources included traffic, distant aircraft, and lawn and garden maintenance.
DTC1	Taken near the corner of Charles Willard Street and Bishop Avenue, this location is used to represent properties east and north of the proposed Project site. At DTC1, three 15-minute sound level measurements are used to represent the range of hourly daytime sound levels. The CNEL was estimated by adding 3.7 dBA to the average daytime hourly level (i.e., similar to the difference between the average daytime hourly level and the CNEL at SLM1, a location also dominated by traffic noise). The dominant noise source at this location was truck traffic noise.
DTC2	Taken on the nearest affected property south of the proposed Project site. As with DTC1, three 15-minute sound level measurements are used to represent the range of hourly daytime sound levels, and the CNEL was estimated by adding 3.7 dBA to the average daytime hourly level. The noise sources noted at this location included both car and truck traffic.
DTC3	Taken on the proposed Project site, this location represents sound levels at the property west of the site. As with DTC1, three 15-minute sound level measurements are used to represent the range of hourly daytime sound levels, and the CNEL was estimated by adding 3.7 dBA to the average daytime hourly level. The noise sources noted at this location included truck traffic and truck loading/unloading.

Measurements taken in July 2010 prior to test drilling activities conservatively characterize the ambient sound levels at properties in the Dominguez Technology Centre. These SLM locations (DTC1, DTC2, and DTC3) are shown in Figure 3.7-2.

3.7.2.2 Existing Noise Sources near Pipeline and Electrical Conduit Routes

New gas and oil pipelines are proposed to be installed and/or connected to existing pipelines as part of the proposed Project (see Figure 2.6-6). There are three areas where pipeline installation and related facilities will be required: approximately 2,000 feet from the site to the intersection of Charles Willard Street and South Central Avenue; approximately 1,000 feet on and near the intersection South Central Avenue and University Avenue; and approximately 100 feet near the intersection of 223rd Street and

TABLE 3.7-3

Existing Sound Levels (dBA)

Location	Time (a)	Range of Hourly L_{eqs}	Range of Hourly L_{maxs}	CNEL
Nearest Resident Properties				
SLM1	Day	55-61	69-81	63
	Night	52-60	65-73	
SLM2	Day	50-57	63-77	58
	Night	46-56	53-71	
SLM3	Day	53-60	70-88	59
	Night	45-56	61-80	
Dominguez Technology Centre Properties				
DTC1	9-9:15 am 11:28-11:43 am 3:35-3:50 pm	67 64 67	NA	70
DTC2	9:21-9:36 am 11:58-12:13 am 3:57-4:12 pm	50 57 57	NA	59
DTC3	9:46-10:01 am 1:01-1:16 am 4:17-4:32 pm	58 61 60	NA	63

Wilmington Avenue (see Figure 2.6-6). The electrical conduit is expected to be installed from north of the 91 Freeway at Greenleaf Boulevard, along Central Avenue to Victoria Street, east to Bishop Avenue and south to Charles Willard Street where it will enter the facility (see Figure 2.6-5).

The area in the vicinity of the proposed pipeline routes is an urban environment characterized by extensive industrial, commercial, and residential land uses located in the City of Carson. Major contributors to the ambient noise levels in the general vicinity of the proposed pipeline routes are primarily vehicular and truck traffic on the major streets including Central Avenue, University Avenue, the I-405 Freeway, East 223rd Street, and Wilmington Avenue. Additional noise sources include industrial facilities such as a refinery and other light/heavy industrial and manufacturing facilities.

The land uses near the proposed pipeline routes are predominately industrial and commercial. Light Industrial and Public Facility land uses are located along at Charles Willard Street. Light Industrial, Commercial, and residential land uses are located along Central Avenue. Light Industrial, Commercial, Residential and public facility land uses are located along University Avenue. Heavy Industrial, Commercial, and Business Park land uses are located along East 223rd Street and Wilmington Avenues.

Environmental Audit, Inc.

SITE LOCATION MAP
AND MODEL RECEPTOR LOCATIONS
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 3.7-2

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The closest sensitive receptors to the proposed pipeline routes are the residential land uses located on the south side of University Avenue, as well as student housing at California State University at Dominguez Hills, located west of Central Avenue (see Figure 3.7-2, SLM2). The closest sensitive receptors to the proposed electrical conduit route is the residential area west of Central Avenue and north of Victoria Street.

3.7.3 REGULATORY BACKGROUND

The proposed Project site is located in the City of Carson in Los Angeles County, California. The proposed Project site is approximately 6.5 acres and is within the Dominguez Technology Center in the northern portion of the City of Carson. The Project site is within 0.2 miles of the City of Compton. Plans and policies that pertain to the noise conditions affecting and affected by the proposed Project include those set by the State of California and the City of Carson. The noise policies established by Los Angeles County have been adopted for use by the City of Carson and are included in the discussion of the Carson noise policies.

3.7.3.1 Federal Regulations

There are no federal noise regulations applicable to the proposed Project.

3.7.3.2 State Regulations

The California Department of Health Services establishes noise compatibility guidelines for various land uses. The guidelines indicate that an exterior noise level up to 65 dBA CNEL is “normally acceptable” for multi-family residential uses, without special noise insulation requirements. An exterior noise level up to 60 dBA CNEL is "normally acceptable" for low-density residential uses, without special noise insulation requirements. A noise level between 60 CNEL and 70 CNEL is considered "conditionally acceptable" for low-density residential uses, while a noise level of 75 dBA CNEL or more is identified as "clearly unacceptable" for all residential uses. In addition, the Caltrans adopts the Federal Highway Administrations Noise Abatement Criteria (NAC) for Type 1 projects.

3.7.3.3 Local Regulations

The Project site is located within the City of Carson, and is subject to the Noise Element of the City of Carson General Plan, the Dominguez Technology Centre Specific Plan noise mitigation measures, and any noise ordinance or other noise regulations adopted by the City.

3.7.3.3.1 City of Carson

The City of Carson Municipal Code, Ordinance No. 95-1068, limits long-term construction noise (periods of 21 days or more) to 65 dBA in the daytime (7 am to 6 pm).

In addition, non-urgent and essential construction is generally prohibited without a special permit between 6 pm and 7 am, and on weekends. If the City Engineer determines that the public health, safety, comfort, and convenience will not be affected during these times, the City Engineer may grant special permission for certain noise-generating activities.

Carson operational noise limits are summarized in Table 3.7-4 for residential, commercial, and industrial areas and are provided for informational purposes. The noise limits in Table 3.7-4 do not apply to construction activities. For residential and commercial areas, nighttime (10 pm to 7 am) limits are 5 dBA lower. If the existing ambient noise level already exceeds these limits, then the noise limit becomes equal to the existing ambient noise level. In addition, interior (indoor) noise levels are limited to 40 dBA nighttime (10 pm to 7 am) and 45 dBA daytime, or the existing ambient noise level in residential dwellings, whichever is greater. For sources of tonal or impulsive noise, noise ordinance limits are reduced by five dBA.

TABLE 3.7-4

City of Carson Noise Ordinance Limits

Construction Limit (dBA)		**Operations Limit (exterior dBA except where noted)**					
Area	**L_{max}**	**Area**	**L_{50}**	**L_{25}**	**$L_{8.3}$**	**$L_{1.7}$**	**L_{max}**
Residential	65 (7 am – 6 pm)	Residential (a,b)	50	55	60	65	70
		Commercial(a,b)	60	60	70	75	80
		Industrial (a,b)	70	70	80	85	90
		Indoor Noise – Residences(b): 45 day, 40 night					

Source: City of Carson Ordinance No. 4101

a Residential and commercial nighttime limits (10 pm – 7 am) are 5 dBA lower. Tonal or impulsive type noise also reduces limit by 5 dBA.

b If ambient noise exceeds limit then limit is increased to ambient noise.

L_X A-weighted sound level, L, that may not be exceeded more than “x” percent of the measured time period.

L_{max} Maximum A-weighted sound level

The City of Carson General Plan Noise Element is a comprehensive program to limit exposure of the community to excessive noise levels. As part of the implementation of this goal, the City identifies compatible noise levels for various types of land uses. The Noise Element indicates that projects should incorporate noise mitigation measures if they will exceed normally acceptable levels as defined by the guidelines. These levels are identified in Table 3.7-5.

The City of Carson's noise ordinance also limits construction noise as shown in Table 3.7-6. The City of Carson exempts a number of activities from the noise controls identified above, including the following:

TABLE 3.7-5

City of Carson Noise and Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure (Ldn or CNEL, dBA)			
	Normally Acceptable[(a)]	Conditionally Acceptable[(a)]	Normally Unacceptable[(a)]	Clearly Unacceptable[(a)]
Residential-Low Density; Residential-Multiple Family	50-60	60-65	65-75	75-85
Transient Lodging-Motel, Hotels	50-65	65-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	60-65	65-80	80-85
Auditoriums, Concert Halls, Amphitheaters	NA	50-65	NA	65-85
Sports Arenas, Outdoor Spectator Sports	NA	50-70	NA	70-85
Playgrounds, Neighborhood Parks	50-70	NA	70-75	75-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	NA	70-80	80-85
Office Buildings, Business Commercial and Professional	50-67.5	67.5-75	75-85	NA
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-75	75-85	NA

Source: City of Carson, General Plan.

(a) **Normally Acceptable:** Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

TABLE 3.7-6

Maximum Noise Level Limits for Construction (dBA)

Timing	Single-family Residential	Multi-family Residential
Equipment used for non-scheduled, intermittent, short-term operations of 20 days or less		
Daily, except Sundays and legal holidays, 7 am 8 pm	75	80
Daily 8 pm to 7 am and all day Sunday and legal holidays	60	64
Equipment used for repetitively scheduled operations of 21 days or more		
Daily, except Sundays and legal holidays, 7 am 8 PM	65	70
Daily 8 pm to 7 am and all day Sunday and legal holidays	55	60
Mobile Equipment used for non-scheduled, intermittent, short-term operations		
Timing	**Business Structure**	
Daily, including Sunday and legal holidays, all hours	85	

Source: Carson Municipal Code Article 5, Chapter 5 and Los Angeles Country Code 12.08.440

- Normal well servicing, remedial, or maintenance work performed within an existing well that does not involve drilling or redrilling and that is restricted to the hours between 7 am and 10 pm; and,

- Drilling or redrilling work which is done in full compliance with Article IX of the Carson Municipal Code (CMC), including CMC 9148.2.

3.8 TRANSPORTATION AND TRAFFIC

3.8.1 REGIONAL CIRCULATION

The proposed Project site is located at 1450 - 1480 Charles Willard Street in the City of Carson (see Figure 2.3-1). Four major freeways are located within the City of Carson including the Gardena Freeway (Route 91), Long Beach Freeway (I-710), the Harbor Freeway (I-110), and the San Diego Freeway (I-405). Regional access to the site is provided by the Route 91 freeway, which lies just north of the site and runs east/west. The I-710 and the I-110 freeways are major north and south highways, which extend from the Ports of Los Angeles and Long Beach through Los Angeles County. Wilmington Avenue, Central Avenue, and Alameda Street are key arterials servicing the area. Alameda Street has been, and continues to be upgraded, expanded and modified to provide a dedicated roadway system for trucks and railcars leaving the Ports of Los Angeles and Long Beach to provide more efficient movements of goods and materials into/out of the port areas.

In addition to the freeway system, railroad facilities service the Wilmington/Carson area providing an alternative mode of transportation for the distribution of goods and materials. Union Pacific and BNSF railroads provide long-haul service to the Ports, while Pacific Harbor Line (PHL) provides local switching and train control services.

3.8.2 LOCAL CIRCULATION

The proposed Project is located at 1450 - 1480 Charles Willard Street in the City of Carson, California. The proposed Project site is located south of Victoria Street, west of Wilmington Avenue, north of East University Drive, and east of South Central Avenue. Regional access to the proposed Project site is provided by the Route 91 freeway, which is located approximately three quarters of a mile north of the proposed Project, and the I-110 freeway, located approximately two and one-half miles west of the site.

Streets in the Carson area will be impacted during construction of the pipeline and electrical conduit portions of the proposed Project. The function and brief description of the street classification system used by the City of Carson is provided below.

Local Streets: Local Streets principally provide vehicular, pedestrian, and bicycle access to property abutting the public right-of-way. Local street configurations vary depending on the land uses abutting the roadway, however, the common right-of-way width is 48 to 60 feet. Local streets can be expected to carry less than 1,500 vehicles per day (City of Carson, 2004).

Collector Streets: The collector street is intended to serve as an intermediate route to handle traffic between local streets and arterials. In addition, collector streets provide access to abutting property. Collector streets are anticipated to carry traffic volumes between 2,000 to 5,000 vehicles per day, but some carry up to 10,000 vehicles per day. The primary function of the collector is to collect vehicles from the local street system and transport them to the arterial system as efficient as possible. Collector streets in Carson require a minimum right-of-way of 60 feet (City of Carson, 2004).

Secondary Highways: Secondary highways are similar to major highways in function and connect traffic from collectors to the major freeway system. Secondary highways move large volumes of automobiles, trucks, and buses and link the principal elements within the City to other adjacent regions. These roadways carry approximately 10,000 to 25,000 vehicles per day. Secondary highways in Carson require a minimum right-of-way of 80 feet (City of Carson, 2004).

Major Highways: Major highways function to connect traffic from collectors to the major freeway system as well as to provide access to adjacent land uses. Major highways move large volumes of automobiles, trucks and buses, and link the principal elements within the City to other adjacent regions. Major highways carry 25,000 vehicles per day or more. Raised medians to separate opposing flows are typical. Major highways in Carson require a minimum right-of-way of 100 feet.

3.8.2.1 Existing Site Traffic Conditions

The proposed Project site occupies approximately 6.5 acres and would be located entirely within the Dominguez Technology Centre, which is located between Charles Willard Street on the north and Bishop Avenue on the east (see Figure 2.3-2). Access to the site is via Charles Willard Street off of Victoria Street. South Central Avenue, Wilmington Avenue, East Del Amo Avenue, Alameda Street, and Avalon Boulevard are key arterials servicing the area. The primary route used to access the proposed Project site is from Route 91, at either South Central or Wilmington Avenues, onto Victoria Street, and then to Charles Willard Street.

The current use of the proposed Project site is an industrial warehouse that is currently leased to a retail hardware and merchandise distributor, an electronic equipment manufacturer, and a global freight forwarder. Existing operations included freight warehousing and distribution operations. Current oil and gas operations at the site include two production test wells and production testing equipment, which operate 24 hours a day, seven days a week. In order to determine existing traffic generated at the proposed Project site, traffic counts were taken at the two driveways that provide access to the proposed Project site, one at the driveway at Bishop Avenue and one at the driveway at Charles Willard Street. The results of the traffic counts are shown in Table 3.8-1. The average daily trip level associated with the existing site is 256 trips per day.

3.8.2.2 Existing Setting for Potentially Impacted Roadways

In addition to the proposed Project site, the proposed Project includes pipelines connecting the new oil and gas production facility to distribution facilities (see Figure 2.6-6). The same freeways, key arterials, and roadways providing regional circulation to the proposed Project site provide access to the proposed pipeline routes, e.g., Charles Willard Street, South Central Avenue, Wilmington Avenue, and East 223rd Street.

Construction of the proposed Project has the potential to contribute additional traffic and result in temporary lanes closures associated with pipeline installation activities. The pipelines will be installed along existing street rights-of-way including Charles Willard Street, South Central Avenue, University Avenue, and near the intersection of 223rd Street and Wilmington Avenue. The specific streets to be impacted by construction of the pipelines are shown in Figure 3.8-1.

In addition, as discussed in Section 2.6.3.3, an electrical conduit may be constructed along South Central Avenue, beginning at Greenleaf Boulevard, running east on Victoria Street, south on Bishop Avenue and west on Charles Willard Street (see Figure 2.6-5). Construction of the electric conduit has the potential to contribute additional traffic and result in temporary lanes closures associated with installation activities. The below ground construction would consist of digging a trench along the route, except that a boring machine and associated equipment would be used to install up to approximately 1,000 feet beneath the 91 Freeway. The electrical conduit will be installed along existing

TABLE 3.8-1

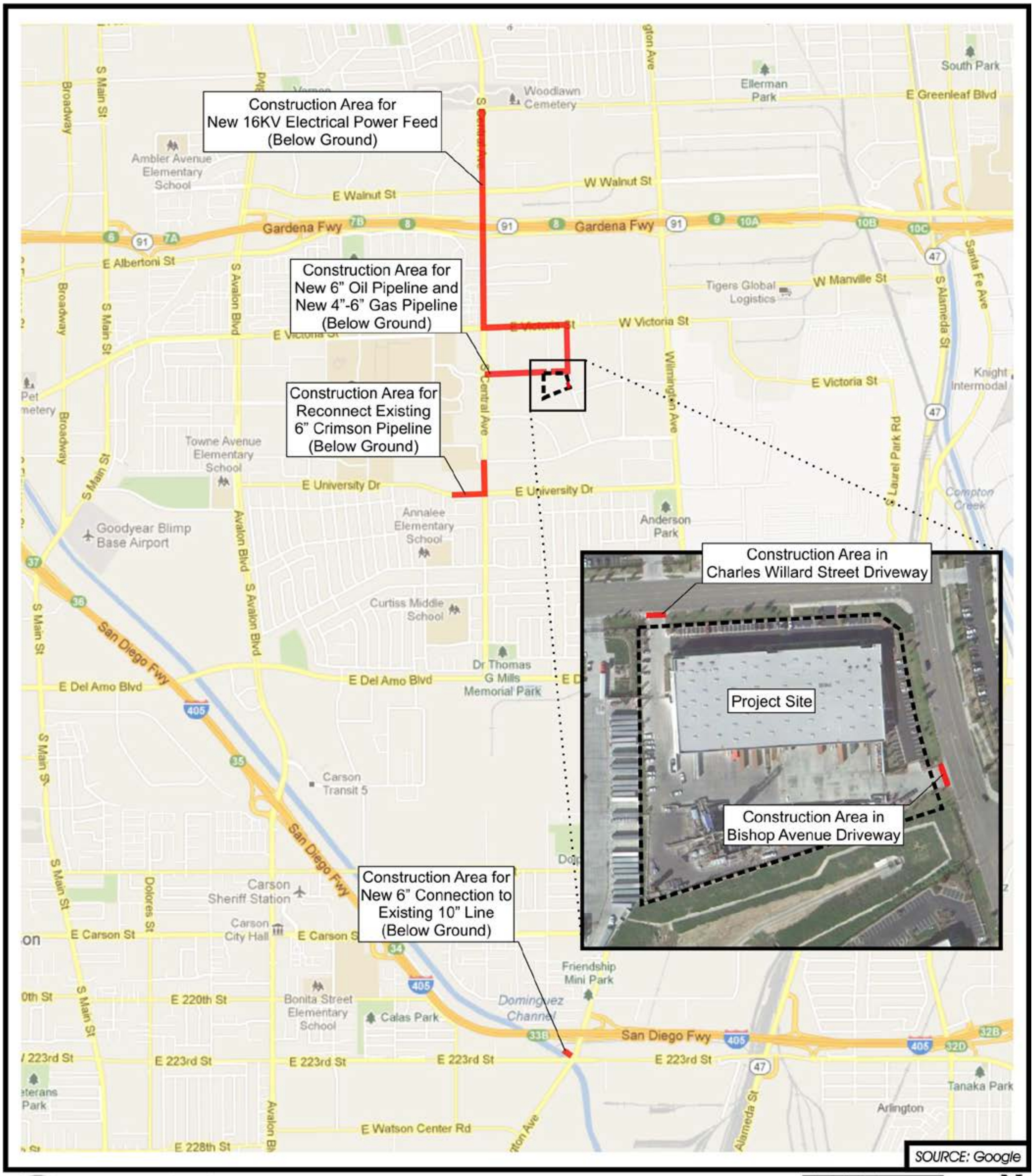
Existing Total Traffic To/From the Proposed Project Site

Hour of Day	Bishop Avenue Driveway	Charles Willard Street Driveway	Existing Site Traffic Total
12 – 4 am	0	0	0
4 – 6 am	16	0	16
6 – 7 am	11	2	13
7 – 8 am	5	4	9
8 – 9 am	8	16	24
9 – 10 am	15	21	36
10 – 11 am	1	21	22
11 – Noon	3	32	35
12 – 1 pm	1	24	25
1 – 2 pm	23	10	33
2 – 3 pm	2	4	6
3 – 4 pm	7	1	8
4 – 5 pm	7	2	9
5 – 6 pm	4	5	9
6 – 7 pm	0	3	3
7 – 8 pm	0	0	0
8 – 9 pm	2	2	4
9 – 10 pm	2	0	2
10 – 11 pm	1	1	2
11 - Midnight	0	0	0
Daily Total	**108**	**148**	**256**

street rights-of-way including South Central Avenue, Victoria Street, Bishop Avenue, and Charles Willard Street. The specific streets to be impacted by construction activities are described below and shown on Figure 3.8-1.

3.8.2.2.1 Charles Willard Street

As discussed in Section 2.6.4.1, the proposed pipeline follows approximately 2,000 feet of Charles Willard Street from Bishop Avenue to South Central Avenue (see Figure 3.8-1) within the Dominguez Technology Centre. The electrical conduit will also be along Charles Willard Street from Bishop Avenue to the proposed Project site. The streets within the Dominguez Technology Centre were developed to accommodate the traffic associated with the light and heavy industrial facilities allowed under the Dominguez Technology Centre Specific Plan. Charles Willard Street is currently a four lane undivided local street.



Environmental Audit, Inc.

PIPELINE AND ELECTRICAL CONDUIT CONSTRUCTION LOCATIONS WITHIN STREETS

Project No. 2757

Figure 3.8-1

N:\2757\Chapter 3\Traffic (rev.3).cdr

3.8.2.2.2 South Central Avenue

As discussed in Section 2.6.4.1, the proposed pipeline will require reconnecting a short segment to an existing pipeline in South Central Avenue between Glenn Curtis Street and East University Drive (see Figure 3.8-1). The electric conduit will also be installed along South Central Avenue from Greenleaf Boulevard to Victoria Street. South Central Avenue is currently a four lane divided major highway.

3.8.2.2.3 Victoria Street

The electrical conduit will run along Victoria Street from South Central Avenue to Bishop Avenue. Victoria Street is currently a four lane undivided secondary highway.

3.8.2.2.4 Bishop Avenue

The electrical conduit will be installed along Bishop Avenue from Victoria Street to Charles Willard Street. Bishop Avenue is within the Dominguez Technology Centre. Bishop Avenue is currently a four lane undivided local street.

3.8.2.2.5 University Avenue

As discussed in Section 2.6.4.1, the proposed pipeline will require reconnecting a short segment to an existing pipeline in East University Drive between South Central Street and Coslin Avenue (see Figure 3.8-1). South Central Avenue is currently a four lane divided secondary highway with a center turning lane.

3.8.2.2.6 223rd Street

As discussed in Section 2.6.4.1, the proposed pipeline will make a new connection at the Wilmington Avenue and East 223rd Street intersection (see Figure 3.8-1). East 223rd Street is currently a four lane divided major highway.

3.8.2.2.7 Wilmington Avenue

The proposed pipeline will make a new connection at the Wilmington Avenue and East 223rd Street intersection (see Figure 3.8-1). Wilmington Avenue is currently a four lane divided major highway.

Table 3.8-2 summarizes the characteristics of streets which the proposed Project could impact during pipeline construction activities.

Table 3.8-3 describes the land uses adjacent to the streets where construction activities are proposed and potentially impacted by construction activities.

TABLE 3.8-2

Normal Southbound/Westbound Roadway Segment Conditions

Affected Roadway	Roadway Segment[(a)]	Travel Lanes		Roadway width (ft)	Length of Segment (ft)	Median Type
		NB/EB	SB/WB			
Charles Willard Street	East of South Central Avenue	2	2	60	1,250	Undivided
South Central Avenue	Charles Willard to University	2	2	80	700	Divided
South Central Avenue	Greenleaf Boulevard to Victoria Street	2	2	80	4,750	Divided
Victoria Street	South Central Avenue to Bishop Street	2	2	80	1,800	Undivided
Bishop Avenue	Victoria Street to Charles Willard Street	2	2	60	1,000	Undivided
University Drive	West of Central to Coslin Avenue	2	2	60	650	Divided
East 223rd Street	Wilmington Avenue Intersection	2	2	80	0	Divided
Wilmington Avenue	East 223rd Intersection	2	2	80	0	Divided

Notes: NB = north bound; EB = east bound; SB = south bound; WB = west bound
(a) All Roadway Segments are within the jurisdiction of the City of Carson.

TABLE 3.8-3

Environmental Setting of Construction Area Roadways

Roadway	On-Street Parking	Land Uses
Charles Willard Street	Prohibited	Light Industrial and Public Facilities
South Central Avenue (Charles Willard to University)	Prohibited	Light Industrial and Commercial
South Central Avenue (Greenleaf to Victoria Street)	Prohibited	Residential, Commercial, and Light Industrial
Victoria Street	Prohibited	Residential and Light Industrial
Bishop Avenue	Prohibited	Light Industrial and Public Facilities
University Avenue	Prohibited	Light Industrial, Commercial, Residential, and Public Facilities
East 223rd Street	Prohibited	Heavy Industrial, Commercial, and Business Park
Wilmington Avenue	Prohibited	Heavy Industrial, Commercial, and Business Park

3.8.3 TRUCK ROUTES

Many trucks travel through the City on its streets due to the types of industrial and commercial uses in the City. It is estimated that trucks make up 10 to 25 percent of the vehicles within the city. The City of Carson has designated truck routes where vehicles in excess of three tons may travel.

3.8.4 TRANSIT FACILITIES

Public transportation in the City of Carson is provided primarily by the Carson Circuit, Torrance Transit and the Los Angeles County Metropolitan Transportation Authority (MTA) bus lines. There is also limited service from Long Beach Transit and Gardena Municipal Bus Lines. The Carson Circuit Transit System generally provides service within the City of Carson, with connections to other systems including the Metro Blue Line light rail at the Del Amo Boulevard and Santa Fe Avenue. The MTA bus lines provide connections to other surrounding areas. An inventory of existing bus stops and transit lines near proposed Project construction activities was reviewed to determine potential impacts from construction activities.

The Carson Circuit Transit System Route A (Cal State Dominguez Hills) serves the northern Carson area in the vicinity of Cal State Dominguez Hills. Bus stops associated with Route A located near the proposed pipeline/conduit construction activities include the bus stop at South Central Avenue/University Drive, the bus stop at Victoria Street and South Central Avenue, and the bus stop at South Central Avenue and Radbard Street.

The Carson Circuit Transit System Route E (Turmont) serves the area just south, east and west of Cal State Dominguez Hills. Bus stops near the proposed Project pipeline construction activities include South Central Avenue/Charles Willard Street and South Central Avenue/University Drive.

The Carson Circuit Transit System Route F (Business Center South) serves the south central Carson area. One bus stop associated with this route is located at the corner of Wilmington Avenue/223rd Street.

3.8.5 BIKE LANES

The City of Carson adopted the Master Plan of Bikeways in August 2013 and has designated bicycle routes using the following definitions.

- Bicycle Path (Class I): This facility is a special path for exclusive use of bicycles which is completely separated from the motor vehicle traffic by space of a physical barrier.

- Bicycle Lane (Class II): A bicycle facility where a portion of the paved roadway area is marked as a lane for use of bicycles. It is identified by "Bike Lane" signing, pavement marking and lane line markings.

- Bicycle Route (Class III): A bicycle way designated within a public right-of-way. The purpose of the bike route is primarily that of transportation, allowing the bicyclist to travel from one point in the City to another. A shared bicycle route is a street identified as "Bike Route" through signs only. No special markings on the pavement are provided.

Several bicycle routes are located in the vicinity of the proposed Project and the related pipeline construction activities. Central Avenue is designated as a bicycle lane (Class II) from Greenleaf Boulevard to University Drive to Del Amo Boulevard. University Drive is designated as a bicycle lane (Class II) for its entire length. Victoria Street is designated as a bicycle lane (Class II) within the City of Carson (Carson, 2013).

3.8.6 REGULATORY BACKGROUND

Because the roadways cross separate city and county jurisdictions, maintenance is undertaken by the appropriate city or county departments, and state roadways are maintained by the Caltrans. In the proposed Project area, Caltrans has the primary responsibility for I-405, I-110, I-710, and the Terminal Island Freeway; the Cities of Los Angeles and Carson have the primary responsibilities for the various roadways that comprise the local roadway network.

3.8.6.1 Federal

There are no federal traffic-related regulatory programs applicable to the proposed Project modifications.

3.8.6.2 Congestion Management Program (State and Local Requirements)

In June 1990, California voters approved Proposition 111 to fund transportation-related improvements statewide. A Congestion Management Program (CMP) is required to be adopted for urbanized counties in California to be eligible for revenues associated with Proposition 111. In the County of Los Angeles, the Los Angeles County MTA is the agency that prepares the CMP. The goal of the CMP is to promote a more coordinated approach to land use and transportation decisions by requiring traffic impact analyses for individual development projects of potential regional significance (add 50 or more trips during either the AM or PM peak hours to arterials within the CMP network). There are no arterial monitoring stations in the City of Carson. The CMP also requires traffic studies to analyze CMP network freeway monitoring locations where a project adds 150 or more trips during the morning (am) or evening (pm) peak hours. Route 91, the I-110 freeway, the I-405 freeway and the I-710 freeway are freeways that are designated for monitoring in the CMP. Compliance with the CMP provisions include land use coordination through traffic impact analyses; implementation of Transportation Demand Management (TDM) strategies; maintenance of transit service standards; monitoring of CMP highway system levels of service; and development of level of service deficiency plans where needed.

Transportation planning for Los Angeles County is the responsibility of the SCAG. Under Federal law, SCAG must prepare a Regional Transportation Plan (RTP). The RTP demonstrates how the region will meet federal mandates associated with air quality requirements and must be approved in order to receive Federal transportation funds. The MTA is the state designated planning agency for Los Angeles County and submits recommended projects to SCAG for inclusion in the RTP. The MTA identifies the transportation needs and challenges that Los Angeles County will face over a 25 year period through the development of Long Range Transportation Plans (LRTP). The adopted LRTP becomes the blueprint for implementing future transportation improvements in Los Angeles County. The LRTP seeks to maintain the existing transportation system, maximize system efficiency, increase system capacity, and manage demand.

3.8.6.3 Local

3.8.6.3.1 County of Los Angeles

The Transportation Element of the Los Angeles County General Plan was adopted in November 1980. The three objectives of the Transportation Element are:

- To achieve a transportation system that is consistent with the comprehensive objectives of the General Plan and the needs of the residents.

- To achieve a transportation system that is responsive to economic, environmental, energy conservation, and social needs at the local community, area, and countywide levels.

- To achieve an efficient, balanced, integrated, multimodal transportation system that will satisfy short- and long-term travel needs for the movement of people and goods.

Relevant policies to the proposed Project modifications within the Transportation Element include the following:

- Policy 31. Provide for the safe movement of hazardous materials.

3.8.6.3.2 City of Carson General Plan

The guiding principle for the Transportation Element of the City of Carson General Plan is a commitment to providing a safe and efficient circulation system that improves the flow of traffic while enhancing pedestrian safety, promoting commerce, and providing for alternative modes of transportation. In regards to the proposed Project, the Transportation Element identifies Central Avenue (north of Victoria Street), Wilmington Avenue, and Avalon Boulevard (among others) as truck routes. The goals and policies within the Transportation Element were developed to ensure safe and adequate transportation infrastructure (City of Carson, 2004). There are no goals or policies within the Transportation Element of the City of Carson General Plan specifically relevant to the proposed Project since the proposed pipelines would be located underground. The following general policies apply to all projects throughout the City.

- TI-1: Minimize impacts associated with truck traffic through the City, as well as the truck parking locations.

- TI-3: Minimize intrusion of commuter traffic on local streets through residential neighborhoods.

- TI-4: Increase the use of alternate forms of transportation generated in, and traveling through, the City of Carson.

- TI-7: Provide improved aesthetic enhancements to and maintenance of the City's transportation corridors.

CHAPTER 4

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 INTRODUCTION

This chapter assesses the potential environmental impacts of the construction and operation of the proposed Project described in Chapter 2.

This Chapter evaluates those impacts that are considered potentially significant under the requirements of CEQA, for those environmental areas identified in the NOP/IS (see Appendix A). Specifically, an impact is considered significant under CEQA if it leads to a "substantial, or potentially substantial, adverse change in the environment." Impacts associated with the proposed Project fall within one of the following categories:

Beneficial – Impacts will have a positive effect on a resource.

No impact – There would be no impact to the identified resource as a result of the proposed project.

Adverse but not significant – Some impacts may result from the project; however, they are judged to be insignificant. Impacts are frequently considered insignificant when the changes are minor relative to the size of the available resource base or would not change an existing resource.

Potentially significant but mitigation measures reduce to insignificance – Significant adverse impacts may occur; however, with proper mitigation, the impacts can be reduced to insignificance.

Potentially significant and mitigation measures are not available to reduce to insignificance – Adverse impacts may occur that would be significant even after mitigation measure have been applied to lessen their severity.

4.2 AIR QUALITY

The NOP/IS concluded that the proposed Project could potentially result in significant adverse air quality impacts for criteria pollutants and TAC emissions associated with construction and operations. Additionally, impacts to sensitive receptors and odor impacts will be evaluated. Also, other air quality topics such as compliance with air quality plans and air quality rules and regulations will be evaluated.

4.2.1 SIGNIFICANCE CRITERIA

To determine whether or not air quality impacts from the proposed Project are significant, impacts will be evaluated and compared to the significance criteria in Table 4.2-1. If impacts equal or exceed any of the criteria in Table 4.2-1, they will be considered significant.

The City of Carson uses the SCAQMD significance thresholds. The SCAQMD makes significance determinations for construction impacts based on the maximum or peak daily emissions during the construction period, which provides a "worst-case" analysis of the construction emissions. Similarly, significance determinations for operational emissions are based on the maximum or peak daily allowable emissions during the operational phase, except for the health risk assessment which also relies upon average emission rates.

4.2.2 ENVIRONMENTAL IMPACTS

4.2.2.1 Construction Emission Impacts

4.2.2.1.1 Regional Impacts

Construction activities associated with the proposed Project would result in emissions of CO, VOC, NOx, SOx, PM10, and PM2.5. Construction emissions were calculated using the CalEEMod, Version 2011.1.1. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform to quantify potential criteria pollutant and GHG emissions associated with both construction and operation of a variety of land use projects. The proposed Project construction emissions were separated into three components for analysis: (1) the production facility, (2) the off-site pipelines; and (3) the SCE connection.

Construction equipment expected to be used for the proposed Project includes off-road construction equipment including excavators, loader dozers, backhoes, and cranes; on-road trucks including water trucks, dump trucks, delivery trucks, and pickup trucks; and worker commute vehicles. The emissions expected to be generated include diesel combustion from the construction equipment, fugitive dust from earth moving (i.e., grading and trenching) and demolition, off-site vehicle activity from deliveries and construction worker commuting, and VOC emissions from architectural coating.

TABLE 4.2-1

Air Quality Significance Thresholds

Mass Daily Thresholds[a]		
Pollutant	**Construction[b]**	**Operation[c]**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants, Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Chronic and Acute Hazard Index ≥ 1.0 (project increment) Cancer Burden ≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000MT/yr CO_2eq for industrial facilities	
Ambient Air Quality for Criteria Pollutants[d]		
NO_2 1-hour average annual average	In attainment; significant if project causes or contributes to an exceedance of any standard: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour annual average	10.4 μg/m^3 (construction)[e] and 2.5 μg/m^3 (operation) 1.0 μg/m^3	
PM2.5 24-hour average	10.4 μg/m^3 (construction)[e] and 2.5 μg/m^3 (operation)	
SO_2 1-hour average 24-hour average	0.255 ppm (state) and 0.075 ppm federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 μg/m^3 (state)	
CO 1-hour average 8-hour average	In attainment; significant if project causes or contributes to an exceedance of any standard: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average Rolling 3-month average Quarterly average	1.5 μg/m^3 (state) 0.15μg/m^3 (federal) 1.5μg/m^3 (federal)	

a) Source: SCAQMD CEQA Handbook (SCAQMD, 1993)
b) Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basin)
c) For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
d) Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
e) Ambient air quality threshold based on SCAQMD Rule 403.

KEY: ppm = parts per million; μg/m^3 = microgram per cubic meter; lbs/day = pounds per day; MT/yr CO2eq = metric tons per year of CO_2 equivalents, ≥ greater than or equal to, > = greater than

Construction emissions were calculated for peak day construction activities based on a phased construction schedule where onsite demolition and construction would occur over a 12 to 18-month time period; depending on the commencement of the SCE connection. The off-site pipeline construction would occur during a six month period in the middle of the onsite construction period, and the SCE connection would occur sometime during project construction. Figure 2.7-1 assumes the longer construction period, however, peak day emissions were based on combining the SCE connection with other various construction phases to present a worst case emission scenario since the construction activities could vary. Peak day emission are presented in Appendix B and summarized in Table 4.2-2. Daily construction emissions were calculated for the peak construction day activities. Peak day emissions represent the highest daily emissions from employee vehicles, fugitive dust sources, construction equipment, and transport activities on any given day in the construction period. The CalEEMod outputs from the component models for each period (i.e., annual, summer, or winter) are included as an attachment to Appendix B.

As discussed in Section 2.6.1, wells are anticipated to be installed at a rate of approximately 20 wells per year. Therefore, the construction of the processing facilities may be built over a longer period of time (i.e., some built initially with the remainder added once more wells are complete). The analysis of constructing the remaining equipment (referred to herein as delayed construction) during the operation of the Facility is presented in Section 4.2.2.2.1.

Off-Road Construction Equipment

Construction equipment will be a source of combustion emissions. Off-road construction equipment includes aerial lifts, backhoes, compactors, compressors, concrete saws, cranes, dozers, excavators, forklifts, front-end loaders, generators, graders, pavers, pumps, rollers, scrapers, tractors, watering trucks, welding machines, and other general construction equipment. The equipment is assumed to be operational eight hours per day. Construction workers are expected to be at the site for longer than eight hours per day, but that includes time for meals and breaks, organizational meetings, and other related activities. Therefore, construction equipment would not be expected to operate the entire time. Emission calculations were performed using the CalEEMod Model (see Appendix B). Estimated emissions from off-road construction equipment used for construction activities are included in Table 4.2-2.

On-Road Construction Emissions

On-road construction emissions include construction worker commuter vehicles, pickup trucks, delivery trucks, vendor trips, and water trucks. Primary emissions generated will include combustion emissions from engines during idling and while operating. Emission calculations were performed using the CalEEMod Model (see Appendix B). Estimated emissions from on-road construction equipment used for construction activities are included in Table 4.2-2.

TABLE 4.2-2

Peak Construction Emissions[a]
(lbs/day)

Activity	CO	VOC	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]
Onsite Activities [c]						
Demolition/Site Preparation	--	--	--	--	7.3	--
Well Cellars/Wall Construction	16.4	4.1	28.3	<0.1	--	1.8
Process Equipment Areas Construction	15.4	3.6	27.2	<0.1	--	1.7
Tanks Construction	6.9	2.4	10.4	<0.1	--	0.6
Subtotal, Onsite	38.7	10.1	65.9	0.3	7.3	4.1
Offsite Activities [c]						
Demolition/Site Preparation	--	--	--	--	7.0	--
Well Cellars/Wall Construction	0.1	0.1	0.2	<0.1	--	0.1
Process Equipment Areas Construction	0.2	0.1	0.4	<0.1	--	0.1
Tank Construction	0.1	0.1	0.2	<0.1	--	0.1
Construction Material Delivery Trucks	1.6	0.3	3.0	<0.1	0.8	0.1
Pipeline Construction	--	--	--	--	--	--
Pipeline Repairs	14.6	4.0	26.8	<0.1	--	1.6
Facility Workers Vehicles	15.4	1.3	1.3	<0.1	3.2	0.2
Pipeline Workers Vehicles	2.6	0.2	0.2	<0.1	--	0.1
SCE Offsite Construction	28.9	6.4	35.8	<0.1	2.9	2.8
SCE Deliveries	1.6	0.3	2.9	<0.1	1.4	0.1
SCE Workers Vehicles	3.2	0.3	0.3	<0.1	0.7	0.1
Subtotal, Offsite	68.3	13.1	71.1	1.0	16.0	5.3
Total Emissions	**107.0**	**23.2**	**137.0**	**1.3**	**23.3**	**9.4**
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**	**55**
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**

Notes: See Appendix B Table B-14. All values of <0.1 are rounded up to 0.1 for a conservative impact analysis. All differences from Appendix B are due to rounding.

(a) The peak emission day was identified for each pollutant based on the maximum combined on-site and off-site emissions and only activities which occur on the peak day are shown.

(b) PM10 and PM2.5 emissions include equipment exhaust, vehicle tire and brake wear, and fugitive dust emissions.

(c) Emissions are reported by construction phase to demonstrate the contribution of each phase to the maximum mass daily emissions. Zero emission values (--) indicate that certain construction phases have no activities on the day when maximum emissions are estimated to occur.

Fugitive Dust

Fugitive dust sources include demolition, grading, trenching, wind erosion, and truck filling/dumping at the site to construct necessary foundations. During construction activities, water used as a dust suppressant will be applied in the construction area during demolition, grading, trenching, and earth-moving activities to control or reduce fugitive dust emissions. Application of water reduces PM emissions by a factor of up to 61 percent (SCAQMD, 2011). It is assumed that one water application per day reduces PM emissions by 34 percent, two applications per day reduce emissions by 50 percent, and three applications per day reduce emissions by 61 percent (SCAQMD, 2011). Fugitive dust suppression, often using water, is a standard operating practice and is one method of complying with SCAQMD Rule 403. Estimated peak controlled PM10 and PM2.5 emissions from construction activities for fugitive dust sources are calculated using CalEEMod (see Table 4.2-2). The detailed emission calculations are provided in Appendix B.

Vehicles and trucks traveling on paved and unpaved roads are also a source of fugitive emissions during the construction period. The fugitive emission calculations for vehicles assume travel on both paved and unpaved roads. Emissions of dust caused by travel on paved roads were calculated using CalEEMod (see Appendix B).

Architectural Coatings

There is the potential for emissions from the use of architectural coatings on new structures, e.g., new storage tanks, vessels, offices). The proposed Project assumes that VOC-containing paints will be used for architectural coating. Emission calculations were performed using the CalEEMod Model (see Appendix B).

Miscellaneous Emissions

In addition to the construction-related emissions already identified, the proposed Project could generate emissions of VOC if contaminated soil is found and soil remediation activities are necessary. The Dominguez Technology Centre was developed on the previously unoccupied oil field, where hydrocarbon contaminated soil was remediated and the existing warehouse was constructed. As such, contaminated soil is not expected to be encountered in any of the areas where project construction will occur. Therefore, emission estimates for VOC would be speculative at this time because the amount of contaminated soil, if any, and the levels of contamination are currently unknown. VOC contaminated soil is defined as soil which registers 50 parts per million or greater per the requirements of SCAQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil. While unlikely, if VOC contamination is found, soil remediation must occur under an SCAQMD-approved Rule 1166 Plan to assure the control of fugitive emissions, which generally includes covering soil piles with heavy plastic sheeting and watering activities to assure the soil remains moist. Soil remediation activities are under the jurisdiction of the RWQCB and it may be necessary for the

RWQCB, SCAQMD, and the City of Carson to coordinate the appropriate response and remediation, if any contaminated soil is encountered.

Regional Construction Emission Summary

Construction activities associated with the proposed Project would result in emissions of CO, VOC, NOx, SOx, PM10, and PM2.5 as summarized in Table 4.2-2, together with the SCAQMD's daily construction significance threshold levels. The construction phase of the proposed Project will exceed the significance threshold for NOx. Therefore, unmitigated air quality impacts associated with construction are considered significant. The proposed Project will mitigate these emissions as discussed in Section 4.2.3

4.2.2.1.2 Localized Construction Impacts

The SCAQMD has developed the Localized Significance Threshold (LST) Methodology to evaluate the potential localized impacts of criteria pollutants from construction activities (SCAQMD, 2003). The LST Methodology requires that the emissions of criteria pollutants be evaluated for impact on ambient air quality standards, including CO, NO_2, SOx, PM10, and PM2.5 associated with the proposed Project.

In order to determine the groundlevel concentrations, the U.S. EPA AERMOD air dispersion model was used to model the peak day construction emissions (see Table 4.2-2) and calculate the annual average and maximum 1-hour, 8-hour, and 24-hour concentrations. The details of the assumptions used in the modeling are provided in Appendix B.

To determine the significance of construction SOx, PM10, and PM2.5 emissions, proposed Project emissions are compared to an incremental change in ambient air quality. PM10 and PM2.5 are evaluated differently than SOx, CO, and NO_2 because PM10 and PM2.5 in nearly the entire District exceed the state or federal PM10 and PM2.5 standards. For CO and NO_2, which are in attainment with all state and federal standards, the SOx 1-hour, SOx 24-hour, SOx annual, CO 1-hour, CO 8-hour, NO_2 1-hour, and NO_2 annual average groundlevel concentrations from the proposed Project are combined with the background ambient concentrations and compared to the most stringent ambient air quality standard. Whereas, the PM10 and PM2.5 LSTs are directly compared to the incremental change in ambient air quality. The results are shown in Table 4.2-3 (see Appendix B for more detailed calculations).

The LST analysis indicates that CO, NO_2, SOx, PM10, and PM2.5 emissions do not exceed the LST in Table 4.2-3 from construction activities associated with the proposed Project. Therefore, the proposed Project complies with the localized significance threshold methodology and no localized significant impacts on air quality during the construction period are expected.

TABLE 4.2-3

Localized Significance Threshold

Criteria Pollutant	Averaging Period	Modeled GLC Conc. (μg/m^3)	Background GLC Conc. (μg/m^3)[a]	Total GLC Conc. (μg/m^3)	Most Stringent Air Quality Standard (μg/m^3)[b]	Exceeds LST Threshold?
CO	1-hour	87	3,433	3,520	23,000	No
	8-hour	32	2,976	3,008	10,000	No
NO_2[c]	1-hour	38	207	245	339	No
	1-hour (Federal)	38	126[d]	164	188	No
	Annual	4	40	44	57	No
SO_2	1-hour	0.11	--	--	196.2	No
	24-hour	0.02	--	--	104.6	No
	Annual	0.003	--	--	78.5	No
Sulfates[e]	24-hour	0.0004	--	--	25	No
PM10	24-hour	4.7	--	--	10.4	No
	Annual	0.4	--	--	1.0	No
PM2.5	24-hour	2.5	--	--	10.4	No

(a) South Coastal LA County years 2009-2011.
(b) SCAQMD CEQA thresholds. For SO_2, sulfates, PM10 and PM2.5, project comparison to incremental change.
(c) Impacts from air dispersion model are reported as NOx. Per SCAMQD methodology, 25.8% and 75% of NOx will be converted to NO_2 within and beyond 500 meters of the facility, respectively.
(d) 98th percentile background NO_2 value from the SCAQMD.
(e) Assumes 2% of SOx emissions are sulfates.

4.2.2.2 Operational Emission Impacts

The proposed Project's operational emissions are evaluated in this section. Operational emissions include both stationary and mobile sources. Stationary sources include combustion sources and fugitive sources.

The emission sources from existing site operations are described in Section 3.2.4.5 and repeated here for ease of reference. The Dominguez Technology Centre is zoned as light industrial and commercial. The proposed Project site currently contains an industrial warehouse building located at 1450-1480 Charles Willard Street and an oil and gas production test facility on the south end of the site. The industrial warehouse on the north side of the proposed Project site is currently leased by a retail hardware and merchandise distributor, an electronic equipment manufacturer, and a global freight forwarder. The operations consist of freight warehousing and distribution operations, which include tractor-trailer traffic associated with such operations.

Current oil and gas site operations include two production test wells and production testing equipment. Existing site operations have included the drilling of the two test wells and currently include production testing. A process flare, an emergency flare, electrical generators, and several tanks are also used during testing operations. Table 4.2-4 reiterates the total highest 30-day average daily baseline emissions (also shown in Chapter 3, Table 3.2-4) correspond to the drilling operations on the test well site and the warehouse operations.

TABLE 4.2-4

Highest 30 - Day Average Daily Baseline Emissions [a]

Emission Source	Daily Emissions (lbs/day)					
	CO	**VOC**	**NOx**	**SOx**	**PM10**	**PM2.5**
Onsite Emissions						
Warehouse [b]	<0.1	2.0	<0.1	<0.1	<0.1	<0.1
Drilling Electrical Generator [c]	123.5	92.2	584.6	11.8	13.1	12.8
Sub-total	123.5	94.2	584.6	11.8	13.1	12.8
Offsite Emissions[d]						
Warehouse Worker and Contractor Vehicles [e]	9.2	1.0	2.5	<0.1	1.8	0.2
Drilling Worker and Contractor Vehicles[e]	5.4	0.6	1.4	<0.1	0.8	0.1
Drilling Slurry Trucks [e]	6.9	1.3	13.8	<0.1	1.1	0.7
Sub-total	21.5	2.9	17.7	<0.1	3.7	1.0
Total	**145.0**	**97.1**	**602.3**	**11.8**	**16.8**	**13.8**

Notes: See Appendix A Table A-3. All values of <0.1 are rounded down to zero for a conservative impact analysis. All differences from Appendix B are due to rounding.

(a) 30-day average emissions represent the highest average emissions over 30 days of operation at the proposed Project site.

(b) Warehouse emissions are modeled using CalEEMod and assuming a 77,360 ft^2 building with 167 trips per day of vehicle activity associated with warehouse activities, based on traffic data collected and presented in Table 3.8.1.

(c) The two electrical generators used to power the drilling rig assume a maximum load of 1,477 bhp and 100 percent load 24 hours per day.

(d) CalEEMod output emissions are multiplied by two to account for round trips.

(e) Warehouse worker and contractor emissions are modeled using CalEEMod and actual traffic data with 167 trips associated with warehouse activities, 85 contractor and worker trips associated with test well activities, and 4 trips associated with slurry transfer offsite.

The highest 30-day average emissions in Table 4.2-4 describe the existing conditions at the proposed Project site when the environmental review process began. These emissions were then compared to the maximum expected daily emissions during operation of the proposed Project to result in the incremental Project emissions for comparison to the CEQA thresholds. Because maximum future emissions are compared to 30-day average emissions, this represents a conservative comparison.

The peak operational emissions from the proposed Project are shown in Table 4.2-5. The primary sources of onsite emissions are from the process heater and process flare. The primary sources of offsite emissions are from the various transport trucks. The peak daily emissions are based on a combination of a peak operational day and intermittent operational emissions, such as well maintenance and emergency generator testing. Detailed operational emission calculations are provided in Appendix B.

TABLE 4.2-5

Proposed Project Peak Operational Emissions[a]
(lbs/day)

Sources	CO	VOC	NOx	SOx	PM10	PM2.5
Onsite Sources						
Well Drilling[b]	0.0	0.0	0.0	0.0	0.0	0.0
Emergency Flare	0.3	<0.1	0.9	<0.1	<0.1	<0.1
Polymer Hopper Vent (Slurry Tank)	0.0	0.0	0.0	0.0	<0.1	<0.1
Carbon Adsorber (Slurry Tank)	0.0	<0.1	0.0	0.0	0.0	0.0
Process Heater Unit	17.8	1.5	2.6	0.1	1.6	1.5
Truck Loading Unit	0.0	<0.1	0.0	0.0	0.0	0.0
Emergency Generators	0.9	<0.1	4.8	0.2	<0.1	<0.1
Carbon Adsorber (Sump)	0.0	<0.1	0.0	0.0	0.0	0.0
Fugitives	0.0	4.3	0.0	0.0	0.0	0.0
Workover Rig	2.3	1.2	10.9	<0.1	0.4	0.3
Process Flare	10.5	3.3	26.9	0.3	3.5	3.5
Backhoe	0.3	<0.1	0.4	<0.1	<0.1	<0.1
Total Onsite Emissions	**32.1**	**10.9**	**46.5**	**0.9**	**5.9**	**5.7**
Off-Site Emission Sources						
Well Drilling						
Works/Contractors Vehicles	1.6	0.2	0.4	<0.1	0.3	<0.1
Mud/Hauling Trucks	4.9	0.9	9.6	<0.1	0.9	0.5
Subtotal	6.5	1.1	10.0	0.2	1.2	0.6
Full Production						
Works/Contractors Vehicles	1.6	0.2	0.4	<0.1	0.3	<0.1
NGL Trucks	6.1	1.2	12.0	<0.1	1.2	0.6
Slurry Haul Trucks	2.4	0.5	4.8	<0.1	0.5	0.2
Workover Rig	0.2	<0.1	0.3	<0.1	<0.1	<0.1
Subtotal	10.3	2.0	17.5	0.4	2.1	1.0
Total Off-Site Emissions	**16.8**	**3.1**	**27.5**	**0.6**	**3.3**	**1.6**
Total Operational Emissions	**48.9**	**14.0**	**74.0**	**1.5**	**9.2**	**7.3**

Notes: See Appendix A Table A-16(a). All values of <0.1 are rounded up to 0.1 for a conservative impact analysis. All differences from Appendix A are due to rounding.
(a) Assumes maintenance and emergency generator testing operations occurring during a peak operating day.
(b) Well drilling rig is electrically powered.

The peak operational emissions, set forth in Table 4.2-5, are greater than the average daily emissions from the proposed Project. The average operational emissions from the proposed Project are identified in Table 4.2-6. Detailed operational emission calculations are provided in Appendix B.

In calculating the peak daily and average daily emissions shown in Tables 4.2-5 and 4.2-6, the incremental increase in emissions from on-site existing operations was evaluated and included in this summary.

TABLE 4.2-6

Average Proposed Project Operational Emissions[a]
(lbs/day)

Sources	CO	VOC	NOx	SOx	PM10	PM2.5
Onsite Sources						
Well Drilling[b]	0.0	0.0	0.0	0.0	0.0	0.0
Emergency Flare	0.3	<0.1	0.9	<0.1	<0.1	<0.1
Polymer Hopper Vent (Slurry Tank)	0.0	0.0	0.0	0.0	<0.1	<0.1
Carbon Adsorber (Slurry Tank)	0.0	<0.1	0.0	0.0	0.0	0.0
Process Heater Unit	6.0	0.5	0.9	<0.1	0.5	0.5
Truck Loading Unit	0.0	<0.1	0.0	0.0	0.0	0.0
Emergency Generators	<0.1	<0.1	0.7	<0.1	<0.1	<0.1
Carbon Adsorber (Sump)	0.0	<0.1	0.0	0.0	0.0	0.0
Fugitives	0.0	4.3	0.0	0.0	0.0	0.0
Workover Rig	1.3	0.7	6.3	<0.1	0.2	0.2
Process Flare	9.0	2.8	23.1	0.2	3.0	3.0
Backhoe	0.3	<0.1	0.4	<0.1	<0.1	<0.1
Total Onsite Emissions	**17.0**	**8.9**	**32.3**	**0.7**	**4.1**	**4.1**
Off-Site Emission Sources						
Well Drilling						
Works/Contractors Vehicles	1.5	0.1	0.4	<0.1	0.2	<0.1
Mud/Hauling Trucks	1.4	0.3	2.6	<0.1	0.3	0.1
Subtotal	2.9	0.4	3.0	0.2	0.5	0.2
Full Production						
Works/Contractors Vehicles	1.5	0.1	0.4	<0.1	0.2	<0.1
NGL Trucks	6.0	1.1	11.3	<0.1	1.1	0.6
Slurry Haul Trucks	<0.1	<0.1	0.2	<0.1	0.1	<0.1
Workover Rig	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
Subtotal	7.7	1.4	12.0	0.4	1.5	0.9
Total Off-Site Emissions	**10.6**	**1.8**	**15.0**	**0.6**	**2.0**	**1.1**
Total Operational Emissions	**27.6**	**10.7**	**47.3**	**1.3**	**6.1**	**5.2**

Notes: See Appendix A Table A-16(b). All values of <0.1 are rounded up to 0.1 for a conservative impact analysis. All differences from Appendix A are due to rounding.
(a) Total annual emissions spread out over 365 days of operation.
(b) Well drilling rig is electrically powered.

Pursuant to SCAQMD rules, all equipment that emits or controls air pollutants must have a permit to construct or operate unless exempt from air district rules. Permitted equipment is evaluated under the SCAQMD's New Source Review regulation, which requires all permitted equipment to be equipped with BACT and emissions increases to be offset. BACT is generally defined as the most stringent emission limitation or control technique that has been achieved in practice for a category or class of source. In addition, air pollutant-emitting equipment is subject to the rules and regulations of the SCAQMD, as described in Section 3.2.5.3, that are further intended to reduce emissions of air pollutants. In order for a permit to construct to be issued by the SCAQMD, the permit applicant must demonstrate that the equipment will be able to comply with all applicable rules. The categories of equipment described below are assumed to have BACT and to comply with SCAQMD rules and regulations. Assumptions used in the calculation of emissions are also discussed.

Fugitive Component Emissions

The proposed Project is expected to increase the number of fugitive component sources such as valves, pumps, drains, flanges, and other connectors. The emissions are based on Method 3 of the *SCAQMD Guidelines for Fugitive Calculations* (SCAQMD, 2003). Fugitive VOC emissions from new components are expected to account for 4.3 pounds per day during the peak day from the operation of the proposed Project. Detailed emission calculations are presented in Appendix B.

Carbon Adsorbers for Slurry Tanks and Sump

The proposed Project is expected to include the installation of two carbon adsorbers to control VOC emissions from the slurry tanks and the sump. The carbon adsorbers control efficiency was conservatively estimated at 95 percent. VOC emissions from the slurry tanks and sumps that are equipped with carbon adsorbers are expected to account for 0.02 pounds per day during the peak day from the operation of the proposed Project. Detailed emission calculations are presented in Appendix B.

Combustion Sources

Five new combustion sources are expected to be installed as part of the proposed Project; an emergency flare, a process flare, two emergency generators, and a process heater. The emergency flare emissions are based on 300 standard cubic feet per hour (scfh) of natural gas for a pilot light. The process flare emissions are based on a maximum load of 41.95 million British thermal units per hour (MMBtu/hr). The 1,000 kilowatt emergency generator emissions are based on 0.3 hours per day for peak day calculations and 15 hours per year for annual calculations. The 500 kilowatt emergency generator emissions are based on 0.2 hours per day for peak day calculations and 11 hours per year for annual calculations. The produced gas fired process heater emissions are based on a maximum load of 10 MMBtu/hr. The CO, VOC, NOx, SOx, PM10, and PM2.5 emissions from combustion sources are expected to account for 29.5, 5.0, 35.2, 0.7, 5.3, and 5.2 pounds per day, respectively during the peak day. Detailed emission calculations are presented in Appendix B.

Polymer Hopper Emissions Associated with Slurry Tanks

As part of the slurry system, a polymer hopper holds polymer solids used to add to the liquids in the slurry system. The polymer hopper is expected to generate particulate matter emissions; however, the emissions are expected to be controlled by a dust collector. The dust collector control efficiency was estimated at 99% with a 90% capture efficiency. The peak daily emission from the polymer hopper is expected to be less than 0.1 pounds per day of PM10 and PM2.5 during the peak day. The detailed emission calculations are presented in Appendix B.

Workover Rig

Workover rigs are used for maintaining the established wells. The proposed Project is expected to have 60 well workovers per year. Each workover activity is approximately 84 hours, therefore, the peak day emissions associated with the workover rig assumes 24 hours of continuous operation. The CO, VOC, NOx, SOx, PM10, and PM2.5 emissions from workover rigs are expected to account for 2.3, 1.2, 10.9, 0.1, 0.4, and 0.3 pounds per day, respectively during the peak day. Detailed emission calculations are presented in Appendix B.

Truck Loading Emissions

As part of the proposed Project, two NGL tanker trucks are expected to be filled per day during a peak operational day. The emissions from the loading rack are expected to be 0.1 pounds per day of VOC from residual liquid trapped in the fill pipe. Detailed emission calculations are presented in Appendix B.

Mobile Source Emissions

The operation of the proposed Project is expected to require several mobile sources. The peak operational day was based on 10 workers, 5 contractors, and 2 slurry removal trucks for well drilling and 10 workers, 5 contractors, 1 workover rig truck, 2 NGL haul trucks, and 1 slurry removal truck for full production. The peak operational day for the proposed Project also assumes the use of a backhoe for 1.4 hours per day. The peak daily emission increases associated with the increased mobile emission sources are shown in Tables 4.2-5. Detailed emission calculations are presented in Appendix B.

4.2.2.2.1 Operational Emissions Summary

The maximum emissions would occur when operational emissions are combined with emissions from delayed construction of portions of the processing area (e.g., storage tanks, installation of processing equipment). Table 4.2-7 compares the peak unmitigated operational emissions from the proposed Project in Table 4.2-5 combined with the potentially delayed construction activity emissions to the 30-day average baseline (existing) emissions from Table 4.2-4 (BACT is not considered to be mitigation because it is required by SCAQMD rules.). The proposed Project operational emissions are less than the baseline (existing) emissions. The net proposed Project emissions, which include potential construction emissions, are then compared to the SCAQMD daily operational incremental significance threshold levels. The emissions from operation of the proposed Project will be less than the baseline emissions and are not expected to exceed any significance thresholds. Emissions are lower with the proposed Project than the baseline emissions largely due to the reduction in truck traffic and the use of an electric drill rig rather than a diesel rig. Therefore, the air quality impacts associated with operational emissions from the proposed Project are considered to be less than significant.

4.2.2.2.2 CO Hot Spots

The potential for high concentration of CO emissions associated with truck/vehicle traffic was considered and evaluated per the requirements of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993). The Handbook indicates that any project that could negatively impact levels of service at local intersections may create a CO hot spot and should be evaluated. As discussed in the NOP/IS (see Appendix A), the proposed Project reduces operational traffic associated activities at the site. Therefore, no adverse changes in level of service at local intersections are expected, and the proposed Project would not generate any significant adverse traffic impact. Therefore, the proposed Project is not expected to create significant adverse CO hotspots impacts to ambient air quality due to the traffic impact at the intersections affected by the proposed Project, so no mitigation is required.

4.2.2.2.3 Impacts to Ambient Air Quality

Dispersion modeling was used to calculate concentrations of the criteria pollutants from the proposed Project sources during operations which emit CO, NOx, SOx, PM10, and PM2.5 to evaluate potential localized air quality impacts to the nearest sensitive receptor. In order to determine the groundlevel concentrations, the U.S. EPA AERMOD air dispersion model was used to model the peak daily emissions for averaging periods less than or equal to 24-hours and the average daily operational emissions were used to model averaging periods greater than 24-hours. The details of the assumptions used in the modeling are provided in Appendix B. The calculated impacts on ambient air concentrations of the modeled criteria pollutants are presented in Table 4.2-8.

TABLE 4.2-7

Proposed Project Peak Day Operational Emissions Summary[a]
(lbs/day)

Activity	CO	VOC	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]
Operational Activities[a]						
Baseline Emissions	145.0	97.1	602.3	11.8	16.8	13.8
Proposed Facility Emissions	48.9	14.0	74.0	1.5	9.2	7.3
Delayed Construction Emissions[c]						
Process Equipment Areas Construction	15.6	3.7	27.6	0.2	--	1.8
Tanks Construction	7.0	2.5	10.6	0.2	--	0.7
Construction Material Delivery Trucks	1.6	0.3	3.0	<0.1	0.8	0.1
Pipeline Repairs	14.6	4.0	26.8	<0.1	--	1.6
Facility Workers Vehicles	15.4	1.3	1.3	<0.1	3.2	0.2
Pipeline Workers Vehicles	2.6	0.2	0.2	<0.1	--	0.1
Subtotal, Delayed Construction Emissions	56.8	12.0	69.5	0.8	4.0	4.5
Significance Determinations [a]						
Total Emissions without Delayed Construction	**-96.1**	**-83.1**	**-528.3**	**-10.3**	**-7.6**	**-6.5**
Total Emissions with Delayed Construction	**-39.3**	**-71.1**	**-458.8**	**-9.5**	**-3.6**	**-2.0**
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**	**55**
Significant without Delayed Construction?	**No**	**No**	**No**	**No**	**No**	**No**
Significant with Delayed construction?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: See Tables 4.2-2, 4.2-4, and 4.2-5 for details. All values of <0.1 are rounded up to 0.1 for a conservative impact analysis. All differences from Appendix B are due to rounding.

(a) Negative numbers indicate an emissions benefit from the baseline emissions.

(b) PM10 and PM2.5 emissions include equipment exhaust, vehicle tire and brake wear, and fugitive dust emissions.

(c) Emissions are reported by construction phase to demonstrate the contribution of each phase to the maximum mass daily emissions. Zero emission values (--) indicate that certain construction phases have no activities on the day when maximum emissions are estimated to occur.

TABLE 4.2-8

Results of Criteria Pollutants Air Quality Modeling

Criteria Pollutant	Averaging Period	Modeled GLC Conc. ($\mu g/m^3$)	Background GLC Conc. ($\mu g/m^3$)[(a)]	Total GLC Conc. ($\mu g/m^3$)	Most Stringent Air Quality Standard ($\mu g/m^3$) [(b)]	Exceeds LST Threshold?
CO	1-hour	33	3,433	3,466	23,000	No
	8-hour	18	2,976	2,993	10,000	No
NO_2[(c)]	1-hour	35	207	242	339	No
	1-hour (Federal)	35	126[(d)]	161	188	No
	Annual	3	40	43	57	No
SO_2	1-hour	0.7	--	--	196.2	No
	24-hour	0.2	--	--	104.6	No
	Annual	0.04	--	--	78.5	No
Sulfates[(e)]	24-hour	0.005	--	--	25	No
PM10	24-hour	1.1	--	--	2.5	No
	Annual	0.2	--	--	1.0	No
PM2.5	24-hour	1.1	--	--	2.5	No

(a) South Coastal LA County years 2009-2011.
(b) SCAQMD CEQA thresholds. For SO_2, sulfates, PM10 and PM2.5, project comparison to incremental change.
(c) Impacts from air dispersion model are reported as NOx. Per SCAQMD methodology 75% of NOx will be converted to NO_2 beyond 500 meters of the facility.
(d) 98th percentile background NO_2 value from the SCAQMD.
(e) Assumes 2% of SOx emissions are sulfates.

Based on the AERMOD air dispersion model results, the groundlevel concentrations of the criteria pollutants of concern will be below SCAQMD CEQA significance thresholds. Therefore, no significant adverse localized air quality impacts are anticipated to occur from the proposed Project.

4.2.2.2.3 Toxic Air Contaminants

A health risk assessment (HRA) was performed to determine if emissions of TACs generated by the proposed Project would exceed the SCAQMD thresholds of significance for cancer risk and hazard indices. The following subsections outline the HRA methodology and the results of the HRA. The HRA summarized herein evaluates only the emission increases from the proposed Project.

HRA Methodology

The HRA is conducted in accordance with SCAQMD risk assessment procedures, which are based on CARB's Air Toxics Hot Spots Program Risk Assessment Guidelines and the state Office of Environmental Health Hazard Assessment (OEHHA, 2003). The baseline risk, which is higher than the risk from the proposed Project, was not included in this analysis as a conservative assumption.

Air dispersion modeling was conducted using the U.S. EPA approved air dispersion model AERMOD, and the health risk analysis was conducted using manual calculations based on data from the Hotspots Analysis and Reporting Program (HARP). The detailed methodology for the health risk estimates is further described in Appendix B.

The project is modeled as a single point source (Flare) and 67 volume sources (all other operational emissions) to cover the area of the Facility. The parameters for the sources can be found in Appendix B.

The receptors used in the model include a fine receptor grid (50 m x 50 m) near the property and a coarse receptor grid (250 m x 250 m) within approximately 1-mile radius of the Facility. The terrain surrounding the Facility is relatively flat; however, terrain variations were included for the receptor networks. Building downwash was also included to account for the building and structures near the modeled sources.

All maximum impact locations are verified as credible locations for receptors (i.e., streets, railroad tracks, and waterways are not considered valid receptor locations). The locations of the maximum impacts are then verified for the type of receptor. Table 4.2-9 summarizes the risk associated with the proposed Project. Based on the HRA, potential adverse health risks will be below the SCAQMD CEQA significance thresholds in Table 4.2-1. Therefore, no significant adverse health risks are anticipated to occur from the proposed Project.

TABLE 4.2-9

Summary of Health Risk Associated with the Proposed Project

Health Impact	Receptor	Maximum Impact Value	Threshold	Significant?
Cancer Risk	Residential	1.0×10^{-6}	10×10^{-6}	No
	Worker	3.6×10^{-6}	10×10^{-6}	No
Chronic Hazard Index	Residential	<0.01	1	No
	Worker	0.01	1	No
Acute Hazard Index	Residential	0.02	1	No
	Worker	0.08	1	No

Note: The incremental health risks are positive due to the conservative assumption that the baseline risk from the Project site is zero.

4.2.2.2.5 Odors

The proposed Project has the potential to create objectionable odors from the produced fluids and gases that contain H_2S and treating chemicals. However, operations are not anticipated to cause odors off-site. The potential odor sources, such as produced fluids and gases, and treating chemicals, will be maintained in closed systems. In addition, all flanges and valves will be monitored quarterly for leakage per the requirements of SCAQMD Rule 1173. This rule is specifically intended to control VOC emission leaks from components in hydrocarbon processing facilities, and requires a rigorous testing, record keeping and, when required, repair program.

The activity for the highest potential of odors is maintenance activities (e.g., replacing spent H_2S removal catalyst). In these cases where there exists a potential for odor excursion, an odor masking agent or chemical inhibitor will be used to reduce and minimize emissions of odorous compounds. Odors are not expected during drilling or well workover due to the odor suppression processes, which is a key function of the mud handling system and operational procedures employed.

4.2.2.2.6 Summary of Air Quality Impacts

The air quality impacts have been evaluated in several ways pursuant to SCAQMD CEQA guidance. First, the short-term air quality impacts related to construction emissions were evaluated by comparing the peak day construction emissions to the SCAQMD mass daily significance thresholds. In the short-term, the air quality impacts related to construction NOx emissions would exceed the SCAQMD construction significance threshold for NOx, which is considered an adverse significant air quality impact. In order to evaluate the health impacts associated with construction emissions, an LST analysis was also completed. The LST analysis modeled the peak onsite construction emissions to determine the groundlevel concentrations. The results of the LST analysis indicated that the short-term construction emissions would be below the applicable LST significance thresholds. The LST significance thresholds are based on the most stringent ambient air quality standard for NOx, SOx, and CO, while the PM10 and PM2.5 significance thresholds were derived based on PM control in SCAQMD Rule 403 – Fugitive Dust, which is based on the state 24-hour PM10 standard. These significance thresholds are considered to be appropriate because the ambient air quality standards are based on health effects (see Table 3.2-1). Since construction of the proposed Project is short-term and would not exceed the LST significance thresholds for local ambient air quality for CO, NO_2, SOx, PM10, and PM2.5, no significant adverse health impacts associated with construction emissions are expected. The primary health effects associated with exposure to NO_2, CO, SOx, PM10, and PM2.5 are respiratory impacts including decreased lung function, aggravation of chronic respiratory condition, and aggravation of heart disease conditions. No such adverse health impacts are expected during the construction phase of the proposed Project.

The peak day operational emissions are not expected to increase as a result of the proposed Project. Air quality modeling was also completed for the CO, NO_2, SOx, PM10, and PM2.5 emissions associated with operation of the proposed Project. The significance thresholds for modeling are directly or indirectly based on the most stringent ambient air quality standards and the ambient air quality standards are based on health effects (see Table 3.2-1). Air quality modeling indicates that emission concentration increases associated with criteria pollutants due to the operation of the proposed Project would be less than the applicable significance thresholds and would not be expected to cause or contribute to an exceedance of any ambient air quality standards (see Table 4.2-8). Therefore, health impacts associated with the operation of the proposed Project are expected to be less than significant. The primary health effects associated with exposure to CO, NO_2, SOx, PM10, and PM2.5 are respiratory impacts including decreased lung function, aggravation of chronic respiratory conditions, and aggravation of heart disease conditions. The proposed Project is not expected to exceed or contribute to an exceedance of the ambient air quality standards, so no such adverse health impacts (respiratory impacts) are expected due to the operation of the proposed Project.

The long-term air quality impacts from exposure to toxics were evaluated through the preparation of an HRA. The HRA evaluated the emissions associated with the operation of the proposed Project and compared them to carcinogenic and non-carcinogenic significance thresholds to determine potential health impacts. As demonstrated in the HRA, the carcinogenic and non-carcinogenic impacts for all receptors are expected to be less than the significance thresholds. Therefore, no significant adverse carcinogenic or non-carcinogenic health impacts associated with the operation of the proposed Project are expected.

The proposed Project has the potential to create objectionable odors from the produced fluids and gases that contain H_2S and treating chemicals. However, the proposed Project is designed so that potential odor sources will be maintained in closed systems and components will be monitored quarterly for leakage per the requirements of SCAQMD Rule 1173. Therefore, no significant offsite odors associated with the operation of the proposed Project are expected.

The actual development of the Project may also be such that the facility is operating while construction occurs. As shown in Table 4.2-7, the concurrent construction and operations analyzed and the potential air quality emissions during concurrent construction and operational situations are expected to be less than significant.

4.2.3 MITIGATION MEASURES

Feasible mitigation measures are required to minimize the significant air quality impacts associated with the construction phase of the proposed Project as the peak day emissions of NOx exceed the SCAQMD significance threshold.

No mitigation measures are required for the operation phase because all emissions were determined to be less than significant.

Construction Mitigation Measures

The proposed Project is expected to have significant adverse air quality impacts during the construction phase. Therefore, the following mitigation measures will be imposed on the proposed Project to reduce emissions associated with construction activities from heavy construction equipment.

Off-Road Mobile Sources:

A-1 For off-road construction equipment rated 50 hp or greater that will be operating for eight hours or more per day, the applicant shall use Tier 3 or equivalent engines as available. Engines equivalent to Tier 3 may consist of Tier 2 engines retrofitted to meet Tier 3 requirements. If equipment rated Tier 3 engines are not available or cannot be retrofitted, the project proponent shall use equipment rated Tier 2 or equivalent engines. The project proponent shall provide documentation that equipment rated 50 hp or greater equipped with Tier 3 or equivalent engines are not available to the City during the Plan Check.

A-2 The applicant shall investigate the use of temporary power to be used in lieu of diesel generators and submit the results of the investigation to the City during Plan Check.

A-3 Combustion-powered construction equipment (including but not limited to aerial lifts, backhoes, compactors, compressors, concrete saws, cranes, dozers, excavators, fork lifts, frontend loaders, generators, pumps, rollers, scrapers, trucks, welding machines) is prohibited from idling longer than five minutes at the Facility as required by CARB.[1]

A-4 The applicant shall maintain construction equipment tuned up and with two to four degree retard diesel engine timing or tuned to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties.

A-5 All construction activities that generate air pollutant emissions shall be suspended during first stage smog alerts.

Other Mitigation Measures

Other mitigation measures were considered but were rejected because they would not further mitigate the potential significant impacts. These mitigation measures include: (1) provide temporary traffic control during all phases of construction activities (traffic

[1] Available at: http://www.arb.ca.gov/enf/advs/advs377.pdf. Accessed: June, 2013.

safety hazards have not been identified); (2) implement a shuttle service to and from retail services during lunch hours (most workers eat lunch on-site and lunch trucks will visit the construction site); (3) use methanol, natural gas, propane or butane powered construction equipment (equipment is not CARB-certified or commercially available); and (4) pave unpaved roads (most Facility roads are already paved).

4.2.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction emissions for the proposed Project for NOx are expected to be less than significant after implementing mitigation measure A-1 (see Table 4.2-10). The construction emissions associated with CO, SOx, VOC, PM10, and PM2.5 are expected to remain less than significant following mitigation. Construction emissions are expected to be short-term and they will be eliminated following completion of the construction phase. While the estimated mitigated NOx emissions are only slightly less than the threshold, the emissions estimate is the peak daily estimate which is based on various assumptions that likely overestimate the emissions (e.g., number of equipment and level of concurrent equipment activity of that equipment). This combination of construction activity may not ever occur.

Localized impacts from construction activities were analyzed for CO, NO_2, SOx, PM10, and PM2.5. The construction activities associated with the proposed Project are not expected to cause a significant adverse impact on ambient air quality and no mitigation would be required. The analysis concluded that construction emissions of CO, NO_2, SOx, PM10, and PM2.5 would not exceed applicable LSTs (Table 4.2-1).

Traffic impacts were analyzed for potential impact to CO ambient air quality and determined that no significant change in the ambient CO air quality is expected as a result of the proposed Project. Therefore, the proposed Project is not expected to cause CO hotspots and no significant adverse impact on ambient air quality is expected.

The proposed Project is not expected to have significant impacts to CO, NOx, SOx, VOC, PM10, or PM2.5 during operation. Therefore, no mitigation measures are required. However, any delayed construction activities that overlap operations would be mitigated. Mitigated construction emissions during operation are presented in Table 4.2-11.

Ambient air quality modeling indicates that the proposed Project emissions of NO_2, SOx, PM10, and PM2.5 during operation of the proposed Project would not cause or contribute to an exceedance of any ambient air quality standard. Therefore, the operation of the proposed Project is not expected to cause a significant adverse impact on ambient air quality.

TABLE 4.2-10

Mitigated Peak Construction Emissions[a]
(lbs/day)

Activity	CO	VOC	NOx	SOx	PM_{10} [c]	$PM_{2.5}$ [c]
Onsite Activities [b]						
Demolition/Site Preparation	--	--	--	--	6.8	--
Well Cellars/Wall Construction	18.7	2.9	16.1	<0.1	--	1.4
Process Equipment Areas Construction	17.7	2.5	15.4	<0.1	--	1.3
Tanks Construction	8.1	2.3	7.8	<0.1	--	0.6
Subtotal, Onsite	44.5	7.7	39.3	0.3	6.8	3.3
Offsite Activities [b]						
Demolition/Site Preparation	--	--	--	--	7.0	--
Well Cellars/Wall Construction	0.1	<0.1	0.2	<0.1	--	<0.1
Process Equipment Areas Construction	0.2	<0.1	0.4	<0.1	--	<0.1
Tanks Construction	0.1	<0.1	0.2	<0.1	--	<0.1
Construction Material Delivery Trucks	1.6	0.3	3.0	<0.1	0.8	0.1
Pipeline Construction	--	--	--	--	--	--
Pipeline Repairs	17.6	3.1	15.7	<0.1	--	1.3
Facility Workers Vehicles	15.5	1.3	1.3	<0.1	3.2	0.2
Pipeline Workers Vehicles	2.6	0.2	0.2	<0.1	--	<0.1
SCE Offsite Construction	28.9	6.4	35.8	<0.1	2.9	2.2
SCE Deliveries	1.6	0.3	2.9	<0.1	1.4	0.1
SCE Workers Vehicles	3.2	0.3	0.3	<0.1	0.7	<0.1
Subtotal, Offsite	71.4	12.2	60.0	1.0	16.0	4.4
Total Emissions	**115.9**	**19.9**	**99.3**	**1.3**	**22.8**	**7.7**
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: See Appendix B Table B-15. All values of <0.1 are rounded up to 0.1 for a conservative impact analysis. All differences from Appendix B are due to rounding.

(a) The peak emission day was identified for each pollutant based on the maximum combined on-site and off-site emissions and includes use of Tier 3 engines for construction equipment with engines greater than 50 hp. Use of Tier 3 engines reduces NOx emissions but may increase CO emissions.

(b) Emissions are reported by construction phase to demonstrate the contribution of each phase to the maximum mass daily emissions. Zero emission values (--) indicate that certain construction phases have no activities on the day when maximum emissions are estimated to occur.

(c) PM10 and PM2.5 emissions include equipment exhaust, vehicle tire and brake wear, and fugitive dust emissions.

TABLE 4.2-11

Mitigated Peak Operational Emissions[a]
(lbs/day)

Activity	CO	VOC	NOx	SOx	PM_{10} (b)	$PM_{2.5}$ (b)
Operational Activities[a]						
Baseline Emissions	145	97.1	602.3	11.8	16.8	13.8
Proposed Facility Emissions	48.9	14.0	74.0	1.5	9.2	7.3
Delayed Construction Emissions[c]						
Process Equipment Areas Construction	17.9	2.6	15.8	0.2	--	1.4
Tanks Construction	8.2	2.4	8.0	0.2	--	0.7
Construction Material Delivery Trucks	1.6	0.3	3.0	<0.1	0.8	0.1
Pipeline Repairs	17.6	3.1	15.7	<0.1	--	1.3
Facility Workers Vehicles	15.5	1.3	1.3	<0.1	3.2	0.2
Pipeline Workers Vehicles	2.6	0.2	0.2	<0.1	--	<0.1
Subtotal, Delayed Construction Emissions	63.4	9.9	44.0	0.8	4.0	3.8
Significance Determinations [a]						
Total Emissions without Delayed Construction	**-96.1**	**-83.1**	**-528.3**	**-10.3**	**-7.6**	**-6.5**
Total Emissions with Delayed Construction	**-32.7**	**-73.2**	**-484.3**	**-9.5**	**-3.6**	**-2.7**
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**	**55**
Significant without Delayed Construction?	**No**	**No**	**No**	**No**	**No**	**No**
Significant with Delayed construction?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: See Tables 4.2-4, 4.2-5, and 4.2-10 for details. All values of <0.1 are rounded up to 0.1 for a conservative impact analysis. All differences from Appendix B are due to rounding.
(a) Negative numbers indicate an emissions benefit from the baseline emissions.
(b) PM10 and PM2.5 emissions include equipment exhaust, vehicle tire and brake wear, and fugitive dust emissions.
(c) Emissions are reported by construction phase to demonstrate the contribution of each phase to the maximum mass daily emissions. Zero emission values (--) indicate that certain construction phases have no activities on the day when maximum emissions are estimated to occur.

The proposed Project was analyzed for cancer and non-cancer human health impacts and determined to be less than significant. The estimated cancer risk due to the operation of the proposed Project is expected to be less than the significance criterion of 10 per million. The chronic hazard index is below 1.0. There is no change to the acute hazard index as a result of implementing the proposed Project. Therefore, the proposed Project is not expected to cause a potentially significant adverse impact associated with exposure to toxic air contaminants.

4.3 GEOLOGY AND SOILS

4.3.1 SIGNIFICANCE CRITERIA

The impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over-covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

4.3.2 ENVIRONMENTAL IMPACTS

As described in the NOP/IS (see Appendix A), the proposed Project will be located in an already developed area and will not result in significant changes or topographic alterations. Due to the prior development of the Dominguez Technology Centre, unique geological resources are not expected to be present. It is not located in a designated Liquefaction Hazard Zone or in an area conducive to liquefaction, mudflows or landslides. Although within a seismically active area, the proposed Project is not located on a known active fault trace that would require the site to be evaluated for surface rupture under the Alquist-Priolo Act. Thus, the risk of earthquake-induced ground rupture is considered less than significant.

With regard to the potential for secondary seismic effects that could damage facility structures, as described in Section 3.3.1.2, a probabilistic seismic hazards analysis was performed using the 2008 Interactive Deaggregations Seismic Hazard Analysis tool available at the USGS website (https://geohazards.usgs.gov/deaggint/2008/, see GeoSoils, 2012, for detailed analysis), which evaluates the site specific probabilities of exceedance for selected spectral periods. Based on a review of these data, and considering the relative seismic activity of the southern California region, a probabilistic horizontal ground acceleration (PHGA) of 0.59g and 0.39g were calculated (2 percent and 10 percent in 50 years, respectively). The calculated values are within the range typical for the southern California region.

The proposed Project will be required to comply with the California Building Code, which is designed to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The proposed Project will be required to obtain building permits, as applicable, for construction of all new proposed above-ground structures, including tank foundations. The Project applicant will be required to receive approval of building plans and building permits to assure compliance with the latest adopted Building Code prior to commencing construction. Accordingly, compliance with the California Building Code will reduce risks of seismic damage to less than significant.

The NOP/IS (see Appendix A) determined that the proposed Project has the potential to generate significant adverse geology and soil hazards related to anthropogenic (man-made) seismic ground-shaking. This determination was based on the inclusion of hydraulic fracturing in the proposed Project. As discussed in Section 2.8.1, OXY has removed hydraulic fracturing from the proposed Project.

The other source of potential anthropogenic seismic ground-shaking would be from oil and gas production. There is the possibility that minor earthquakes can be a result of anthropogenic activities, such as extraction of oil at major oil fields, due to a net liquid mass depletion (i.e., removal of oil without replacement of water). See Section 3.3.1.3 for further details. The Dominguez Oil Field was discovered in 1923 and was operated using salt water injection beginning in the mid-1940s as a means to extract more oil. The oil and gas production activities associated with the proposed Project will include the injection of salt water as well. Therefore, net liquid mass depletion will not occur. As discussed in Section 3.3.1.3, no known historic earthquakes have occurred within the Dominguez Oil Field. Extraction of oil and gas from the Dominguez Oil Field has not been associated as the cause of earthquakes in the vicinity of the Dominguez Oil Field. Therefore, no significant adverse geologic and soils impacts associated with anthropogenic sources are expected as a result of the proposed Project.

4.3.3 MITIGATION MEASURES

No mitigation measures are required for the proposed Project because all geologic and soils impacts were determined to be less than significant. In June 2012, OXY submitted a letter and in October 2012 submitted a subsequent letter clarifying to the City, hydraulic fracturing has been removed from the proposed Project. The following mitigation is being imposed to ensure that hydraulic fracturing is not employed during the proposed Project.

G-1 OXY shall be subject to inspection by a City representative or consultant to verify that hydraulic fracturing has not been employed. Drilling records maintained per DOGGR requirements shall be available during the inspection. OXY shall have a written agreement with the City regarding this mitigation measure. This mitigation measure is independent from any inspections required by or from DOGGR.

4.3.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

No mitigation measures are required but with the imposed mitigation, the geologic and soils impacts from the proposed Project would remain less than significant.

4.4 GREENHOUSE GASES

While the proposed Project is expected to emit GHGs, the impact of GHG emissions from a single project towards global change cannot be readily measured. Rather, it is the increased accumulation of GHGs in the atmosphere from many projects and sources that result in global climate change. The contribution of GHG emissions from a large number of sources can contribute to climate change, which in turn can cause adverse environmental effects, such as increasing temperatures, more wildfires, rising sea levels, etc. Due to the complex physical, chemical, and atmospheric mechanisms involved in global climate change, it is likely impossible to identify the specific impact, if any, to global climate change from one project's incremental increase in global GHG emissions. As such, the project GHG emissions and the resulting significance of potential impacts are more properly assessed on a cumulative basis. Therefore, the analysis of potential impacts from the proposed Project's GHG emissions and significance determination are assessed on a cumulative basis in Chapter 5 - Cumulative Impacts.

4.5 HAZARDS AND HAZARDOUS MATERIALS

The NOP/IS (see Appendix A) determined that the proposed Project has the potential to generate significant adverse hazards and hazardous materials impacts. The hazard and hazardous materials impacts associated with operation of the proposed Project are potentially significant and the impacts are evaluated in Section 4.5 herein. The analysis of the hazards associated with the operation of the proposed Project has been divided into three subsections: (1) construction activities; (2) oil and gas production activities and processing facilities; and, (3) product transport.

4.5.1 SIGNIFICANCE CRITERIA

The impacts associated with hazards and hazardous materials will be considered significant if any of the following occur:

- Create a significant hazard to the public or environment through routine transport, storage, use, or disposal of hazardous materials.

- Non-conformance to National Fire Protection Association standards.

- Create a health and/or safety hazard identified in Title 5 of the California Code of Regulations, Sections 14001 through 14012.

4.5.2 ENVIRONMENTAL IMPACTS

4.5.2.1 Compliance with Design Codes, Regulations and Standards

The proposed project would be required to comply with various applicable regulations to minimize the potential impacts associated with hazardous materials during construction and operation. These regulations, which are described in detail in Subsection 3.5.5 include:

- OSHA regulations (29 CFR Part 1910);
- Process Safety Management of Highly Hazardous Chemicals (29 CFR Part 1910.119);
- Title 8 of the CCR, General Industry Safety Order §5189;
- U.S. EPA's EPCRA;
- SPCC Plan requirements (40 CFR, Section 112);
- Federal regulations for the qualification and maintenance of cargo tanks (40 CFR Part 180, Subpart E);
- The Hazardous Materials Transportation Act;
- Caltrans standards for trucks in California; and
- Hazardous Materials Business Plan requirements (AB 2185).

Consistent with all applicable regulatory requirements, OXY operators will incorporate modern industrial technology and design standards, regulatory health and safety codes, and training, operating, inspection, and maintenance procedures into the proposed Project to reduce the risk and severity of potential upset conditions.

In addition, the pipeline operation and construction must be compliant with the Elder California Pipeline Safety Act of 1981, California Government Code Sections 51010-51019, which prescribes regulations for the construction, operation, and maintenance of pipelines used to transport hazardous liquids.

4.5.2.2 Potential for Hazards Impact

The potential for a hazards impact is a function of both the consequence of release and the probability of the release scenario occurring. The consequence of a hazardous material release is the physical impact expected to occur as the result of a release. The probability that the release would occur is estimated from available data for each release scenario. Typically releases occur due to multiple circumstances occurring sequentially with each circumstance having its own probability of occurrence. Stopping any one of the circumstances from occurring can prevent the release from happening or can mitigate the consequence of the release. The use, storage, transportation, and disposal of hazardous materials and wastes are heavily regulated to reduce the circumstances that could result in a release.

The hazards associated with the proposed Project were assessed by developing a range of potential upset scenarios associated with the proposed Project; estimating the consequences of the scenarios, should they occur; estimating the likelihood of the upset scenarios occurring; and determining the significance of the risk based on the probability of an occurrence.

The hazard analysis focuses on scenarios that may result in risk to offsite receptors. The hazard impact analysis for the proposed Project compares the existing hazards to the potential hazards associated with the proposed Project.

The likelihood of occurrence for the scenarios analyzed was based on available accident data for pipeline hazards discussed in Section 3.5.3.2 and transportation hazards discussed in Section 3.5.3.3. The likelihood of occurrence for the scenarios analyzed for the oil and gas processing facilities was based on reliability data available from Guidelines for Process Equipment Reliability Data (AIChE, 1989).

4.5.2.3 Hazards Associated with Construction Activities

Vehicles and equipment used for construction of the proposed Project would contain or require the short-term use of small amounts of potentially hazardous materials including, but not limited to, fuels, lubricating oils, solvents, antifreeze, hydraulic fluid, and compressed gasses. In addition, construction activities would utilize some hazardous materials, such as paints and solvents, and would generate hazardous waste streams such as waste oil and empty containers that previously held hazardous materials. The potential exists for an accidental release of these hazardous materials during routine construction activities or routine hazardous materials transport related to construction. Project-related construction activities also have the potential to result in exposure to these hazardous materials by workers, or by the public, if access to the construction site is not adequately controlled or if the materials are not properly handled and contained. Potential hazards to workers, the public, and the environment from routine use, transport, or disposal of hazardous materials handled for routine construction would be limited through adherence to existing pollution prevention, waste management, worker health and safety, and transportation safety regulations that would apply to the proposed Project, as described in the following paragraphs.

Construction projects that disturb one or more acres of land are required to obtain coverage under a NPDES permit for discharges of stormwater. In order to obtain coverage under the NPDES Permit No. CAS000002, State General Permit for Storm

Water Discharges Associated with Construction and Land Disturbance Activities (SWRCB Order No. 2009-0009-DWQ), a Notice of Intent and SWPPP would need to be filed with the RWQCB. The SWPPP would include best management practices that would prevent or minimize the release and/or dispersion of potential pollutants from storm events during construction activity. These best management practices would need to encompass measures to effectively prevent or minimize pollutants from being discharged in stormwater. Such measures would include, but would not be limited to, measures for proper containment of hazardous materials and frequent inspections to ensure that best management practices are in place and effective. These measures would directly limit the potential for hazardous materials exposure via stormwater for workers, the public, and the environment. In addition, the hazardous materials containment and control measures that would necessarily be implemented as part of best management practices would limit the potential for direct exposure to hazardous materials.

Regulations promulgated under the federal Resource Conservation and Recovery Act and California Hazardous Waste Management Act include rigorous requirements that limit the potential for releases of hazardous waste to the environment and the potential for public and worker exposure. These regulations include specific requirements for identifying, accumulating, and managing hazardous wastes onsite, transport of hazardous wastes offsite, and treatment and disposal of hazardous wastes at properly designed and permitted facilities. Compliance with these requirements will minimize the risk of hazardous wastes being released to the environment where public exposure could occur.

In addition, the Project would be required to comply with CalOSHA standards for worker safety in the handling and use of hazardous materials and hazardous wastes. These standards (found at 8 CCR Sections 337-340) require an employer to monitor worker exposure to hazardous substances and notify workers of exposure to hazardous substances. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substances exposure warnings. These requirements would limit the potential for unhealthful exposure of workers to hazardous materials during proposed Project construction.

The Federal Hazardous Materials Transportation Law (49 U.S.C. 5101-5127) is the primary foundation for the regulatory control of transportation of hazardous materials. The purpose of the Federal Hazardous Materials Transportation Law is to "protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous materials." In addition, the Hazardous Materials Regulations (49 CFR Parts 171-180) contain requirements for hazardous materials classification, hazard communication, packaging requirements, operational rules, training and security, and registration. The transportation of hazardous building materials and supplies such as lead-based paint, asbestos, and solvents is subject to full regulation under Section 171.3 of the Hazardous Materials Regulations. All hazardous materials being transported must be handled, packaged, labeled, and transported in a manner that is consistent with Hazardous Materials Regulations set forth for each categorized hazardous material/waste.

Adherence to the regulations and requirements described in the preceding paragraphs will limit the potential for exposure from routine use of hazardous materials or routine generation of hazardous wastes during construction such that unhealthful levels of exposure by workers at the construction sites, or to the general public located outside of Project construction areas, would not be expected. Furthermore, adherence to these regulations and requirements would limit the potential for hazardous materials or wastes to be released to the environment due to routine use, transport, or disposal. With adherence to these requirements, routine transport, use, and disposal of hazardous materials related to proposed Project construction would have a low likelihood of resulting in health or environmental consequences from exposure to a hazard by the public offsite or to construction workers onsite. Therefore, with adherence to these requirements, the risk of health or environmental consequences from exposure to a hazard by the public offsite or to construction workers onsite would be less than significant. Considering these factors, the potential for the routine transport, use, and/or disposal of hazardous materials during proposed Project construction to result in a hazard to the environment, workers, or the public is less than significant.

4.5.2.4 Hazards Associated with Operational Activities

Hazards at a facility can occur due to releases resulting from natural events, such as earthquakes, and non-natural events, such as mechanical failure or human error. A hazard analysis generally considers compounds or physical forces (fire or explosion) that can migrate off-site and result in acute health effects to individuals outside of the proposed Project site. The risk associated with a facility is defined by the probability of an event and the consequence (or hazards) should the event occur. The hazards can be defined in terms of the distance that a release would travel or the number of individuals of the public potentially affected by a maximum single event defined as a “worst-case” scenario.

The discussion that follows is based on a report by Quest Consultants, Inc., which conducted a worst-case consequence analysis of the proposed Project using the hazard model Canary Model by Quest® (see Appendix E) The study involved a determination of the maximum credible potential releases, and their consequences, for existing process units, transfer system (e.g. pipelines), and storage areas; the maximum credible potential releases and their consequences for the modifications to the facility and pipelines that have been proposed as part of the proposed Project; and whether the consequences associated with the proposed modifications generate potential hazards that are larger or smaller than the potential hazards that currently exist. To determine the maximum radius of influence from a potential hazard, end point hazard criteria are established for the type of hazard being analyzed. The endpoint hazard criterion established for this analysis correspond to the level at which human injury might occur. Existing hazards are discussed in Section 3.5.

4.5.2.4.1 Safety Features Incorporated Into the Design

The proposed Project will be equipped with computerized control, monitoring, and communication systems. In general, these systems will be designed to monitor and control all process equipment that will operate within the facility. The on-site Operations Building will house the operator control console and the supervisory control and data acquisition (SCADA) systems used to operate the facilities.

The operator control console will be manned 24-hours a day. The building will be provided with two uninterruptible power supplies and a diesel emergency generator to provide continuous power in the event of an external power failure. It will also be equipped with gas and fire detection systems and a fire suppression system.

An Emergency Response Plan will be prepared to specify measures to be taken in emergency scenarios. This document will identify the responsible parties for the incident command and the supporting organizations/agencies.

The Facility will contain firefighting and other emergency equipment. Firefighting equipment will include carbon dioxide and/or halon fire extinguishers inside the control rooms for electrical fires around panels and switch gear. Dry powder fire extinguishers will be available for hydrocarbon fires. Fire suppressant foaming agents and related foam generation equipment will also be installed at the Facility. Emergency call lists will be posted within the Facility.

4.5.2.4.2 Processing Hazards

The processing and transport activities were reviewed to determine the operations with the most potential to create offsite hazard impacts. The processing and transport activities that were analyzed for potential hazards include the operation of oil storage tanks, transfer pumps, gas compressors, separators, NGL storage, NGL truck loading, crude oil pipeline pigging station, crude oil pipeline transport, natural gas pipeline transport, and gas containing hydrogen sulfide. The potential hazards include flash fires, explosion or overpressure, pool/torch fire thermal radiation, BLEVE, and toxic gas releases.

<u>Oil Storage Tanks</u>

The oil processing storage tanks were analyzed for hazard impacts associated with a breach of storage resulting in a pool fire.

<u>Process Equipment</u>

Process equipment including production lines, three-phase separation vessels and lines, oil treatment vessels and lines, gas compressors, gas treatment vessels, and NGL sales equipment were analyzed for hazard impacts associated with:

- a breach of liquid lines or vessels resulting in a pool fire,
- a breach of a flashing liquid line or vessel resulting in a flash fire, pool fire, torch fire, vapor cloud explosion (VCE) and a toxic cloud, and
- a breach of a vapor line or vessel resulting in a flash fire, torch fire, VCE, and toxic cloud.

Pressurized Storage Tanks

The NGL pressurized storage tanks were analyzed for hazard impacts resulting from a flash fire, torch fire, VCE, and BLEVE.

Hydrogen Sulfide Release

H_2S and odorant have been identified as toxic components in the processed hydrocarbons fluids at the facility. The H_2S concentrations from the produced fluids have been monitored and found to be below 10 ppm. Once released, the H_2S would be diluted to a lower concentration. Therefore, the 30 ppm Emergency Response Planning Guide (ERPG-2) level for H_2S could not be reached by a release from a stream with a concentration of less than 10 ppm and no toxic hazard zone from H_2S is expected to occur at the facility.

Table 4.5-1 presents the results of the modeling associated with the potential hazards from processing and transport activities. Details of the hazard analysis are presented in Appendix E.

Table 4.5-1 shows that the onsite processing activities including oil storage tanks, oil transfer pumps, gas compressors, and low temperature separation were determined to have the potential to generate hazards, but such hazard impacts would remain onsite or be contained by the 30-foot wall and remain onsite. The NGL storage and truck loading have the potential to create hazards that would result in offsite impacts.

Once the scenarios with a potential for hazardous releases are identified, a hazards analysis calculates the likelihood of such a release occurring based upon actual operating data. The worst-case event at the proposed site would be a failure of the NGL tank or a tank truck in the NGL loading area (see Table 4.5-1). Such a release could extend 1,250 feet offsite in the area zoned light industrial, but census data indicate there would be no public residential exposure within the area of impact.

TABLE 4.5-1
Maximum Hazard Distances for Maximum Credible Event from Processing and Transport Activities

Equipment/ Release Event	Status of Potential Hazard (E) Existing (P) Proposed	Established Hazard Criteria[a]			
		Flash Fire (LFL)	Explosion Overpressure 1.0 psig	Pool/Torch Fire Thermal Radiation 1,600Btu/hr-ft^2	BLEVE Radiation Btu/ft$^{24/3}$*sec
			Maximum Distance (ft) from Center of Unit [b] to meet Hazard Criteria		
Oil Storage Tank/Tank Top Fire	P	NA[c]	NA	[d]	NA
Oil Transfer Pump/Pump Rupture	P	[e]	[e]	[d]	NA
Gas Compressors/ Line Rupture	P	[d]	[e]	[e]	NA
Low Temperature Separator/ Rupture	P	[d]	[e]	[e]	NA
NGL Storage Tanks/BLEVE	P	NA	NA	NA	880
NGL Truck Loading/BLEVE	P	NA	NA	NA	1,250
Crude Oil Pigging Station/Rupture	P	[e]	[e]	[d]	NA
Crude Oil Pipeline/Rupture	E (10")	205	[f]	75	NA
	P (6")	205	[f]	75	NA
Natural Gas Pipeline	E (30")	10	[f]	800	NA
	P (6")	50	[f]	185	NA

Notes: LFL = lower flammable limit, psig = pound per square inch gauge, Btu = British thermal unit.

(a) The established endpoint hazard criteria correspond to a level below which no injuries would be expected. For each scenario, receptors at a distance greater than listed would not be expected to be affected by the hazard.

(b) Hazard impacts from the proposed project would be considered significant if they create new offsite hazards or increase the influence of an existing offsite hazard. For example, the existing radius for natural gas pipeline pool/torch fire radiation is greater than the proposed project modification evaluated, so no significant impact is expected.

(c) NA means hazard type not applicable to release event.

(d) Potential hazard does not extend beyond facility boundary.

(e) Hazard not the maximum hazard associated with release event.

(f) Does not reach the 1 psig overpressure level.

The Guidelines for Process Equipment Reliability Data (AIChE, 1989) estimate the probability of a failure of a pressurized storage tank (i.e., NGL storage tank or NGL tank truck while at the loading rack) at 0.424 events per million hours of operation or one failure every 269 years. Since the anticipated useful life of the facility is 50 years, this event has an extremely low probability of occurring and would be expected to occur during the life of the Facility. Additionally, OXY is required to comply with all applicable design codes and regulations, conform to National Fire Protection Association standards, and conform to policies and procedures concerning leak detection, containment, and fire protection (see discussion in Section 3.5.5). Therefore, no significant adverse hazard impacts are expected from the processing facilities associated with proposed Project.

Potential Impacts on Water Quality

A project may have a significant adverse impact if it does not conform to regulations or generally accepted industry practices related to operating policy and procedures concerning the design and construction for leak detection and spill containment. A spill of any of the hazardous materials (generally petroleum products and by-products from the processing activities) used and stored at the facility could occur under upset conditions (e.g., earthquake, tank rupture, and tank overflow). Spills also could occur from corrosion of containers, piping, and process equipment; and leaks from seals or gaskets at pumps and flanges. A major earthquake would be a potential cause of a large spill or release. Other causes could include human or mechanical error or deliberate human action. If such a spill were to occur, it could potentially impact surface or groundwater quality.

To reduce the potential for spills and releases due to seismic activity, new structures must be designed to comply with the California Building Code requirements since the proposed Project is located in a seismically active area. The City of Carson is responsible for assuring that the proposed Project complies with the California Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic class and site coefficient, which represent the foundation conditions at the site.

Spills at the facility would generally be collected within containment facilities for individual processing equipment (e.g., tanks, separators). Large spills outside of individual containment areas at the facility are expected to be controlled, since the facility is designed to capture liquids within the walled-compound and direct them to the well cellars. Spilled material would be collected and pumped to an appropriate tank, or sent off-site if the spilled material cannot be processed on-site. Because of the containment systems in place, spills are not expected to migrate from the facility. Also, because the site will be paved and any spilled material will be cleaned up quickly, impacts to groundwater quality would be prevented. Thus potential adverse water quality hazard impacts from processing activities are considered to be less than significant.

4.5.2.5 Transportation Hazards

The transportation of hazardous materials can result in offsite releases through accidents or equipment failure. The materials currently transported to and from the facility include production fluids associated with the test wells and freight to and from the existing commercial warehouse. The proposed Project is not expected to increase the amount of hazardous materials transported to or from the facility during peak day activities (i.e., one to two trucks in one day) but could increase the number of days trips that occur on an annual basis from the increase in NGL production as the number of oil and gas wells increases. The main products, crude oil and natural gas, will be transported via pipeline, with NGL being transported by one to two trucks per day.

4.5.2.5.1 Truck Transport

The transportation by truck of hazardous substances poses a potential for fires, explosions, and hazardous materials releases. In general, the greater the vehicle miles traveled, the greater the potential for an accident. Statistical accident frequency varies, (especially for truck transport), and is related to the relative accident potential for the travel route since some freeways and streets are safer than others. The size of a potential release is related to the maximum volume of a hazardous substance that can be released in a single accident, should an accident occur, and the type of failure of the containment structure, e.g., rupture or leak. The potential consequences of the accident are related to the size of the release, the population density at the location of the accident, the specific release scenario, the physical and chemical properties of the hazardous material, and the local meteorological conditions.

The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway; presence of road hazards; vehicle type; maintenance and physical condition; and driver training. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality.

Every time hazardous materials are moved from the site of generation, there are opportunities for accidental (unintentional) releases. The U.S. DOT conducted a study on the comparative risks of hazardous materials and non-hazardous materials and non-hazardous materials truck shipment accidents (i.e., involved in a collision) and incidents (i.e., not involved in a collision). The Federal Motor Carrier Safety Administration (FMCSA) compared risks of hazardous materials truck shipment accidents and incidents to non-hazardous materials truck shipment accidents and incidents (FMCSA, 2001). The estimated accident rate for trucks (shipping non-hazardous materials) was 0.73 per million miles traveled. The average accident rate for trucks transporting hazardous materials (all hazard classes) was estimated to be 0.32 per million miles traveled (FMCSA, 2001). Since not all hazardous materials transport accidents involve releases, the average accident rate for trucks carrying flammable materials involving a release (hazard class 2.1), such as NGL, was estimated to be 0.06 per million miles traveled (47/805,000,000)(FMCSA, 2001). The NGL trucks from the proposed Project are expected to deliver the NGL locally, but may travel as far as Bakersfield approximately 150 miles one-way from the facility. Using the maximum estimated truck trips of 2 per day, the potential for an accident involving an NGL truck is 0.00002 (2 trucks per day x 150 miles per truck / 1 million miles x 0.06 accidents/million miles driven) or approximately one accident every 55,556 years. Though it is difficult to compare hazardous and non-hazardous transport risk, the differences appear to be significant enough to conclude that the magnitude of non-hazardous transport accidents dominates highway transport risk. The specific hazardous material trucking regulations and additional care provided by carriers and shippers of hazardous materials appear to be reducing the accident rate for hazardous material shipments (FMCSA, 2001).

The County of Los Angeles has developed criteria to determine the safest transportation routes. Some of the factors which need to be considered when determining the safest direct routes include traffic volume, vehicle type, road capacity, pavement conditions, emergency response capabilities, spill records, adjacent land use, and population density. In managing the risk involved in the transportation of hazardous materials, all these factors must be considered.

The actual occurrence of an accidental release of a hazardous material associated with a traffic accident cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and residential areas into account. The likelihood that an accident involving NGL truck transport would occur during the lifetime of the facility is once every 55,556 years, which is greater than the lifetime of the facility (expected to be 50 years). Therefore, the probability for an adverse impact from truck transport of NGL is extremely low and the potential hazard impact related to truck transport from the proposed Project is less than significant.

Pipeline Transport

There is the potential for leakage or rupture when operating a pipeline system. The proposed Project has two types of pipelines: oil and natural gas. The potential impacts for each type are analyzed in the following paragraphs.

Crude Oil Pipelines: The impacts associated with an oil pipeline leak or rupture would generally be contamination of the local soils. The U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) compiles pipeline incidents statistics, which identify the major causes of leakage or rupture including: (1) corrosion; (2) third party excavation; (3) damage by natural events (e.g., a seismic event); and, (4) equipment failure. New pipelines are less likely to leak or rupture than old pipelines due to increased regulation requiring activities such as use of state-of-the art in-field inspection techniques and corrosion protection. A leak or rupture from the oil pipeline would be expected to result in the contamination of soils and or groundwater, in the event that the pipeline leak was not detected promptly. Leak detection measures would be required as part of new pipelines, so the potential for a leak to go undetected would be minimal. In the event of a leak, there is little potential for exposure as the oil pipelines will be underground. Nonetheless, the potential impacts of fire hazards associated with a pipeline rupture and ignition have been estimated in this section.

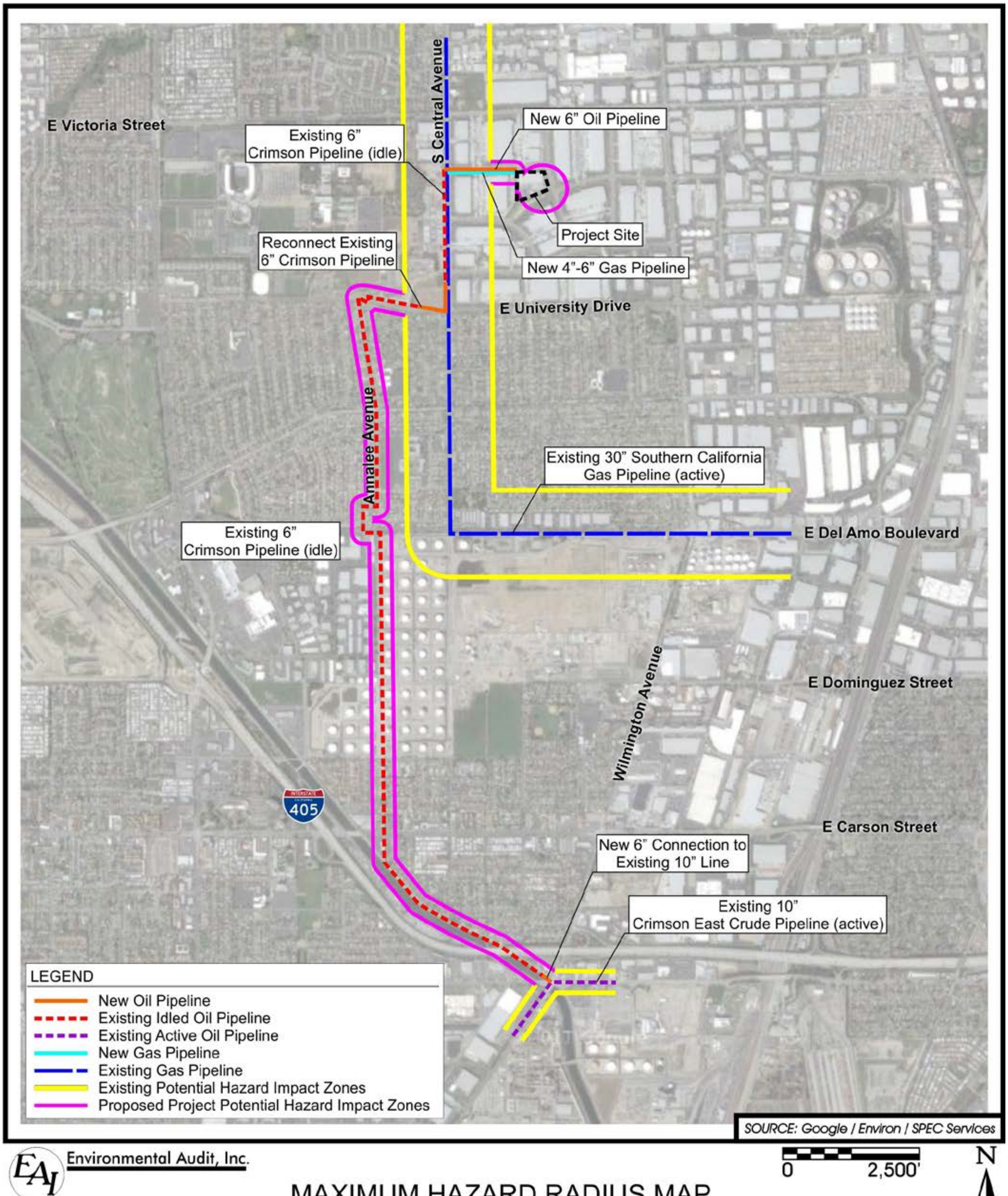
Based on PHMSA data for both crude oil and natural gas pipelines, the most likely accident or upset scenario outside the control of the operator for proposed Project pipelines is damage by a third party (PHMSA, 2013). To evaluate potential impacts associated with an accidental release from the Project pipelines, the following three accidental release scenarios were evaluated:

- A pipeline rupture that then ignites (flash fire);
- A pipeline rupture resulting in a vapor cloud explosion greater than 1 psig; and,
- A pipeline rupture resulting in a pool or torch fire.

The results of the pipeline hazard risk analysis are presented in Table 4.5-1. The natural gas connector pipeline has potential hazard impacts up to 185 feet from the pipeline and the crude oil pipeline has the potential hazard impacts up to 205 feet from the pipeline.

Land use in the vicinity of the natural gas pipeline is light industrial. Since the gas connector pipeline will connect to an existing pipeline that is in use, only the connector pipeline was evaluated. Land use in the vicinity of the crude oil pipeline is light industrial, heavy industrial, commercial, and residential. As shown in Figure 4.5-1, the majority of the crude oil pipeline is existing pipeline that operated previously. However, the crude oil pipeline has been non-operational for over 10 years. Therefore, for purposes of this analysis the reactivation of the Crimson crude oil pipeline is considered a new operation. Residential land uses including schools occur within the hazard distances calculated for the crude oil pipeline shown in Table 4.5-1.

The hazard distances in Table 4.5-1 show that a pool fire, explosion overpressure, or flash fire events could occur within 205 feet of the crude oil pipeline. At the sensitive receptor locations (i.e., Analee Elementary and Curtiss Middle Schools) along Analee Avenue and residential locations along Analee Avenue, South Perry Street, and Acarus Avenue, these types of events have the potential for significant adverse hazard impacts.
After selecting and analyzing the potential upset scenarios and their consequences, the likelihood of occurrence is determined. The U.S. DOT, Pipeline and Hazardous Material Safety Administration keeps detailed pipeline incident and mileage reports to chart fatalities, injuries, property damage, and loss of barrels of product resulting from pipeline incidents. Pipeline accident events, referred to as “significant incidents” by the Pipeline and Hazardous Material Safety Administration, include all incidents reported by a pipeline operator when any of the following conditions are met: (1) fatality or injury requiring in-patient hospitalization (also referred to as a “serious incident”); (2) $50,000 or more in total costs; (3) highly volatile liquid releases of five barrels or more or other liquid releases of 50 barrels or more; and/or (4) liquid releases resulting in an



MAXIMUM HAZARD RADIUS MAP
PROPOSED PROJECT
OXY USA Dominguez Oil and Gas Field

Project No. 2757

Figure 4.5-1

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unintentional fire or explosion. Thus "significant incidents" can range from small releases of as little as five barrels to serious events resulting in injury or fatalities.

Table 4.5-2 reiterates the number of "significant" incidents each year between 2003 and 2012 for onshore hazardous liquid pipelines, including crude oil and petroleum products, in California (also shown in Chapter 3, Table 3.5-1). The 10-year total (2003 - 2012) reported 268 incidents, one of which resulted in fatalities and two of which resulted in serious injuries. These 268 significant incidents resulted in 36,161 gross barrels spilled, and a net loss of 12,105 barrels (barrels not recovered). According to the U.S. DOT Incident and Mileage Reports, California contains 6,525 miles of hazardous liquid pipeline, transporting primarily crude oil and petroleum products.

As discussed above, over a 10-year period (2003 - 2012), the U.S. DOT reported 87 "significant" accidents over 6,525 miles of hazardous liquid pipeline in California. Therefore, the "significant" accident rate was 0.00133 accidents per mile of hazardous liquid pipeline per year.[2] "Serious" incidents (those resulting in fatality or serious injury) accounted for two accidents over the 10-year period (2003-2012) over 6,525 miles of hazardous liquid pipeline in California, or an accident rate of 0.000031 per mile of hazardous liquid pipeline per year. The data demonstrates that the rate of risk of hazardous liquid pipeline accidents resulting in serious injury or fatality is very low.

The pipeline accident statistics from the U.S. DOT discussed above were utilized to determine the rate of serious accidents per pipeline mile per year. As outlined in Section 3.5.3.2 and above, "serious" (i.e. resulting in an injury or fatality) hazardous liquid pipeline incidents occur approximately 0.000031 times per pipeline mile, per year. The proposed Project would connect to and reactivate the Crimson 6-inch crude oil pipeline (approximately four miles in length). Therefore, the statistical rate of "serious" incidents for the approximately four miles of proposed Project pipeline would be 0.00012 incidents per year. This equates to approximately one serious incident every 8,065 years for the crude oil pipeline. Since the anticipated useful life of the pipelines is 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project.

For potential "significant" hazardous liquid pipeline incidents as defined by the U.S. DOT (all incidents required to be reported), effects would be considered to be mostly moderate (refer to Table 4.5-2), due to the fact that of the 91 "significant" incidents recorded, only the two "serious" incidents had reported injuries. As outlined in Section 3.5.3.2, "significant" hazardous liquid pipeline incidents occur approximately 0.00133 times per pipeline mile, per year. Therefore, the statistical rate of "significant" pipeline incidents for the approximately four miles of proposed Project pipeline would be 0.00532 incidents per year, which equates to approximately one event every 188 years. Again, since the useful life of the proposed Project crude oil pipeline is approximately 50 years,

[2] The significant and serious accident rates associated with hazardous liquid pipelines are calculated by dividing the total number of incidents by the duration of the study divided by the total number of hazardous liquid pipelines miles (e.g., [87/10]/6,525 = 0.00133)

TABLE 4.5-2

California Hazardous Liquid Onshore Pipeline Incidents (2003 – 2012)

Year	Number	Serious	Significant	Fatalities	Injuries	Gross Barrels Spilled	Net Barrels Lost
2003	31	1	12	0	1	4,260	889
2004	34	1	9	5	3	8,543	4,655
2005	28	0	13	0	0	7,265	3,468
2006	33	0	13	0	0	3,954	1,704
2007	32	0	7	0	0	1,214	193
2008	30	0	11	0	0	8,596	854
2009	19	0	2	0	0	294	26
2010	15	0	6	0	0	981	162
2011	24	0	8	0	0	272	127
2012	22	0	6	0	0	777	22
Totals	268	2	87	5	4	36,161	12,105
2013 YTD	7	0	1	0	0	21	1
3 Year Average (2010 – 2012)	**20**	**0**	**7**	**0**	**0**	**677**	**104**
5 Year Average (2008 – 2012)	**22**	**0**	**7**	**0**	**0**	**2,185**	**239**
10 Year Average (2003 – 2012)	**27**	**0**	**9**	**1**	**0**	**3,616**	**1,211**

Source: U.S. DOT, PHMSA, 2013.
Notes: Net Barrels Lost applies only to Liquid incidents and is the difference between Gross Barrels Spilled and Barrels Recovered

this type of event has a low probability of occurring during the lifetime of the proposed Project. Therefore, no significant impact from crude oil transport by pipeline is expected from the proposed Project.

Natural Gas Pipeline: Table 4.5-3 reiterates the number of incidents including "significant" and "serious" incidents each year between 2003 and 2012 for natural gas pipelines in California (also shown in Chapter 3, Table 3.5-2). The 10-year total (2003 - 2012) reported 91 significant incidents, 14 of which resulted in fatalities. According to the U.S. DOT Incident and Mileage Reports, California contains about 115,000 miles of pipeline in natural gas service (including gas transmission, gas gathering, and gas distribution).

TABLE 4.5-3

California Natural Gas Pipeline Incidents (2003 – 2012)

Year	Number	Serious	Significant	Fatalities	Injuries
2003	18	4	13	2	3
2004	14	0	6	0	0
2005	21	1	14	0	1
2006	24	2	9	0	2
2007	23	4	13	0	5
2008	29	4	10	1	5
2009	29	0	6	0	0
2010	21	1	5	8	51
2011	12	0	6	0	0
2012	21	2	9	3	1
Totals	212	18	91	14	68
2013 YTD	11	0	8	0	0
3 Year Average (2010 – 2012)	**18**	**1**	**6**	**4**	**17**
5 Year Average (2008 – 2012)	**22**	**1**	**7**	**3**	**11**
10 Year Average (2003 – 2012)	**22**	**2**	**9**	**2**	**7**

Source: PHMSA, 2013.

The U.S. DOT reported 91 “significant” accidents over 115,000 miles of natural gas pipeline in California. Therefore, the “significant” accident rate was 0.000079 accidents per mile of natural gas pipeline per year. “Serious” incidents (those resulting in fatality or serious injury) accounted for 18 accidents over the 10-year period (2003-2012) over about 115,000 miles of pipeline in California, or an accident rate of 0.000016 per mile of natural gas pipeline per year. The data demonstrates that the rate of risk of natural gas pipeline accidents resulting in serious injury, or fatality is very low.

As outlined in Section 3.5.3.2 and above, “serious” natural gas pipeline incidents occur approximately 0.000016 times per pipeline mile per year. The proposed Project would connect to an active natural gas pipeline by installing a 6-inch diameter pipeline for approximately 2,000 feet along Charles Willard Street. Therefore, the statistical rate of “serious” incidents for the 2,000 feet (0.38 miles) of proposed Project pipeline would be less than 0.00001 incidents per year. This equates to approximately one serious incident every 100,000 years for the natural gas pipeline. Since the anticipated useful life of the pipelines is 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project.

For potential “significant” natural gas pipeline incidents as defined by the U.S. DOT, effects would be considered to be mostly moderate (refer to Table 4.5-3), due to the fact that of the 91 “significant” incidents recorded, only the 18 “serious” incidents had reported injuries. As outlined in Section 3.5.3.2, “significant” natural gas pipeline incidents occur approximately 0.000079 times per pipeline mile, per year. Therefore, the statistical rate of “significant” pipeline incidents for the 0.38 miles of proposed Project pipeline would be 0.00003 incidents per year, which equates to approximately one event every 33,300 years. Again, since the useful life of the proposed Project natural gas pipeline is approximately 50 years, this type of event has a low probability of occurring during the lifetime of the proposed Project. Therefore, no significant impact from natural gas transport by pipeline is expected from the proposed Project.

Pipeline Regulations: Use of the U.S. DOT statistics is considered conservative because it does not take into account that proposed Project facilities would be designed and constructed in accordance with modern standards and requirements, while much of the existing hazardous materials and natural gas pipeline infrastructure (on which the U.S. DOT accident statistics are partially based) is aged and more likely to be subject to accidental release events.

In addition, pipelines, new and reactivated, are subject to comprehensive regulation including requirements for pre-operational testing to ensure the operational integrity of the pipeline. (See the discussion of regulatory standards in Section 3.5.5.) Hydrostatic testing to 125 percent of the operating pressure is required by the State Fire Marshal prior to operation of a pipeline. Additional periodic testing is required for pipelines with the frequency of testing based on pipeline age, use of cathodic protection, and release history. New pipelines are required to accommodate instrumented internal inspection devices (commonly referred to as “smart pigs”). Older pipelines, when repaired or replaced, are required to be upgraded in a manner consistent, to the extent practicable, with the eventual accommodation of “smart pigs”, which is an internal inspection device for pipelines. “Smart pigs” detect where corrosion or other damage has affected the wall thickness or shape. The proposed Project includes upgrades to allow for the use of “smart pigs.” Additionally, to ensure the pipeline is operating properly and the volume of material shipped is received, monitoring of operations during transfer of material is required. The monitoring may include pressure indicators along the route and flow meters at both the shipping and receiving ends of the pipeline.

Also, a number of federal, state, and local laws have been enacted to regulate the use, storage, transportation, and management of hazardous materials and wastes. Section 3.5.5 outlines pertinent regulations and agency oversight that direct the use, handling, transportation, storage, and remediation of hazardous materials and wastes, including petroleum products. Compliance with such regulations will reduce the frequency and consequences of events resulting in hazardous releases.

4.5.2.6 Emergency Access

4.5.2.6.1 Construction

Demolition, site preparation, and facility development and finishing activities would involve the use of various construction vehicles and equipment on site that would utilize the local street system. Furthermore, pipeline construction would include short-term closure of traffic lanes where work occurs on or adjacent to travelled roadways. These activities may interfere with emergency routes or existing traffic flow, or cause unsafe conditions for traffic flow or pedestrian activities in the immediate vicinity of the construction activities.

The City of Carson designates the following roadways within the vicinity of the Project area as evacuation routes: Avalon Boulevard, Wilmington Avenue, Del Amo Boulevard, Victoria Street, and the 91 Freeway. Of these streets, none of these would be involved in pipeline construction activities associated with the proposed Project. Construction in the roadway right-of-way on Charles Willard Street and University Avenue would require the closure of one lane of traffic (both streets have four lanes of traffic, two in each direction). No road closures are anticipated during the construction phase of the proposed Project. The construction activities will require the preparation of a Traffic Control Plan and adequate emergency access will be maintained during construction activities. The Traffic Control Plan that would be prepared for the proposed Project (refer to Section 4.8 – Traffic and Transportation) would ensure that roadway or travel lane closures would be coordinated with emergency response personnel and City engineering or public works staff so that construction of the Project would not impair implementation of, or physically interfere with, emergency response or evacuation efforts. As such, impacts to adopted emergency plans or emergency evacuation plans during proposed Project construction would be less than significant.

Construction of the proposed Project would not require the creation of, or revision to, any existing emergency response plan, or emergency evacuation plan. Emergency response and evacuations plans are administered by state and local agencies and the proposed Project would not require any existing plan to be revised.

4.5.2.6.2 Operation

Once constructed, the proposed Project would not impede any designated disaster evacuation routes or impair implementation of any emergency response plans through long-term street blockage. No roads or streets will be blocked by project-related activities. Emergency Response Plans are required for the Oil and Gas Processing Facility under OSHA regulations (29 CFR §1910.120). Therefore, impacts to adopted emergency plans or emergency evacuation plans during proposed Project operation would be less than significant.

Risk management plans are required under Section 112(r) of the Clean Air Act for facilities that store certain hazardous materials. None of the materials included within the Project would require the preparation of a risk management plan pursuant to Section 112(r) of the Clean Air Act. Therefore, there would be no impacts related to the requirement for a new or revised risk management plan during operation of the proposed Project.

4.5.2.7 Hazardous Materials or Waste

A potential impact would occur if construction or operations activities would involve the handling of hazardous materials or waste (including contaminated soil or groundwater). The potential for exposure would primarily be to construction workers and operators directly handling or in the immediate work area of any hazardous materials encountered during construction and operation. Improper handling of hazardous materials can lead to adverse health effects for the handler, and potentially for other workers in the immediate vicinity. For instance, handling of solvent-containing materials without proper ventilation or respiratory protection can cause adverse effects to the human respiratory system. Therefore, it is important to accurately assess the presence of hazardous materials and waste prior to the beginning of construction activities and properly handle hazardous materials during operations. Additionally, if the construction or operating site is not properly restricted, or if hazardous materials are not properly handled, stored, or transported, the public could be subjected to health risks from exposure to hazardous materials and waste. Because the public would not be allowed access to construction sites or the operating facility without escort, the risk of exposure for members of the public is considerably lower than the risk to construction workers and operators.

Proposed Project facilities and pipelines would be constructed in multiple areas where potentially contaminated soil may be present. The area where the proposed Project is to be constructed has historically been used for oil production with records indicating four abandoned oil wells and two active test wells and is developed as a commercial warehouse. Since the proposed Project site has been developed, the likelihood of encountering contaminated soil is reduced. Nonetheless, the possibility to encounter previously unidentified contaminated soil exists during construction.

Provided that applicable federal, state, and local regulations are adhered to, the risk of exposure to hazardous materials is limited. Hazardous waste handling and transportation regulations contain specific procedures to ensure that hazardous waste and hazardous waste sites are managed in such a manner as to limit the potential exposure to workers and the general public. The following existing regulatory framework would help to ensure that potential impacts from existing hazardous materials, waste, or soil/groundwater contamination would be less than significant:

- CCR Title 22, Division 4.5 regulations, as overseen by the Department of Toxic Substances Control, require the following;

  - Identification and listing of hazardous waste, including specifications for when excavated soils must be classified as hazardous waste;
  - Standards for generators and transporters of hazardous waste;
  - Standards for universal waste management;
  - Requirement for handling of specific wastes, including extremely hazardous waste; and
  - Site remediation and corrective action requirements and guidelines.

- Regulations promulgated under the Federal Resource Conservation and Recovery Act and California Hazardous Waste Management Act, which include specific requirements for safe accumulation, transport, and disposal of hazardous wastes.

- South Coast Air Quality Management District Rule 1166 (Excavation of Soil Contaminated with Volatile Organic Compounds), which contains requirements for monitoring and handling of soils contaminated with volatile organic compounds.

- California Occupational Safety and Health Administration standards for worker safety relating to the handling and use of hazardous materials and hazardous wastes, which include requirements for employee training and accident-prevention programs that help to limit the potential for a hazardous material release to occur from an accident or upset condition.

Regulations for the transportation of hazardous and other regulated substances under the Federal Hazardous Materials Transportation Law (49 U.S.C. 5101-5127) and the Hazardous Materials Regulations (49 CFR Parts 171-180) contain provisions for materials classification, hazard communication, packaging requirements, operational rules, training and security, and registration. The transportation of hazardous building materials and supplies such as lead-based paint, asbestos, and solvents are subject to full regulation under Section 171.3 of the Hazardous Materials Regulations. All hazardous materials being transported must be handled, packaged, labeled, and transported in a manner that is consistent with the Hazardous Materials Regulations set forth for each categorized hazardous material/waste. Therefore, the existing laws and regulations discussed above, would reduce the potential impacts associated with construction or operations on or adjacent to sites containing hazardous materials, waste and contamination to a less than significant level.

4.5.2.8 Oil and Gas Production

As identified in Section 3.5.3.1, the three primary sources of hazards are loss of control of produced fluids, soil and groundwater contamination, and damage to existing abandoned oil wells. The potential hazard impacts are evaluated in the following subsections.

4.5.2.8.1 Loss of Control of Produced Fluids

The loss of control of produced fluids (blow-out) from a well during drilling occurs when the pressure in the oil reservoir is sufficient to force fluids to the surface. The Dominguez Oil Field has produced over 274 million barrels of oil, a large portion of which were produced by the aid of salt water injection to improve oil recovery. Based on information provided by OXY, the test wells have shown the oil reservoir is approximately 30 percent of hydrostatic pressure. At less than hydrostatic pressure, fluids are unable to rise to the surface unassisted. In addition, as described in Section 2.6.1.3 as part of the proposed Project, the oil wells will be equipped with a BOP system during drilling. The probability of loss of control of produced fluids during drilling is low since the field has been extensively developed since 1923, the operating pressure is less than hydrostatic pressure, and a BOP system will be in place during drilling. The BOP system confines fluids in the well allowing for a contained system for adding or withdrawing fluids during well drilling, as well as, shutting in the well during an emergency. Therefore, since pressure in the Dominguez Oil Field is low and the proposed wells incorporate the use of the BOP system, hazard impacts associated with loss of control of produced fluids are considered to be less than significant.

4.5.2.8.2 Soil and Groundwater Contamination

Soil contamination from drilling operations historically has been from the use of unlined mud sumps, which pursuant to 14 CCR 1775 are currently prohibited. The use of aboveground, liquid-tight tanks for mud will eliminate the potential for soil contamination. Additionally, the proposed Project site will be paved, which provides an impermeable cover that protects the underlying soil in the event that a tank should leak. In addition, secondary containment required for tanks to comply with SPCC requirements and overall site drainage design to contain fluids onsite have been incorporated into the proposed Project design to prevent the spills from migrating offsite. Based on the above considerations, the probability of soil contamination is low.

The potential for groundwater contamination is discussed in Subsection 4.6.2.2 of the Hydrology and Water Quality Section. Based on the analysis presented in Subsection 4.6.2.2, the proposed Project is not expected to impact groundwater because of the separation distance between the oil reservoir and the groundwater, the geology of the separation zone, and well design requirements. Therefore, the potential hazard impacts of soil and groundwater contamination are considered to be less than significant.

4.5.2.8.3 Damage to Existing Abandoned Oil Wells

The Dominguez Oil Field has approximately 600 abandoned oil wells. A review of DOGGR oil well files for 594 of the abandoned oil wells was performed to identify wells with the potential to be influenced by reactivation of the Dominguez Oil Field (Mearns, 2013). Of the well files reviewed, 18 wells were identified as potentially being influenced by the reactivation of the Dominguez Oil Field (see Table 4.5-4 and Figure 4.5-2)). The well abandonment record notes in the DOGGR well files indicate that the well abandonment methods for these 18 wells may not have been sufficient to comply with regulations and requirements and to preclude influence by the reactivation of the field.

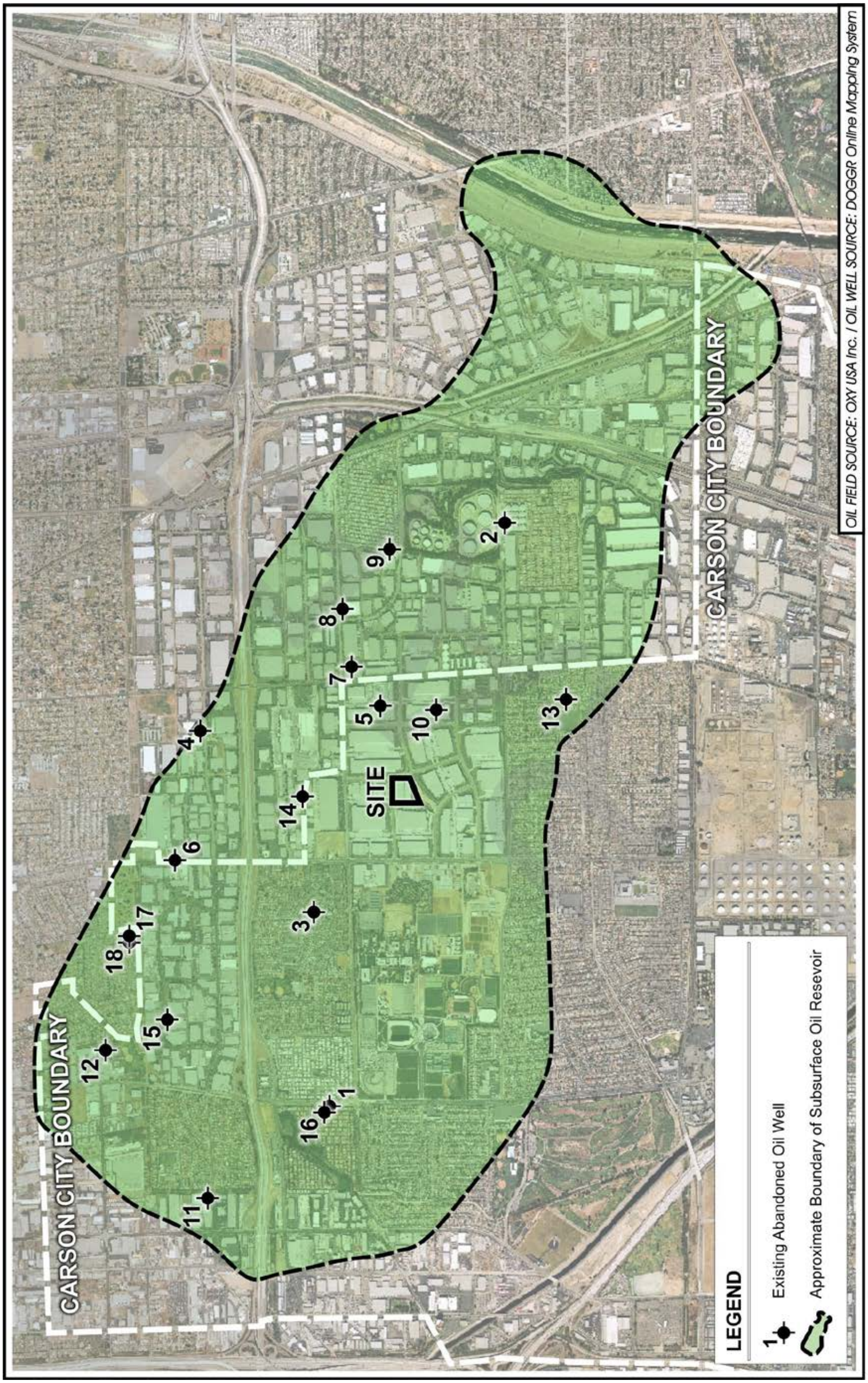
TABLE 4.5-4

Existing Abandoned Oil Wells with Potential for Influence from the Proposed Project

Map Reference Number[(a)]	API Number[(b)]	Operator Name	Lease Name	Well Number
1	03706746	LB Chase Oil	NR[(c)]	1
2	03706803	Selbar Oil Co	Selbar	1
3	03707103	Brea Canon Oil Co	Callender	41
4	03707362	Union Oil Co	Hellman	58
5	03720139	Dominguez Energy LP	Reyes	178
6	03700019	Brea Canon Oil Co	Hellman	59
7	03706614	Dominguez Energy LP	Reyes	9
8	03706615	Dominguez Energy LP	Reyes	10
9	03706744	Atlantic Richfield Co	Susanna	1
10	03706769	Highland Development Co.	NR	1
11	03706771	A. E. Hiles & Associates	Grant	1
12	03706789	Western Springs Petroleum Co.	Mattoon-Kent	2
13	03706819	Dominguez Energy LP	Dominguez Estate	8
14	03707363	Union Oil Company of CA	Hellman	60
15	03707507	Union Oil Company of CA	Callender	139
16	03707542	Union Oil Company of CA	Laronde	5
17	03707548	J. K. Wadley	Frame	1
18	03707549	J. K. Wadley	Frame-Sopp	4

Source: Mearns, 2013.
(a) See Figure 4.5-2 for approximate location.
(b) API Number is the American Petroleum Institute (API) well identification number.
(c) NR means none reported.

Of the 200 wells proposed to be installed in the Dominguez Oil Field, the 130 extraction and 65 salt water injection wells have the potential to change the conditions of the Dominguez Oil Field in the vicinity of the potentially influenced existing abandoned oil wells. Installation of extraction wells in the vicinity of existing abandoned oil wells would not be expected to adversely affect an abandoned well since the extraction well would draw fluids and gases away from the existing well reducing the potential for fluids and gases to migrate to the surface through the abandoned well. While the proposed operation of the field is expected to be similar to past operation (i.e., use of salt water injection), the potential to adversely affect the 18 identified wells exists if a salt water



EXISTING ABANDONED OIL WELLS WITH POTENTIAL
FOR INFLUENCE FROM THE PROPOSED PROJECT
DOMINGUEZ OIL FIELD
OXY Dominguez Oil Field
1450 Charles Willard Street
Carson, CA 90746

Figure 4.5-2

Project No. 2757
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injection well is installed in the vicinity. As part of the proposed Project, up to 65 salt water injection wells will be installed to maintain reservoir pressure. Salt water injection wells create a radial zone of influence. The salt water is injected to replace the fluids extracted and to "push" the oil towards extraction wells. Typically an injection well is located in the center of a cluster of extraction wells. To avoid adversely influencing the 18 wells identified during the records review, the City is imposing mitigation restricting the use of salt water injection wells in vicinity of the wells listed in Table 4.5-4.

In addition, drilling activities have the potential to damage abandoned wells by disturbing the formation adjacent to the abandoned well or inadvertently striking the well during drilling activities. Striking a well during drilling is not an activity that is expected to occur and due to the potential damage to drilling equipment and possible delay is undesirable. The potential damage and environmental impacts of disturbing the formation adjacent to the abandoned well or striking a well are unknown and would be considered speculative at this time. However, to provide assurance the drilling activities would avoid striking existing abandoned wells, the City is imposing mitigation discussed below.

4.5.3 MITIGATION MEASURES

No significant hazard impacts associated with construction of the proposed Project were identified. Therefore, no mitigation measures are required during construction of the proposed Project as the potential hazard impacts do not exceed thresholds and are considered less than significant.

Potential off-site impacts could occur from crude oil pipeline, natural gas pipeline, NGL storage tanks, and NGL truck loading rack associated with the proposed oil and gas processing facility. However, the probability of an offsite event is low and the impacts were determined to be less than significant. As no significant hazard impacts were identified, no mitigation measures are required.

The 18 identified existing abandoned oil wells have the potential to be influenced by the proposed Project. Additionally, the proposed Project has a potential to damage the existing abandoned oil wells. Therefore, the following mitigation measures are being imposed:

H-1 OXY shall avoid placing the end point of an injection well within a 75-foot radius of the 18 existing abandoned wells identified in Table 4.5-4 and shown on Figure 4.5-2. The 75-foot radius shall be approximated based on the best available information from DOGGR regarding the subsurface location of these wells. Records documenting the distance between the 18 wells identified in Table 4.5-4 and new wells shall be maintained by OXY and available for review by the City upon request.

H-2 OXY shall evaluate the potential subsurface location of any existing abandoned wells that may be encountered prior to the drilling of a well. The evaluation shall be based on the best available information from DOGGR regarding the subsurface location of these wells. OXY shall reasonably avoid the existing wells based on their evaluation of the location of the existing abandoned wells. Records documenting the evaluation shall be maintained by OXY and available for review by the City upon request.

4.5.4 LEVEL OF SIGNIFICANCE FOLLOWING MITIGATION

No significant hazard impacts were identified for the construction and operation of the proposed Project. However, mitigation measures are imposed to ensure there are no significant impacts from installation of wells as a precaution. Therefore, the hazards impacts associated with proposed Project will remain less than significant.

No significant impacts were identified to emergency access and no mitigation measures are required. Therefore, the hazard impacts associated with emergency access will remain less than significant following mitigation.

No significant impacts were identified related to hazardous materials or waste and no mitigation measures are required. Therefore, the hazard impacts associated with hazardous materials or wastes will remain less than significant following mitigation.

4.6 HYDROLOGY AND WATER QUALITY

The NOP/IS (see Appendix A) determined that the proposed Project has the potential to generate significant adverse hydrology and water impacts associated with water quality standards or waste discharge requirements, depletion of groundwater supplies, stormwater runoff management, or otherwise substantially degrade water quality. The NOP/IS determined that the hydrology and water quality impacts associated with the construction and operation of the proposed Project were potentially significant and those hydrology and water quality impacts are evaluated herein.

4.6.1 SIGNIFICANCE CRITERIA

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Quality

- The proposed Project will cause degradation or depletion of groundwater resources substantially affecting current or future uses.

- The proposed Project will cause the degradation of surface water substantially affecting current or future uses.

- The proposed Project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.

- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the proposed Pproject.

Water Demand

- The existing water supply does not have the capacity to meet the increase demands of the Project, or the Project would use a substantial amount of potable water. For the purposes of this analysis, substantial amount of potable water demand is defined as the amount of water necessary to supply 500 dwelling units, which has been calculated for this area as approximately 233,200 gallons of potable water per day.

4.6.2 ENVIRONMENTAL IMPACTS

The proposed Project includes facilities to process oil and gas produced from the Dominguez Oil Field. During construction, water will be required for dust suppression and hydrostatic testing of tanks and pipelines. During operation, the production of crude oil and natural gas is expected to generate approximately 94,000 barrels per day of saltwater, which will be treated and reinjected into the oil bearing formation. The operation of the proposed Project will maintain a balance in the oil bearing formation between the volume of material extracted and volume of saltwater reinjected into the oil bearing formation. An additional 20,000 barrels per day of saltwater will be produced and treated for reinjection into the oil bearing formation. Prior to the completion of the saltwater production wells, up to 4,500 gallons (approximately 100 barrels) per day of potable water is expected to be needed.

4.6.2.1 Construction Impacts

4.6.2.1.1 Water Demand

During construction activities, the proposed Project would use water for dust suppression and soil compaction associated with site preparation and grading in compliance with the dust suppression requirements of the SCAQMD Rule 403 – Fugitive Dust. In addition, following completion of construction, the proposed storage tanks and associated piping will require the use of water for hydrostatic testing.

Construction activities will require demolition and grading of the proposed Project site. Watering three times per day is expected to be used for dust suppression and to comply with SCAQMD Rule 403. For a 6.5 acres site (31,460 square yards) watered three times per day, dust suppression is expected to use 10,382 gpd of water (31,460 square yards x 0.11 gallons per square yard x 3 times per day [0.11 gpd from MDAQMD, April 2000]).

Therefore, during grading activities, water use is expected to be less than 233,200 gpd, so that water demand associated with grading activities would be less than significant and the proposed Project is not a "water demand project" as defined by CEQA Guidelines §15155.

Hydrostatic testing (a.k.a., hydrotesting) will be conducted following the completion of certain construction activities (and subsequent to grading activities) to assure that storage tanks and pipelines are constructed as designed and do not leak. Hydrotesting requires that the storage tank be filled with water for this purpose. Hydrotesting of one 5,000-barrel storage tank will use a total of 210,000 gallons over a number of days, which is the maximum water use for hydrostatic testing. To the extent possible, the hydrotesting water used for the first tank will be reused to hydrostatic test other tanks and piping. The reuse of the water for purposes of hydrotesting provides adequate water to test the pipelines, which require approximately 29,235 gallons for the oil pipeline and 2,938 gallons for the natural gas pipeline segment. California Water Supply Company is anticipated to provide the water necessary for the construction activities. While, if available, recycled water will be used, this analysis uses the worst-case assumption that recycled water would be unavailable and potable water would be used. Therefore, during hydrotesting associated with construction activities, the amount of potable water needed is 210,000 gallons on the maximum day. The potable water demand during hydrotesting would be less than 223,200 gpd. It should be noted that the water use associated with grading activities and hydrotesting would cease following construction activities and no further water demand would be required for these purposes.

4.6.2.1.2 Water Quality

During construction activities, the proposed Project site is subject to the stormwater management measures detailed in Sections 3.6.3.2.3. As such, BMPs specified in the Stormwater Pollution Prevention Plan (SWPPP) and the Wet Weather Erosion Control Plan (WWECP) will be implemented to control erosion and sediment runoff. BMPs generally include measures designed for:

- Good Housekeeping Measures - clean up trash, sweep paved areas, clean up spills, use drip pans, proper storage of materials, appropriate cleanup measures, and employee training.

- Preventive Maintenance – Repair leaks, use drip pans, maintain aisle space, inspect stormwater sumps/catch basins, and inspect retention devices.

- Spill Prevention and Response – Provide containment, divert spills from drains, clean up spills, and proper training.

- Stormwater Management Practice – Inspect existing stormwater sewers, provide sumps, use drip pans in heavily used areas, use containment methods for above ground storage tanks, and review new construction plans for stormwater impacts.

- Sediment and Erosion – Reduce erosion in unpaved areas, control sedimentation, minimize erosion during construction and maintain vegetation buffers.

An NPDES permit for construction stormwater discharges or coverage under the General Permit for Storm Water Discharges Associated with Construction Activity would be obtained by OXY. The associated SWPPP would specify measures for controlling contamination of stormwater by construction activities, including:

- Equipment would be inspected regularly (daily) during construction, and any leaks found would be repaired immediately.

- Refueling of vehicles and equipment would be in a designated, contained area.

- Drip pans would be used under stationary equipment (e.g., diesel fuel generators), during refueling, and when equipment is maintained.

- Drip pans would be covered during rainfall to prevent washout of pollutants.

- Appropriate containment structures and BMPs would be implemented or built and maintained to prevent offsite transport of pollutants from spills and construction debris.
- Soil stabilization measures such as geotextiles, erosion control blankets, bonded fiber matrix (BFM), visqueen, hydroseeding, wood mulch, fiber rolls, or other measure approved by Director of Public Works.

- Storm drain inlet protection, gravel bag berms to dissipate flow, and silt fence along the perimeter of the work area.

Fluids captured during construction activities will be managed onsite to reduce the potential for water quality impacts during construction. Wastewater generated during construction will be stored onsite within temporary storage tanks. This includes water from washing down trucks, equipment and concrete constructions pads, as well as stormwater. Most stormwater during construction will be stored onsite within temporary storage tanks, treated, and discharged in accordance with the general NPDES permits issued by the RWQCB or trucked off-site and disposed of at a permitted commercial facility. Some stormwater may runoff the proposed Project site during construction activities. Temporary containment, treatment, and proper disposal of stormwater generated during construction will avoid potential impacts to groundwater quality from the proposed Project. Periodically, the contents of these tanks will be collected via vacuum truck for off-site disposal at a permitted commercial facility. Hydrotest water, water from washing down trucks, equipment, and concrete construction pads will be collected and hauled off-site periodically by vacuum trucks for off-site disposal.

Adhering to the requirements of the SWPPP and WWECP by implementing appropriate BMPs, construction activities associated with the proposed Project are not expected to result in the discharge of stormwater from the site that could potentially result in off-site contamination. Therefore, the proposed Project construction activities are not expected to result in significant impacts to surface water quality.

4.6.2.2 Operational Impacts

4.6.2.2.1 Groundwater Level and Water Demand

The proposed Project is not expected to affect the quantity of water in existing fresh water aquifers currently being used as potable water supply. Other than the initial wells, which will require water from Calwater, production water for the proposed Project will be drawn from salt water aquifers interbedded between impermeable layers located 2,275 to 3,700 feet below MSL, roughly 1,475 to 2,900 feet below the deepest potable water aquifer currently in use (see Figure 3.6-2). Process water use during well drilling will be approximately 4,500 gpd per well. There will be approximately 130 production wells, 65 salt water injection wells, four salt water production wells, and one solids disposal well built for disposal of the generated slurry material. Slurry material may also be trucked off site and disposed of at a permitted commercial facility.

During operations, approximately 10,500 gpd of water will be required, which will be used primarily for the slurry injection system. If the slurry is trucked off site and not injected, water use will be substantially reduced. Much of the water used will be produced salt water, which is a byproduct of oil production. Additional water will be drawn from salt water aquifers located 2,275 to 3,700 feet below msl.

The saltwater zone that will be used as a source of process water is separated from the potable fresh water aquifers by roughly 1,475 to 2,900 feet of impermeable layers of siltstone. The layers of siltstone are interbedded with small aquifers that become increasingly brackish with depth. The bottom of this brackish zone is separated from the oil production zone by approximately 1,840 to 2,410 feet. Due to the presence of the impermeable rock layers between the saltwater and potable water aquifers and the well design and construction, water drawn from the saltwater aquifer is not expected to affect the quantity of water available in the potable aquifers or the brackish waters that lie within the layers of siltstone between the potable and saline aquifers. Therefore, the proposed Project is not expected to result in depletion in potable groundwater resources.

The proposed Project will require potable water during the initial well drilling operations of 4,500 gpd until the saltwater production wells are completed. Well drilling will not occur while site grading and construction is occurring. However, even if there is a period of overlap, the combined usage (construction water use of 10,382 gpd plus well drilling water use of 4,500 gpd = 14,582 gpd) would be less than the significance threshold (233,300 gpd). Once the saltwater production wells are completed, potable water demand for operations will cease. Domestic water demand is not expected to increase, since the existing warehouse activities and associated water demand will be eliminated. The temporary potable water demand is below 233,300 gpd and the proposed Project is not a "water demand project" as defined by CEQA Guidelines Section 15155.

The proposed Project is not expected to increase wastewater discharge to the sewer. The proposed Project will include wastewater discharge from offices, toilets, facility safety showers, wash down connections, etc. However, the existing warehouse activities and associated wastewater discharge will be eliminated. Therefore, no increase in domestic wastewater discharge is expected.

4.6.2.2.2 Water Quality

Surface Water Quality: There will be no discharges of process water to surface water. Surface water runoff from the site will be managed according to the BMPs specified in the SWPPP and the WWECP, which will be developed and submitted to the City and County for approval. The SWPPP will include appropriate BMPs to minimize the effect on water quality and hydrology from operations on- and off-site, such as those outlined by the California Stormwater Quality Association and the Los Angeles County Department of Public Works. Also, the DOGGR regulations require extensive protection against the release of pollutants.

The proposed Project will include the following project design features to protect water quality during operations:

- No liquids other than rain water will be allowed to run onto or run off of the enclosed area of the Project site. The proposed Project site will be completely covered with concrete or asphalt except for the green belt located outside the walls on the north and east side of the site.

- The proposed Project will capture and treat stormwater that falls on the site within the enclosed area and all water produced by on-site wells. The stormwater and produced water will be treated to prevent corrosion of the wells and injected into the subsurface as part of the mineral extraction process.

- All wells will be located within well cellars, which will contain any spilled liquids or rainwater that falls within the enclosed area of the proposed Project site. Well cellars will be pumped as necessary to remove accumulated fluids. All pumped fluids will be transferred to on-site tanks for treatment and reinjected to enhance production.

- During drilling operations, a liquid slurry of drilling "mud" will be collected on-site within enclosed tanks surrounded by berms. Much of the mud will be reused on-site with some treated on-site and disposed at an approved off-site commercial disposal site or injected into the on-site slurry injection well and into the oil reservoirs.

- A pollution pan will be installed under the rig floor and catch pans will be installed under the drill pipe to catch drilling mud. The drilling pad will be constructed to allow fluids spilled directly around the rig to flow into the well cellar. In addition, a berm will be placed around the entire drilling rig after the drilling rig is installed.

- Rainwater and accumulated run-off within the bermed area around the rig will flow into the well cellars and be pumped into on-site tanks.

- A spill trailer at the drilling area will be equipped with absorbent material, small spill booms to contain and direct flow, plastic sheets, personal protective equipment, rakes, shovels, and hand tools. This equipment is designed for use in the event of an oil spill.

- Process equipment will be surrounded by curbed areas to contain spills. The storage tanks will be equipped with full encirclement walls designed to provide for full containment as required by the design code and the Los Angeles County Fire Department.

- Stormwater that accumulates within the curbed areas around process equipment will be held within the curbed area until it can be visually inspected before being drained to the well cellars. If the water appears to be impacted, a vacuum truck will be used to move the water to the slop separation area for treatment.
- Drains will be routed to the well cellars to the north and east side of the property. Property features will contain the 50-year storm event. The water will then be pumped to the on-site water treatment system and injected through the on-site wells into the oil reservoirs.

Fluids captured would be processed on-site to separate water and solids from oil. Water will be retained and injected into the subsurface, below the potable aquifers, via injection wells, thereby avoiding potential impacts to water quality associated with surface water runoff. Alternatively, some water may be trucked off-site and disposed of in a commercial permitted disposal facility. The proposed Project would comply with all stormwater and waste discharge requirements and will exceed the requirement to infiltrate or treat the first 0.75 inch of rain that falls in a 24-hour period, which is less than the 50-year storm event that the facility is designed to contain. Management of stormwater runoff waters will be addressed in the SWPPP and the WWECP for the Project.

The stormwater drainage to the existing stormwater drainage system for the Dominguez Technology Centre will no longer receive surface water runoff from the enclosed areas of the proposed Project site; therefore, the proposed Project would reduce stormwater runoff from the site and would not contribute runoff water that would exceed the capacity of existing stormwater drainage systems. In addition, the proposed Project would capture and treat most stormwater onsite and is, therefore, not expected to result in surface water quality impacts. Therefore, no significant impacts to surface water quality are expected.

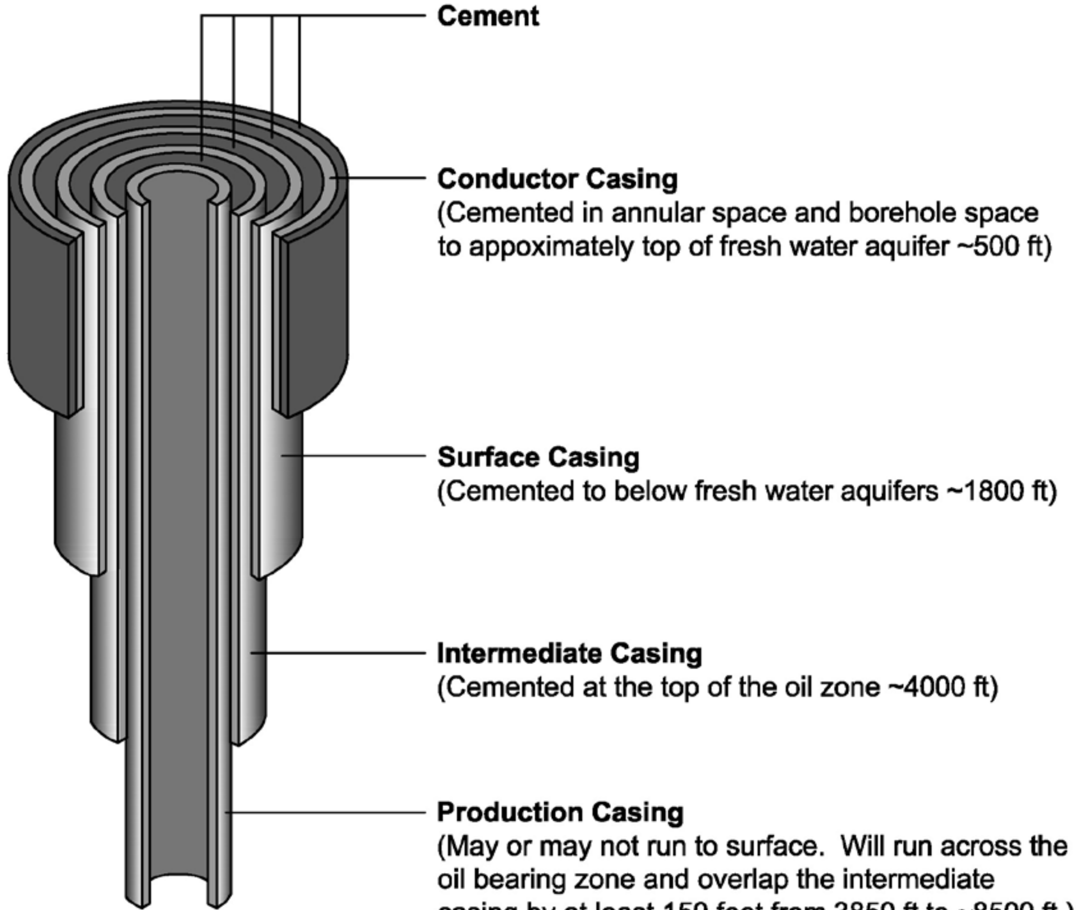
Groundwater Quality: Operation of the facility (i.e., oil and gas production) has the potential for impacting groundwater from oil drilling activities. While the proposed Project will produce oil and saltwater, and inject saltwater (and potentially slurry materials) into oil producing zones, geologic features, engineering design and regulatory oversight will help ensure that the proposed Project will not impact fresh water aquifers.

Engineering designs and compliance with regulations help to ensure that proposed Project operations will not impact potable water producing zones. The proposed Project is designed and required by regulations to install sealed casing through the water bearing aquifers to protect potable groundwater (see Figure 4.6-1). The casing protects both the environment and the mechanical integrity of the well. As the well is drilled, a steel casing (referred to as production casing) is installed in the well to seal it from the surrounding rock. Then, a specially-engineered cement slurry is pumped into the void space between the rock and the steel casing to increase the strength of the casing and to insure no leakage of fluids out of the casing or between the outer wall of the casing and the surrounding rock. The casing requirements will isolate the wells from the fresh water aquifers and is expected to meet or exceed DOGGR and U.S. EPA requirements. In California, DOGGR has established requirements for the design of wells and must review, approve, and monitor all well designs.

The proposed Project wells are expected to be operated at depths and zones separated by large geologic barriers from the fresh water aquifers. As shown in Figure 3.6-2, the deepest fresh water aquifer is approximately 800 below msl. The base of the fresh water is about 1,400 feet deep. The saltwater aquifer is located between 2,275 and 3,700 feet below msl. Oil production will occur at depths greater than 4,000 feet below msl and injection of slurry, should the slurry injection well be installed, would occur at depths greater than 5,000 feet below msl. The top oil production zone is located approximately 3,200 feet below the potable fresh water aquifers. The saltwater aquifer is isolated from the fresh water aquifers by geologic barriers a minimum of 425 feet thick. The extracted saltwater will be reinjected in the oil bearing formation.

Saltwater injection has historically occurred in the Dominguez Oil Field from 1946 to 1998, with no evidence of impact to groundwater quality. The historical saltwater injection has had no effect on the fresh water aquifers as shown in Table 3.6.5, which shows water quality in the Water Replenishment District (WRD) wells closest to the site of the proposed Project. Chloride concentrations in the potable water in the vicinity of the proposed Project are very low (i.e., less than on tenth of the MCL of 500 mg/l). The purpose of the saltwater injection is to stimulate production by maintaining pressure to force fluids from the oil reservoir into the productions wells and prevent subsidence. Injection of saltwater is anticipated to occur at pressures of less than 2,500 pounds per square inch, with specific maximum pressures for each area specified by DOGGR.

I:\2757\Well Casing (rev.1) **(Created)** 04/15/13 **(Drawn By)** A.S.K. **(Check By)** M.R.B. **(Last Rev.)** 08/12/13



NOTE: Actual well design details regulated and approved by DOGGR.

Environmental Audit, Inc.

TYPICAL WELL CASING DIAGRAM
1450-1480 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 4.6-1

The extracted saltwater and captured stormwater will be cleaned and treated prior to injection into the oil bearing formation. Water additives typically used, as allowed by DOGGR, include corrosion inhibitors, scale inhibitors, emulsion breakers, polymers, biocides, oxygen scavengers, surfactants, and flocculants) and are injected to improve water quality and maintain well performance (see Table 4.6-1). As shown in Table 4.6-1, the quantity of additive can vary with ranges between 0.2 and 4.3 gallons of additive per 1,000 barrels of treated water and is dependent on the water characteristics desired. These additives are included in the saltwater injected into the oil bearing formation. Historically additives have been included in the injected saltwater with no evidence of impact to groundwater quality. Therefore, no significant impact to groundwater quality is anticipated from the use of water treatment additives or from saltwater injection.

TABLE 4.6-1

Saltwater Additives

Function	Description	Typical Amount Used (gallon/1000 barrel of treated water)
Corrosion Inhibitor	Reduce corrosion of piping and well equipment	1.3
Scale Inhibitor	Prevent common scale formation on subsurface well equipment	0.6
Polymers	Assist with saltwater clarification to improve water quality and injection	0.2
Biocide	Control common oilfield bacteria	4.3 [(a)]
Oxygen Scavenger	Remove oxygen in the injection water to reduce corrosion formation	3.9 [(b)]
Surfactants	Improve wetting ability or surface activity or cleaning ability	2.6 [(b)]
Flocculants	Assist with water clarification to improve water quality	0.2

Source: Historical LA Basin Oilfield Water Treatment Values
(a): Batch Treatment as needed. This value is maximum concentration during batch application
(b): Treatment Not Needed. Value is typical treatment concentration if needed

Oil production, saltwater withdrawal, and water injection will all occur thousands of feet below the bottom of the deepest fresh water aquifer. Due to the distance between the zones of operation, the natural containment features of the underlying rock formations, and the design of the wells, the proposed Project is not expected to affect groundwater quality within the proposed Project area.

Groundwater in the area is routinely monitored by the WRD. The WRD tracks groundwater levels throughout the year by measuring the depth to water in monitoring wells and production wells located throughout the Central Basin and West Coast Basin. WRD uses groundwater levels to determine when additional replenishment water is required; to calculate groundwater storage changes; and to evaluate the effectiveness of seawater barrier injection wells. Groundwater quality throughout the Central Basin and West Coast Basin is monitored by the WRD through monitoring wells, water production wells, and monitoring of the quality of water used for groundwater replenishment. Annually, WRD collects nearly 500 groundwater samples from its monitoring well network and analyzes them for over 100 water quality constituents to produce nearly 60,000 individual data points to help track the water quality in the basins. By analyzing and reviewing the results on a regular basis, any new or growing water quality concerns can be identified and managed effectively (WRD, 2012). As discussed in Chapter 3.6, water quality concerns in the vicinity of the Dominguez Oil Field have not been associated with oil recovery or processing activities. In addition, WRD maintains approximately five groundwater monitoring wells in the vicinity of the proposed Project. Therefore, groundwater level and groundwater quality monitoring activities will continue to assure that groundwater quality is maintained.

In conclusion, while the proposed Project will produce oil and saltwater, and inject saltwater (and potentially slurry materials) into oil producing zones, the features described herein help ensure that the proposed Project will not impact fresh water aquifers. The oil zones are geologically isolated from the fresh water aquifer by many impermeable layers of siltstone. Engineering designs and regulations will also help ensure that the operations do not impact different zones. The casing procedure protects both the environment and the mechanical integrity of the well. The casing requirements will isolate the wells from the fresh water aquifers and will meet or exceed requirements of DOGGR[3] and U.S. EPA. All wells will be designed and constructed to prevent contact between the water in the fresh water aquifers and the produced fluids and the injected fluids.

4.6.3 MITIGATION MEASURES

No significant water demand or water quality impacts associated with construction of the proposed Project were identified. Therefore, no mitigation measures are required during construction of the proposed Project as the potential water demand and water quality impacts do not exceed thresholds and are considered less than significant.

No significant water demand or water quality impacts associated with operation of the proposed Project were identified. Therefore, no mitigation measures are required during operation of the proposed Project as the potential water demand and water quality impacts are considered to be less than significant.

[3] Available at: http://www.conservation.ca.gov/dog/Pages/WellPermitting.aspx#injectionwell. Accessed September 2011.

4.6.4 LEVEL OF SIGNIFICANCE FOLLOWING MITIGATION

No mitigation measures are required and the water demand and water quality impacts from the proposed Project would remain less than significant.

4.7 NOISE

The NOP/IS (see Appendix A) determined that the proposed Project has the potential to generate significant adverse noise impacts associated with the construction and operation of the proposed Project. The NOP/IS determined that the noise impacts associated with the construction and operation of the proposed Project were potentially significant and those noise impacts are evaluated herein. The analysis of the noise impacts of the proposed Project has been divided into two subsections: (1) construction activities; and (2) proposed Project operation.

4.7.1 SIGNIFICANCE CRITERIA

The proposed Project noise impacts would be considered significant if the following occurs:

- A substantial temporary noise level increase due to construction-related noise with an increase of 10 dBA or more for the hourly L_{eq} at sensitive receptors for construction activities lasting more than one day but less than 11 days, and an increase of five dBA or more for more than 10 days in a three month period. These significance criteria are based on the City of Los Angeles' CEQA Threshold Guide (2006), since neither the City of Carson nor Los Angeles County has developed CEQA noise thresholds.

- A substantial permanent noise increase is defined as a project-related noise increase of three dBA or more in the CNEL in locations where the future overall noise level would be within the "normally unacceptable" or "clearly unacceptable category" (see Table 3.7-5), or a five dBA or greater increase in the CNEL.

- Project-related equipment generates noise that exceeds the established Carson noise limits.

4.7.2 ENVIRONMENTAL IMPACTS

A noise analysis was prepared for the proposed Project and is included as Appendix D of this EIR.

4.7.2.1 Construction Noise Impacts

4.7.2.1.1 Onsite Production Facility Construction Noise Impacts

To assess potential noise impacts from onsite construction equipment, the potential overall sound levels for each of the construction phases were screened using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). The RCNM was used to evaluate the overall noise levels of equipment identified for each of the four on-site construction phases, including demolition/site preparation, well cellars, process equipment areas, and tanks. The types of construction equipment that are proposed to be used in each of these phases of construction are shown in Table 4.7-1. This screening process indicated that sound levels during demolition and site preparation would be the loudest phase of construction, resulting in an hourly L_{eq} of 77 dBA at 500 feet. Sound levels during the other three phases (construction of well cellars, process equipment, and tanks) ranged from 64 to 71 dBA (see Table 4.7-1). Therefore, to assess potential noise impacts during construction, the demolition/site preparation phase will be analyzed further.

TABLE 4.7-1

Construction Equipment Noise Levels

Type	Quantity	Sound Level at 500 feet (Hourly L_{eq}, dBA)[(a)]
Demolition/Site Prep Equipment		
Excavator	2	61
Loader	2	59
Hoe Ram	4	70
Backhoe	2	58
Pickup Truck	3	52
Water Truck	1	52
Dump Trucks	~31 trucks/day, ~3 trucks/hour[(b)]	57
Total Demolition Sound Level		**77**
Well Cellars		
Trackhoe	1	58
Loader	1	59
Dozer	1	62
Roller	1	60
Backhoe	1	58
Water Truck	1	51
Plate Compactors	1	63
Cranes	2	61
Generator	1	58
Forklift	1	52
Air Compressor	1	58
Welding Equipment (Diesel)	1	51
Pick-up Truck	1	55

TABLE 4.7-1 (Continued)

Construction Equipment Noise Levels

Type	Quantity	Sound Level at 500 feet (Hourly L_{eq}, dBA)[a]
Total Well Cellar Construction Sound Level		**71**
Process Equipment Areas		
Trackhoe	1	58
Loader	1	59
Dozer	1	62
Roller	1	60
Backhoe	1	58
Dump Trucks	1	57
Water Truck	1	52
Plate Compactors	1	63
Cranes	2	61
Generator	1	58
Forklift	1	52
Air Compressor	2	58
Welding Equipment (Diesel)	4	54
Pick-up Truck	1	55
Dump Trucks	~8 trucks/day, <1 truck/hour	53
Total Process Equipment Construction Sound Level		**71**
Tanks		
Automatic Floor Welder	1	54
Automatic Horizontal Seam Welder	1	54
Crane	1	61
Manlift	1	55
Welding Equipment (Diesel)	1	54
Pick-up Truck	1	55
Total Tanks Construction Sound Level		**64**

Source: Roadway Construction Noise Model (RCNM) version 1.1, 2008

[a] Except for dump trucks, the sound level presented is for *each* individual piece of equipment. The dump truck sound level considers the number of trucks expected in a one-hour period.

[b] The demolition and site preparation phase would require the most truck visits, with 148 to 155 truck visits a week. Assuming a five-day construction work week and 10 hours a day of construction, approximately 31 truck visits per day and 3 truck visits per hour, on average, are expected.

To assess the potential noise impacts associated with the on-site construction demolition/site preparation noise in more detail, the Computer Aided Noise Abatement

(CadnaA) industrial noise calculation procedure was used to estimate construction-related sound levels from on-site equipment. The CadnaA industrial noise calculation procedure allows noise modeling of complex facilities using sound propagation factors as adopted by International Organization for Standardization (ISO 9613). The CadnaA modeling setup for this analysis involved building three-dimensional maps that included intervening structures and topography.

A general overall construction equipment sound level based on the initial RCNM screening output from all active construction sources of 77 dBA at 500 feet (overall sound power level of approximately 131 dBA) was applied and was distributed across the site as an area source. The CadnaA model then predicted construction noise levels at the nearest off-site receptors. Results of the construction noise modeling assessment that considered noise from all predicted construction noise sources is shown in Table 4.7-2.

TABLE 4.7-2

Projected Demolition/Site Preparation Sound Levels (Hourly L_{eq}, dBA)

Receptor	Existing[a]	Construction	Overall	Increase
Nearest Residential Properties				
SLM1	57-61	47	58-61	0
SLM2	52-57	53	56-59	1-3
SLM3	54-60	48	55-61	0-1
Carson Construction Noise Limit[b]		65-70	NA	>5
Dominguez Technology Centre Properties				
NPL	NA	72	NA	NA
EPL	NA	74	NA	NA
SPL	NA	71	NA	NA
WPL	NA	74	NA	NA
Carson Construction Noise Limit[c]		85	NA	NA

Note: Any apparent calculation errors are due to rounding.

(a) Existing sound levels are shown for the hours between 7:00 am and 5:00 pm, the expected hours of construction.

(b) The noise limits apply to construction activities between 7:00 am and 8:00 pm and occurring longer than 20 days. The 65-dBA limit applies to single family residences (i.e., SLM1 and SLM3) while the 70-dBA limit applies at multi-family residences (i.e., SLM2). An increase of greater than 5 dBA due to construction would be considered to cause a significant noise impact.

(c) The noise limits are being applied to on-site construction (i.e., construction for more than 20 days) since no other construction noise limits are identified by the City of Carson for business structures. Noise impacts at industrial properties are not assessed by comparison with existing sound levels since they are not considered sensitive receptors; "NA" indicates that the information is not applicable to this assessment

As shown in Table 4.7-2, construction noise levels would be fairly low at the nearest residential receptors (47-53 dBA). Construction activities are anticipated to occur only during daytime hours. Because the construction noise level increases at the residential areas are 3 dBA or less, construction noise levels are considered to be less than significant (>5 dBA for construction projects more than 10 days in a three month period). It should also be noted that the maximum noise levels in the City of Carson for construction equipment used for repetitive operations of 21 days or more is 65 dBA in single family residential areas and 70 dBA in multi-family residential areas (see Table 3.7-6). Therefore, the noise related to construction activities would be less than the established Carson noise limits.

Construction noise levels were also estimated for the closest offsite properties which are industrial areas. The expected noise levels during construction activities at properties adjacent to the Project site are 71-74 dBA. The maximum noise levels in the City of Carson for construction equipment used for short-term operations (20 days or less) is 85 dBA in commercial areas (see Table 3.7-6). Therefore, the noise related to construction activities would be less than the established Carson noise limits.

4.7.2.1.2 Off-Site Construction Noise Impacts

Off-site construction activities are associated with the proposed new pipelines and modifications to existing pipelines. To assess potential noise impacts from off-site construction equipment, the types and numbers of equipment expected to be used during the various phases of construction were identified. The RCNM was then used to estimate the overall noise levels of the equipment at various distances representing the nearest sensitive populations to the proposed construction activities. The results of the analysis of off-site pipeline construction activities and off-site SCE connection construction activities are discussed separately below.

Pipeline Construction

New gas and oil pipelines would need to be installed and/or connected to existing pipelines as part of the proposed Project (see Figures 2.6-6). There are three areas where pipeline installation and related facilities will be required: approximately 2,000 feet from the site to the intersection of Charles Willard Street and South Central Avenue, approximately 1,000 feet on and near the intersection of University Drive and South Central Avenue, and approximately 100 feet near the intersection of 223rd Street and Wilmington Avenue. Construction in each area would take approximately two to three weeks.

To assess potential noise impacts from off-site construction equipment, equipment sound levels identified in RCNM were used for each of the three phases of pipeline installation: asphalt removal and ditching, pipe installation and testing, refilling of the trench, and repaving. Equipment types during the various phases of construction are displayed in Table 4.7-3. As shown, equipment associated with asphalt removal and ditching and with trench refilling are the same and will be considered together.

TABLE 4.7-3

Pipeline Installation Equipment

Type	Number	Sound Level at 50 feet (Hourly L_{eq}, dBA)
Ditching and Refilling		
Backhoe	1	74
Dump Truck	1	73
Total Pipeline Construction Ditching Sound Level		**76**
Pipe Installation and Testing		
Crane	1	73
Sideboom	2	73
Generator	2	78/68[a]
Welder	2	70
Total Pipeline Construction Pipe Installation Sound Level		**83/79**

Source: Roadway Construction Noise Model (RCNM) version 1.1, 2008

[a] The sound levels are displayed as standard/quieted.The quieted sound level of the generators includes a 10 dBA reduction. This may be accomplished either by selecting a quieted generator meeting the above sound level specification or by using temporary/portable barriers around the generators.

Construction sound levels were calculated at sensitive receptors near two of the off-site pipeline installation areas using the equipment identified in Table 4.7-3 and the RCNM model. (The third off-site pipeline installation occurs in an industrial area. The off-site pipeline installation areas are described in more detail below.) These levels were then added to the measured existing sound levels to identify a range of potential noise increases due to construction activities (see Table 4.7-4).

New Pipeline Installation to the Intersection of Charles Willard Street and South Central Avenue: Activities in this area involve installation of over 2,000 feet of gas and oil pipeline from the Project site west to the intersection of Charles Willard Street and South Central Avenue. The construction activities would range from 550 to over 2,000 feet from the nearest student housing units at Cal State University Dominguez Hills (SLM2), considered multi-family residential uses. Noise impacts from pipeline construction activities are expected to range from 44 to 59 dBA at the university housing. The increase in hourly sound levels during pipeline construction activities would range from 0 to 7 dBA. Increases during construction would not exceed 10 dBA and are not expected to exceed 5 dBA for more than 10 days at any location (see Appendix D), as the pipeline construction activities would move throughout the construction period. Therefore, noise construction impacts associated with pipeline construction at this location are less than significant.

TABLE 4.7-4

Projected Pipeline Installation Sound Levels
(Hourly L_{eq}, dBA)

Receptor	Existing[a]	Construction		Overall	Increase
New pipeline installation to the intersection of Charles Willard Street and South Central Avenue					
CSU Dominguez Hills (SLM2)	52-57	Ditch	44-55	53-59	0-5
		Pipeline	47-59	53-61	0-7
Carson Construction Noise Limit[b]		80		NA	>5, >10
Reconnection of Crimson Pipeline at University Drive and South Central Avenue					
Near University and S Central (SLM3)	54-60	Ditch	55-72	57-72	1-18
		Pipeline	58-75	59-75	2-21
Carson Construction Noise Limit[b]		75		NA	>5, >10

Note: Any apparent calculation errors are due to rounding.

[a] Existing sound levels are shown for the hours between 7:00 am and 5:00 pm, the expected hours of construction.

[b] The noise limits apply to construction activities between 7:00 am and 8:00 pm and occurring less than 21 days. The 75-dBA limit applies to single family residences (i.e., SLM3) while the 80-dBA limit applies at multi-family residences (i.e., SLM2). An increase of greater than 5 dBA for more than 10 days due to construction would be considered to cause a significant noise impact. An increase of 10 dBA or more for more than 1 day would be considered to cause a significant noise impact.

Reconnection of Crimson Pipeline at University Drive and South Central Avenue: Activities in this area involve replacement of approximately 1,000 feet of oil pipeline previously removed from the Crimson Pipeline. The pipeline replacement would occur within South Central Avenue and University Drive rights-of-way for approximately 500 feet north and 500 feet west of the intersection of the two roads. The construction activities would range from 80 to 600 feet or more from the single-family residences south of University Drive, represented by SLM3. The residences closest to the University Drive/South Central Avenue intersection would be exposed to elevated levels of construction noise for more time than residences farther west from the intersection. At the most affected residences, the increase in hourly sound levels during pipeline construction activities would range from 1 to 21 dBA. Therefore, noise construction impacts associated with pipeline construction at this location would exceed a 10 decibel noise increase and are considered to be potentially significant (exceed an increase of 10 dBA).

Connection Between the Crimson Pipeline and Norwalk-Carson Pipeline: Construction activities associated with the connection of the Crimson Pipeline to the Norwalk-Carson Pipeline would be near the intersection of 223rd Street and Wilmington Avenue, within a commercial parking lot. Construction activities at this location would not occur near any sensitive receptors and would occur 100 feet or more from business structures. The closest residential area to the proposed construction activities is about 0.5

miles away. Therefore, no significant impacts noise impacts would be expected at this location.

No night time construction activities are expected to be required for construction and modifications to the pipeline system.

SCE Connection Construction

The electrical power supply to the proposed facility would be provided by SCE. SCE is currently evaluating an option to supply 25 MVA power to the Project site. The primary option would locate all cables underground and would likely install a fenced connection at the proposed Project site. The noise impacts of the off-site elements of the SCE construction are evaluated in this section.

SCE would serve the facility at 16 kV from the existing Jersey 66-16 kV substation. Three new 16 kV circuits would be run underground from Jersey Substation to the proposed Project site, requiring approximately 8,000 feet below ground construction along the proposed route (see Figure 2.6-5). Most of the below ground construction would consist of digging a trench, but a boring machine and associated equipment would be used to install approximately 1,000 feet electricity lines beneath Route 91 freeway.

Noise impacts were assessed for the three phases of conduit installation: underground conduit installation via trenching, repaving, and horizontal directional drilling (HDD). Equipment types during the various phases of construction are displayed in Table 4.7-5.

The underground conduit installation and repaving activities would occur in the same general vicinities. Since the conduit installation sound levels are higher than the repaving levels, only the conduit installation scenario was considered for assessing noise impacts at receptors nearest these activities. Similarly, since the equipment on the HDD drilling side is louder than the equipment on the HDD stringing side, only the HDD drilling side was considered in detail when assessing noise impacts at residences near this activity.

Construction sound levels were calculated at sensitive receptors nearest the underground conduit installation and HDD drilling areas using the equipment identified in Table 4.7-5. These levels were then added to the measured existing sound levels to identify a range of potential noise increases due to construction activities. These levels were then added to the measured existing sound levels to identify a range of potential noise increases due to SCE connection construction activities (see Table 4.7-6).

<u>Underground Conduit Installation:</u> The proposed Project includes installation of cables in conduits installed underground on South Central Avenue from Greenleaf Boulevard to Victoria Street, east on Victoria Street to Bishop Avenue, south on Bishop Avenue to Charles Willard Street, and west on Charles Willard Street to the Project site. This assessment assumed the conduit would be installed on the east side of South Central Avenue, the north side of Victoria Street, the east side of Bishop Avenue and the north

TABLE 4.7-5

SCE Connection Construction Equipment

Type	Number	Sound Level at 50 feet (Hourly L_{eq}, dBA)
Underground Conduit Installation		
Loader	1	75
Backhoe	1	74
Plate Compactors	1	76
Crane	1	73
Generator	1	68 [(a)]
Air Compressor	1	74
Welder	1	70
Pickup Truck	1	71
Delivery/Dump Trucks	1	73
Total Underground Conduit Installation Sound Level		**83**
Repaving After Underground Conduit Installation		
Backhoe	1	74
Roller	1	73
Paver	1	74
Total Repaving Sound Level		**78**
Horizontal Directional Drilling (HDD) – Drilling Side [(b)]		
Boring Machine	1	81
Water Pump	1	72
Cuttings Separation Equipment	1	77
Slurry Pump	1	72
Total HDD Drilling Side Sound Level		**83**
Horizontal Directional Drilling (HDD) – Stringing Side		
Backhoe	1	74
Cranes	2	73
Total HDD Stringing Side Sound Level		**78**

[(a)] The sound level of the generator includes a 10 dBA reduction. This could be accomplished either by selecting a quieted generator that meets the above sound level specification or by using temporary/portable barriers around the generator.

[(b)] The sound levels for the HDD equipment on the drilling side were taken from data collected by ENVIRON for previous noise studies.

Source: Roadway Construction Noise Model (RCNM) version 1.1, 2008; see Appendix D

side of Charles Willard Street. The underground conduit installation activities could occur as near as 130 feet from the residences on the west side of South Central Avenue (represented by SLM1), with an existing wall assumed to provide at least 5 dBA of reduction in the construction noise. The underground construction activities would move linearly for about 7,000 feet and would be more than 400 feet from residences the majority of the time. Therefore, each residence is expected to be exposed to elevated construction noise for fewer than 21 days.

TABLE 4.7-6

SCE Connection Sound Levels
(Hourly L_{eq}, dBA)

<table>
<tr><th>Receptor</th><th>Existing [a]</th><th colspan="2">Construction</th><th>Overall</th><th>Increase</th></tr>
<tr><td rowspan="3">West Side of S Central (SLM1)</td><td>57-61</td><td>Underground</td><td>47-69</td><td>58-70</td><td>0-12</td></tr>
<tr><td>52-61</td><td>HDD Drilling</td><td>55</td><td>59-62</td><td>1-5</td></tr>
<tr><td>52-61</td><td>HDD Stringing</td><td>50</td><td>54-62</td><td>0-2</td></tr>
<tr><td rowspan="3">Carson Construction Noise Limit</td><td>20 days or less</td><td colspan="2">75-80</td><td>NA</td><td>>5, >10 [b]</td></tr>
<tr><td rowspan="2">> 20 days</td><td>7:00 am to 8:00 pm</td><td>65-70</td><td rowspan="2">NA</td><td rowspan="2">>5, >10 [b]</td></tr>
<tr><td>8:00 pm to 7:00 am</td><td>55-60</td></tr>
</table>

Note: Any apparent calculation errors are due to rounding.

[a] Existing sound levels for underground conduit installation are shown for the hours between 7:00 am and 5:00 pm, the expected hours of construction. Existing sound levels from HDD drilling activities are shown for 24-hours a day, the expected hours of drilling.

[b] An increase of greater than 5 dBA for more than 10 days due to construction would be considered a significant noise impact. An increase of 10 dBA or more for more than 1 day would be considered a significant noise impact.

The sound levels from the underground conduit installation equipment and activities would range from 47 to 69 dBA at the most affected residences near the intersection of South Central Avenue and Victoria Street, resulting in a noise increase of 0-12 dBA (see Table 4.7-6). Although the 12 dBA increase is temporary and would occur for a short time period, it could potentially continue for more than one day and is considered to be significant.

With one exception, underground conduit installation activities are expected to occur farther than 50 feet from any business structures, resulting in noise impacts of 83 dBA or less. The exception is the business structure at 17900 South Central Avenue, which could be as near as 25 feet from some construction activities. The estimated noise level at this building would be estimated at 89 dBA and would be considered significant.

<u>HDD Drilling and Stringing Activities:</u> Approximately 1,000 feet of horizontal directional drilling (HDD) would be required to install the conduit and cables under the 91 Freeway. The equipment associated with this task would include HDD drilling equipment and HDD stringing equipment at sites approximately 500 feet north of and 500 feet south of the center of the 91 Freeway. At the time of this analysis it was unknown if the HDD drilling equipment or the HDD stringing equipment would be located south of the 91 Freeway and nearest potentially affected residences. For this analysis, it was assumed the louder HDD drilling equipment would operate approximately 500 feet south of the 91 Freeway and approximately 700 feet from the nearest residences on the west side of South Central Avenue just north of Victoria Street. As previously discussed, this analysis assumed a 5 dBA reduction in construction noise at these residences due to existing walls.

HDD drilling and HDD stringing equipment are expected to operate more than 50 feet from the nearest business structures, resulting in noise levels of 83 and 78 dBA or less for the HDD drilling and HDD stringing operations, respectively. The construction equipment would operate in the same location for a period of approximately four weeks, including 24-hour operation for a portion of the overall construction period. Assuming the HDD drilling equipment was located south of the 91 Freeway, the noise levels would be approximately 55 dBA at the residences on the west side of South Central Avenue, north of Victoria Street (see Table 4.7-6). The increase in hourly sound levels due to HDD drilling would range from 1 to about 5 dBA. Assuming the HDD stringing equipment were to be located north of the 91 Freeway, the noise levels would be approximately 50 dBA at the nearest residences and the increase in hourly levels would range from 0 to 2 dBA. As HDD construction activities could occur 24-hours a day, if the drilling equipment was located south of the 91 Freeway, the resulting noise increase of 5 dBA would be considered a significant noise impact

HDD drilling and string activities are expected to occur 50 feet or farther from any business structures, resulting in sound levels of 83 and 78 dBA or less for HDD drilling and HDD stringing operations, respectively. These levels would comply with the 85 dBA construction noise limit at business structures.

4.7.2.2 Operational Noise Impacts

4.7.2.2.1 Methodology and Assumptions

The proposed facility would consist of drilling activities; slurry, oil, water, and gas handling; slop and utility systems; electrical power; flares; and truck loading racks. The noise impact assessment included drilling and slurry handling equipment and multiple pumps, compressors, blowers, and other miscellaneous equipment associated with the various handling and treatment processes. Occasional routine workover/maintenance activities were also considered. Non-routine, unpredictable noise events were not considered because the magnitude of such events is unknown and is speculative.

Sound data for most equipment were not available and were estimated for purposes of modeling based on typical sound levels for these types of equipment taken from simple calculations or measurements of similar equipment. Equipment expected to contribute to the overall noise levels from the facility is identified in Table 4.7-7, which estimates how many units might be on the site for a facility of this size and the approximate sound pressure level at 100 feet from each unit. Frequency sound level data for the various type of equipment is provided in Appendix D. Even though drilling and workover/maintenance activities are exempt from the Carson noise limits, these sources were included in the noise analysis. Regardless, they are minor noise sources that do not contribute substantially to the overall levels.

TABLE 4.7-7

Primary Operational Equipment Sound Levels (dBA)

Equipment	Number of Equipment	Approximate Sound Level at 100 ft (dBA)	Sound Level Data Source Reference
Drilling Equipment			
Drill Rig (Electric)	1	50	1
Metal-on-Metal Noise	Varies	100	3
Slurry Handling Equipment			
Separators/Shakers (2 units)	1	71	3
Slurry Pumps (4 pumps)	1	72	3
Pumps	5	55	4
Mud Mixer	3	75	5
Oil Handling Equipment			
Air Exchangers with Fans	2	55	4
Pumps	4	55	4
Water Handling Equipment			
Pumps	12	55	4
Large Injection Pumps	5	60	4
Gas Handling Equipment			
VRU Rotary Screw Compressors	4	60	6
Rotary Screw Compressor Air Coolers	4	60	6
Reciprocating Compressors	2	64	6
Reciprocating Compressor Air Coolers	2	59	6
LTS Pre-Coolers	2	52	4
Refrigeration Skids	2	72	6
Pumps	4	55	4
Slops System			
Pumps	8	55	4
Utility System			
Pumps	9	55	4
Process Heater	1	58	2
Air Compressors	3	60	6
Miscellaneous			
Step-Down Transformers	4	54	7
Process Flare	1	55	8
Workover/Maintenance Rig	1	75	2

Note: Other pieces of equipment not included in the table are not expected to contribute substantially to the overall levels.

Data Source References:

1) See Appendix D for more detailed information on the noise references

Because very few trucks are expected at the site on a daily and hourly basis (i.e., generally two trucks or fewer a day), truck noise would not contribute measurably to the overall noise levels and is not included in the noise study. It should also be noted that the truck and other related traffic from the existing warehouse at the proposed Project site would be reduced and the reduction in noise associated with the reduction in traffic was not taken into account in this analysis, in order to provide a conservative estimate of project noise impacts.

The noise assessment included the noise-reducing effects of a proposed 30-foot high concrete wall around the majority of the site perimeter (excluding one driveway to the north and one driveway to the east).

As was done for assessing construction noise impacts, the CadnaA industrial noise calculation procedure was used (described in Section 4.7.2.1) to estimate operational sound levels from on-site equipment. The CadnaA modeling setup involved building three-dimensional maps that included intervening structures and topography, identifying the relevant noise sources (displayed in Table 4.7-7), inputting the locations and heights of the individual sources, and identifying the most affected residential and property boundary model receptor locations. The model receptor locations are shown in Figure 3.7-2 and Appendix D.

4.7.2.2.2 Sound Level Results

The overall hourly sound levels (L_{eqs}) of the noise sources displayed in Table 4.7-7 (except short-term metal-on-metal noise discussed in Section 4.7.2.2.3) were estimated at the nearest and/or most affected residential and property boundary locations. The hourly levels are also representative of the half-hourly L50 noise levels and were compared to the Carson L50 noise limits to assess compliance with the noise ordinance (see Table 4.7-8).

The CNEL levels were calculated using the model-calculated hourly sound levels displayed in Table 4.7-8. The CNEL levels due to operation of the facility were added to the existing sound levels to estimate the overall future noise levels and noise level increases at the affected properties nearest the proposed Project site (see Table 4.7-9).

A substantial permanent noise increase would occur if the noise level increase from the proposed Project is 3 dBA CNEL or greater where the future overall noise level would be within the "normally unacceptable" or clearly unacceptable" category (see Table 3.7-5) or 5 dBA CNEL or greater otherwise. As shown in Table 4.7-9, equipment and activities related to the proposed Project would increase overall CNEL sound levels by 0 to 1 dBA at the nearest residences, which would be considered less than significant increases.

The model-calculated sound levels comply with the applicable daytime noise limits at the nearest residential properties. The model-calculated sound levels also comply with the more stringent nighttime noise limits at all residential areas which apply 24-hours a day.

TABLE 4.7-8

Model-Calculated Operational Sound Levels (dBA)

Receptor	Operation	Limit Day/Night
Nearest Residential Properties		
SLM1	40	50/45
SLM2	43	50/45
SLM3	39	50/45
Dominguez Technology Centre Properties[a]		
NPL	51	70
EPL	55	70
SPL	54	70
WPL	53	70

[a] The NPL and EPL receptors are located at the nearest property boundaries north of Charles Willard Street and east of Bishop Avenue, respectively. The SPL receptor is located on the south edge of the stormwater retention basin, which abuts the southern boundary of the OXY property. These receptor placements represent the nearest potentially-affected properties to the facility.

TABLE 4.7-9

Operational Sound Levels and Sound Level Increases (CNEL, dBA)

Receptor	Existing	Operation	Overall	Increase
Nearest Residential Properties				
SLM1	63	46	63	0
SLM2	58	50	58	0
SLM3	59	45	59	0
Dominguez Technology Centre Properties				
NPL	70	57	70	0
EPL	70	61	71	1
SPL	59	61	63	4
WPL	63	60	65	2

Notes: Any apparent calculation errors are due to rounding.
The calculated CNEL levels assume peak 24-hour operation.

At receptors in the Dominguez Technology Centre, projected increases in CNEL range from 0 to 4 dBA with resulting overall sound levels of 63 to 71 dBA. These levels are within the “normally acceptable” to “conditionally acceptable” range for both office/professional buildings and industrial/manufacturing facilities, and would not, therefore, be considered substantial noise increases. Therefore, no significant impacts would be anticipated due to operational noise levels resulting in substantial increases in overall noise.

4.7.2.2.3 Short-term Metal-on-Metal Sound Level Results

In addition to the operational noise sources expected to operate at the proposed Project site, drill pipe and casing handling can result in metal-on-metal contact, resulting in very short-term elevated sound levels. Metal-on-metal noise can be characterized as clanking sounds varying in duration and sound level. Because it is short in duration, it is restricted by the L_{max} noise limits identified in the Carson Municipal Code Article 5, Chapter 5, which are 20 dBA higher than the base L50 noise limits.

Using the same methodology described above for operational noise, sound levels of metal-on-metal events were predicted at nearby residential and property line locations. The resulting modeled sound levels are displayed in Table 4.7-10 and are compared to the City of Carson L_{max} limits as applied at residential and industrial properties.

TABLE 4.7-10

Modeled Short Term Metal-on-Metal Sound Levels
(L_{max}, dBA)

Receptor	Sound Level	Noise Limit Day/Night[a]
Nearest Residential Properties		
SLM1	57	70/65
SLM2	62	70/65
SLM3	57	70/65
Industrial Property Lines		
NPL	72	90
EPL	72	90
SPL	70	90
WPL	73	90

[a] Daytime hours are from 7:00 am to 10:00 pm; nighttime hours from 10:00 pm to 7:00 am.

As shown in Table 4.7-10, the model-calculated sound levels comply with the applicable daytime noise limits at the nearest residential properties. The model-calculated sound levels also comply with the more stringent nighttime noise limits at all residential and industrial areas which apply 24-hours a day. Therefore, no significant operational noise impacts are expected.

4.7.3 MITIGATION MEASURES

Feasible mitigation measures are required to minimize the significant noise impacts associated with the construction phase of the proposed Project as the noise impacts associated with pipeline and electrical conduit installation are considered significant.

No mitigation measures are required for the operation phase because noise impacts were determined to be less than significant.

Construction Mitigation Measures

Construction mitigation measures shall include the following:

N-1 Quieted generators or portable barriers shall be used around the generators for all off-site pipeline construction locations.

N-2 To minimize the time during which any single noise-sensitive receptor is exposed to construction noise, construction shall be completed as rapidly as possible.

N-3 Where possible, electric-powered equipment shall be used rather than diesel equipment and hydraulic-powered equipment shall be used rather than pneumatic power. If compressors powered by diesel or gasoline engines are used, they shall be contained or have baffles to help abate noise levels.

N-4 All construction equipment shall be properly maintained.

N-5 All construction equipment shall be equipped with suitable exhaust and air-intake silencers in proper working order.

N-6 Construction equipment shall be operated only when necessary, and shall be switched off when not in use.

N-7 Construction employees shall be trained in the proper operation and use of the equipment to minimize noise levels.

N-8 Contractors shall be required to participate in training programs related to Project-specific noise requirements, specifications, and/or equipment operations. Contractors shall also receive on-site training related to noise-specific issues and sensitive areas adjacent to the pipeline route.

N-9 Construction **s**taging sites shall be located on properties restricted to industrial and commercial uses only.

N-10 To the extent possible, construction staging sites shall not be located within 500 feet of a sensitive receptor. Where this is not possible, the contractor shall erect noise barriers, or ensure that existing structures provide adequate noise barriers between the staging site and the sensitive receptor.

N-11 Stationary noise sources such as generators and compressors shall be positioned as far away as possible from noise sensitive areas.

N-12 To the extent practicable, construction equipment shall be stored in the construction zone while in use. This will eliminate noise associated with repeated transportation of the equipment to and from the site.

N-13 Public notice shall be given to residents and business along the pipeline route at least two weeks prior to the commencement of construction activities. The notice shall identify the location and dates of construction, and the name and phone number of the contractor's contact person in case of complaints. The public notice shall encourage the residents to contact this person rather than the police in case of complaint. Residents shall also be kept informed of any changes to the schedule. The contractor's designated contact person shall be on-site throughout Project construction with a mobile phone. If a complaint is received, the contact person shall take whatever reasonable steps are necessary to resolve the complaint. If possible, a member of the contractor's team shall also travel to the complainant's location to understand the nature of the disturbance.

4.7.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The mitigation measures are expected to reduce the potential construction noise impacts. However, for many of the noise mitigation measures it is not possible to estimate the reduction in noise level that will be achieved. In addition, all the measures may not be feasible at all construction locations and at all times. Therefore, the construction noise impacts, while temporary, are considered significant even with incorporation of the recommended mitigation measures. Construction noise impacts will cease after the completion of the construction period.

Operational noise impacts are less than significant and no mitigation is required.

4.8 TRANSPORTATION AND TRAFFIC

The traffic associated with the construction phase of the currently proposed Project could result in potentially significant traffic impacts. The following potentially significant traffic impacts were identified in the NOP/IS:

- Construction of the proposed Project has the potential to contribute additional traffic in the Carson area associated with construction workers, transport of oversized loads, and pipeline installation.

- Traffic during the construction phase could impact the circulation system as most construction activities associated with the pipelines will be within existing roadways and rights-of-way. Pipeline construction activities could result in lane closures, street closures, and result in traffic impacts.

Traffic impacts related to the operational phase of the proposed Project were evaluated in the NOP/IS and determined to be less than significant. Therefore, only construction-related traffic will be analyzed in the EIR. Once construction of the proposed Project is completed, the facility is expected to require up to 15 permanent workers. Operations will be conducted 24-hours a day, seven days a week, so traffic would be spread throughout the day. One to two truck trips are also expected to be required to transport supplies or remove natural gas liquids, hazardous/solid wastes, etc., once operations commence. The existing (baseline) traffic at the site is 256 trips per day (see Table 3.8-1). Operational activities associated with the proposed Project are expected to generate a peak of 30 trips per day. Since the proposed Project will generate much less traffic than the existing warehouse operations, no significant LOS impacts are expected at any of the local intersections. No increase in traffic during peak hours is expected during project operations. Therefore, traffic impacts associated with the operational phase of the proposed Project are considered to be less than significant.

4.8.1 SIGNIFICANCE CRITERIA

Pipeline construction activities within street rights-of-way would potentially result in significant transportation/traffic impacts if any of the following occur:

- Construction activities result in street and lane closures within a major or secondary highway right-of-way which would necessitate temporary lane, alley, or street closures for more than one day (including day and evening hours, and including overnight closures if on a residential street);

- Construction activities result in street and lane closures within a collector or local street right-of-way which would necessitate temporary lane, alley, or street closures for more than seven days (including day and evening hours, and including overnight closures if on a residential street);

- In-street construction activities result in the loss of regular vehicular or pedestrian access to an existing land use for more than one day, including day and evening hours and overnight closures if access is lost to residential units;

- In-street construction activities result in the temporary loss for more than one day of an existing bus stop or rerouting of a bus route that serves the project site; and

- Construction activities result in the temporary removal of existing heavily used, on-street parking spaces.

The significance thresholds are based on the City of Los Angeles CEQA Thresholds (City of LA, 2006) for pipelines, as the City of Carson does not have any specific significance thresholds for construction activities.

4.8.2 PROJECT ENVIRONMENTAL IMPACTS

4.8.2.1 Construction Activities

Construction of the proposed Project has the potential to contribute additional traffic in the Carson area associated with construction workers, transport of oversized loads, and pipeline installation. The proposed Project will involve the installation of additional piping to transport crude oil and natural gas from the site. The pipelines will be installed along existing street rights-of-way including Charles Willard Street, South Central Avenue, and at the intersection of 223rd and Wilmington Avenue. Pipeline construction activities could result in lane closures, street closures, and result in traffic impacts. Therefore, the construction activities have the potential to cause significant adverse traffic impacts.

Crude Oil Pipeline: Crude oil will be transferred to the Phillips 66 Company (formerly known as ConocoPhillips) refinery or other local refineries via the existing six-inch Crimson Pipeline (see Figure 2.6-6). The proposed Project will install approximately 2,000 feet of six-inch pipeline under Charles Willard Street to tie into the existing six-inch Crimson Pipeline under South Central Avenue. An additional section of six-inch pipeline will be installed at the corner of South Central Avenue and University Drive to replace a section that was previously removed. Also, a new section of six-inch pipeline and a new valve box will be installed near the intersection of 223rd Street and Wilmington Avenue to tie the existing six-inch Crimson Pipeline to the existing ten-inch Crimson East Crude Pipeline. The proposed Project will also assess the existing six-inch Crimson Pipeline to determine if additional repair or maintenance work may be required. Additional maintenance work may include short-term construction in localized areas. Figure 2.6-6 shows the locations of the proposed and existing crude oil pipelines.

Natural Gas Pipeline: A new four- to six-inch pipeline approximately 2,000 feet in length under Charles Willard Street will connect the proposed oil and gas production facility to the existing 30-inch SCGC Line 1014 under South Central Avenue to transfer natural gas from the proposed Project site (see Figure 2.6-6). The pipeline will operate at up to 200 psig and will carry odorized natural gas. Figure 2.6-6 shows the location of the proposed natural gas pipeline.

Electrical Conduit: New electrical conduit may be constructed along South Central Avenue, beginning at Greenleaf Boulevard, running east on Victoria Street, south on Bishop Avenue and west on Charles Willard Street. The below ground construction would consist of digging a trench along the route, except that a boring machine and associated equipment would be used to install approximately 1,000 feet beneath the 91 Freeway. The electrical conduit will be installed along existing street rights-of-way including South Central Avenue, Victoria Street, Bishop Avenue, and Charles Willard Street (see Figure 2.6-5).

4.8.2.2 Construction Phase Traffic Conditions – Trips Generated

Project construction would generate traffic from construction worker travel, the arrival and departure of trucks delivering construction materials, and the removal of debris generated by on-site demolition activities. Both the number of construction workers and trucks would vary throughout the construction process.

Construction activity is generally expected to begin at about 7:00 am and end at about 5:00 pm. Workers are expected to arrive beginning at 6:30 am and leave between 5:00 pm and 5:30 pm, Monday through Friday. Therefore, most construction workers are expected to arrive at the construction sites during off-peak hours. The proposed Project is expected to require between 70 and 140 construction workers (up to 120 for facility construction and 20 for pipeline construction).

The construction traffic associated with the proposed Project can be compared to the existing traffic at the proposed Project site. The estimated maximum construction traffic would be about 120 workers at the proposed Project site, which would result in a maximum of 240 vehicle trips per day. The existing (baseline) traffic at the site is 256 trips per day (see Table 3.8-1). Therefore, construction activities associated with the proposed Project are expected to generate less traffic than existing warehouse operations and no significant traffic impacts during construction activities at the proposed Project site would be expected. It is expected that most construction workers will meet at a staging yard and go to the construction site in buses due to the limited parking space at the proposed Project site. Therefore, construction vehicle trips are expected to be much less than the existing traffic at the proposed Project site.

4.8.2.3 Construction Phase Traffic Conditions – In-Street Construction Activities

The pipeline construction, particularly construction which takes place within roadways and paved industrial areas, will use the "cut and cover" method. The proposed pipeline construction activities are identified below.

<u>Charles Willard Street:</u> A new six-inch crude oil pipeline and a new four to six inch natural gas pipeline will be installed from the proposed Project site along Charles Willard Street to existing pipelines at South Central Avenue. Approximately 2,000 feet of pipeline will be required. Construction in the roadway right-of-way would require the closure of a roadway area of about 15 feet in width on Charles Willard Street which is currently a four lane undivided roadway. The construction of the proposed pipelines will require the temporary closure of one travel lane of Charles Willard Street.

<u>South Central Avenue:</u> An additional section of six-inch pipe will be installed under South Central Avenue and University Drive to replace a section of pipe that was previously removed. Approximately 1,000 feet of pipeline will be required at this location with about 500 feet of pipeline under South Central Avenue. Construction in the roadway right-of-way would require the closure of a roadway area of about 15 feet in width on South Central Avenue which is currently a four lane undivided roadway. The

construction of the proposed pipeline will require the temporary closure of one travel lane of South Central Avenue, just north of University Drive.

The electric conduit will also be installed along South Central Avenue from Greenleaf Boulevard to Victoria Street. Approximately 4,750 feet of conduit will be installed by trenching, with the exception of approximately 1,000 feet, which will be directionally drilled near the 91 Freeway. The construction of the conduit will require the temporary closure of one travel lane of South Central Avenue between Victoria Street and Greenleaf.

Victoria Street: The electrical conduit will run approximately 1,800 feet along Victoria Street from South Central Avenue to Bishop Avenue. Construction in the roadway right-of-way would require the closure of a roadway area of about 15 feet in width on Victoria Street which is currently a four lane undivided roadway. The construction of the conduit would require the temporary closure of one travel lane of Victoria between South Central and Bishop Street.

Bishop Avenue: Approximately 1,000 feet of electrical conduit will be installed along Bishop Avenue from Victoria Street to Charles Willard Street. Construction in the roadway right-of-way would require the closure of a roadway area of about 15 feet in width on Bishop Avenue which is currently a four lane undivided roadway. The construction activities will require the temporary closure of one travel lane of Bishop Avenue.

University Drive: An additional section of six-inch pipe will be installed under South Central Avenue and University Drive to replace a section of pipe that was previously removed. Approximately 1,000 feet of pipeline will be required at this location with about 500 feet of pipeline under University Drive. Construction in the roadway right-of-way would require the closure of a roadway area of about 15 feet in width on University Drive which is currently a four lane undivided roadway. The construction of the proposed pipeline will require the temporary closure of one travel lane of University Drive, just east of South Central Avenue.

Wilmington Avenue/223rd Street: A new section of six-inch pipeline and a new valve box will be installed near the intersection of 223rd Street and Wilmington Avenue to tie the existing six-inch Crimson Pipeline to the existing ten-inch Crimson East Crude Pipeline. The work on this section will occur within a commercial parking lot and no lane closures would occur on either Wilmington Avenue or 223rd Street.

The potential in-street construction impacts associated with pipeline construction activities were evaluated using the screening criteria and significance thresholds contained in the City of Los Angeles CEQA Thresholds Document (City of LA, 2006) for in-street construction impacts which includes impacts associated with projects requiring major construction activity within a street right-of-way, such as temporary loss of access to adjacent parcels, temporary loss of bus stops and temporary loss of on-street parking. Pipeline construction activities within street rights-of-way would potentially result in significant traffic impacts to the following:

- Vehicular or pedestrian access to a parcel fronting the construction area would potentially be significant if the in-street construction would occur in a manner to block access to parcels. If that occurs, tenants would need to be informed prior to and alternative access would need to be provided during the in-street construction activities. Access is expected to be maintained to all parcels and no construction activities are expected to occur within or block access to residential areas.

- Street and lane closures – All streets where pipeline construction activities are proposed would result in lane closures including Charles Willard Avenue, South Central Avenue, and University Drive. No lanes along designated truck routes would be closed. No temporary street closures would occur as part of the proposed Project.

- Temporary loss of a bus stop could occur along The Carson Circuit Transit System Route E at the intersection of South Central Avenue/Charles Willard Street. No bus stops are expected to be impacted by pipeline construction activities at the corner of University Drive and South Central Street as the bus stop is located on the east bound side of University Drive and pipeline construction activities would occur on the west bound side.

- There would be no temporary loss of on-street parking as the in-street construction activities would occur along streets where parking is prohibited, including Charles Willard Street, South Central Avenue (between Charles Willard Street and University Drive), and University Drive (between South Central Avenue and Coslin Avenue) as shown in Table 3.8-3.

Table 4.8-1 presents the determination of potential significant impacts under the conditions of temporary in-street construction occurring on arterial roadways.

The elements included in the determination of significance include the volume on the roadways and the before and during construction capacity and level of service of the roadways. During the construction period for the four-lane roadways, (including Charles Willard Street, South Central Avenue, Victoria Street, Bishop Avenue, and University Drive), one directional side of the roadway would operate with one lane and the other side of the roadway would operate under normal conditions. These conditions would be temporary and last approximately 10-15 days at each location.

The only impacts affecting the existing street system are the temporary construction activities associated with the laying of the pipeline underneath the ground surface. These impacts are summarized for each of the Project's arterial roadway segments in Table 4.8-1.

TABLE 4.8-1

Normal Southbound/Westbound Roadway Segment Conditions

Affected Roadway	Roadway Segment	Travel Lanes		Roadway width (ft)	Length of Segment (ft)	Median Type	ROW Roadway Closure (ft)	Approx. Lane Closure Duration (days)	Impact Discussion
		NB/EB	SB/WB						
Charles Willard Street	East of South Central Avenue	2	2	60	2,000	Undivided	45	10 to 15	One lane of 4 lane street would be closed. Traffic impacts are potentially significant, although two-way traffic flow would be maintained. Implementation of Traffic Control Plan (TCP) would assure continued traffic flow along this segment. Traffic impacts would be less than significant with mitigation.
South Central Avenue	Charles Willard to University	2	2	80	1,000	Divided	65	10 to 15	One lane of 4 lane street would be closed. Traffic impacts are potentially significant, although two-way traffic flow would be maintained. Implementation of TCP would assure continued traffic flow along this segment. Traffic impacts would be less than significant with mitigation.
South Central Avenue	Greenleaf Boulevard to Victoria Street	2	2	80	4,750	Divided	65	10 to 15	One lane of 4 lane street would be closed. Traffic impacts are potentially significant, although two-way traffic flow would be maintained. Implementation of TCP would assure continued traffic flow along this segment. Traffic impacts would be less than significant with mitigation.
Victoria Street	South Central Avenue to Bishop Avenue	2	2	80	1,800	Undivided	65	10 to 15	One lane of 4 lane street would be closed. Traffic impacts are potentially significant, although two-way traffic flow would be maintained. Implementation of TCP would assure continued traffic flow along this segment. Traffic impacts would be less than significant with mitigation.

TABLE 4.8-1 (concluded)

Normal Southbound/Westbound Roadway Segment Conditions

Affected Roadway	Roadway Segment	Travel Lanes		Roadway width (ft)	Length of Segment (ft)	Median Type	ROW Roadway Closure (ft)	Approx. Lane Closure Duration (days)	Impact Discussion
		NB/EB	SB/WB						
Bishop Avenue	Victoria Street to Charles Willard Street	2	2	60	1,000	Undivided	45	10 to 15	One lane of 4 lane street would be closed. Traffic impacts are potentially significant, although two-way traffic flow would be maintained. Implementation of TCP would assure continued traffic flow along this segment. Traffic impacts would be less than significant with mitigation.
University Drive	West of Central to Coslin Ave.	2	2	60	1,000	Divided	45	10 to 15	One lane of 4 lane street would be closed. Traffic impacts are potentially significant, although two-way traffic flow would be maintained. Implementation of TCP would assure continued traffic flow along this segment. Traffic impacts would be less than significant with mitigation.
East 223rd Street	Wilmington Avenue Intersection	2	2	80	0	Divided	0	0	Pipeline work is outside of the street right-of-way and within a commercial parking lot. No road closure is required. No traffic impacts would occur.
Wilmington Avenue	East 223rd Intersection	2	2	80	0	Divided	0	0	Pipeline work is outside of the street right-of-way and within a commercial parking lot. No road closure is required. No traffic impacts would occur.

Based on the preceding analysis, construction of the proposed pipeline would result in short-term impacts to traffic patterns and result in temporary traffic congestion on the affected roadways, resulting in potentially significant impacts, since construction activities would result in lane closures for approximately 10-15 days on Charles Willard Street, South Central Avenue, Victoria Street, Bishop Avenue, and University Drive. No construction activities are expected in Wilmington Avenue or 223rd Street; therefore no significant traffic impacts would be expected at these locations. The proposed Project construction activities are not expected to result in the loss of regular vehicular or pedestrian access to existing land use as access would be provided to existing parcels along the proposed pipeline routes. In-street construction activities could result in the temporary loss for more than one day of an existing bus stop or rerouting of a bus route (Carson Circuit Transit System Routes A and E) that serves the South Central Avenue/Charles Willard Street location. Therefore, traffic impacts during the construction period would be temporary but potentially significant. However, significant impacts would be avoided through the preparation of traffic control plans that could include limits on the hours of operation/lane closures, flaggers, restriping, directional guidelines, cones, installing street plates after construction hours, and other similar measures.

4.8.3 MITIGATION MEASURES

The following mitigation measure will be imposed.

> TT-1: Prior to the start of construction activities, the Applicant shall develop and implement a traffic control plan, prepared by a registered traffic engineer, for the entire pipeline route at all locations where construction activities would interact with the existing transportation system. The traffic control plan shall be approved by the City Traffic Engineer. The traffic control plan shall include permitted hours of construction, method of safeguarding traffic flow, method of re-routing or detouring traffic, if necessary, the placement of traffic control devices (including warning signs, flashing arrows, traffic cones and delineators, barricades, etc.) and flaggers (if needed), temporary modifications to existing signals and signal timing (if needed), method to maintain access to parcels fronting the construction area (e.g., use of street plates), method to re-route or re-locate temporary loss of bus stop, and other details of the pipeline construction.

The Traffic Control Plan would be required to help to ensure that public safety would not be endangered, and inconvenience would be reduced to a minimum. Implementation of the Traffic Control Plan is expected to minimize traffic impacts to less than significant.

4.8.4 LEVEL OF SIGNIFICANCE FOLLOWING MITIGATION

The impact of the proposed Project construction activities on traffic and transportation would be less than significant following mitigation.

4.9 GROWTH INDUCING IMPACTS

4.9.1 INTRODUCTION

CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects, which would remove obstacles to population growth" (CEQA Guidelines §15126.2(d)).

To address this issue, potential growth-inducing effects are examined through the following considerations:

- Facilitation of economic effects that could result in other activities that could significantly affect the environment;
- Expansion requirements for one or more public services to maintain desired levels of service as a result of the proposed Project;
- Removal of obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area or through changes in existing regulations pertaining to land development;
- Adding development or encroachment into open space; and/or
- Setting a precedent that could encourage and facilitate other activities that could significantly affect the environment.

4.9.2 ECONOMIC AND POPULATION GROWTH, AND RELATED PUBLIC SERVICES

The proposed Project would not directly foster economic or population growth or the construction of new housing in the southern California area. Although the proposed Project includes additional development within an existing industrial area, it would not stimulate significant population growth, remove obstacles to population growth, or necessitate the construction of new community facilities that would lead to additional growth in the surrounding area.

A project would directly induce growth if it would directly foster economic or population growth or the construction of new housing in the surrounding environment (e.g., if it would remove an obstacle to growth by expanding existing infrastructure). The proposed Project would not remove barriers to population growth, as it involves no changes to General Plan, zoning ordinance, or related land use policy. The proposed Project does not include the development of new housing or population-generating uses or infrastructure that would directly encourage such uses. The residential areas in the immediate vicinity of the proposed Project (Carson, Compton, Wilmington, Long Beach and Rancho Dominguez) are built out. Therefore, the proposed Project would not directly trigger new residential development in the area.

The proposed Project would contribute to regional employment, requiring employees for construction and operation of the new oil and gas production facility, as well as the related pipelines. The construction work force is expected to require a peak of 140 construction workers. Operation of the proposed Project is expected to create a total of approximately 15 direct jobs at the new oil and gas production facility. Project operations could also be expected to create a small number of indirect jobs, but that number would not be large enough to result in substantial population growth. It is expected that both construction workers and permanent workers necessary to build new equipment and/or operate the equipment will be largely drawn from the existing workforce pool in southern California.

Considering the existing workforce in the region and current unemployment rates, it is expected that a sufficient number of workers are available locally and that few or no workers would relocate for jobs created by the proposed Project. Further, the proposed Project would not be expected to result in an increase in local population, housing, or associated public services (e.g. fire, police, schools, recreation, and library facilities). Likewise, the proposed Project would not create new demand for secondary services, including regional or specialty retail, restaurant or food delivery, recreation, or entertainment uses. As discussed in the NOP/IS (see Appendix A), implementation of the proposed Project would not increase the demand for solid waste disposal capacity, or natural gas.

The proposed Project would increase the demand for electricity and water supply; however, adequate water supply and electrical utilities exist in the region so the proposed Project would not induce growth of those systems. The proposed Project would supply additional quantities of natural gas and crude oil into the local economy. These increases are expected to reduce the need to transport natural gas and crude oil from more distant sources. As such, the proposed Project would not foster economic or population growth in the surrounding area in a manner that would be growth-inducing.

4.9.3 REMOVAL OF OBSTACLES TO GROWTH

The proposed Project is located in an urbanized, industrial area where adequate infrastructure is in place to serve existing population demand. The proposed Project would involve development of a new oil and gas production facility. As such, the proposed Project would help ensure the continued reliable supply of crude oil and petroleum products in an in-fill area that historically has been used for oil production. The proposed Project would not result in an increase in the import or refining of crude oil and would not result in the increased production of petroleum products (e.g., gasoline and diesel fuels), as the capacity to refine crude is limited by the crude capacity of existing refineries. The proposed Project would not result in any operational changes at existing refineries and would not result in an increase in the amount of crude refined in the area.

The proposed Project would not employ activities or uses that would result in growth inducement, such as the development of new infrastructure (i.e., new roadway access or utilities) that would directly or indirectly cause the growth of new populations, communities, or currently undeveloped areas. Likewise, the proposed Project would not result in an expansion of existing public service facilities (e.g., police, fire, libraries, and schools) or the development of public service facilities that do not already exist.

4.9.4 DEVELOPMENT OR ENCROACHMENTS INTO OPEN SPACE

Development can be considered growth-inducing when it is not contiguous to existing urban development and introduces development into open space areas. The proposed Project is located in an existing heavy industrial, urbanized area that is currently developed with warehouse and other similar commercial/industrial uses. The proposed Project would not result in development within an open space area.

4.9.5 PRECEDENT SETTING ACTION

The Dominguez Oil Field was discovered in September 1923 by Union Oil Company of California. After 20 years of development by four different operators, the field was thought to be approaching the end of its productive life. However, newer techniques, including salt water injection, were used to increase the oil recovery in portions of the field. From the mid 1970's through 2011, limited oil production has occurred in the Dominguez Oil Field, producing an additional 24 million barrels of oil. A total of 605 wells have been drilled in the Dominguez Oil Field of which three are currently active in the southeast portion of the field (approximately 1.3 miles from the proposed Project location), three are idled (one approximately 1.3 miles southeast of the proposed Project location, one approximately 1 mile east of the proposed Project location and one approximately 1.3 miles northwest of the proposed Project location), two existing test wells at the proposed Project property, and the remainder have been abandoned (also referred to as plugged) including four on the proposed Project property (DOGGR, 2012). The proposed Project would continue the use of the Dominguez Oil Field for oil and gas production and would not be considered precedent setting because of the extensive history of oil and gas production in the area.

The proposed Project would require numerous permits, franchise agreements, right-of-way agreements, and other regulatory approvals from state, federal, and local agencies. For construction and operation of the oil and gas production facilities and related pipelines, the project applicant would obtain permits to conduct well operations from DOGGR and the State Fire Marshal. A number of permits and approvals would be required from the City of Carson including a development agreement, business license, building and occupancy permits, grading permit, encroachment permits, and traffic control permits. A number of approvals would also be required from the Los Angeles County Fire Department and South Coast Air Quality Management District. These required permits and approvals are routine permit actions and would not result in precedent-setting actions that might cause significant environmental impacts.

4.9.6 CONCLUSION

Implementation of the proposed Project would allow the continued use of the Dominguez Oil Field. As such, the proposed Project would help ensure the efficient transportation and storage of crude oil and petroleum products in an existing, industrial area that contains current and historic oil storage and refinery operations. The proposed Project would not modify an existing refinery and would not result in an increase in production of refined petroleum products or crude throughput at the local refineries. The proposed Project would provide a local supply of crude oil to the local refineries. As a development project occurring in an urban, industrialized, and generally built-out environment, the proposed Project would expand the City's industrial uses, would improve the City's tax base, and would increase long-term stability of crude oil and petroleum product storage and transport. However, the proposed Project would not be considered growth-inducing, because it would not result in an increase in production of resources (e.g., motor fuels) or cause a progression of growth that could significantly affect the environment either individually or cumulatively.

4.10 SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

Section 15126.2(b) of the *CEQA Guidelines* requires that an EIR describe significant environmental impacts that cannot be avoided, including those effects that can be mitigated but not reduced to a less than significant level. The following is a summary of the impacts associated with the proposed Project that this Draft EIR concluded are significant and unavoidable. These impacts are also described in detail in the preceding portions of Chapter 4.0 of this EIR.

- Noise impacts associated with the proposed Project construction activities are considered to be significant.

Feasible mitigation measures have been developed for the identified adverse significant impacts; however, those mitigation measures would not reduce the impacts to less than significant. Air quality (NOx emissions) and traffic impacts associated with construction activities are potentially significant but can be mitigated to less than significant.

4.11 ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

The environmental effects of the proposed Project that may have potentially significant adverse effects on the environment are identified, evaluated, and discussed in detail in the preceding portions of Chapter 4 of this Draft EIR and in the Initial Study (see Appendix A) per the requirements of the CEQA Guidelines (§15128). The potentially significant environmental impacts as determined by the Initial Study (see Appendix A) include: air quality; geology and soils; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality; noise; and transportation and traffic. The analysis provided in this chapter has concluded that the following environmental topics would be less than significant: air quality, except for NOx emissions during construction; geology and soils; hazards and hazardous materials; noise during proposed Project operation; and, traffic during operation. Air quality and traffic impacts associated with construction activities would be mitigated to less than significant.

The environmental analysis completed in the NOP/IS for the proposed Project found that environmental impacts for the following environmental topics would be less than significant. The reasons for finding the environmental resources to be less than significant are explained below.

4.11.1 AESTHETICS

The proposed Project will be located in the northern portion of the City of Carson within Los Angeles County. The proposed Project is located in an existing industrial facility within the Dominguez Technology Center and existing street rights-of-way. The Project site currently consists of an industrial building and two oil and gas test wells (and associated process equipment). Except for pipeline construction, all project activities are expected to take place within the boundaries of the proposed Project site.

The proposed Project, once complete, will be behind a 30-foot tall perimeter wall designed to look like the neighboring warehouse buildings and will not be substantially different from the existing building, with the exception of the 145-foot high drill rig mast which will be enclosed and designed to look similar to the perimeter wall. There are no scenic vistas in the vicinity of the proposed Project. Therefore, the proposed Project will not change any scenic vistas. No scenic resources are present within the Facility. Therefore, the proposed Project will not have substantial adverse effects on scenic vistas or scenic resources.

The drill rig mast will be visible to the surrounding industrial and commercial areas within the Dominguez Technology Centre. However, because of the surrounding structures and topography, the drill rig mast is not expected to be visible in residential areas of the City and, thus, will not degrade the existing visual character or quality of the surrounding environment.

The proposed Project lighting will be within the perimeter wall, shrouded to project light downward, and below the height of the wall. The enclosed drill rig will be equipped with safety lighting and red, pulsating warning lights for air traffic safety. There are no sensitive receptors in the vicinity of the proposed Project. Therefore, the proposed Project is not expected to create substantial new sources of light or glare which would adversely affect sensitive receptors or day or nighttime views in the area.

4.11.2 AGRICULTURAL AND FORESTRY RESOURCES

No agricultural or forestry resources are located within the confines of the existing Facility or in existing street rights-of-way. The proposed Project will not involve extensive construction outside of the existing boundaries of the Facility, or street rights-of-way, and no agricultural or forestry resources are located within or adjacent to these areas. The zoning of the Facility and street rights-of-way will remain Manufacturing Light (ML). No existing agricultural or forest land will be converted to non-agricultural or non-forestry land uses because the proposed Project will not occur in areas containing agricultural or forestry resources. Therefore, the proposed Project will not result in any new significant adverse impacts on agricultural or forestry resources.

4.11.3 BIOLOGICAL RESOURCES

The proposed Project would be located largely in a manufacturing area, within the existing boundaries of an existing industrial site and public rights-of-way in local streets. The facilities and surrounding areas have been fully developed and are essentially devoid of vegetation and wildlife. Vegetation onsite or near each affected area has been eliminated for fire prevention purposes with the exception of landscape vegetation. Because there is no native vegetation in the vicinity of the proposed Project, project construction activities would not impact rare, endangered, or threatened species. The proposed pipeline rights-of-way will follow existing streets which are devoid of vegetation. The proposed Project would not adversely affect federally protected wetlands as defined in §404 of the Clean Water Act, as none are located within the Project area. Therefore, no significant adverse impacts on biological resources are expected.

4.11.4 CULTURAL RESOURCES

The existing building on the site is a concrete warehouse constructed in the early 2000's. The structure is not distinctive or historically significant to the history or cultural heritage of California. Therefore, no significant impacts to historic cultural resources are expected as a result of implementing the proposed Project. As required by State law, if human remains are unearthed, no further disturbance will occur until the County Coroner has made the necessary findings concerning the origin and disposition of these remains. The Native American Heritage Commission will be notified if the remains are determined to be of Native American descent.

The proposed Project will not cause significant adverse impacts to cultural resources, therefore, impacts on cultural resources are expected to be less than significant.

4.11.5 LAND USE AND PLANNING

The proposed Project would not adversely impact or conflict with the land use designations at the Dominguez Technology Center. Oil and gas exploration, production and transmission are allowable land uses within the Dominguez Technology Center Specific Plan. Therefore, the proposed Project is consistent with the designated land use and zoning of the site and will not conflict with the adopted General Plan or Specific Plan for the site. With the exception of the new pipelines, all proposed modifications would occur within the confines of the existing manufacturing area and would not require acquisition of land outside of the current boundaries to implement the proposed Project.

A Specific Plan Amendment to require a Development Agreement for the proposed Project is consistent with the adopted General Plan

The proposed pipeline routes would occur within existing public street rights-of-way and generally within the industrial portions of the northern portion of the City of Carson within Los Angeles Country. Since construction of the pipelines will be limited to public rights-of-way, no change in land use and zoning is required and the streets will be returned to their existing configuration following pipeline construction activities. Therefore, no significant adverse land use impacts are expected to result from the proposed Project.

The currently proposed Project would not cause any new significant adverse impacts to land use and planning; therefore, land use and planning impacts are considered to be less than significant

4.11.6 MINERAL RESOURCES

The proposed Project would allow the construction and operation of an oil drilling and oil and gas processing facility to remove oil and gas from the Dominguez Oil Field. The Dominguez Oil Field is a large, thick deposit, with many separate layers of oil and gas bearing sandstones and siltstones separated by non-porous rock. Cumulative oil production from the field has resulted in about 274 million barrels, with over 400 million barrels of oil estimated to remain in the Dominguez Oil Field.

The purpose of the proposed Project is to extract oil and natural gas for production and sale. Extraction of these resources will make them available to the residents of California by allowing the removal of additional quantities of oil and gas from the Dominguez Oil Field. Therefore, the proposed Project will not result in the loss of availability of a known mineral resource.

4.11.7 POPULATION AND HOUSING

Construction activities associated with the proposed Project would not involve the relocation of individuals, adversely impact housing or commercial facilities, or change the distribution of the population because the proposed Project will occur completely within the boundaries of existing industrial facilities or within public rights-of-way. A construction work force, consisting of approximately 120 temporary construction jobs, will be created by construction activities at the oil drilling and processing facility, with an additional 10 - 20 workers associated with pipeline construction. The construction workforce is expected to come from the large existing labor pool in the Southern California area.

Once construction is completed, an additional 15 workers will be required for the long-term operation of the proposed Project. These permanent workers are also expected to come from the existing southern California labor pool. No additional housing will be necessary to accommodate the labor force needed during construction and, further, no existing housing or population will be displaced. Therefore, no significant adverse population or housing impacts are expected to result from the proposed Project.

4.11.8 PUBLIC SERVICES

Fire protection and emergency services in the City of Carson are provided by the LACFD. The proposed Project involves the installation of new oil and gas drilling and processing facilities, as well as new pipelines to transport materials from the site. The oil drilling and gas processing facility would be protected by a firewater loop fed by the local water main. While the proposed Project involves the use of hazardous materials, numerous regulations apply to the handling, storage, and transport of those materials, such that the proposed Project is not expected to require additional fire-fighting services. As discussed in Section 3.5.5.3, the LACFD includes a Petroleum Chemical Unit and Hazardous Materials Squads and is equipped to respond to the facility, so no new services are expected to be required. Significant impacts that would affect service ratios, response times, etc., are not expected from the implementation of the proposed Project. Therefore, impacts on fire services are less than significant.

The Los Angeles County Sheriff's Department is the responding agency for law enforcement needs in the City of Carson. The proposed Project site will have a 30-foot high perimeter wall to prevent unauthorized entry and access to the site will be provided through two gates controlled by plant personnel or from within the Control Building. Thus, no additional or altered police protection will be required for the proposed Project.

The proposed Project also involves the modification and installation of underground pipelines and equipment related to the operation of the pipeline. Pipelines associated with the proposed Project are not expected to increase the need or demand for additional public services (e.g., fire departments and police departments) above current levels because the pipelines would be located underground, beneath street right-of-ways. Local fire protection and police agencies will be notified of the construction schedule so they are aware of the location of activities in the event of emergency response.

The local labor pool (e.g., workforce) from the southern California area is expected to be adequate to fill the short (70 – 120 construction workers) and long-term (15 permanent workers) positions for the proposed Project. Thus, the proposed Project is not expected to impact local schools, public facilities, or government services.

Based upon these considerations, significant public service impacts that could adversely affect service ratios, response times, etc., are not expected from the implementation of the proposed Project.

4.11.9 RECREATION

Implementation of the proposed Project is not expected to substantially increase the local population. The construction work force, which is temporary, is expected to come from the existing labor pool in southern California. Additionally, once the proposed Project is complete, operational activities are expected to require about 15 new permanent employees. Therefore, implementation of the proposed Project is not expected to increase the demand for neighborhood or regional parks or other recreational facilities, nor would it adversely affect existing recreational facilities. Therefore, the proposed Project is not expected to have significant impacts on recreation.

4.11.10UTILITIES AND SERVICE SYSTEMS

The Dominguez Oil Field is an established oil field which has previously produced 274 million barrels of oil, and it contains a large portion of salt water. It is expected that over 90 percent of the materials removed from the wells of the proposed Project will be salt water (an estimated 94,000 barrels per day). An additional 20,000 barrels per day of salt water is expected to be produced from the Project water wells. The oil will be separated from the water. The water will be treated on-site in the water treatment facilities and re-injected into the oil reservoir. Therefore, the proposed Project is not expected to result in an increase in process wastewater sent to a wastewater treatment facility.

The proposed Project includes the demolition of the existing warehouse facility and related office space, prior to the construction of an operations/maintenance building which will provide new office space for approximately 15 workers. The wastewater generated from the proposed office building is expected to be the same or less than the wastewater generated by the existing warehouse facilities. Therefore, the proposed Project is not expected to result in an increase in wastewater that would need to be treated at a wastewater treatment plant.

Water use for construction activities is expected to be required for sanitary use, facility safety showers, wash down connections, fire protection, and fugitive dust abatement. In addition to the daily construction water needs, hydrostatic testing for the new pipelines and storage vessels will also require water, which will be obtained from the California Water Service Company. The amount of water that will be used for hydrostatic tests will occur on a one time basis and will be minimized by transferring water from one component to another. Therefore, construction activities are not expected to result in a substantial increase in water use at the site or require the expansion water treatment or water supply facilities.

Approximately 2,000 gpd of potable water will be required for operations at the proposed facility, which is not expected to result in a substantial increase in water use as opposed to the existing activities at the proposed Project site. Potable water will be required for the operations building, facility safety showers, wash down connections, and fire protection. The only process use of potable will be the slurry facility, which will require a small amount of water for truck clean-out and operation of the shakers. Most process water will be supplied from the deep salt water aquifers on-site. Used water will be sent to the slurry facility which injects water via the slurry injection well or to the floatation tanks and ultimately injected into water injection wells. Therefore, construction of the proposed Project is not expected to require the construction of new water supply or treatment facilities.

As discussed in the Hydrology and Water Quality section, the proposed Project is not expected to increase the surface water runoff from the site as the site is already paved. Therefore, the impact of the proposed Project on drainage patterns and drainage volumes is expected to be less than significant.

Construction waste will include waste from demolition of the existing buildings and from other construction activities. Waste materials will typically be hauled to the local recycling centers. The demolition wastes will be recycled where possible and otherwise disposed of at an appropriate landfill.

Other construction wastes may include soils, asphalt, and concrete. The non-hazardous wastes will be hauled to a sanitary landfill or recycled. Hazardous wastes will be sent to a permitted treatment or disposal facility.

Operation of the proposed Project is expected to generate a variety of wastes including typical wastes from office activities such as cardboard and paper boxes, paper, and plastics. The proposed Project is not expected to result in an increase in these types of waste as there is an existing warehouse/office building on the site. Other wastes would include pallets, scrap steel, scrap aluminum, and scrap wire, most of which will be recycled. The facility will also generate solid wastes from oil and gas production operations, which include sands from production wells, and spent catalyst from the H_2S Treatment System. These wastes will typically be injected into the slurry well, or collected and disposed of off-site at a licensed commercial disposal site.

The Los Angeles County Sanitation District maintains three active Class III landfills that would likely receive waste from the proposed Project and can handle a total of approximately 20,000 tons per day of non-hazardous solid waste. These landfills include Puente Hills Landfill, Scholl Canyon and Calabasas Landfill. The combined capacity of these three landfills exceeds the anticipate amounts of non-hazardous waste that may be generated during construction of the proposed Project.

Hazardous waste can be handled at one facility in California; the Safety-Kleen facility in Buttonwillow in Kern County. Hazardous waste also can be transported to permitted facilities outside of California. Therefore, sufficient capacity is expected to be available should any hazardous waste be generated.

CHAPTER 5

CUMULATIVE IMPACTS

5.0 CUMULATIVE IMPACTS

5.1 INTRODUCTION

This chapter presents the requirements for analysis of the cumulative impacts, including the analysis of the potential for the proposed Project, together with other past, present, and reasonably foreseeable future projects in each resource area's cumulative geographic scope, to have significant cumulative effects. Following the presentation of the requirements related to cumulative impact analyses and a description of the related projects (Sections 5.1.1 and 5.1.2, respectively), the analysis in Section 5.2 addresses each of the resource areas for which the proposed Project may make a cumulatively considerable contribution to cumulative impacts, when combined with other reasonable and foreseeable projects in the area. Some of the resources affected by the proposed Project and the related projects would occur during the construction phase, e.g., traffic impacts. Cumulative construction impacts were evaluated as if the major portion of construction is expected to occur during the same construction period as the proposed Project. Other impacts would occur primarily during the operational phase, e.g., hazards. Still other impacts would occur during both phases, e.g., air quality and noise.

5.1.1 REQUIREMENTS FOR CUMULATIVE IMPACT ANALYSIS

State CEQA Guidelines (14 CCR 15130) require that an EIR include a reasonable analysis of the significant cumulative impacts of a proposed project. Cumulative impacts are defined by CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (State CEQA Guidelines, §15355).

Cumulative impacts are further described as follows:

- The individual effects may be changes resulting from a single project or a number of separate projects.

- The cumulative impacts from several projects are the changes in the environment which result from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (State CEQA Guidelines, §15355[b]).

- As defined in §15355, a "cumulative impact" consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

In addition, as stated in the CEQA Guidelines, Section §15064(h)(4), which states, "The mere existence of cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable".

The following cumulative impact analysis focuses on whether the impacts of the proposed Project are cumulatively considerable within the context of impacts caused by other past, present, or reasonably foreseeable future projects. This cumulative impact analysis considers other projects proposed within the area defined for each resource that would have the potential to contribute to cumulatively considerable impacts. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

For this Draft EIR, related projects with a potential to contribute to cumulative impacts were identified using the "list" approach, using a list of closely related projects that would be constructed in the cumulative geographic scope, as defined for each technical area. The list of closely related projects utilized in this analysis is provided in Table 5.1-1.

5.1.2 PROJECTS CONSIDERED IN CUMULATIVE IMPACT ANALYSIS

As described in Section 2.5, currently there are a limited number of oil wells in the Dominguez Oil Field. The geographic scope for the cumulative analysis is discussed under each resource category. Review of public information identified 25 proposed projects in the general area, within an approximately one mile radius of the proposed Project, which could contribute to cumulative impacts of the proposed Project (the cumulative projects). The study area includes the area around the proposed production facility as well as the areas where proposed new pipelines or pipeline modifications will occur. Table 5.1-1 lists the identified proposed cumulative projects and the corresponding locations are shown in Figure 5.1-1.

TABLE 5.1-1

List of Cumulative Projects

Map #	Project Address/Name	Project No.	Project Description	Submit/ Action Date
City of Carson				
1	20314 S Tajauta Ave	CUP 928-13	Vehicle service & repair.	2/6/2013
2	21703 S Avalon Blvd	DOR 1476-13	Carl's Junior restaurant.	1/30/2013
3	759-761 E 223rd St	CUP 912-12	For office use and spiritual church services on weekends.	7/23/2012
4	20220 S. Avalon Blvd	DOR 1449-12	Walmart Neighborhood Market to replace the existing Bestway Market in 20,900 sq ft.	4/24/2012

TABLE 5.1-1 (continued)

Map #	Project Address/Name	Project No.	Project Description	Submit/ Action Date
5	Carson Street Master Plan and Street Improvement Project		Complement existing and proposed development by reinforcing the concept of a "main street." The plans feature widened sidewalks, public art, pedestrian lighting, entry monuments, new landscaping, seating areas, with street furniture, such as benches, trash receptacles, and bike racks.	Construction to begin Summer 2014.
6	The Gateway and The Renaissance at City Center		The Gateway is a 86-unit affordable senior building with ground floor retail. The Renaissance at City Center is a 150-unit luxury apartment complete with ground floor retail. Combined, the development is 4.29 acres, including about 8,500 sft of restaurant use, 23,000 sq ft of retail use, and a subterranean garage.	Project complete.
7	401-425 E Carson St		New four-story, 65-unit affordable apartment complex on 1.755-acres. Includes live-work units and interior parking at grade with courtyard located above (Completed and Occupied since May 2012.) The second phase will be located on 1.07 acres at 401 E. Carson Street with a 40-unit affordable apartment community.	Phase I completed. Phase II under construction.
8	616 E Carson St		Develop a 9.63-acre property formerly used as the Avalon Carson mobilehome park. The mixed-use community will feature 152 condominiums and 13,313 sq ft of ground floor retail.	Under construction.
9	Boulevards at South Bay		The Boulevards at South Bay (formerly known as Caron Marketplace) is a 168-acre development project, 157-acres of which are a former landfill. The Boulevards at South Bay Specific Plan and EIR provides for a potential mix of approximately 1.9 million square feet of commercial, retail and entertainment uses, a 300-room hotel, and up to 1,550 residential units. The developer, Carson Marketplace LLC, recently announced plans for the Boulevards Outlets with over 500,000 square feet of designer brands.	Remediation on-going. Outlets expected to open in 2016.
10	South Bay Pavilion		The construction of movie theaters in the area currently occupied by Chuck E. Cheese and the Millennium High School. The initial steps will require the relocation of the high school to a different site and the shuffling of Chuck E. Cheese, Old Navy and a few other tenants to make way for the theaters.	Construction expected to be complete December 2014.

TABLE 5.1-1 (continued)

Map #	Project Address/Name	Project No.	Project Description	Submit/ Action Date
11	Shell Specific Plan		Proposing the redevelopment of the 448-acre Shell Carson Terminal facility located at 20945 South Wilmington Avenue. The project will allow for the subsequent development of over a 15 to 25-year period. The initial phase will include development of an 8.8-acre retail center at Del Amo and Wilmington Avenues, a 12.3-acre business park on Chico Street and the addition of product storage tanks within the center of the property.	Draft EIR is anticipated to be publicly released in 2014.
12	Winn Hyundai and Winn Chevrolet		A new 24,285 square foot Hyundai automotive dealership building will be constructed to the east of the existing Winn Chevrolet automotive dealership. This new Hyundai building will be placed adjacent to the freeway and will feature a prominent vehicle display area within the second floor. Winn Chevrolet is also looking to modernize the appearance of the existing building with a façade remodel to establish updated architectural features consistent with the new design standards established for the Chevrolet brand. Both dealerships were approved to construct new electronic display freeway-oriented pylon signs.	Project complete.
13	Car Pros Kia of Carson		Currently located at 21243 S. Avalon Boulevard. With the lease on the property expiring in four years, Car Pros Kia opted to purchase the former Altman's Winnebago property on Recreation Road so that a new Kia dealership could be constructed. In the mean time, the new property will be used for car storage with the main dealership still operating from the Avalon Boulevard location.	Project on-going.
14	Inland Kenworth		A new truck sales and service dealership is nearing completion at 1202 E. Carson Street.	Project complete.
15	Back in the Day Classics		Located at 21126 S. Avalon Boulevard is a specialty dealership focusing on classics, hot rods, exotics and more. There is also a memorabilia section selling old neon lights, slot machines, movie posters, pinball machines and automobile related equipment.	Project complete.

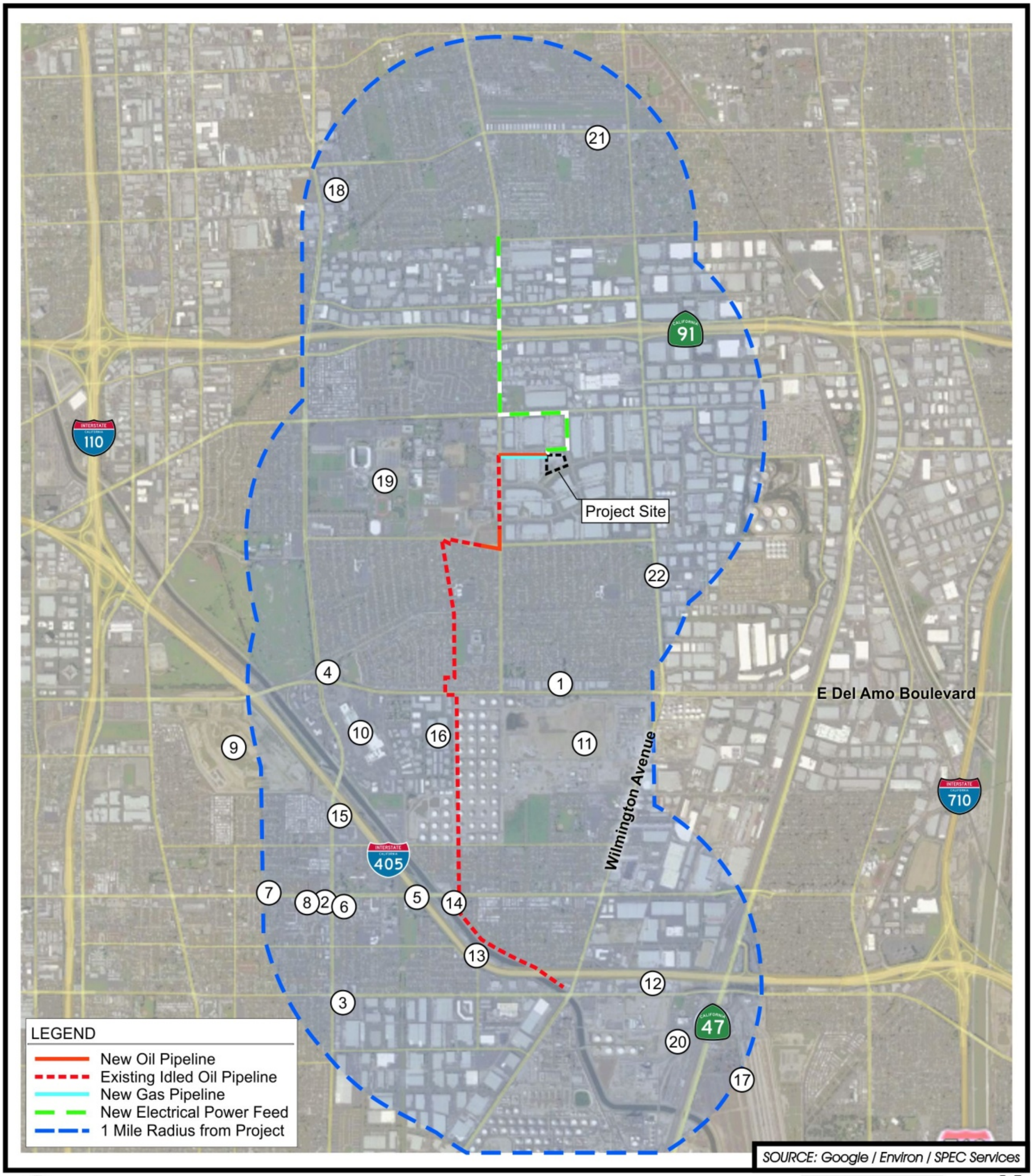
TABLE 5.1-1 (continued)

Map #	Project Address/Name	Project No.	Project Description	Submit/ Action Date
16	Shell Carson Ethanol Plan		The Shell Carson Facility Ethanol Project includes the following changes to the Carson Facility (located at 20945 S. Wilmington avenue): 1) increase the permitted ethanol throughput at an existing two-lane tanker truck loading rack; 2) convert four existing storage tanks from gasoline to ethanol service; 3) install one new ethanol tanker truck loading lane and associated ethanol loading rack; 4) expand the existing ethanol loading rack operations building; and 5) install one new gasoline storage tank to partially replace gasoline storage capacity transferred to ethanol service.	Final EIR certified in December 2012. Construction expected to be complete 2014.
17	Intermodal Container Transfer Facilility (ICTF) Expansion and Modernization Project		The proposed modernization would include the construction of additional working rail tracks, the construction of a new gate facility, the improvement of existing gate facilities, and additional parking. The proposed Project would more than double the throughput capacity of the ICTF from 725,000 to 1.5 million containers per year. The proposed Project would incorporate a number of environmental improvements including the use of electric overhead cranes, cleaner hostling tractors, and ultra low emissions locomotives.	NOP/IS released in January 2009. DEIR expected to be released in 2014.
18	716 E. Alondra Blvd.	DOR 1469-12	Warehouse to store glass (vacant lot).	Application submitted October 22, 2012.
19	Cal State Dominguez Hills Master Plan		CSUDH has prepared a campus master plan to guide future development. The master plan anticipates a build-out of 20,000 full-time equivalent students by 2089. Near-term developments include the construction of new academic buildings, a new campus entrance, new housing, a student rec center/gymnasium and a cogeneration plant.	NOD submitted May 2010.

TABLE 5.1-1 (concluded)

Map #	Project Address/Name	Project No.	Project Description	Submit/ Action Date
20	BP Shop Building Project		BP proposed a new 127,273 ft^2 building to serve multiple uses as a shop, warehouse, and change room on a 14-acre lot within the BP Carson Refinery site.	Project approved by the City of Carson.
City of Compton				
21	950 West Alondra Blvd.	CUP2578/79/V 2577 TM 65829/ARB07-112	New 28-unit townhome development and new 3,000 square foot church/sanctuary.	Under construction
City of Los Angeles				
22	WesPac Smart Energy Transport System		WesPac is proposing to construct a jet fuel pipeline system to support airport operations at Los Angeles International Airport (LAX) and other airports in the western United States.	Phase 1 is proposed to begin upon resolution of court case.

*Note: N/A = not available



Environmental Audit, Inc.

CUMULATIVE IMPACT LOCATIONS
OXY Dominguez Oil Field
1450 Charles Willard Street
Carson, CA 90746

Project No. 2757

Figure 5.1-1

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5.2 CUMULATIVE IMPACT ANALYSIS

The following sections analyze the cumulative impacts identified for each resource area evaluated in the EIR. As described in the NOP/IS the proposed Project has been found to have either no impact or a less than significant impact on all resource areas except for those discussed below. Except where noted, the significance criteria used for the cumulative analysis are the same as those used in Chapter 4 for the evaluation of the proposed Project impacts.

5.2.1 AIR QUALITY

5.2.1.1 Scope of Analysis

The region of analysis for cumulative effects on air quality is the South Coast Air Basin, but the analysis is focused on the communities adjacent to the proposed Project modifications (i.e., the City of Carson) because that is the area of maximum potential effect. The significance thresholds for cumulative air quality impacts are the same as the significance thresholds for project specific impacts and are shown in Table 4.2-1.

The SCAQMD has provided guidance on an acceptable approach to addressing the cumulative impacts issue for air quality.[1] "As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the HI significance threshold for TAC emissions.[2] Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

5.2.1.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects Including the Project

As described in Chapter 3.3, air quality within the Basin has generally improved. This improvement is mainly due to lower-emission on-road motor vehicles, reformulated fuels used in mobile sources, more stringent regulation of industrial sources, and the implementation of emission reduction strategies by CARB and the SCAQMD. This trend towards cleaner air has occurred in spite of population growth.

[1] Available at: http://www.aqmd.gov/hb/2003/030929a.html. Accessed: June, 2013.
[2] The project specific (project increment) significance threshold is HI $\geq$ 1.0 while the cumulative (facility-wide) is HI $\geq$ 3.0. Available at: http://www.aqmd.gov/hb/2003/030929a.html. Accessed: August, 2013.

Rule development in the 1970s through 1990s resulted in dramatic improvement in air quality. The number of days in which the Basin exceeds the federal one-hour ozone standard has continually declined over the years. The 8-hour ozone concentrations have been reduced by half over the past 30 years, nitrogen dioxide, sulfur dioxide, CO, and lead standards have been met, and other criteria pollutant concentrations have significantly declined.

The Basin is a nonattainment area for ozone and PM2.5 in regard to the NAAQS. The Basin is in attainment of the NAAQS for PM10, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. The Basin was redesignated by the U.S. EPA to be in attainment for PM10.[3] The Basin is also in nonattainment of the CAAQS for ozone, PM10, and PM2.5. The Basin is in attainment of the CAAQS for sulfur dioxide, nitrogen dioxide, CO, sulfates, and lead, and is unclassified for hydrogen sulfide and visibility-reducing particles. The implementation of the 2012 AQMP is expected to: (1) lead to attainment of the federal PM2.5 standard within the Basin by 2014; (2) assist in attaining the eight-hour ozone standard by 2023 (although the source of certain emission reductions is uncertain); (3) maintain compliance with state and federal nitrogen dioxide standards (even considering the increase in population growth); (4) maintain compliance with state and federal sulfur dioxide standards (even considering the increase in population growth); and (5) maintain compliance with the federal 24-hour PM10 standard (SCAQMD, 2012).

5.2.1.2.1 Construction Activities

In the time period between 2014 and 2016, several large construction projects may occur within the City of Carson (see Table 5.1-1), including The Boulevards at South Bay (#9), the Shell Specific Plan (#11), the Shell Ethanol Project (#16), the ICTF Expansion and Modernization Project (#17), Cal State Dominguez Hills (#19), as well as some smaller commercial and residential projects. The EIRs for several of the projects concluded that the construction emission impacts would be significant on an individual basis and would also result in cumulatively considerable air quality impacts. There will be construction emissions associated with other projects in the area, but these emissions were not estimated and sufficient information does not exist to estimate these emissions. Therefore, additional unquantifiable adverse air quality impacts may occur due to construction activities from these other projects. The construction impacts of the related projects would be cumulatively significant if their combined emissions would exceed the SCAQMD daily emission thresholds for construction (see Table 4.2-1). Since some of the construction activities associated with the cumulative projects exceed the SCAQMD significance thresholds on an individual basis, they would also be considered cumulatively significant.

[3] Available at: http://www.epa.gov/region9/air/actions/pdf/ca/southcoast/2013-06-12-sc-pm10-frm-prepub.pdf. Accessed: August 2013

5.2.1.2.2 Operational Activities

The past, present, and reasonably foreseeable future projects would have a significant cumulative impact if their combined operational emissions would exceed the SCAQMD daily emission thresholds for operations (see Table 4.2-1).

The EIR for the Shell Ethanol Project indicated that the operational emissions associated with the project were expected to be below the significance thresholds for CO, SOx, PM10 and PM2.5. Estimated emissions during operation are anticipated to exceed the significance thresholds for VOC and NOx, primarily due to emissions from mobile sources, e.g., tanker truck emissions. Several other large projects would also be expected to generate additional emissions (e.g., trucks and other mobile sources), including the Boulevards at South Bay (#9), the Shell Specific Plan (#16), and the ICTF Expansion and Modernization Project (#17). Since some of the operational activities associated with the cumulative projects exceed the SCAQMD significance thresholds on an individual basis, they would also be considered cumulatively significant.

Emission estimates are not available for all of the projects listed and there is insufficient information available to estimate the emissions. However, stationary sources of air pollution are required to obtain permits to construct, including the requirement to install Best Available Control Technology, and to comply with SCAQMD rules to reduce emissions of air pollutants. Transportation related emissions have been addressed by CARB regulations for new and in-use motor vehicles and motor vehicle fuels.

5.2.1.2.3 Toxic Air Contaminants

In MATES-III, completed by the SCAQMD in 2006, the existing cancer risk from TACs was estimated at 1,000 to 2,000 in a million in the San Pedro and Wilmington areas. In the Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach, CARB estimated that elevated levels of cancer risks due to operational emissions for port-area sources occur within and near the Ports (CARB, 2006). Given the results of the MATES-III study, cancer risk from existing TAC emissions within the Project region, are considered to contribute to a significant cumulative impact.

CARB is continuing to implement additional regulations that would reduce emissions from mobile sources include yard hostlers (ICTF project #17) and trains in an effort to reduce diesel particulate emissions. Furthermore, the impacts from toxic air contaminants are typically localized impacts. While a number of the listed related projects (Table 5.1-1) may result in increased emissions of toxic air contaminants, it is unlikely that toxic emissions from these related projects would cumulatively contribute to the existing cumulative significant impact due to the distance between the related projects and air dispersion, which dilutes emission impacts of potential toxic emissions. Nevertheless, the toxic air emissions from reasonably foreseeable future related projects may potentially be cumulatively considerable to the existing significant impact given the uncertainty about the exact nature of the toxic air emissions of these related projects.

5.2.1.3 Contribution of the Proposed Project

5.2.1.3.1 Construction Activities

Construction emissions from the proposed Project after mitigation would not exceed the SCAQMD significance criteria for VOC, CO, NOx, SOx, PM10, or PM2.5 and would be less than significant. The impact of NO_2, VOC, CO, SOx, PM10 and PM2.5 emissions on ambient air quality standards during construction activities is expected to be less than significant (based on the results of LST analyses). Therefore, according to SCAQMD guidance because the proposed Project does not exceed the project-specific thresholds the project is not cumulatively considerable.

5.2.1.3.2 Operational Activities

Operation of the proposed Project would not exceed the SCAQMD significance thresholds for NOx, VOC, CO, SOx, PM10 or PM2.5. The proposed Project would result in a reduction in emissions from the proposed Project site (see Table 4.2-11). Therefore, the proposed Project is not cumulatively considerable.

The impact of NOx, CO, SOx, PM10, and PM2.5 emissions during operation on ambient air quality is expected to be less than significant for the proposed Project and is not cumulatively considerable with respect to the Basin's ability to comply with ambient air quality standards.

5.2.1.3.3 Toxic Air Contaminants

The proposed Project is not expected to result in significant health risks associated with operational activities from the facility. The MEIW would be about 3.6 per million and the MEIR would be about 1.0 per million. Therefore, the proposed Project would not result in a cumulatively considerable contribution to the existing significant impact because the proposed Project cancer risk is below the significance threshold of 10 per million. The non-carcinogenic acute and chronic health risk would be well below the significance threshold of 1.0 and not cumulatively considerable.

5.2.1.4 Mitigation Measures and Residual Cumulative Impacts

5.2.1.4.1 Construction Activities

Construction emissions are calculated for peak day construction activities based on a phased construction schedule and present a worst case emission scenario see Section 4.2.2.1). It is unlikely that the peak construction day activities for the related projects will occur at the same time as the peak construction day for the proposed Project. Accordingly, it is likely that construction emissions from the cumulative projects will not overlap. Also, construction emissions are limited in duration and will be eliminated following completion of the construction phase. Mitigation measure A-1 would require the use of Tier 3 engines or the equivalent for construction equipment associated with the proposed Project. After mitigation, construction emissions of NOx are expected to be below the SCAQMD thresholds and localized impacts are not expected to cause a significant adverse impact on air quality. Therefore, the construction activities associated with the proposed Project after mitigation are not cumulatively considerable.

5.2.1.4.2 Operational Activities

Emission offsets and implementation of BACT are required for operational impacts associated with the stationary sources in the proposed Project. The proposed Project would result in a reduction in emissions from the proposed Project site (see Table 4.2-11). Additional mitigation is not required because the impact of the proposed Project on air quality was determined to be less than significant and thus the proposed Project is not cumulatively considerable.

5.2.1.4.3 Toxic Air Contaminants

Mitigation measures are not required because the proposed Project is not expected to contribute to cumulative impacts and is not considered to be cumulatively considerable.

5.2.2 GEOLOGY AND SOILS

5.2.2.1 Scope of Analysis

The region of analysis for cumulative effects on geology and soil is the coastal plain on the western portion of the Los Angeles Basin (generally southern California), but the analysis is focused on the proposed Project site and communities within and adjacent to the proposed Project (i.e., cities of Carson, Compton, Long Beach and the community of Wilmington).

5.2.2.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects Including the Project

Virtually all of the cumulative projects in southern California are within a seismically active area. Therefore, it is reasonable to expect a strong ground motion seismic event during the lifetime of any proposed project in the region and for such motion to damage some of the cumulative projects to some degree. Seismic ground shaking is capable of providing the mechanism for liquefaction, usually in fine-grained, loose to medium dense, saturated sands and silts. The effects of liquefaction may result in structural collapse if total and/or differential settlement of structures occurs on liquefiable soils. However, as discussed in the NOP/IS, the proposed Project is not located in a designated Liquefaction Hazard Zone and no significant impact from liquefaction at the proposed Project Site is expected. Liquefiable soils may exist on other sites, but not on the subject site.

Past, present, and reasonably foreseeable future projects, and the proposed Project, should not change the risk of seismic ground shaking; all of the related projects are subject to severe seismically induced ground shaking, and many to soil liquefaction, during an earthquake. Recent experience has shown that in a large earthquake, buildings and other structures will sustain damage and there is the potential for injury and death. New projects, such as those listed in Table 5.1-1 would typically replace older structures and/or result in the construction of new buildings, which must be designed to current seismic standards. The modern construction of these buildings and other structures and compliance with the California Building Code would reduce the risk of injury in such an event.

New structures must be designed to comply with the California Building Code seismic provisions since the proposed Project is located in a seismically active area. The local land use approval authority (e.g., cities and counties) is responsible for assuring that new projects comply with the California Building Code as part of the issuance of the building permits and conduct calculations/plan reviews and/or inspections to ensure compliance. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, in order to protect life, but with some structural and non-structural damage. The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic class and site coefficient, which represent the foundation conditions at the site. Compliance with the applicable building codes would reduce the risk of structural damage due to earthquake and liquefaction following seismic ground shaking. Accordingly, although damage and/or injury may occur, cumulative impacts due to seismically induced ground failure would be less than significant.

5.2.2.3 Contribution of the Proposed Project

The NOP/IS (see Appendix A) determined that the proposed Project has the potential to generate significant adverse geology and soil hazards related to anthropogenic seismic ground-shaking. This determination was based on the inclusion of hydraulic fracturing in the proposed Project. As discussed in Section 2.8.1, OXY has removed hydraulic fracturing from the proposed Project, therefore no geology or soils impacts, specifically no anthropogenic earthquakes are expected from the proposed Project.

As discussed in Section 4.3.2, the proposed Project is not expected to generate anthropogenic seismic ground-shaking from oil and gas production. There is the possibility that minor earthquakes can be a result of anthropogenic activities such as extraction of oil at major oil fields, due to a net liquid mass depletion (i.e., removal of oil without replacement of water). See Section 3.3.1.3 for a further discussion anthropogenic earthquakes. The Dominguez Oil Field was discovered in 1923 and was operated using salt water injection beginning in the mid-1940s as a means to extract more oil. The oil and gas production activities associated with the proposed Project will include the injection of salt water as well. Therefore, net liquid mass depletion will not occur. As discussed in Section 3.3.1.3, no known historic earthquakes have occurred within the Dominguez Oil Field. Extraction of oil and gas from the Dominguez Oil Field has not been associated as the cause of earthquakes in the vicinity of the Dominguez Oil Field. Therefore, no significant adverse geologic and soils impacts associated with anthropogenic sources are expected as a result of the proposed Project.

5.2.2.4 Mitigation Measures and Residual Cumulative Impacts

Additional mitigation is not required because the impact of the proposed Project on cumulative geology and soils impacts were determined to be less than significant.

5.2.3 GREENHOUSE GAS EMISSIONS

5.2.3.1 Scope of the Analysis

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). See Section 3.4 for a discussion of the existing setting for GHG emissions. The analysis of GHG emissions is a different analysis than for criteria pollutants for the following reasons. For criteria pollutant, significance thresholds are based on daily emissions because attainment or non-attainment is typically based on daily or shorter term exceedances of applicable ambient air quality standards. Several ambient air quality standards are based on relatively short-term exposure effects to human health, e.g., one-hour and eight-hour exposures. The effects of GHGs are longer-term, affecting the global climate over a relatively long time frame. As a result, the evaluation of GHG effects is based over a longer timeframe than a single day.

GHGs do not have direct human health effects like criteria pollutants. Rather, it is the increased accumulation of GHGs in the atmosphere that may result in global climate change. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project. Furthermore, the GHG emissions associated with the proposed Project would be small relative to total global or even state-wide GHG emissions. Thus, the significance of potential impacts from GHG emissions related to the proposed Project has been analyzed for long-term operations on a cumulative basis, as discussed in this Section. The SCAQMD interim significance threshold for industrial projects is 10,000 metric tons per year of CO_2 equivalent emissions (see Table 4.2-1).

5.2.3.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects Including the Project

As described in Chapter 3.4, GHG emissions from human activities are considered to contribute to global climate change. Past, present, and reasonably foreseeable future projects, and the proposed Project, which emit GHGs, would contribute to global climate change. Therefore, the cumulative global emissions of GHGs can be attributed to every nation, region, and city, and virtually every individual on Earth. In California alone, CO_2 emissions totaled approximately 452.97 million metric tons in year 2009 (see Table 3.4-1), most of which comes from energy production and transportation. Based upon this information, past, current, and future global GHG emissions, including emissions from projects in the Carson area (Table 5.1-1) (for example, Shell Ethanol Project (#16) exceeds the SCAQMD GHG significance threshold (SCAQMD, 2012a)), and elsewhere in California, are cumulatively significant.

5.2.3.3 Contribution of the Proposed Project

The contribution of the proposed Project is considered in two aspects: (1) GHG emissions generated from construction of the proposed Project; and (2) GHG emissions generated during the operation of the proposed Project. To determine whether or not greenhouse gas emissions from the proposed Project may be significant, impacts will be evaluated and compared to the SCAQMD threshold of 10,000 metric tons CO_2 equivalent (CO_2e) per year for industrial sources. The GHG emissions evaluated for significance are the sum of the CO_2e emissions from construction emissions amortized over 30 years and the annual CO_2e emissions from operation of the proposed Project.

The direct and indirect GHG emissions are included in this analysis.[4] The indirect emissions reported are consistent with those included in the CalEEMod v2011.1. CalEEMod is a California statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operational activities from a variety of land use projects. The indirect sources include electricity usage, mobiles sources, waste disposal, and water usage.

5.2.3.3.1 Existing Emissions

The operations at the proposed Project location currently include test well operations and warehousing activities. The test well operation GHG emissions sources include a process flare, an emergency flare, an electrical generator, drill rig generators, well workover activities, and mobile sources. Warehouse GHG emissions sources include energy consumption in the existing warehouse and mobile sources. Drilling of the two test wells that began in November 2010 was completed in May 2011. The production testing that began in August 2011 is ongoing. Warehouse activities occurred concurrently with test well activities. Therefore, to most accurately represent current site activities, the emissions were calculated for the period prior to the release of the NOP, from November 2010 to November 2011. The GHG emissions from existing operations are summarized in Table 5.2-1 with detailed calculations presented in Appendix C.

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[4] Direct GHG emissions are emissions from sources that are owned or controlled by OXY. Indirect GHG emissions are emissions that are a consequence of the activities at the site, but occur at sources not owned or controlled by OXY.

TABLE 5.2-1
GHG Emissions from Existing Operations
(metric tons/year)

Emissions Source	Annual CO_2e Emissions
Direct Emissions - Stationary Sources	
Process Flare	12,650
Emergency Flare	761
Electrical Generator	637
Drill Rig Generators	2,984
Well Workover	7
Subtotal, Stationary Sources	17,039
Direct Emissions - Mobile Sources[(1)]	
Workers and Contractors[(2)]	501
Drilling Slurry Trucks	454
Trucks (oil and gas transport)	30
Workover Rig	<1
Subtotal, Mobile Sources	986
Total Direct Emissions	**18,025**
Indirect Emissions	
Warehouse[(3)]	3,701
Total GHG Emissions (direct and indirect)	**21,726**

Source: See Appendix C.
(1) CalEEMod output emissions are multiplied by two to account for round trips.
(2) Includes workers and contractor commute trips related to warehouse operations, drilling, and well production activities.
(3) GHG emissions from warehouse operations associated with energy use, water/wastewater conveyance, solid waste disposal, and vegetation planting/removal as modeled by CalEEMod.

5.2.3.3.2 Proposed Project GHG Emissions

The proposed Project will eliminate the existing warehouse and the associated GHG emissions from warehouse operations including energy use, water/wastewater conveyance, solid waste disposal, vegetation planting/removal, and vehicle trips. An electric drill rig will be used in place of the diesel drill rig used for the test wells. GHG emissions for construction and operation of the new oil and gas production facility have been calculated in Appendix C and are summarized in Tables 5.2-2 and 5.2-3.

Construction GHG Emissions

GHG emissions from construction equipment were calculated using CalEEMod v2011.1. Construction emissions include GHG emissions generated as a byproduct of fuel combustion in off-road construction equipment (e.g., excavators, loaders, dozers,

TABLE 5.2-2

GHG Emissions Associated with Construction of the Proposed Project (metric tons/year)

Construction Activity	Annual CO_2e Emissions
Year 1 Activities	
Onsite Facility Construction	777
Offsite Pipeline Construction	82
SCE Substation(1)	86
Year 2 Activities	
Onsite Facility Construction	232
Total Construction Emissions	1,177

(1) Only offsite emissions are included in this activity. Onsite construction equipment necessary for this activity is expected to use equipment onsite for facility construction.

backhoes, and cranes), on-road trucks (e.g., water trucks, dump trucks, delivery trucks, and pickup trucks), and worker commute vehicle trips.

The proposed Project construction activities consists of three major components – the production and processing facility; the crude oil pipeline reactivation and crude oil and natural gas connector pipelines; and, the SCE interconnect and substation. As shown in Figure 2.7-1, the construction schedule is expected to occur over an 18-month period with overlapping activities. Facility construction is comprised of four phases: (1) demolition of the existing warehouse, (2) well cellar preparation, (3) construction of process equipment, and (4) tank construction. The pipeline installation is expected to occur in segments along the pipeline route with each segment requiring approximately two to three weeks to complete. The SCE interconnect and substation activities are expected to take three to four months to complete.

The primary GHG emission sources associated with construction are diesel-powered construction equipment (i.e., excavators, loaders, forklifts, cranes, air compressors, generators, etc.). The hours of operation for construction equipment vary from two hours to 24 hours depending on the equipment and activity with the majority of the equipment assumed to operate eight hours per day (see Appendix C, Tables A-2(a) and A-2(b) for operating hours for specific equipment).

Estimated emissions from construction activities are included in Table 5.2-2, with more detailed emission information in Appendix C. The proposed Project will also include construction equipment working offsite to install pipeline segments and the SCE interconnect and substation activities. Estimated emissions from offsite construction activities are included in Table 5.2-2.

When analyzing GHG emission impacts, SCAQMD policy recommends combining construction emissions amortized over 30 years with operational emissions and then comparing this total to the GHG emissions significance threshold. The GHG construction emissions associated with the proposed Project are estimated to be 1,177 metric tons over the entire construction period, or 39 metric tons per year amortized over 30 years (1,177/30 = 39).

Operational Emissions

The operation of the proposed Project is expected to emit GHG from stationary and mobile sources. The stationary sources of GHG emissions include the process flare, workover rig, carbon adsorber units for sump water and slurry system, process heater, backhoe, truck loading, and fugitive components. The mobile sources of GHG emissions include commuter vehicles, trucks for hauling mud and material, NGL transport trucks, slurry transport trucks, and the workover rig. Additional indirect GHG emissions associated with the proposed Project are from purchased power and energy used to deliver water and process domestic wastewater. The direct and indirect GHG emissions from operation of the proposed Project are expected to be 46,666 metric tons per year (shown in Table 5.2-3 with detailed calculations in Appendix C).

The total direct GHG emissions associated with the proposed Project, including the 30-year amortized construction GHG emissions, are 18,497 metric tons per year (17,743 + 715 + 39 = 18,497). To assess the overall impact of the proposed Project, the change from the existing operations is compared to the significance threshold. As shown in Table 5.2-4, the incremental increase in direct GHG emissions from the proposed Project is 472 metric tons per year (18,497 compared to 18,025). The incremental increase of 472 metric tons is below the significance threshold of 10,000 metric tons. Therefore, the GHG cumulative impacts are not considered to be cumulatively considerable.

As shown in Table 5.2-3, indirect emissions from the proposed Project (primarily from purchased electrical power) total 28,208 pounds of GHG emissions. However, electricity generators within California, including SCE, are included in the CARB AB32 cap and trade program. In December 2010, CARB adopted regulations establishing a cap and trade program for the largest sources of GHG emissions in the state that altogether are responsible for about 85 percent of California's GHG emissions. Among these are fossil-fuel fired power plants, including plants that generate power within California's borders and those located outside of California that generate power imported to the state. The cap and trade program became effective on January 1, 2012, with enforceable compliance obligations beginning with the 2013 GHG emissions inventory. GHG emissions from this universe of sources were capped for 2013 at a level approximately two percent below the emissions level forecast for 2012, and the cap will steadily decrease at a rate of two to three percent annually from now to 2020. Sources regulated by the statewide cap must reduce their GHG emissions or buy credits from others so that the statewide cap is not exceeded. Therefore, there will be no cumulative increase in GHG emissions from the universe of sources regulated by the cap and trade program, which includes power plants. The AB 32 regulatory program mandates compensating changes in the system, e.g.,

TABLE 5.2-3

GHG Emissions Associated with Operation of the Proposed Project (metric tons/year)

Emission Source	Annual CO_2e Emissions
Direct Emissions from Stationary Sources	
Emergency Flare	148
Carbon Adsorber Unit for Slurry System	<1
Process Heater	4,685
Truck Loading Unit	<1
Emergency Generator	15
Carbon Adsorber for Sump Water	<1
Fugitives	11
Workover Rig	223
Process Flare	12,650
Backhoe	8
Subtotal, Stationary Sources	17,743
Direct Emissions from Mobile Sources	
Commuter Vehicles(1)	87
Mud/Hauling Trucks(2)	130
NGL Trucks(3)	489
Solids Trucks(4)	7
Workover Rig(5)	2
Subtotal, Mobile Sources	715
Total Direct Emissions	18,458
Indirect Emission Sources	
Purchased Power(6)	28,204
Waste Disposal(7)	4
Subtotal, Indirect Sources	28,208
Total GHG Emissions (direct and indirect sources)	46,666

Source: See Appendix C.

(1) Emissions from worker, contractor, and pickup trucks during well drilling and production.
(2) Haul truck emissions during the initial well drilling phase prior to the startup of the slurry plant.
(3) NGL transport trucks from site to Bakersfield.
(4) Slurry transport trucks to Buttonwillow.
(5) When needed, the workover rig will be brought to the site.
(6) The 22 MW substation at 50% load providing electricity for the entire facility.
(7) GHG emissions from water distribution and solid waste collection are estimated using CalEEMod using default assumptions.

TABLE 5.2-4

Overall GHG Emissions Impact from the Proposed Project (metric tons/year)

Emission Source	Annual CO_2e Emissions
Total Existing Operations (direct sources)(1)	**18,025**
Proposed Project Operations (direct sources) (2)	18,458
30-Year Amortized Construction Emissions(3)	39
Total Proposed Project Operations	**18,497**
Overall Proposed Project Impact(4)	**472**
SCAQMD Interim Significance Threshold	**10,000**
Significant?	**NO**

(1) See Table 5.2-1.
(2) See Table 5.2-3.
(3) See Table 5.2-2.
(4) Overall Proposed Project Impact = Total Proposed Project Operations – Total Existing Operations.

reductions in power consumption, improvements in efficiency in power generation or delivery, and increases in the contribution of renewables such as solar and wind. Since the statewide cap will decline over time, the cap and trade program assures that the GHGs associated with both the historical use of power at the facility as well as any project-related increment will decline over time as mandated by AB 32 and will not be cumulatively significant.

Based on the analysis above, the total GHG emissions associated with the proposed Project, including the 30-year amortized construction GHG emissions, are 472 metric tons, which is less than the SCAQMD interim significance thresholds. Therefore, the GHG emissions from the proposed Project are less than significant.

Additional GHG Emissions Benefits

The proposed Project offers additional GHG emissions benefits that are realized by the use of the oil produced from the proposed Project. These benefits are presented here to provide a comprehensive impact of the proposed Project. These benefits were not included as part of the above analysis because assurance that other crude oils would be displaced is outside the control of OXY and cannot be guaranteed. However, it is likely that the benefits will be realized as a result of the proposed Project.

Reduction in Imported Crude Oil

The California Energy Commission (CEC) discussed the relationship between imported crude oil and domestically produced crude oil in the 2011 Integrated Energy Policy Report (IEPR). The IEPR states "The quantity of crude oil imported into California is determined by the rate of decline of California production, processing capacities, and operating rates of refineries" (CEC, 2012). Additionally, a key finding from a 2006 staff paper prepared by the CEC directly links declining California production with foreign imports, and states "The declining crude oil production in South-Central California has resulted in higher crude oil costs because of reliance on higher priced imported crude oils" (CEC, 2006). State policy makers also recognize that California refineries are operating at capacity and that the State is importing finished petroleum products (e.g., gasoline and diesel fuel) to meet demand. The IEPR also states that crude oil imports are expected to rise, compared to 2010 levels, by between 22 million and 104 million barrels per year by 2030. At the high end, this increase is solely the result of declining California crude oil production, since refining capacity remains fixed. The forecast for the low end is driven primarily by the assumption of declining refining capacity, reducing the need for crude oil supply. An increase in refining capacity could not realistically occur without an expansion project at one of California's refineries, or the siting of a new refinery. Such an expansion would require a separate evaluation under CEQA.

Carbon intensity is a metric used to compare oil production activities and is the quantity of GHG emissions generated to produce and transport one barrel of oil to a refinery, reported as kilograms of CO_2e per barrel crude oil (kg CO_2e/bbl). The carbon intensity for the crude oil produced from the proposed Project was compared to other crude oils produced in California and imported from foreign sources (see Appendix C). The carbon intensity associated with crude oil produced from the proposed Project was 21.4 kg CO_2e/bbl as compared to the foreign imported crude oils ranging from 29.2 to 41.4 kg CO_2e/bbl. Since oil produced in California is not exported but is refined in local refineries and refinery capacity is fixed, it is assumed that an increase in local crude oil production would displace imported crude oil. Therefore, with a lower carbon intensity, production of crude oil from the proposed Project would generate between approximately 17,100 and 43,800 metric tons per year less GHG emissions ((29.2- 21.4 kg CO_2e/bbl crude oil) x 6,000 bbl crude oil/day x 365 days /year x 0.001 metric tons/kg = 17,082 metric tons per year to (41.4 – 21.4 kg CO_2e/bbl crude oil) x 6,000 bbl crude oil/day x 365 days /year x 0.001 metric tons/kg = 43,800 metric tons per year)) than the use of imported crude oil, depending on which foreign crude oil is displaced.

Crude Oil Refining Characteristics

Carbon intensity related to production does not account for variations in refining between crude oils. More energy is needed to refine high sulfur (sour) heavy crude oil than to refine low sulfur (sweet) light crude oil. The increase in energy demand is to remove sulfur and crack heavy crude oils during the refining process to produce gasoline, diesel fuel, jet fuel, and other petroleum products. Table 5.2-5 provides a comparison of crude oil characteristics for the most common California-imported crude oils in 2012. As shown, Dominguez Hills crude oil is comparable to Alaska North Slope crude oil, both of which are considered intermediate weight sweet crude oils and require less energy to refine than foreign imported crude oils. As such, less energy to refine the crude oil equates to less GHG emissions.

TABLE 5.2-5

Characteristics of Crude Oil Commonly Imported to Southern California Refineries

Crude Origin	Percent of Total Imported(1)	Sulfur Content (%)(2)	API Gravity(2)
	Domestic		
Dominguez Hills	NA	<1	31
Alaska North Slope	19.7	0.9	32
	Foreign		
Saudi Arabia	21.8	1.1 – 2.9	28 – 39
Ecuador	15.2	1.5	24
Iraq	14.7	1.6 – 2.9	30 – 34

(1) Source: Energy Information Administration (EIA) 2013a.
(2) Source: CEC, 2013.
NA = not applicable, Dominguez Hills is a local supply

The proposed Project expects to transport the produced oil to the Phillips 66 Refinery Carson Plant. According to information published by Phillips 66, "the Refinery processes mainly heavy, high-sulfur crude oil" (Phillips, 2013). The use of heavy and sour crude oils at the Phillips 66 Carson Plant is further exemplified from the Energy Information Administration data available, which shows the crude oils imported to be heavy or higher sulfur-bearing than Dominguez Hills crude oil (see Table 5.2-6). Characteristics of the foreign imported crude oil received by the Phillips 66 Carson Plant in January of 2013 are presented in Table 5.2-6.

TABLE 5.2-6

Characteristics of Foreign Crude Oil Imported by Phillips 66 Carson Plant in January 2013

Crude Origin	Percent of Import	Sulfur Content (%)	API Gravity(1)
Canada	32	0.79	19.12
Ecuador	40	1.54	23.9
Iraq	28	2.82	33

Source: EIA, 2013a.
(1) API Gravity = The higher the API gravity, the lighter the compound. Light crude oils > 38, heavy crude oils < 22, and intermediate crude oils >22 and < 38 (EIA, 2013b).

The GHG emission reductions associated with refining Dominguez Hills crude oil in lieu of imported crude oils requires detailed information regarding the refinery operations. While it is currently expected that the crude oil produced from the proposed Project will be delivered to Phillips 66, it is possible that in the future it could be delivered to another local refinery. Since each refinery is configured differently, the energy demands are somewhat different. For these reasons, quantifying the GHG emission reductions associated with refining the crude oil produced from the proposed Project would be speculative. However, fundamentally a reduction in GHG emissions is expected from refining the Dominguez Hills crude oil in lieu of imported crude oils.

5.2.3.4 Mitigation Measures and Residual Cumulative Impacts

Mitigation measures are not required because the proposed Project would not make a cumulatively considerable contribution to an existing cumulative significant impact. In addition, as detailed above, GHG emission reductions from the substitution of Dominguez Hills crude oil for foreign oil are expected to occur.

The cumulative adverse GHG emission impacts are not expected to exceed the SCAQMD significance threshold. Therefore, the proposed Project impacts are not considered to be cumulatively considerable.

5.2.4 HAZARDS AND HAZARDOUS MATERIALS

5.2.4.1 Scope of Analysis

The geographic scope for cumulative impacts associated with spills of hazardous materials encompasses two main areas: (1) oil and gas production activities and processing facilities; and (2) product transport. The related projects list is based on the geographic area of the proposed Project site and the proposed pipelines. Hazard impacts generally occur within the vicinity of the proposed Project, e.g., the maximum hazard impacts from the proposed Project is about 1,250 feet (see Chapter 4, Table 4.5-1). Thus, cumulative hazard impacts associated with past, present, and reasonably foreseeable future projects are expected to be limited to less than one mile from proposed Project activities. The cumulative impact analysis herein evaluates projects within one mile to provide a conservative analysis. Past, present, and reasonably foreseeable future projects that could contribute to these cumulative impacts include those projects that would handle and transport hazardous materials within and near the City of Carson.

5.2.4.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects Including the Project

Construction: Several other local projects could increase the hazards in the Carson area related to the storage, transport, and handling of hazardous materials including Boulevards at South Bay (#9), Shell Specific Plan (#11), and Shell Carson Ethanol Project (#16). Although other industrial facilities exist in the general vicinity of the proposed Project, the cumulative impacts from and between the onsite operations of the proposed Project and the other industrial projects are not expected to be significant because it is extremely unlikely that a spill or upset condition at one facility would create an upset at another nearby facility due to the distance between facilities. Because of governing regulations, such as spill prevention and containment requirements, a spill or other type of on-site release would only be expected to cause local hazard impacts.

Accordingly, the past, present, and reasonably foreseeable future projects, including the proposed Project, are not expected to result in a significant cumulative impacts for hazards.

A number of past, present and reasonably foreseeable future projects could increase the transportation of hazardous materials, including projects in industrial areas. These related projects could generate contaminated soil or other materials during the construction and operation phases (Boulevards at South Bay #9, Shell Specific Plan #11, Shell Carson Ethanol Project #16 and ICTF Expansion #17).

The other related projects listed in Table 5.1-1 are not expected to increase the consequences of transportation incidents involving hazardous materials, but they may increase the potential frequency of those incidents if they transport hazardous materials. Accordingly, the past, present, and reasonably foreseeable future projects are expected to result in potentially significant cumulative impacts on hazardous materials transportation.

5.2.4.3 Contribution of the Proposed Project

The proposed Project would be subject to applicable federal, state, and local laws and regulations governing the spill prevention, storage, use, and transport of hazardous materials, as well as emergency response to hazardous material spills, thus minimizing the potential for adverse health and safety impacts. Potential health and environmental impacts associated with hazardous material spills are also minimized by the preventative secondary containment capable of containing 110 percent of the contents of the storage tanks. Construction, demolition, and operation of the proposed Project would not substantially increase the probable frequency and severity of consequences to people or property as a result of an accidental release or explosion of a hazardous substance, as analyzed in Section 4.5.2.

While hazardous materials could be encountered during construction of the proposed Project or other related projects, with implementation of federal, state, and local regulations and procedures, the Project's impacts related to hazardous materials would be less than significant. Therefore, construction and operation of the proposed Project are not cumulatively considerable.

In the event of a pipeline release, a release from the proposed pipelines would not be expected to result in a release from another pipeline and, therefore, would not be expected to result in a cumulative hazard. Hazards associated with operating both the crude and natural gas pipelines associated with the proposed Project were determined to be less than significant. Therefore, the proposed Project is not cumulatively considerable as it relates to oil and gas pipeline transport.

The proposed Project may also transport hazardous materials by truck. The proposed Project was considered to be less than significant for the transport of hazardous materials by truck. Therefore, the proposed Project is not cumulatively considerable as it relates to hazardous material transport by truck.

The Dominguez Oil Field has approximately 600 abandoned oil wells. Of the well files reviewed, 18 wells were identified as potentially being influenced by the reactivation of the Dominguez Oil Field. The well abandonment record notes in the DOGGR well files indicate that the well abandonment methods for these 18 wells may not have been sufficient to comply with regulations and requirements and preclude influence by the reactivation of the field. To avoid adversely influencing the18 wells identified during the records review, the City is imposing mitigation restricting the use of salt water injection wells in vicinity of the wells listed in Table 4.5-4.

5.2.4.4 Mitigation Measures and Residual Cumulative Impacts

Mitigation measures H-1 and H-2 will be imposed on the proposed Project to minimize potential adverse impacts on abandoned wells. These mitigation measures require the evaluation of abandoned wells and restricts injection wells within 75 feet of the 18 existing abandoned wells. Mitigation measures are expected to reduce project-specific impacts to less than significant and no additional cumulative impacts would be expected. Therefore, no additional mitigation measures are required and no residual cumulative impacts are expected.

5.2.5 HYDROLOGY AND WATER QUALITY

5.2.5.1 Scope of Analysis

The proposed Project impacts on hydrology and water quality are limited to the project vicinity in the City of Carson and are associated with crude production which generates large quantities of saltwater, potentially impacting local groundwater levels and water quality. Therefore, hydrology and water quality impacts are limited to the Dominguez Oil Field.

5.2.5.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects Including the Project

5.2.5.2.1 Construction Activities

The proposed Project and surrounding areas primarily consist of urbanized areas. Industrial, residential, and commercial projects generally require water for dust suppression during construction activities. Water use associated with construction activities generally requires minimal amounts of water (e.g., 5,000 gallons per day), depending on the project size. There are a few projects on Table 5.1-1 that are larger in size and would involve the construction of pipelines and storage tanks, including the Shell Specific Plan (#11), the Shell Carson Ethanol Project (#16), and the ICTF Expansion and Modernization Project (#17). The water use associated with hydrostatic testing of the pipelines and storage tanks associated with these projects could be substantial, but would occur on a one-time basis. The schedules for these projects vary so that it is not expected that hydrostatic testing for these projects would overlap. Further, water use would cease following the completion of hydrostatic testing and other construction related activities. Therefore, the cumulative impacts on water supply associated with construction activities is expected to be less than significant.

Although the Final EIR for the Boulevards at South Bay Project (Carson Redevelopment Agency, 2006) concluded that the project would not have significant adverse impacts on potable water supply, it identified mitigation measures to reduce water demand by providing reclaimed water for the project's nonpotable water uses, utilizing xeriscape (low-maintenance drought resistant) plantings for landscaping, using automated irrigation systems to minimize water loss from evaporation and recycling water used in cooling systems to the maximum extent possible. Similarly, although the Final EIR for the CSUDH Master Plan (CSUDH, 2009) concluded that the project would not have significant adverse impacts on potable water supply, it identified a mitigation measure to require the use of reclaimed water for non-potable water uses during construction for that project.

5.2.5.2.2 Operations

Most of the related projects are urban in-fill projects, generally commercial or industrial development and are not expected to require extensive water use. None of the CEQA documents for the potential cumulative projects identified potentially significant adverse impacts to water supply during operation. However, combined the past, present and reasonable foreseeable future projects may exceed the potable water significance threshold of 233,200 gallons per day, so that potential cumulative impacts to potable water supply during operation may be significant.

Water quality impacts associated with the related projects are not expected to result in cumulative impacts. All projects would be required to comply with stormwater pollution prevention requirements during project operation and construction as well as NPDES requirements for commercial and industrial facilities required to obtain such permits. Compliance with existing stormwater and wastewater discharge requirements is expected to ensure cumulative water quality impacts are less than significant.

5.2.5.3 Contribution of the Proposed Project

5.2.5.3.1 Water Demand

The proposed Project's impacts on water demand during construction and operation are expected to be less than significant as minimal potable water use is expected to be required. Therefore, during hydrotesting associated with construction activities, the amount of potable water needed is 210,000 gallons on the maximum day. The potable water demand during hydrotesting would be less than 223,200 gpd. It should be noted that the water use associated with grading activities and hydrotesting would cease following construction activities and no further water demand would be required for these purposes. Furthermore, the hydrotesting would only occur on a small number of days during the construction period and the water would be recycled and reused if possible.

See Chapter 4 subsection 4.6.2.1.1 for more detailed discussion of water demand associated with proposed Project construction.

The proposed Project will require potable water during the initial well drilling operations of up to 4,500 gpd, until the saltwater production wells are completed. Once the saltwater production wells are completed, potable water demand for well drilling operations will reduce to sanitary use, facility safety showers, wash down connections, fire protection, and fugitive dust abatement. Therefore, potable water demand associated with the proposed Project is less than significant and would not contribute to a cumulative considerable impact. See Chapter 4, subsection 4.6.2.2.1 for a more detailed discussion of the water demand associated with the proposed Project operation.

5.2.5.3.2 Water Quality

The proposed project includes a number of features for water quality control including site design and the implementation of BMPs specified in the SWPPP and Wet Weather Erosion Control Plan. Such measures include preventing liquids (other than rain water) from running onto or off of the proposed Project site, capturing and treating stormwater that falls on the site, collecting all drilling mud within enclosed tanks, using catch pans to catch drilling mud, and maintaining spill equipment onsite (absorbent material, booms, plastic sheets, etc.) for use in the event of a spill. Fluids captured would be processed onsite to separate water and solids from oil. Water will be retained and injected into the subsurface, below the potable aquifers. Therefore, the proposed Project would reduce stormwater runoff from the site by capturing and treating most stormwater onsite. Therefore, no significant surface water quality impacts are expected.

While the proposed Project will produce oil and saltwater, and inject saltwater and potentially slurry materials into oil producing zones, geologic features, engineering design of the oil wells, regulatory oversight (including continued groundwater monitoring by the Water Replenishment District) will help ensure that the proposed Project will not impact fresh water aquifers. Therefore, water quality impacts associated with the proposed Project are less than significant and would not contribute to a cumulative considerable impact.

5.2.5.4 Mitigation Measures and Residual Cumulative Impacts

Mitigation is not required because the impacts of the proposed Project on water demand and water quality are less than significant. No residual cumulative impacts are expected.

5.2.6 NOISE

5.2.6.1 Scope of Analysis

The geographic scope of analysis for the cumulative impact of noise to which the proposed Project may contribute are the locations from which the related construction or operational activities of the proposed Project have the potential to be heard. The analysis uses the same thresholds of significance as the proposed Project analysis (Section 4.6.1) and assesses the potential of the proposed Project, along with other cumulative projects within the geographic scope of the project (including along the pipeline routes), to cause a substantial increase in noise as a result of project construction activities and operational activities (including onsite operations).

5.2.6.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects Including the Project

5.2.6.2.1 Construction

Construction noise is generally site-specific, and localized to the vicinity of each related project. Accordingly, although a project's construction could affect the noise environment in its immediate vicinity, the related projects would not have a significant cumulative impact on ambient noise since most of the cumulative projects (Table 5.1-1) are not located in the general vicinity of the proposed Project. However, there are a number of construction projects within the City of Carson and pipelines and electric utility lines associated with the proposed Project travel several miles crossing near other related projects. It is uncertain if the timing of various construction projects will coincide with the timing of the Project construction. Thus, the cumulative noise impact is potentially significant.

5.2.6.2.2 Operation

Operational noise is generally site-specific, and localized to the vicinity of each related project. Accordingly, although a project's operations could affect the noise environment in its immediate vicinity, the related projects would not have a significant cumulative impact on ambient noise. Most of the cumulative projects (Table 5.1-1) are not located in the general vicinity of the proposed Project. No related projects are located close enough to the proposed Project to have the potential to create a cumulative long-term operational noise impact.

5.2.6.3 Contribution of the Proposed Project

The noise impact analysis for the proposed Project is analyzed and summarized in Chapter 4.6. The noise impact analysis indicates that the construction activities associated with the proposed Project modifications would exceed ambient noise levels by 10 dBA or more at nearby noise-sensitive land uses during several phases of construction. Specifically, the revised project is expected to result in the following:

- Noise impacts associated with onsite construction activities at the oil production facility would result in noise levels at local sensitive receptors of between 55-61dBA with noise increases of 3 dBA or less (see table 4.7-2). Noise impacts associated with all phases of onsite construction activities were considered to be less than significant.

- Noise impacts during construction activities associated with the pipeline and electrical conduit could result in significant noise impacts during the construction phase when construction noise levels are anticipated to exceed ambient noise levels by more than 10 dBA at residences near the pipeline and conduit construction activities (see Table 4.7-4 and 4.7-6).

Therefore, the proposed Project would have a cumulatively considerable contribution to a significant impact at receptors along portions of the pipeline and electrical conduit routes during construction activities only. These impacts are temporary and will cease following the completion of construction activities.

The operational noise impacts associated with the proposed Project modifications were determined to be less than significant. As shown in Table 4.7-9, equipment and activities related to the proposed Project would increase overall CNEL sound levels by 0 to 1 dBA at the nearest residences, which would be considered less than significant increases. Traffic associated with the proposed Project is expected to be less than the existing traffic so that noise generated by traffic would be reduced as compared to existing conditions. Therefore, operational noise impacts were considered to be less than significant and the proposed project would not result in a cumulatively considerable noise increase due to project operational activities.

5.2.6.4 Mitigation Measures and Residual Cumulative Impacts

5.2.6.4.1 Construction

Mitigation measures N-1 through N-13 would address the significant impacts from construction noise at nearby noise sensitive receptors and are expected to reduce the potential noise impacts. Construction noise impacts are primarily mitigated by limiting construction activities to day time hours, avoiding construction during the more sensitive night time hours, and using noise barriers. However, for many of the noise mitigation measures it is not possible to estimate the reduction in noise level that will be achieved. In addition, all the measures may not be feasible at all construction locations and at all times. Therefore, the construction noise impacts of the proposed Project are considered to contribute to a cumulatively significant and an unavoidable noise impact.

5.2.6.4.2 Operation

No mitigation measures are required as no significant noise impacts were expected due to the operation of the proposed Project. The cumulative operational noise impacts of the proposed Project are less than significant.

5.2.7 TRANSPORTATION AND TRAFFIC

5.2.7.1 Scope of the Analysis

The analysis includes streets and intersections that would be impacted by construction activities associated with the proposed pipelines and electrical conduit. Therefore, the scope of the analysis is limited to the road segments potentially impacted by construction activities. Thresholds of significance used in the cumulative analysis are the same as those used for the project analysis in Section 4.8.

Traffic impacts related to the operational phase of the proposed Project were evaluated in the NOP/IS and determined to be less than significant. Once construction of the proposed Project is completed, the facility is expected to require up to 15 permanent workers. Operations will be conducted 24-hours a day, seven days a week, so traffic would be spread throughout the day. One to two truck trips are also expected to be required to transport supplies or remove natural gas liquids, hazardous/solid wastes, etc., once operations commence. The existing (baseline) traffic at the site is 256 trips per day (see Table 3.8-1). Operational activities associated with the proposed Project are expected to generate a peak of 30 trips per day. Since the proposed Project will generate much less traffic than the existing warehouse operations, no significant LOS impacts are expected at any of the local intersections. No increase in traffic during peak hours is expected during project operations. Therefore, traffic impacts associated with the operational phase of the proposed Project are considered to be less than significant.

5.2.7.2 Impacts of Past, Present, and Reasonably Foreseeable Future Projects, Including the Project

Cumulative project traffic impacts, including local and regional growth, have added daily and peak hour trips to the roadway system. Given the geographic area covered by the proposed pipeline and conduit routes, there is a possibility that other construction projects (i.e., related projects) would occur along the same routes as the pipeline during the construction phase. While there is a potential for cumulative impacts to occur, the duration of the impact would be very limited given the rate of construction for the proposed pipelines (1-2 days in any one location). Furthermore, the proposed Project will be required to prepare a Traffic Control Plan and for other related projects that may have significant transportation related impacts, it is anticipated that the affected jurisdictions would require that such effects be addressed through the preparation of Traffic Control Plans by each such project. The preparation of such Traffic Control Plans would ensure that cumulative construction-related traffic impacts would be appropriately addressed. Therefore, the cumulative construction impacts are expected to be less than significant.

5.2.7.3 Contribution of the Proposed Project

With mitigation, the proposed Project is not expected to result in significant adverse traffic impacts during pipeline construction activities. Traffic Control Plans will be prepared and will address potentially significant issues such as: (1) potential blocked vehicular and pedestrian access to parcels fronting the construction area; (2) temporary loss of bus stops; and (3) lane closures along major streets. The impact of the proposed Project modifications on transportation and traffic would be less than significant with implementation of the traffic control plans. Further, construction traffic associated with the proposed Project will cease after the completion of construction activities. Therefore, the proposed Project is not cumulatively considerable for transportation and traffic during the construction phase. Traffic impacts related to the operational phase of the proposed Project were evaluated in the NOP/IS and determined to be less than significant.

5.2.7.4 Mitigation Measures and Residual Cumulative Impacts

Additional mitigation is not required because the impacts of the proposed Project on cumulative traffic impacts were determined to be less than significant.

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CHAPTER 6

PROJECT ALTERNATIVES

6.0 PROJECT ALTERNATIVES

6.1 INTRODUCTION

Chapter 6 provides a discussion of alternatives to the proposed Project as required by CEQA. According to the CEQA guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project, but would avoid or substantially lessen significant effects of the project, and provide means for evaluating the comparative merits of each alternative. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines, §15126.6(a)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

Alternatives presented in this chapter were developed by identifying alternatives achieving most or some of the objectives of the proposed Project. The range of alternatives was limited due to the fact the proposed Project would further develop the Dominguez Oil Field, which is overlain by developed urban communities. Consequently, each project alternative described below is similar to the proposed Project in most respects. The rationale for selecting specific components of the proposed Project on which to focus the alternatives analysis rests on CEQA's requirements to present a range of reasonable project alternatives that could feasibly attain the basic objectives of the project, while generating fewer or less severe adverse environmental impacts.

The objectives of the proposed Project are to:

1. Develop the Dominguez Oil Field utilizing state-of-the-art technology;

2. Encourage development of local oil and gas resources to reduce dependence on foreign energy supplies;

3. Integrate an oil and gas production facility with the current commercial and light industrial neighborhood;

4. Locate the proposed Project to utilize existing pipeline networks to transport oil and natural gas to local refineries and natural gas suppliers;

5. Centrally locate the proposed Project relative to the Dominguez Oil Field to allow oil reservoir access from a single site; and,

6. Utilize proven technology to maximize individual well production and to minimize the number of wells and associated drilling.

Section 15126.6(f) of the CEQA Guidelines stipulates that the range of alternatives required in an EIR is governed by a rule of reason in that the EIR must discuss only those alternatives "necessary to permit a reasoned choice" and those that could feasibly attain most of the basic objectives of the proposed Project, while reducing potential impacts from the proposed Project.

The project alternatives were developed by modifying one or more components of the proposed Project taking into consideration the project's limitations as to space, permitting requirements, and engineering constraints. Unless otherwise stated, all other components of each project alternative are identical to the proposed Project. Alternatives rejected as infeasible and the identified feasible project alternatives are described in the following sections.

Aside from the alternatives described below, no other project alternatives were identified that met most of the objectives of the proposed Project, while substantially reducing significant adverse environmental impacts.

6.2 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reason underlying the lead agency's determination. Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; or (3) inability to avoid significant environmental impacts. Furthermore, CEQA Guidelines §15126.6(f)(2)(B) indicates that if the lead agency concludes that no feasible alternative locations for the project exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR. The specialized nature of the proposed Project does not provide a selection of project design alternatives since oil drilling and recovery requires certain specialized equipment. The analysis of alternative sites was limited to properties of adequate size[1] within the center portion of the Dominguez Oil Field (see Figure 2.5-2), as drilling activities need a certain amount of space and need to be appropriately sited to access the oil and gas reserves. Further, commercial or industrial properties are required to avoid land use conflicts with residential areas consistent with the Project objectives. The sites evaluated were selected based on these basic criteria and their availability.

The following sites were considered but these were rejected as infeasible. A site was identified on the northeast corner of Victoria Street and Central Avenue (Victoria-Central Site). The Victoria-Central site was rejected as infeasible due to the proximity to residential areas located across Central Avenue. Similarly, sites within the California State University, Dominguez Hills (Cal State Dominguez) were rejected due to the presence of residential buildings located throughout that campus and due to the closer proximity of residential areas surrounding Cal State Dominguez. Additional alternatives

[1] A minimum of 6.5 acres is required to accommodate the Project and the geometry of the area can influence the required space.

identified are analyzed in the following section. Given the highly developed nature of the surrounding area, no other feasible alternative locations were identified nor were any other locations identified that would avoid or substantially lessen any of the significant effects of the project.

6.3 DESCRIPTION OF THE PROJECT ALTERNATIVES

The five alternatives include: (1) the "No Project Alternative", (2) Alternative Site (Crimson Line), (3) Alternative Site (Plains Pipeline), (4) Reduced Project, and (5) Alternative Crude Oil Pipeline. The alternatives are described in the following subsections.

6.3.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

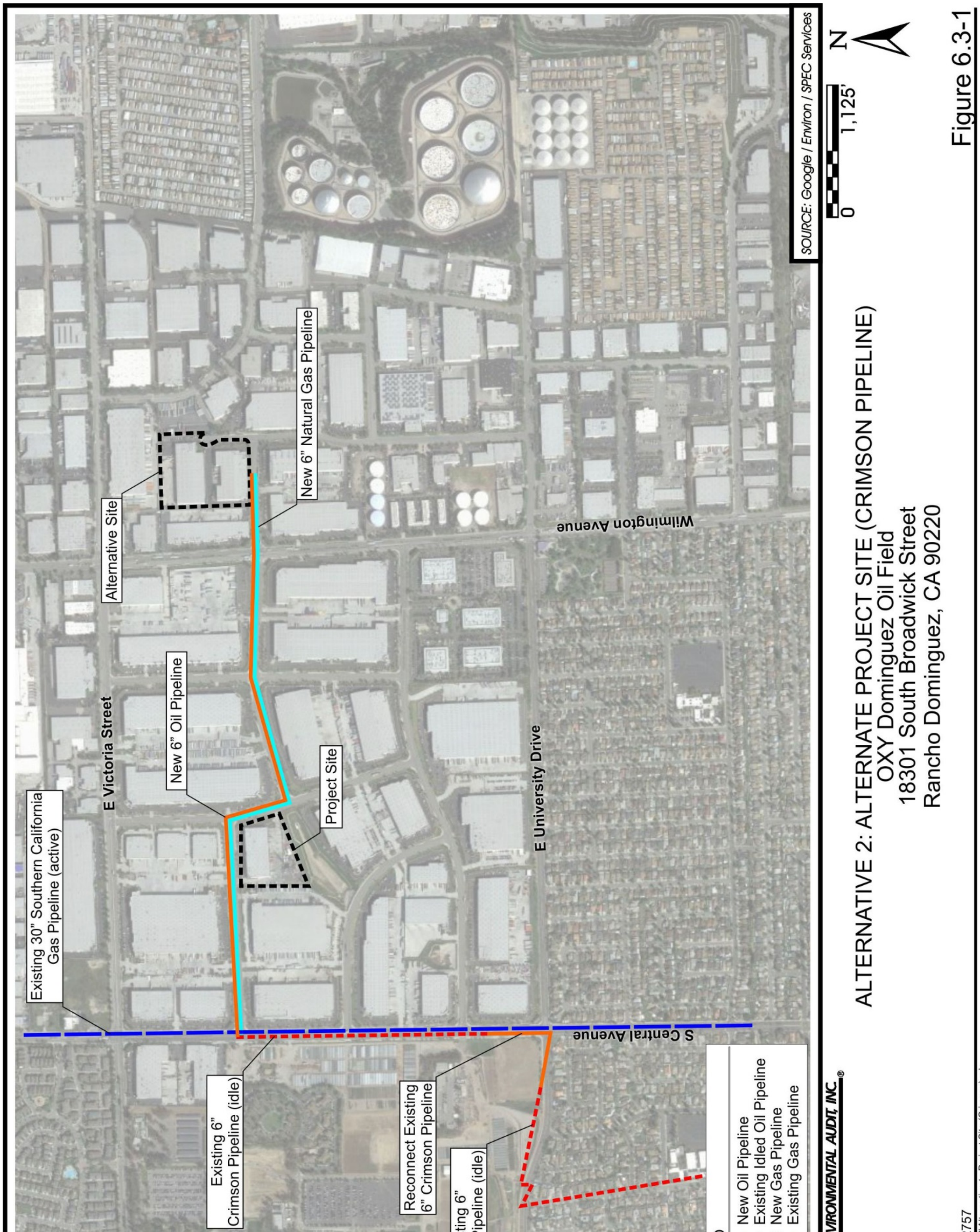
CEQA Guidelines §15126.6 (e) require evaluation of a "No Project Alternative." Under the No Project Alternative, the proposed Project would not occur and the site would remain as it is today. The existing warehouse activities would remain and the existing test wells would continue as production wells. Under the No Project Alternative, the produced oil from the existing wells would continue to be transferred by truck and the produced natural gas would continue to be flared. No additional development of the oil field would occur in the No Project Alternative.

The No Project Alternative would not meet the objectives of the proposed Project, which include development of the Dominguez Oil Field to produce local supplies of crude oil and natural gas. The No Project Alternative would continue the operation of the warehouse facility and two test wells as production wells. All produced crude oil would be shipped via truck and natural gas would continue to be flared.

6.3.2 ALTERNATIVE 2 – ALTERNATIVE SITE (CRIMSON PIPELINE)

Alternate locations are limited to the general vicinity of the proposed Project as they would need to be located near the central portion of the Dominguez Oil Field in order to access the oil reserves within this field. Alternative sites are also limited to sites within commercial/industrial areas that would be available for sale or lease and not located close to residential areas.

An alternative site meeting the above conditions was found located at 18301 South Broadwick Street in the Rancho Dominguez area of the County of Los Angeles (see Figure 6.3-1). This site will be evaluated as the alternative site under Alternative 2 and is also located within the Dominguez Technology Centre. The alternative site is physically larger than the proposed Project site but would have the same number of proposed wells. Additional pipelines would be required to connect the two existing wells to the Alternative site which would follow the same route as the new gas pipeline in Figure 6.3-1. The Alternative 2 site would include pipeline connections to the Crimson Oil Pipeline. The Alternative site location would require longer connections to the Southern California



ALTERNATIVE 2: ALTERNATE PROJECT SITE (CRIMSON PIPELINE)
OXY Dominguez Oil Field
18301 South Broadwick Street
Rancho Dominguez, CA 90220
Figure 6.3-1
SOURCE: Google / Environ / SPEC Services
0
1,125'
N
Existing 30" Southern California Gas Pipeline (active)
E Victoria Street
New 6" Oil Pipeline
Project Site
Alternative Site
New 6" Natural Gas Pipeline
Wilmington Avenue
E University Drive
S Central Avenue
Existing 6" Crimson Pipeline (idle)
Reconnect Existing 6" Crimson Pipeline
Existing 6" Crimson Pipeline (idle)
LEGEND
New Oil Pipeline
Existing Idled Oil Pipeline
New Gas Pipeline
Existing Gas Pipeline
ENVIRONMENTAL AUDIT, INC.
Project No. 2757

Gas natural gas pipeline (approximately 5,100 feet for the Alternative site instead of 2,000 feet for the proposed Project) and to the Crimson Oil Pipeline (approximately 5,100 feet for the Alternative site instead of 2,000 feet for the proposed Project). The additional connecting pipeline from the two existing wells would be approximately 3,100 feet long (see Figure 6.3-1). Additionally, assuming the electrical connection is from the same junction, the connection would be approximately 10,800 feet instead of the approximately 8,000 feet for the proposed Project (see Figure 6.3-2). Table 6.3-1 compares the length of the various pipelines in Alternative 2 to the proposed Project.

TABLE 6.3-1

Pipeline Lengths in the Proposed Project Compared to the Alternatives

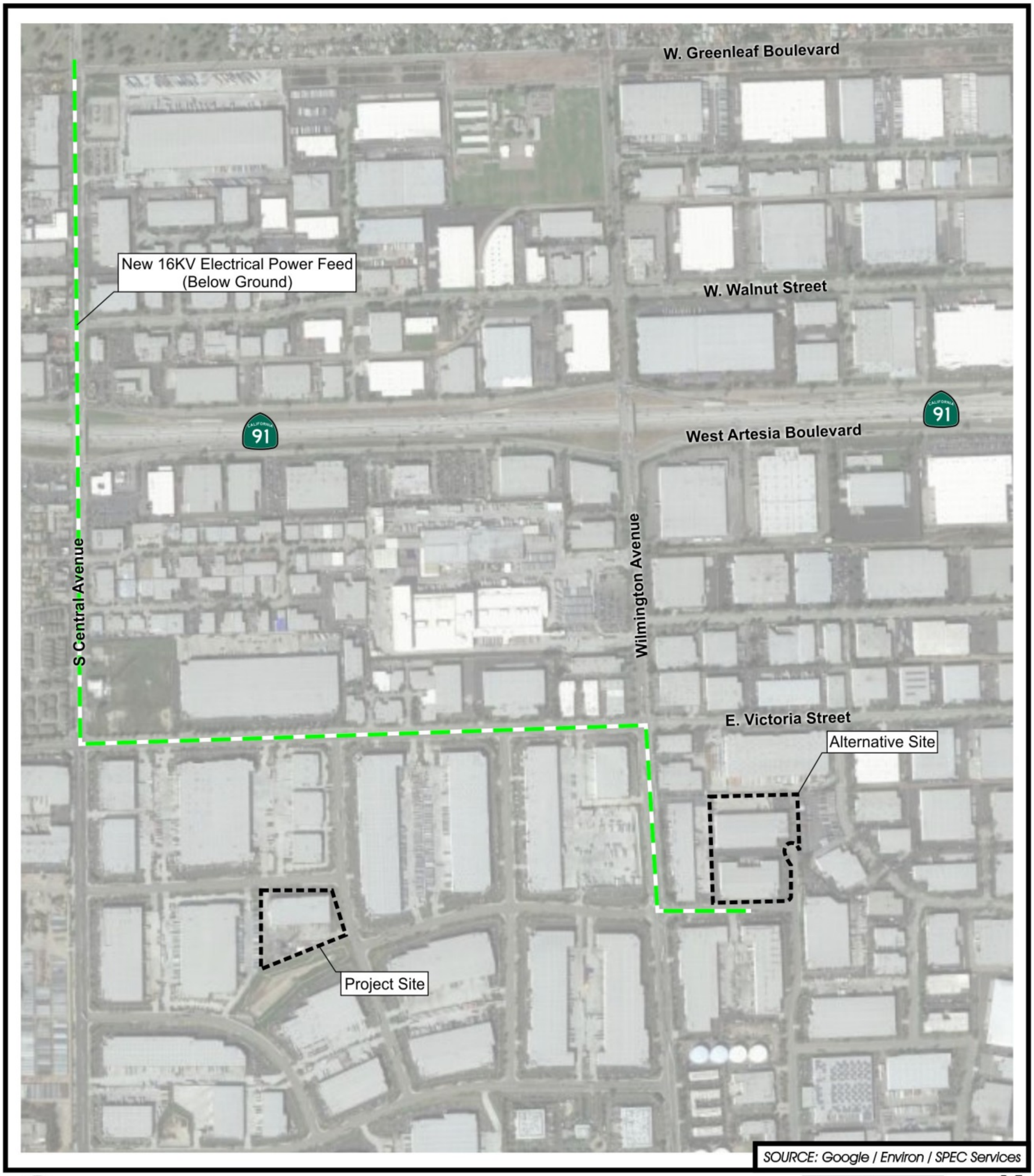
Pipeline	Distance from Sites to Pipeline Connections (feet)[a]			
	Proposed Project	Alternative 2	Alternative 3	Alternative 5
SCG Pipeline	2,000	5,100	5,100	2,000
Crimson Oil Pipeline	2,000	5,100	NA	NA
Plains Oil Pipeline	NA	NA	5,500	8,600
Electricity Transmission Line	8,000	10,800	10,800	8,000
Reactivation of Existing Crimson Oil Pipeline[b]	18,480	18,480	NA	NA
Connection to Existing Wells at the Proposed Project Site	NA	3,100	3,100	NA

Note: NA means not applicable.
(a) Alternative 1 does not involve installation of any pipelines and Alternative 4 would have the same pipelines as the proposed Project.
(b) The proposed Project also includes reactivation of approximately 3.5 miles of the existing Crimson Oil Pipeline. Alternative 1, 3 and 5 would not reactivate the Crimson Oil Pipeline.

The same improvements to reactivate the Crimson Oil Pipeline would be required similar to the proposed Project. The use of the Alternative Site 2 would move the site location to the Rancho Dominguez area of Los Angeles County (an unincorporated area) and outside of the City of Carson.

6.3.3 ALTERNATIVE 3 – ALTERNATIVE SITE (PLAINS PIPELINE)

Alternative 3 would be the same as Alternative 2 in that the alternative site would be located at 18301 South Broadwick Street in the Rancho Dominguez area of the County of Los Angeles (see Figure 6.3-3). Additional pipelines would be required to connect the two existing wells to the Alternative site, which would follow the same route as the new gas pipeline in Figure 6.3-3). However, Alternative 3 would include pipeline connections to the existing Plains Connection Oil Pipeline (which is closer to this alternative site than the Crimson Oil Pipeline) in lieu of the reactivating the Crimson Oil Pipeline. The Alternative site location would require longer connections to the Southern California Gas natural gas pipeline (approximately 5,100 feet for the Alternative site instead of 2,000



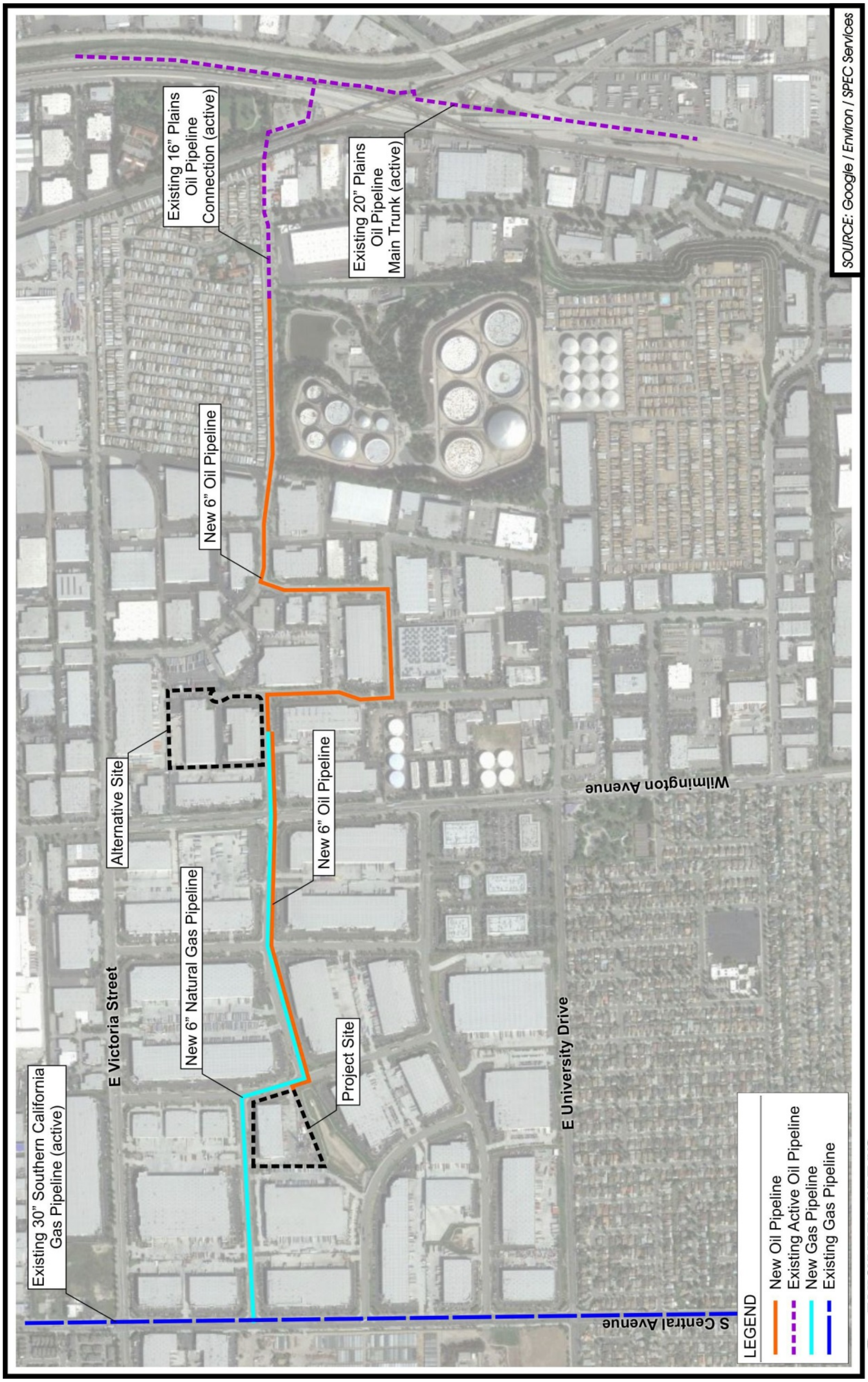
Environmental Audit, Inc.

PROPOSED SCE TIE-IN
FOR ALTERNATIVES 2 AND 3
OXY Dominguez Oil Field
18301 South Broadwick Street
Rancho Dominguez, CA 90220

Project No. 2757

Figure 6.3-2

N:\2757\Chapter 6\Proposed SCE for Alternative Site.cdr



ALTERNATIVE 3: ALTERNATE PROJECT SITE (PLAINS PIPELINE)
OXY Dominguez Oil Field
18301 South Broadwick Street
Rancho Dominguez, CA 90220

Figure 6.3-3

Project No. 2757
N:\2757\Chapter 6\Alternative to Project Site (Plains).cdr

feet to connect to the Crimson Oil Pipeline for the proposed Project) and to the Plains Connection Oil Pipeline (approximately 5,500 feet for the Alternative site instead of 2,000 feet for the proposed Project). The additional connecting pipeline from the two existing wells would be approximately 3,100 feet long. Additionally, assuming the electrical connection is from the same junction, the connection would be approximately 10,800 feet instead of the approximately 8,000 feet.

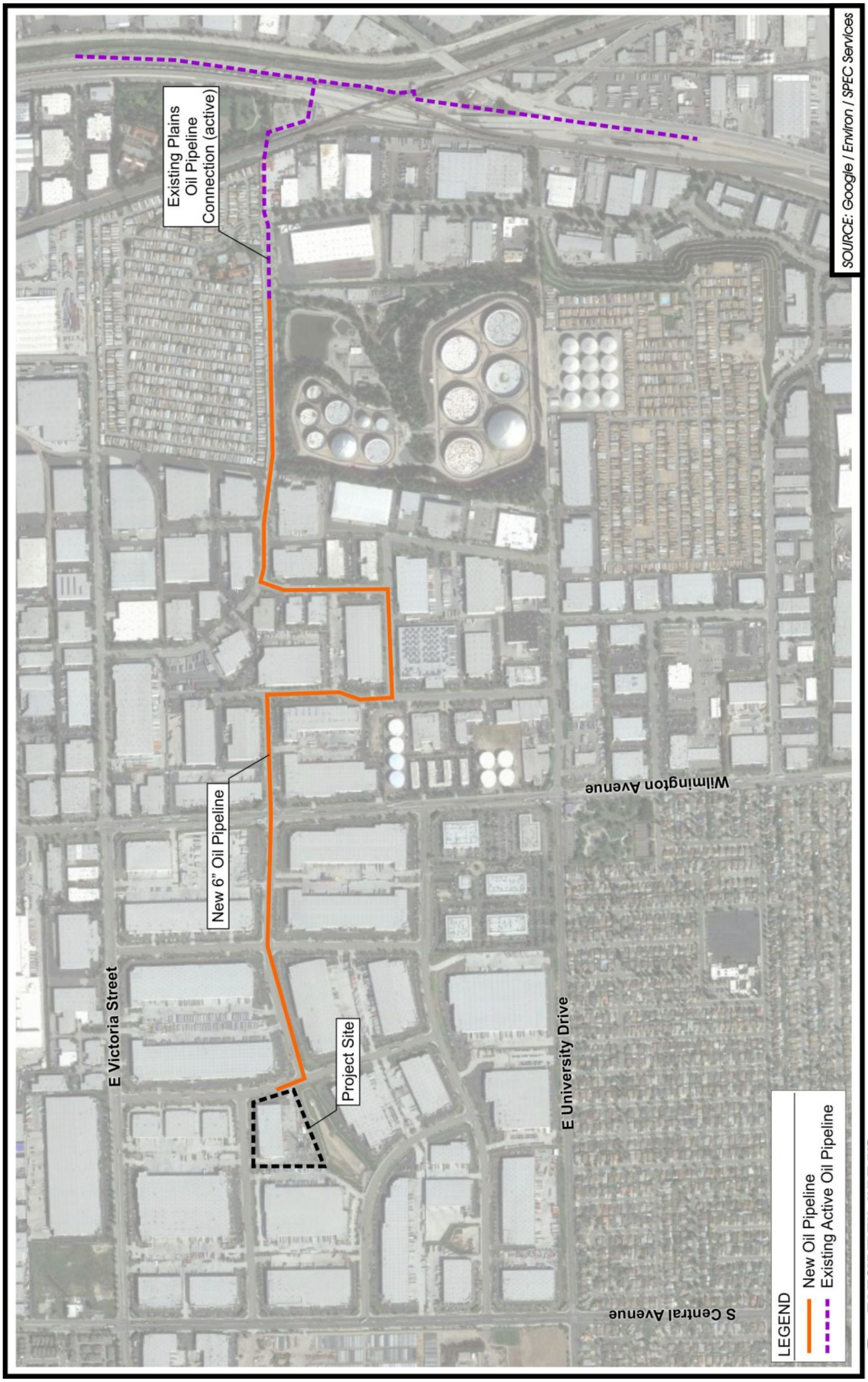
The Plains Connection Oil Pipeline is an active pipeline; therefore, no additional upgrades would be necessary like those needed to reactivate the Crimson Oil Pipeline. The use of the Alternative Site would move the site location to the Rancho Dominguez area of Los Angeles County (an unincorporated area) and outside of the City of Carson.

6.3.4 ALTERNATIVE 4 – REDUCED PROJECT ALTERNATIVE

The Reduced Project Alternative would use the same site as the proposed Project but would reduce the number of total wells from 200 to 100. The infrastructure for the proposed Project would also be required for the Reduced Project Alternative. The Reduced Project Alternative represents the minimum number of wells to support the purchase and use of an electric drill rig. With the reduction in the number of wells, the production rate will be lower, thus the lifetime of the proposed Project is expected to be longer (i.e., twice as long or 100 years for the Reduced Project Alternative) in order to maximize production from the site. The duration of drilling will likely take a similar amount of total time given the need to re-drill various wells in order to access the various pockets of recoverable oil. However, the total recoverable amount of crude oil under Alternative 4 is expected to be less than the proposed Project due to the reduced number of wells and the inefficiency of re-drilling wells.

6.3.5 ALTERNATIVE 5 – ALTERNATIVE CRUDE OIL PIPELINE CONNECTION

The Alternative Crude Oil Pipeline Connection would transport crude oil via a new pipeline that would connect to the Plains Connection Oil Pipeline located to the east of the proposed Project site (approximately 8,600 feet of new pipeline) (see Figure 6.3-4). This alternative would eliminate the reactivation of the Crimson Pipeline and the 2,000-foot new connecting pipeline. All other aspects of the proposed Project would remain the same.



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ALTERNATIVE 5: ALTERNATIVE CRUDE OIL PIPELINE CONNECTION
OXY Dominguez Oil Field
1450-1480 Charles Willard Street
Carson, CA 90746

Figure 6.3-4

Project No. 2757
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6.4 ENVIRONMENTAL IMPACTS FROM THE PROJECT ALTERNATIVES

6.4.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

6.4.1.1 Air Quality

Air quality impacts associated with construction of the proposed Project would be eliminated (see Table 4.2-2) under Alternative 1 because no construction activities would be required. Construction emissions associated with the proposed Project were considered to be less than significant for all pollutants after mitigation. Under Alternative 1, no construction activities would occur, therefore, air quality impacts from construction would be less than significant.

Under Alternative 1 the existing operations (i.e., the warehouse operations and two oil wells) at the site would be expected to continue; however, no additional operational activities associated with the proposed Project would be expected. The emissions associated with the operational phase of Alternative 1 would be greater than the proposed Project because existing operations at the site would continue including the use of diesel-fired electricity generators (see Table 6.4-1) The operational emission reductions that would occur with implementing the proposed Project, which includes providing power to the proposed Project site from Southern California Edison, would be eliminated under Alternative 1 and the baseline emissions would continue to occur (see Table 6.4-1). The operational emissions under Alternative 1 would be the same as the existing baseline emissions. Consequently, operational emissions under Alternative 1 would be considered less than significant (i.e., no increase from baseline). However, the operational emissions under Alternative 1 would be higher than the proposed Project emissions (see Table 6.4-1).

TABLE 6.4-1

Proposed Project as Compared to Alternative 1
Peak Day Operational Emissions Summary
(lbs/day)

Sources	CO	VOC	NOx	SOx	PM10	PM2.5
Proposed Project Operational Emissions						
Baseline Emissions	145.0	97.1	602.3	11.8	16.8	13.8
Proposed Project Emissions	48.9	14.0	74.0	1.5	9.2	7.3
Net Project Emissions(1)	-96.1	-83.1	-528.3	-10.3	-7.6	-6.5
Alternative 1 Emissions						
No Project Alternative Emissions(2)	145.0	97.1	602.3	11.8	16.8	13.8

(1) Negative numbers indicate an emissions benefit.
(2) Alternative 1 operational emissions are the same as the baseline emissions.

The long-term air quality impacts from exposure to toxics associated with the proposed Project were evaluated through the preparation of an HRA. The HRA evaluated the emissions associated with the operation of the proposed Project and compared them to carcinogenic and non-carcinogenic significance thresholds to determine potential health impacts. As demonstrated in the HRA, the carcinogenic and non-carcinogenic impacts for all receptors are expected to be less than the significance thresholds. Therefore, no significant adverse carcinogenic or non-carcinogenic health impacts associated with the operation of the proposed Project are expected.

The toxic air contaminant emissions associated with the operational phase of Alternative 1 would be greater than the proposed Project because existing operations at the site would continue including the use of diesel-fired electricity generators. The continued use of diesel-fired generators would continue to generate diesel particulate matter, which is a toxic air contaminant. Therefore, emissions of toxic air contaminants would also be higher under Alternative 1 than under the proposed Project. Because of the distance from the proposed Project site to residential receptors, the health effects associated with exposure to toxic air contaminants are expected to be less than significant under Alternative 1.

6.4.1.2 Geology and Soils

Geology and soil impacts from the proposed Project were considered less than significant. Under Alternative 1, no additional development of the Dominguez Oil Field would occur, no new production wells would be constructed, no additional structures would be constructed at the proposed Project site, and no pipelines would be constructed. The geology and soils impacts would remain the same as the existing conditions. Therefore, geology and soil impacts would be considered less than significant.

6.4.1.3 Greenhouse Gas Emission

The GHG emissions associated with the proposed Project would be generated by construction activities as well as operational emissions, both of which would result in an estimated 472 metric tons per year increase. The total GHG emissions increase from the proposed Project (472 metric tons per year) would be less than the GHG significance threshold of 10,000 metric tons per year and was determined to be less than significant. Under Alternative 1, the baseline operations would continue to occur and would continue to generate GHG emissions. There would be no increase in GHG emissions from baseline conditions; therefore, GHG emission impacts would not be cumulatively considerable and would not be cumulatively significant.

6.4.1.4 Hazards and Hazardous Materials

The proposed Project was determined to have less than significant impacts from facility, pipeline, oil well activities, and hazardous material operational activities. Under Alternative 1, these operations from the existing facility, as well as facility operations, would continue to occur without the pipeline transport. Therefore, no change in the hazard and hazardous materials impacts would occur under Alternative 1 and the impacts would be considered less than significant. No additional pipelines would be constructed; therefore, the risks associated with pipeline operations would be eliminated. Since fewer wells would be drilled under Alternative 1, there would be reduced risk of potentially hitting abandoned wells.

6.4.1.5 Hydrology and Water Quality

The proposed Project was determined to have less than significant impacts to hydrology and water quality. Under Alternative 1, the expansion of oil and gas operations from the proposed Project would not occur; however, the existing baseline operations would continue. Only the two existing wells would continue to operate and the other 200 wells would not be constructed. Therefore, the potential for in hydrology and water quality impacts would be reduced under Alternative 1 and the impacts would be considered less than significant.

6.4.1.6 Noise

The proposed Project is expected to produce a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors during construction activities. Noise impacts associated with operation of the proposed Project were determined to be less than significant.

Alternative 1 would eliminate all construction activities associated with the proposed Project and would eliminate the potential significant noise impacts associated with the proposed Project construction activities. Under Alternative 1, noise levels would remain at current levels. Therefore, no change in noise impacts would occur under Alternative 1 and both the construction and operational impacts would be considered less than significant.

6.4.1.7 Transportation and Traffic

The construction traffic impacts associated with the proposed Project are considered to be less than significant with the implementation of a traffic management plan. Therefore, no significant traffic impacts at local intersections are expected to occur during the construction phase of the proposed Project. Traffic impacts related to the operational phase of the proposed Project were determined to be less than significant.

Alternative 1 would eliminate traffic impacts as no construction activities would be required. Under Alternative 1, the current traffic levels associated with the operation of the warehouse and oil and gas production activities would remain unchanged at existing levels, which are higher than those expected with implementation of the proposed Project.

6.4.2 ALTERNATIVE 2 – ALTERNATIVE SITE (CRIMSON)

6.4.2.1 Air Quality

Under Alternative 2, the oil and gas production facility would be relocated to 18301 South Broadwick Street in Rancho Dominguez approximately 3,100 feet east of the proposed Project site. Construction of the oil and gas processing facility would remain the same as the proposed Project under Alternative 2. However, the installation of the connecting pipeline to the main natural gas line in South Central Avenue would be approximately 5,100 feet long instead of 2,000 feet for the proposed Project, the connecting pipeline to transport crude oil would be approximately 5,100 feet instead of 2,000 feet for the proposed Project, the SCE tie-in would be approximately 10,800 feet instead of 8,000 feet for the proposed Project, and a connecting line from the existing test wells to the Alternative Site would be approximately 3,100 feet). The additional construction activities associated with installing longer lengths of new pipelines and electrical conduits would be expected to generate greater construction emissions than the proposed Project (see Table 6.4-2).

TABLE 6.4-2

Estimated Alternative 2 Construction Emissions (lbs/day)

Activity	CO	VOC	NOx	SOx	PM10	PM2.5[2]
Proposed Project Mitigated Construction Emissions	115.9	19.9	99.3	1.3	22.8	7.7
Estimated Increase in Mitigated Construction Emissions for Alternative 2[a]	6.1	1.3	7.7	<0.1	0.9	0.5
Total Estimated Emissions for Alternative 2	**122.0**	**21.2**	**107.0**	**1.4**	**23.7**	**8.2**
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**	**55**
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**

(a) Assumes construction emissions for conduit installation are 20 percent higher for Alternative 2 than the proposed Project since the SCE alternate route is approximately 20 percent longer and would require more equipment and crew to accomplish the work in the same timeframe.

As shown in Table 4.2-10, while pipeline construction activities are not expected to occur during peak construction activities, the SCE conduit installation is conservatively assumed to occur during peak construction activities since it is unknown when exactly SCE will perform their offsite construction work (this is the same assumption for the Project). It is assumed that the construction activities associated with the conduit installation under Alternative 2 would be about 20 percent greater than the proposed Project (see Table 6.4-2) with the same mitigation measures imposed. Conservatively scaling the construction emissions associated with the SCE conduit installation by 20 percent would change the significance conclusions associated with peak daily emissions after mitigation. Construction emissions under Alternative 2 will become significant for NOx, but be less than significant for all other pollutants after mitigation (see Table 6.4-2).

The operational emissions associated with Alternative 2 would be the same as the proposed Project as all of the same equipment would be required and installed. The proposed Project operational emissions were determined to be less than significant (see Table 4.2-7). Therefore, operation emissions under Alternative 2 would be considered to be less than significant.

The HRA prepared for the toxic air contaminant emissions associated with the operation of the proposed Project determined that the carcinogenic and non-carcinogenic impacts are expected to be less than significant. Under Alternative 2, the same equipment will be installed as the proposed Project. Therefore, the emissions of toxic air contaminants are expected to be the same. Further, the location of sensitive receptors from the alternative site is about the same as from the proposed Project site. Therefore, the impacts of toxic air contaminants for Alternative 2 are expected to be the same as the proposed Project and less than significant.

6.4.2.2 Geology and Soils

Geology and soil impacts from the proposed Project were considered less than significant. Under Alternative 2, the Dominguez Oil Field would also be developed from a different, but nearby location. The same equipment would be installed and the same number of production and injection wells would be installed. Additional trenching would be required to install the additional pipelines but these impacts are expected to be less than significant because of the general flat topography of the area. Therefore, geology and soil impacts under Alternative 2 would be the same as the proposed Project and would be considered less than significant.

6.4.2.3 Greenhouse Gas Emissions

The GHG emissions associated with the proposed Project were associated with construction activities as well as operational emissions. The total GHG emissions change associated with the proposed Project (both construction and operation) is estimated to be 472 metric tons per year. The GHG emissions change from the proposed Project was determined to be less than significant.

Under Alternative 2, the GHG emissions from operations would be the same as the proposed Project and the emissions associated with construction activities would be expected to increase slightly by approximately 5.2 metric tons per year to an estimated 44.2 metric tons per year, which is similar in magnitude to the proposed Project estimated emissions of 39 metric tons per year (emissions increase for the additional pipeline and SCE conduit installation). The estimated increase was determined by scaling the calculated GHG emissions for pipeline and SCE conduit installation based on the relative lengths to the proposed Project length (see Appendix C for detailed calculations). The estimated total GHG emissions for Alternative 2 would be approximately 477 metric tons per year, which is less than the significance threshold of 10,000 metric tons per year. Therefore, under Alternative 2, GHG emission impacts would not exceed the GHG significance threshold, would not be cumulatively considerable and, therefore, would not be cumulatively significant.

6.4.2.4 Hazards and Hazardous Materials

The proposed Project was determined to have less than significant impacts from facility, pipeline, oil well activities, hazardous materials activities, and oil and gas production hazards. Pipeline hazards under Alternative 2 would be greater as the crude oil pipeline, and the connecting piping from the existing wells would be approximately 8,200 feet instead of 2,000 feet for the proposed Project for a total of approximately 5.2 miles of pipeline instead of approximately 4 miles for the proposed Project. The probability of a "significant" pipeline incident under Alternative 2 would be slightly greater than the proposed Project (one incident every 145 years under Alternative 2 as compared to one incident every 188 years for the proposed Project).

Pipeline hazards under Alternative 2 would be greater as the natural gas pipeline and the connecting piping from the existing wells would be approximately 5,100 feet instead of 2,000 feet for the proposed Project. The probability of a "significant" pipeline incident under Alternative 2 would be slightly greater than the proposed Project (one incident every 50,000 years under Alternative 2 as compared to one incident every 100,000 years for the proposed Project). The anticipated useful life of the pipelines is 50 years, therefore, a pipeline incident has a low probability of occurring during the lifetime of the proposed Project and hazard impacts under Alternative 2 are considered to be less than significant.

The hazard impacts associated with operation of the facility under Alternative 2 would be the same as the proposed Project because the same equipment would be installed under Alternative 2. Therefore, hazards associated with facility operations under Alternative 2 would be less than significant. Alternative 2 would result in the transportation of NGL by truck to the same facility as the proposed Project; therefore, transportation hazards associated with Alternative 2 would be the same as the proposed Project and would be less than significant.

6.4.2.5 Hydrology and Water Quality

The proposed Project was determined to have less than significant impacts to hydrology and water quality. The proposed Project impacts on ground water level and water demand were determined to be less than significant as water use will generally be salt water. Saltwater zones are separated from fresh water aquifers by roughly 1,475 to 2,900 feet of impermeable layers of siltstones. Due to the presence of the impermeable rock layers between the saltwater and potable water aquifers and the well design and construction, water drawn from the saltwater aquifer is not expected to affect the quantify of water available in the potable aquifers.

Further, the proposed Project includes a number of design features aimed at controlling groundwater and surface water quality impacts including BMPs as required in SWPPP, DOGGR regulations regarding the development of wells, provisions to contain stormwater onsite, and so forth.
Under Alternative 2, the impacts to hydrology and water quality would be the same as the proposed Project. The Dominguez Oil Field would still be developed within the same general location as the proposed Project, so the saltwater and potable water aquifers would be generally the same under Alternative 2 as the proposed Project. Further, the same project design features would be included under Alternative 2 as the proposed Project. Therefore, hydrology and water quality impacts under Alternative 2 would be considered less than significant.

6.4.2.6 Noise

The proposed Project is expected produce a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors. Alternative 2 would be expected to have greater noise impacts during the construction phase as additional crude oil pipelines and electrical conduit would be installed. Alternative 2 would be expected to create a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors.

The noise impacts associated with the operation of Alternative 2 is expected to be the same as the proposed Project because the same equipment would be installed and the same amount of traffic would be required. Further, the distance to sensitive receptors from the alternative site is about the same as under the proposed Project. Therefore, operational noise impacts under Alternative 2 are expected to be less than significant.

6.4.2.7 Transportation and Traffic

Alternative 2 would create similar traffic impacts associated with construction activities as the proposed Project. The proposed Project construction traffic impacts associated with construction of the pipeline and electrical conduit were considered to be significant but can be mitigated to less than significant with the implementation of a traffic management plan. Alternative 2 would require more construction activities associated with a longer crude pipeline and electrical conduit routes and potentially result in higher traffic impacts during construction than the proposed Project. A traffic management plan would be required under Alternative 2 which would be expected to reduce construction impacts to less than significant.

The proposed location of the alternative site under Alternative 2 is also a commercial facility within the Dominguez Technology Centre with existing warehouse operations. Under Alternative 2, the existing traffic levels associated with the operation of the warehouses would be eliminated and operational traffic levels would be the same as the proposed Project. The proposed Project operational traffic was considered less than significant. Therefore, under Alternative 2, operational traffic impacts are expected to be less than significant.

6.4.3 ALTERNATIVE 3 – ALTERNATIVE SITE (PLAINS)

6.4.3.1 Air Quality

Under Alternative 3, the oil and gas production facility would be relocated to 18301 South Broadwick Street in Rancho Dominguez approximately 3,100 feet east of the proposed Project site. Construction of the oil and gas processing facility would remain the same as the proposed Project under Alternative 3. However, the installation of the connecting pipeline to the main natural gas line in South Central Avenue would be approximately 5,100 feet long instead of 2,000 feet for the proposed Project, the connecting pipeline to the Plains pipeline to transport crude oil would be approximately 5,500 feet instead of 2,000 feet for the proposed Project, the SCE tie-in would be approximately 10,800 feet instead of 8,000 feet for the proposed Project, and a connecting line from the existing test wells to the Alternative Site would be approximately 3,100 feet. Under Alternative 3, construction associated with the reactivation of the Crimson Oil Pipeline would be eliminated. The additional construction activities associated with installing longer lengths of new pipelines would be expected to generate greater construction emissions than the proposed Project (see Table 6.4-3).

TABLE 6.4-3

Estimated Alternative 3 Construction Emissions (lbs/day)

Activity	CO	VOC	NOx	SOx	PM10	PM2.5[2]
Proposed Project Mitigated Construction Emissions	115.9	19.9	99.3	1.3	22.8	7.7
Estimated Increase in Mitigated Construction Emissions for Alternative 3[a]	6.1	1.3	7.7	<0.1	0.9	0.5
Total Estimated Emissions for Alternative 3	**122.0**	**21.2**	**107.0**	**1.4**	**23.7**	**8.2**
SCAQMD Threshold Level	**550**	**75**	**100**	**150**	**150**	**55**
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**

(a) Assumes construction emissions for conduit installation are 20 percent higher for Alternative 3 than the proposed Project since the SCE alternate route is approximately 20 percent longer and would require more equipment and crew to accomplish the work in the same timeframe.

As shown in Table 4.2-10, while pipeline construction activities are not expected to occur during peak construction activities, the SCE conduit installation is conservatively assumed to occur during peak construction activities since it is unknown when exactly

SCE will perform their offsite construction work (this is the same assumption for the proposed Project). It is assumed that the construction activities associated with the conduit installation under Alternative 3 would be about 20 percent greater than the proposed Project (see Table 6.4-3). Conservatively scaling the construction emissions associated with the SCE conduit installation by 20 percent would change the significance conclusions associated with peak daily emissions. Construction emissions under Alternative 3 will be significant for NOx after mitigation, but be less than significant for all other pollutants (see Table 6.4-3).

The operational emissions associated with Alternative 3 would be the same as the proposed Project as all of the same equipment would be required and installed. The proposed Project operational emissions were determined to be less than significant (see Table 4.2-7). Therefore, operation emissions under Alternative 3 would be considered to be less than significant.

The HRA prepared for the toxic air contaminant emissions associated with the operation of the proposed Project determined that the carcinogenic and non-carcinogenic impacts are expected to be less than significant. Under Alternative 3, the same equipment will be installed as the proposed Project. Therefore, the emissions of toxic air contaminants are expected to be the same. Further, the location of sensitive receptors from the alternative site is about the same as from the proposed Project site. Therefore, the impacts of toxic air contaminants for Alternative 3 are expected to be the same as the proposed Project and less than significant.

6.4.3.2 Geology and Soils

Geology and soil impacts from the proposed Project were considered less than significant. Under Alternative 3, the Dominguez Oil Field would also be developed from a different, but nearby location. The same equipment would be installed and the same number of production and injection wells would be installed. Additional trenching would be required to install the additional pipelines but these impacts are expected to be less than significant because of the general flat topography of the area. Therefore, geology and soil impacts under Alternative 3 would be the same as the proposed Project and would be considered less than significant.

6.4.3.3 Greenhouse Gas Emissions

The GHG emissions associated with the proposed Project were associated with construction activities as well as operational emissions. The total GHG emissions change associated with the proposed Project (both construction and operation) is estimated to be 472 metric tons per year. The GHG emissions change from the proposed Project was determined to be less than significant.

Under Alternative 3, the GHG emissions from operations would be the same as the proposed Project and the emissions associated with construction activities would be expected to increase slightly by approximately 4.5 metric tons per year to an estimated

43.5 metric tons per year, which is similar in magnitude to the proposed Project estimated emissions of 39 metric tons per year (emissions increase for the additional pipeline and SCE conduit installation). The estimated increase was determined by scaling the calculated GHG emissions for pipeline and SCE conduit installation based on the relative lengths to the proposed Project length (see Appendix C for detailed calculations). The estimated total GHG emissions for Alternative 3 would be approximately 477 metric tons per year, which is less than the significance threshold of 10,000 metric tons per year. Therefore, under Alternative 3, GHG emission impacts would not exceed the GHG significance threshold, would not be cumulatively considerable and, therefore, would not be cumulatively significant.

6.4.3.4 Hazards and Hazardous Materials

The proposed Project was determined to have less than significant impacts from facility, pipeline, oil well activities, hazardous materials activities, and oil and gas production hazards. The new pipeline segments under Alternative 3 would be greater as the crude oil pipeline and the connecting piping from the existing wells would be approximately 8,600 feet instead of 2,000 feet for the proposed Project for a total of 1.6 miles of new pipeline but the Crimson Oil Pipeline would not be reactivated. Therefore, pipeline hazards from Alternative 3 would be less for the 1.6 miles of pipeline than the approximately four miles for the proposed Project, which includes 2,000 feet of new pipeline plus the reactivation of the Crimson Oil Pipeline. The probability of a "significant" pipeline incident under Alternative 3 would be less than the proposed Project (one incident every 470 years under Alternative 3 as compared to one incident every 188 years for the proposed Project).

Natural gas pipeline hazards under Alternative 3 would be greater as the natural gas pipeline and the connecting piping from the existing wells would be approximately 5,100 feet instead of 2,000 feet for the proposed Project. The probability of a "significant" natural gas pipeline incident under Alternative 3 would be slightly greater than the proposed Project (one incident every 66,700 years under Alternative 3 as compared to one incident every 100,000 years for the proposed Project). The anticipated useful life of both pipelines is 50 years, therefore, a pipeline incident has a low probability of occurring during the lifetime of the proposed Project and hazard impacts under Alternative 3 are considered to be less than significant.

The hazard impacts associated with operation of the facility under Alternative 3 would be the same as the proposed Project because the same equipment would be installed under Alternative 3. Therefore, hazards associated with facility operations under Alternative 3 would be less than significant. Alternative 3 would result in the transportation of NGL by truck to the same facility as the proposed Project; therefore, transportation hazards associated with Alternative 3 would be the same as the proposed Project and would be less than significant.

6.4.3.5 Hydrology and Water Quality

The proposed Project was determined to have less than significant impacts to hydrology and water quality. The proposed Project impacts on ground water level and water demand were determined to be less than significant as water use will generally be salt water. Saltwater zones are separated from fresh water aquifers by roughly 1,475 to 2,900 feet of impermeable layers of siltstones. Due to the presence of the impermeable rock layers between the saltwater and potable water aquifers and the well design and construction, water drawn from the saltwater aquifer is not expected to affect the quality of water available in the potable aquifers.

Further, the proposed Project includes a number of design features aimed at controlling groundwater and surface water quality impacts including BMPs as required in SWPPP, DOGGR regulations regarding the development of wells, provisions to contain stormwater onsite, and so forth.

Under Alternative 3, the impacts to hydrology and water quality would be the same as the proposed Project. The Dominguez Oil Field would still be developed within the same general location as the proposed Project so the saltwater and potable water aquifers would be generally the same under Alternative 3 as the proposed Project. Further, the same project design features would be included under Alternative 3 as the proposed Project. Therefore, hydrology and water quality impacts under Alternative 3 would be considered less than significant.

6.4.3.6 Noise

The proposed Project is expected to produce a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors. Alternative 3 would be expected to have greater noise impacts during the construction phase as additional crude oil pipelines and electrical conduit would be installed. Alternative 3 would be expected to create a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors.

The noise impacts associated with the operation of Alternative 3 is expected to be the same as the proposed Project because the same equipment would be installed and the same amount of traffic would be required. Further, the distance to sensitive receptors from the alternative site is about the same as under the proposed Project. Therefore, noise impacts under Alternative 3 are expected to be less than significant.

6.4.3.7 Transportation and Traffic

Alternative 3 would create similar traffic impacts associated with construction activities as the proposed Project. The proposed Project construction traffic impacts associated with construction of the pipeline and electrical conduit were considered to be significant but can be mitigated to less than significant with the implementation of a traffic management plan. Alternative 3 would require more construction activities associated

with a longer crude pipeline and electrical conduit routes and potentially result in higher traffic impacts during construction than the proposed Project. A traffic management plan would be required under Alternative 3 which would be expected to reduce construction impacts to less than significant.
The proposed location of the alternative site under Alternative 3 is also a commercial facility within the Dominguez Technology Centre with existing warehouse operations. Under Alternative 3, the existing traffic levels associated with the operation of the warehouses would be eliminated and operational traffic levels would be the same as the proposed Project. The proposed Project operational traffic was considered less than significant. Therefore, under Alternative 3, operational traffic impacts are expected to be less than significant.

6.4.4 ALTERNATIVE 4 – REDUCED PROJECT ALTERNATIVE

6.4.4.1 Air Quality

Under Alternative 4, the oil and gas production facility, pipelines, and electrical conduit would be constructed while the number of oil and gas production wells would be reduced from a maximum of 200 to a maximum of 100. Under Alternative 4, construction emissions are expected to be the same as for the proposed Project as all the same equipment and pipelines would be required. The construction emissions for the proposed Project were considered less than significant after mitigation for all pollutants (see Table 4.2-10). Therefore, construction emissions under Alternative 4 are expected to be less than significant for all pollutants.

The peak day operational emissions associated with Alternative 4 would be the same as the proposed Project as all of the same equipment would be installed and operated. The proposed Project peak day operational emissions were determined to be less than significant (see Table 4.2-7). Therefore, peak day operational emissions under Alternative 4 would be considered to be less than significant. It should be noted that operational emissions under Alternative 4 would be expected to be less on an annual basis as fewer wells would be drilled (100 instead of 200) and potentially less crude oil, natural gas, and NGL would be produced on an annual basis.

The HRA prepared for the toxic air contaminant emissions associated with the operation of the proposed Project determined that the carcinogenic and non-carcinogenic impacts are expected to be less than significant. Under Alternative 4, the same equipment will be installed as the proposed Project. Toxic air contaminant emissions under Alternative 4 would be expected to be less on a long term basis as fewer wells would be drilled and potentially less crude oil, natural gas, and NGL would be produced on an annual basis. The toxic air contaminant impacts are expected to be less than the proposed Project. Therefore, the impacts of toxic air contaminants for Alternative 4 are expected to be less than significant.

6.4.4.2 Geology and Soils

Geology and soil impacts from the proposed Project were considered less than significant. Under Alternative 4, the Dominguez Oil Field would also be developed from the same location. The same equipment would be installed; however, only 100 production wells would be drilled instead of 200. Therefore, geology and soil impacts under Alternative 4 would be the same as the proposed Project and would be considered less than significant.

6.4.4.3 Greenhouse Gas Emissions

The GHG emissions associated with the proposed Project were associated with construction activities as well as operational emissions. The total GHG emissions change associated with the proposed Project (both construction and operation) is estimated to be 472 metric tons per year. The GHG emissions change from the proposed Project was determined to be less than significant.

Under Alternative 4, the GHG emissions from construction are expected to be the same as the same equipment, pipelines, and conduits would be installed. The GHG emissions from operations would be less than the proposed Project since there would be fewer wells installed. Therefore, under Alternative 4, GHG emission impacts would not exceed the GHG significance threshold, would not be cumulatively considerable and, therefore, would not be cumulatively significant.

6.4.4.4 Hazards and Hazardous Materials

The proposed Project was determined to have less than significant impacts from facility, pipeline, oil well activities, hazardous materials activities, and oil and gas production hazards. Under Alternative 4, the same equipment, pipelines, and electrical conduits would be installed. In addition, the transport of hazardous materials would be less than the proposed Project. Under Alternative 4, less NGL is expected to be produced as 100 fewer wells would be installed as compared to the proposed Project; however the lifetime of the facility is expected to be longer due to the slower oil production rate. The NGL would still be transported the same distance under Alternative 4 as the proposed Project and assuming one-half the number of NGL trucks per day compared to the Project (i.e,. one NGL truck per day) but for a longer operating life, the transportation hazard impacts would be less than significant Alternative 4. The hazard impacts associated with facility operation would be less than significant similar to the Project.

6.4.4.5 Hydrology and Water Quality

The proposed Project was determined to have less than significant impacts to hydrology and water quality because of the presence of impermeable rock layers between salt and potable water aquifers and the well design requirements. Further, the proposed Project includes a number of design features aimed at controlling groundwater and surface water quality impacts including BMPs as required in SWPPP, DOGGR regulations regarding the development of wells, provisions to contain stormwater onsite, and so forth.

Under Alternative 4, the impacts to hydrology and water quality would be the same as the proposed Project. The Dominguez Oil Field would still be developed at the same location as the proposed Project, so the saltwater and potable water aquifers would be the same under Alternative 4 as the proposed Project. Further, the same project design features would be included under Alternative 4 as the proposed Project. Therefore, hydrology and water quality impacts under Alternative 4 would be considered less than significant.

6.4.4.6 Noise

The proposed Project is expected to produce a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors. Alternative 4 would be expected to have the same noise impacts during the construction phase as the proposed Project as the pipeline and electrical conduit routes would be the same. Alternative 4 would be expected to create a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors.

The noise impacts associated with the operation of drilling activities under Alternative 4 is expected to be similar to the proposed Project. While fewer wells would be drilled, the number of re-drills is expected to increase to access the various pockets of recoverable oil. Therefore, noise impacts would be considered less than significant under Alternative 4, similar to the proposed Project.

6.4.4.7 Transportation and Traffic

Alternative 4 would create the same traffic impacts associated with construction activities as the proposed Project. The proposed Project construction traffic impacts associated with construction of the pipeline and electrical conduit were considered to be significant but can be mitigated to less than significant with the implementation of a traffic management plan. Alternative 4 would require the same construction activities as the proposed Project as the pipeline and conduit routes would be the same. A traffic management plan would be required under Alternative 4 which would be expected to reduce construction impacts to less than significant.

Alternative 4 is expected to generate the same level of traffic as the proposed Project. Under Alternative 4, the operational traffic levels would be generally the same as the proposed Project, however, fewer NGL trucks trips would likely be generated. The proposed Project operational traffic was considered less than significant. Therefore, under Alternative 4, operational traffic impacts are expected to be less than significant.

6.4.5 ALTERNATIVE 5 – ALTERNATIVE CRUDE OIL PIPELINE CONNECTION

6.4.5.1 Air Quality

The Alternative Crude Oil Pipeline Connection would transport crude oil via a new pipeline that would connect to the Plains Connection Oil Pipeline located to the east of the proposed Project site (approximately 8,600 feet of new pipeline) (see Figure 6.3-4). This alternative would eliminate the reactivation of the Crimson Oil Pipeline and the 2,000-foot new connecting pipeline. All other aspects of the proposed Project would remain the same. Under Alternative 5, the construction activities would increase to install the additional length of the alternative pipeline connection (8,600 feet instead of 2,000 feet for the proposed Project). Pipeline construction is not expected to occur during peak construction activities and, therefore, peak construction emissions are expected to be the same as the proposed Project. However, pipeline construction activities would last for a longer period of time. The construction emissions for the proposed Project after mitigation were less than significant for all pollutants. Therefore, construction emissions are expected to be less than significant after mitigation for all pollutants under Alternative 5.

The operational emissions associated with Alternative 5 would be the same as the proposed Project as all the same equipment and operational activities would still occur. The proposed Project operational emissions were determined to be less than significant following mitigation. Therefore, operational emissions under Alternative 5 would also be considered less than significant.

The HRA prepared for the toxic air contaminant emissions associated with the operation of the proposed Project determined that the carcinogenic and non-carcinogenic impacts are expected to be less than significant. Under Alternative 5, the same equipment will be installed as the proposed Project. Therefore, the emissions of toxic air contaminants are expected to be the same. Further, the location of sensitive receptors from the alternative site is about the same as from the proposed Project site. Therefore, the impacts of toxic air contaminants for Alternative 5 are expected to be the same as the proposed Project and less than significant.

6.4.5.2 Geology and Soils

Geology and soil impacts from the proposed Project were considered less than significant. Under Alternative 5, the Dominguez Oil Field would also be developed from the same location. The same equipment would be installed and the same number of production and injection wells would be installed. Additional trenching would be required to install the additional pipelines but these impacts are expected to be less than significant because of the general flat topography of the area. Therefore, geology and soil impacts under Alternative 5 are expected to be the same as the proposed Project and would be considered less than significant.

6.4.5.3 Greenhouse Gas Emissions

The GHG emissions associated with the proposed Project were associated with construction activities as well as operational emissions. The total GHG emissions change associated with the proposed Project (both construction and operation) is estimated to be 472 metric tons per year. The GHG emissions change from the proposed Project was determined to be less than significant.

Under Alternative 5, the GHG emissions from operations would be the same as the proposed Project and the emissions associated with construction activities would be expected to increase slightly by approximately 2.1 metric tons per year to an estimated 41.1 metric tons per year, which is similar in magnitude to the proposed Project estimated emissions of 39 metric tons per year (emissions increase for the additional pipeline installation). The estimated increase was determined by scaling the calculated GHG emissions for pipeline based on the relative length to the proposed Project length (see Appendix C for detailed calculations). The estimated total GHG emissions for Alternative 5 would be approximately 474 metric tons per year, which is less than the significance threshold of 10,000 metric tons per year. Therefore, under Alternative 5, GHG emission impacts would not be cumulatively considerable and, therefore, would not be cumulatively significant.

6.4.5.4 Hazards and Hazardous Materials

The proposed Project was determined to have less than significant impacts from facility, pipeline, oil well activities, hazardous materials activities, and oil and gas production hazards. The new pipeline segments under Alternative 5 would be greater as the crude oil pipeline would be approximately 8,600 feet instead of 2,000 feet for the proposed Project for a total of 1.6 miles of new pipeline but the Crimson Oil Pipeline would not be reactivated. Therefore, pipeline hazards from Alternative 5 would be less for the 1.6 miles of pipeline than the approximately four miles for the proposed Project, which includes 2,000 feet of new pipeline plus the reactivation of the Crimson Oil Pipeline. The probability of a "significant" pipeline incident under Alternative 5 would be less than the proposed Project (one incident every 470 years under Alternative 5 as compared to one incident every 188 years for the proposed Project). The anticipated useful life of the pipelines is 50 years, therefore, a pipeline incident has a low probability of occurring during the lifetime of the proposed Project and hazard impacts under Alternative 5 are considered to be less than significant.

Natural gas pipeline hazards under Alternative 5 would be the same as the natural gas pipeline for the proposed Project. The probability of a "significant" natural gas pipeline incident under Alternative 5 would be the same as the proposed Project (one incident every 100,000 years). The anticipated useful life of both pipelines is 50 years, therefore, a pipeline incident has a low probability of occurring during the lifetime of the proposed Project and hazard impacts under Alternative 5 are considered to be less than significant.

The hazard impacts associated with operation of the facility under Alternative 5 would be the same as the proposed Project because the same equipment would be installed under Alternative 5. Therefore, hazards associated with facility operations under Alternative 5 would be less than significant. Alternative 5 would result in the transportation of NGL by truck to the same facility as the proposed Project and would result in the same amount of NGL produced; therefore, transportation hazards associated with Alternative 5 would be the same as the proposed Project and would be less than significant.

6.4.5.5 Hydrology and Water Quality

The proposed Project was determined to have less than significant impacts to hydrology and water quality because of the presence of impermeable rock layers between salt and potable water aquifers and the well design requirements. Further, the proposed Project includes a number of design features aimed at controlling groundwater and surface water quality impacts including BMPs as required in SWPPP, DOGGR regulations regarding the development of wells, provisions to contain stormwater onsite, and so forth.

Under Alternative 5, the impacts to hydrology and water quality would be the same as the proposed Project. The Dominguez Oil Field would still be developed at the same location as the proposed Project so the saltwater and potable water aquifers would be the same under Alternative 5 as the proposed Project. Further, the same number of production and injection wells would be developed and the same project design features would be included under Alternative 5 as the proposed Project. Therefore, hydrology and water quality impacts under Alternative 5 would be considered less than significant.

6.4.5.6 Noise

The proposed Project is expected to produce a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors. Alternative 5 would be expected to have greater noise impacts during the construction phase as additional crude oil pipelines would be installed. Alternative 5 would be expected to create a temporary significant increase in noise levels along the pipeline and electrical conduit installation corridors.

The noise impacts associated with the operation of Alternative 5 is expected to be the same as the proposed Project because the same equipment would be installed, the same number of production and injection wells would be operated, and the same amount of traffic would be required. Therefore, noise impacts under Alternative 5 are expected to be less than significant.

6.4.5.7 Transportation and Traffic

The proposed Project construction traffic impacts associated with construction of the pipeline and electrical conduit were considered to be significant but can be mitigated to less than significant with the implementation of a traffic management plan. Alternative 5 would require more construction activities associated with a longer crude pipeline route and potentially result in higher traffic impacts during construction than the proposed Project. A traffic management plan would be required under Alternative 5 which would be expected to reduce construction impacts to less than significant.

Under Alternative 5, the operational traffic levels would be the same as the proposed Project because the same equipment would be installed and the same amount of traffic would be required. The proposed Project operational traffic was considered less than significant. Therefore, under Alternative 5, operational traffic impacts are expected to be less than significant.

6.5 CONCLUSION

Table 6.5-1 provides a qualitative comparison of the potential environmental impacts of the various alternatives relative to the proposed Project. Based on the analyses herein, no feasible alternatives were identified that would reduce or eliminate the potentially significant noise impacts during construction. The Alternative 1 - No Project Alternative would eliminate these impacts, but would not achieve any of the goals of the proposed Project. Therefore, Alternative 1 would not be considered to be the environmentally superior alternative.

Alternatives 2 and 3 would result in increased emissions during construction and increased noise impacts with all other environmental impacts equal to the proposed Project. Therefore, Alternatives 2 and 3 would not be considered to be the environmentally superior alternative as they would not reduce project impacts. Alternatives 2 and 3 would allow the facility to meet the project objectives of developing the Dominguez Oil Field.

Alternative 4 would result in less GHG emissions with all other environmental impacts equal to the proposed Project. Therefore, Alternative 4 would be considered to be the environmentally superior alternative as it would reduce some project impacts, which were not found to be significant, but would not avoid or substantially lessen the significant adverse noise impacts during construction. Alternative 4 would allow the facility to meet most of the project objectives of developing the Dominguez Oil Field but would not fully develop the potential oil reserves. Therefore, Objective 2 would not be fully realized (encourage development of local oil and gas resources to reduce dependence on foreign energy supplies) under Alternative 4.

Alternative 5 would result in greater construction emissions, GHG emissions, and noise impacts with all other environmental impacts equal to the proposed Project. Therefore, Alternative 5 is not the preferred alternative.

TABLE 6.5-1

Environmental Impacts of Alternatives as Compared to Proposed Project

Environmental Topic	Proposed Project	Alt. 1 No Project	Alt. 2 Alternative Site (Crimson)	Alt. 3 Alternative Site (Plains)	Alt. 4 Reduced Project Alternative	Alt.5 Alternative Crude Oil Pipeline
Air Quality						
Construction	MNS	NS(-)	S(+)	S(+)	MNS(=)	MNS(+)
Operation	NS	NS(+)	NS(=)	NS(=)	NS(-)	NS(=)
Toxics	NS	NS(+)	NS(=)	NS(=)	NS(-)	NS(=)
Geology and Soils	NS	NS(-)	NS(=)	NS(=)	NS(=)	NS(=)
Greenhouse Gases	NS	NS(-)	NS(+)	NS(+)	NS(=)	NS(+)
Hazards/Hazardous Materials						
Facility Hazards	NS	NS(=)	NS(=)	NS(=)	NS(-)	NS(=)
Oil Well Activities	NS	NS(-)	NS(=)	NS(=)	NS(=)	NS(=)
Crude Oil Pipeline Transport	NS	NS(-)	NS(+)	NS(-)	NS(=)	NS(-)
Natural Gas Pipeline Transport	NS	NS(-)	NS(+)	NS(+)	NS(=)	NS(=)
Truck Transport	NS	NS(=)	NS(=)	NS(=)	NS(-)	NS(=)
Hydrology and Water Quality	NS	NS(-)	NS(=)	NS(=)	NS(=)	NS(=)
Noise						
Construction Noise	S	NS(-)	S(+)	S(+)	S(=)	S(+)
Operational Noise	NS	NS(-)	NS(=)	NS(=)	NS(=)	NS(=)
Transportation and Traffic						
Construction Traffic	MNS	NS(-)	MNS(+)	MNS(+)	MNS(=)	MNS(+)
Operational Traffic	NS	NS(+)	NS(=)	NS(=)	NS(-)	NS(=)

Notes:
S = Significant
NS = Not Significant
MNS = Mitigated, Not Significant
(-) = Potential impacts are less than the proposed Project.
(+) = Potential impacts are greater than the proposed Project.
(=) = Potential impacts are approximately the same as the proposed Project.

CHAPTER 7

REFERENCES

References
Organizations and Persons Consulted
List of Environmental Impact Report Preparers

7.0 REFERENCES

7.1 REFERENCES

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7.2 ORGANIZATIONS AND PERSONS CONSULTED

The CEQA statues and Guidelines require that organizations and persons consulted be provided in the EIR. A number of organizations, state and local agencies, and private industry have been consulted. The following organizations and persons have provided input into this document.

7.2.1 ORGANIZATIONS

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California Division of Oil, Gas and Geothermal Resources

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CHAPTER 8

ACRONYMS AND ABBREVIATIONS

8.0 ACRONYMS and ABBREVIATIONS

ABBREVIATION	DESCRIPTION
$\mu g/m^3$	micrograms per cubic meter
$\mu g/l$	micrograms per liter
AB32	California's Global Warming Solutions Act of 2006
AB1807	California Toxic Air Contaminants Program (Tanner Bill)
AB 2185	Hazardous Materials Business Plan
AGI	Acoustics Group, Inc.
AIChE	American Institute of Chemical Engineers
API	American Petroleum Institute
AQMP	Air Quality Management Plan
Basin	South Coast Air Basin
Basin Plan	Water Quality Control Plan for the Los Angeles Regional Board's Basin Plan
BACT	Best Available Control Technology
bbl/day	barrels per day
BDT	best demonstrated technology
BFM	Bonded fiber matrix
BLEVE	boiling liquid expanding vapor explosion
BMP(s)	Best Management Practice(s)
BOP	blowout prevention
Btu/hr-ft^2	British Thermal Units per hour per square foot
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CadnaA	Computer Aided Noise Abatement
CARB	California Air Resources Board
CalARP	California Accident Release Prevention
CalEPA	California Environmental Protection Agency
CalOSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CBC	California Building Code
CCAA	California Clean Air Act
CCC	Criterion Continuous Concentration
CCR	California Code of Regulations
CDMG	California Division of Mines and Geology
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CHP	California Highway Patrol
CMC	Carson Municipal Code

ABBREVIATION	DESCRIPTION
CMP	Congestion Management Program
CNEL	Community Noise Equivalent Level
CNRA	California Natural Resources Agency
CO	Carbon Monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
CUPAs	Certified Unified Permitting Agencies
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DHS	California Department of Health Services
DO	Dissolved Oxygen
DOGGR	California Department of Oil, Gas, and Geothermal Resources
DTC	Dominguez Technology Centre
DTSC	Department of Toxic Substances Control
EIA	Energy Information Administration
EIR	Environmental Impact Report
EPCRA	Emergency Planning and Community Right-To-Know Act
ERCs	Emission Reduction Credits
ERPG	Emergency Response Planning Guide
Facility	production facility
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
Ft	feet
GHG	Greenhouse Gas
GHGRP	Greenhouse Gas Reporting Program
g	gravity
g/mile	grams per mile
gpd	gallons per day
GWP	global warming potential
H_2S	Hydrogen sulfide
HARP	Hotspots Analysis Reporting Program
HDD	Horizontal Directional Drilling
HFCs	hydrofluorocarbons
HMTA	Hazardous Materials Transportation Act
hp	Horsepower
HR 2764	The Consolidated Appropriations Act of 2008
HRA	Health Risk Assessment
I-110	Harbor Freeway
I-405	San Diego Freeway
I-710	Long Beach Freeway
ICTF	Intermodal Container Transfer Facility

ABBREVIATION	DESCRIPTION
IEPR	Integrated Energy Policy Report
IGF	Induced Gas Flotation
ISO	International Organization for Standardization
Km	kilometer
kV	kilovolt
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACFD	Los Angeles County Fire Department
LAER	Lowest Achievable Emission Rate
lbs	pounds
lbs/day	pounds per day
LCFS	Low Carbon Fuel Standard
L_{dn}	day/night noise level
L_{eq}	equivalent sound level
LFL	lower flammable limit
LI	Light Industrial
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
LRTP	Long Range Transportation Plans
LST	Localized Significance Thresholds
LSWPPP	Local Storm Water Pollution Prevention Plan
MATES	Multiple Air Toxic Exposure Study
MCL	Maximum Contaminant Level
MDAB	Mojave Desert Air Basin
mg/l	milligrams per liter
ML	Manufacturing, Light
mmBtu/hr	million British thermal units per hour
mmscf/day	million standard cubic feet per day
MSL	mean sea level
MT	metric tons
MTA	Metropolitan Transportation Authority
MTBE	methyl tertiary butyl ether
$MTCO_2e/yr$	metric tons of CO_2 equivalent emissions per year
MVA	megavolt-amps
M_w	momentum magnitude scale
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NGLs	natural gas liquids
N/m^2	Newton per square meter
NOP/IS	Notice of Preparation and Initial Study
NO_2	nitrogen dioxide

ABBREVIATION	DESCRIPTION
NOx	nitrogen oxide
N_2O	nitrous oxide
ng/l	nanograms per liter
nanograms/m^3	nanograms per cubic meter
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NSR	New Source Review
OEHHA	Office of Environmental Health Hazard Assessment's
OSHA	Occupational Safety and Health Administration
OXY	OXY USA, Inc.
PAHs	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PCE	tetrachloroethylene
PFCs	perfluorocarbons
PHGA	probabilistic horizontal ground acceleration
PHMSA	U.S. DOT, Pipeline and Hazardous Materials Safety Administration
PHL	Pacific Harbor Line
PM2.5	particulate matter less than 2.5 microns in diameter
PM10	particulate matter less than 10 microns in diameter
POLA	Port of Los Angeles
POLB	Port of Long Beach
Ports	Ports of Los Angeles and Long Beach
ppbv	parts per billion by volume
ppm	parts per million
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
RECLAIM	Regional Clean Air Incentives Market
RMP	Risk Management Plan
ROW	right of way
Route 91	Gardena Freeway
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board, Los Angeles Region
SB	Senate Bill
SBCCOG	South Bay Cities Council of Governments
SBESC	South Bay Environmental Services Center
SCADA	supervisory control and data acquisition
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
scfh	standard cubic feet per hour
SCGC	Southern California Gas Company

ABBREVIATION	DESCRIPTION
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SLM	sound level measurement
SO_2	sulfur dioxide
SOx	sulfur oxides
SPCC	Spill Prevention, Control and Countermeasure
SSAB	Salton Sea Air Basin
SUSMP	Standard Urban Storm Water Mitigation Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TBT	tributyltin
TCE	trichloroethylene
TCP	Traffic Control Plan
TDM	Transportation Demand Management
TDS	total dissolved solids
TMDL	total maximum daily load
UIC	Underground Injection Control
UPS	uninterruptible power supply
U.S. DOT	United States Department of Transportation
U.S. EPA	U.S. Environmental Protection Agency
USDW	Underground Sources of Drinking Water
USGS	United States Geologic Survey
VCE	vapor cloud explosion
VOC	volatile organic compounds
WRD	Water Replenishment District – West Coast Basin
WWECP	Wet Weather Erosion Control Plan

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CHAPTER 9

GLOSSARY

Glossary

9.0 GLOSSARY

TERM	DEFINITION
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Abandoned Well	In this process, tubing is removed from the well and sections of well bore are filled with concrete to isolate the flow path between gas and water zones from each other, as well as the surface. Completely filling the well bore with concrete is costly and unnecessary. The surface around the wellhead is then excavated, and the wellhead and casing are cut off, a cap is welded in place and then buried.
Ambient Noise	The background sound of an environment in relation to which all additional sounds are heard.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Anthropomorphic	Manmade.
Anthropogenic	Human caused.
Aqueous	Formed from water, having a water base.
Aromatics	Hydrocarbons which contain one or more benzene rings.
Barrel	42 gallons.
BLEVE	The sudden, catastrophic failure of a pressure vessel at a time when its liquid contents are well superheated. (BLEVE is normally associated with the ruptured, due to fire impingement, of pressure vessels containing liquefied gases.)
Blowout Preventer	A large, specialized valve or similar mechanical device, usually installed redundantly in stacks, used to seal, control and monitor oil and gas wells. Blowout preventers were developed to cope with extreme erratic pressures and uncontrolled flow emanating from a well reservoir during drilling.

TERM	DEFINITION
Blowout Prevention System	The terms blowout preventer, blowout preventer stack and blowout preventer system are commonly used interchangeably and in a general manner to describe an assembly of several stacked blowout preventers of varying type and function, as well as auxiliary components.
CO_2 equivalent (CO_2e)	A measure for comparing CO_2 with other GHGs, based on the amount of the other GHGs multiplied by the appropriate global warming potential factor.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Crude Oil	Crude oil is "unprocessed" oil, which has been extracted from the subsurface. It is also known as petroleum and varies in color, from clear to tar-black, and in viscosity, from water to almost solid.
Cuttings	Drill cuttings are the broken bits of solid material removed from a borehole drilled by rotary, percussion, or auger methods.
Day/Night Noise Level (L_{dn})	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm. and 7:00 am.
dBA	The decibel (dDB) is one tenth of a bel, where one bel represents a difference in noise level between two intensities I_1 and I_0, where one is ten times greater than the other. (A) indicates the measurement is weighted to the human ear.
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Directional Drilling	Drilling wells at multiple angles, not just vertically, to reach and produce oil and gas reserves, which allows for multiple wells from the same vertical well bore.

TERM	DEFINITION
Drilling Mud	Liquid drilling fluid is often called drilling mud, and is used to aid the drilling of boreholes into the earth. The three main categories of drilling fluids are water-based muds (which can be dispersed and non-dispersed), non-aqueous muds, usually called oil-based mud, and gaseous drilling fluid, in which a wide range of gases can be used.
Drilling Rig	A drilling rig is a machine which creates holes in the ground. Drilling rigs can be massive structures housing equipment used to drill water wells, oil wells, or natural gas extraction wells, or they can be small enough to be moved manually by one person and are called auger.
Emergency Flare	Equipment used to incinerate gases in the event of an upset to production.
Equivalent Noise Level (Leq)	The average A-weighted noise level during the measurement period.
Fault Anticline	A type of geologic fold that is favorable for oil and gas accumulation.
Feedstock	Material used as a stream in the refining process.
Flares	Equipment used to incinerate unusable gases produced during oil and gas production.
Flammable Vapor Cloud	A vapor cloud consisting of flammable gas and air, within which the gas concentration equals or exceeds its lower flammable limit.
Flash Fire	Transient combustion of a flammable vapor cloud.
Heater	Process equipment used to raise the temperature of process streams.
Hydrocarbon	Organic compound containing hydrogen and carbon, commonly occurring in petroleum and natural gas.
Hydrostatic Pressure	In a fluid at rest, all frictional stresses vanish and the state of stress of the system is called hydrostatic.
Hydrostatic Testing	A method in which pressure vessels such as pipelines, plumbing, gas cylinders, boilers and fuel tanks can be tested for strength and leaks. The test involves filling the vessel or pipe system with a liquid, usually water, which may be dyed to aid in visual leak detection, and pressurizing the vessel to the specified test pressure.
Hydrotesting	See hydrostatic testing.

TERM	DEFINITION
L_{max}, L_{min}	The maximum and minimum noise levels during the measurement period.
Liquefied Petroleum Gas (LPG)	Liquefied light end gases often used for home heating and cooking; this gas is usually 95 percent propane, the remainder being split between ethane and butane.
Loudness	The amplitude of sound waves combined with the reception characteristics of the human ear.
Lower Flammable Limit (LFL)	The lowest concentration of flammable gas in air that will support flame propagation.
Natural Gas	A mixture of hydrocarbon gases that occurs with petroleum deposits, principally methane together with varying quantities of ethane, propane, butane, and other gases.
Natural Gas Liquids	Naturally occurring elements found in natural gas, and include propane, butane, and ethane, among others.
Paleontological	Prehistoric life.
Peak Hour	This typically refers to the hour during the morning (typically 7 AM to 9 AM) or the evening (typically 4 PM to 6 PM) in which the greatest number of vehicles trips are generated by a given land use or are traveling on a given roadway.
Pig	Pigging in the context of pipelines refers to the practice of using pipeline inspection gauges or 'pigs' to perform various maintenance operations on a pipeline without stopping the flow of the product in the pipeline.
Potholing	The process of excavating and exposing an existing utility to record its true horizontal and vertical position and depth below the surface.
Pumpjack	The overground drive for a reciprocating piston pump in an oil well.
Slick Bore	A trenchless method of installing a pipeline under a surface feature that cannot be disturbed (e.g., railroad track, waterway, freeway, etc.). With a slick bore a sacrificial piece of pipe is first mechanically pushed between two excavated bore pits on either side of the surface feature and then the pipeline is attached and also pulled through.
Slops	Oil-water emulsions from primary separation equipment.
Smart Pig	See Pig.

TERM	DEFINITION
Sound Pressure	Sound pressure or acoustic pressure is the local pressure deviation from the ambient atmospheric pressure caused by a sound wave. Sound pressure can be measured using a microphone. The unit for sound pressure (p) is the pascal [symbol: Pa or 1 Newton exerted over an area of 1 square meter (N/m^2)].
Sound Pressure Level	The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals in air). Sound pressure level is the quantity that is directly measured by a sound level meter.
Tectonism	Faulting
Thermal Radiation	The transfer of heat by electromagnetic waves. This is how heat is transferred from flames to an object or person not in contact with or immediately adjacent to the flames. This is also how heat is transferred from the sun to the earth.
Torch Fire	Continuous combustion of a flammable fluid that is being released with considerable momentum.
Toxic Vapor Cloud	A vapor cloud consisting of toxic gas and air, within which the gas concentration equals or exceeds a concentration that could be harmful to humans exposed for a specific time.
Vapor Cloud	A volume of gas/air mixture within which the gas concentration equals or exceeds some specified or defined concentration limit.
Vapor Cloud Explosion	Extremely rapid combustion of a flammable vapor cloud, resulting in a blast wave.
Well Cellar	A dug-out area, possibly lined with wood, cement, or very large diameter (6 ft [1.8 m]) thin-wall pipe, located below the rig. The cellar serves as a cavity in which the casing spool and casinghead reside. The depth of the cellar is such that the master valve is easy to reach from ground level.
Wellhead	The component at the surface of an oil or gas well which provides the structural and pressure-containing interface for drilling and production equipment.

TERM	DEFINITION
Workover Rig	Refers to any kind of oil well intervention involving invasive techniques, such as wireline, coiled tubing, or snubbing. More specifically it refers to the expensive process of pulling and replacing a completion well which has become terminally unsuitable for the intended job.