SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Environmental Impact Report for:
Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project

August 2015

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PREFACE

This document constitutes the Final Environmental Impact Report (EIR) for the Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project. The Draft EIR was circulated for a 45-day public review and comment period on April 15, 2015. The comment period ended on May 29, 2015. Two comment letters were received during the public comment period on the Draft EIR. The comment letters and responses to the comment letters are included in Appendix C of this document. The comments were evaluated and no modifications were necessary to the Draft EIR released for public review. For the Final EIR, change of the document date, replacement of "Draft" with "Final" in the headers and footers, and the addition of Appendix C are the only changes to the Draft EIR. None of the comments received alter any conclusions reached in the Draft EIR nor provide new information of substantial importance relative to the draft document that would require recirculation of the Draft EIR pursuant to CEQA Guidelines §15088.5. Per CEQA §15088 (b), the FEIR was certified at least 10 days after June 17, 2015 when public agency commenter (the California Department of Oil, Gas and Geothermal Resources – DOGGR) received the SCAQMD response to its DEIR comment letter (see Appendix C for the DOGGR comment letter and response). Therefore, this document is now a Final EIR.

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1 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Introduction

Breitburn Operating LP (Breitburn) is proposing a project to upgrade and augment its fluid (e.g. oil, gas, and water) handling systems at its existing Santa Fe Springs facilities (Breitburn Santa Fe Springs Facilities) to facilitate an increase in the amount of produced fluids that can be treated at the site. The systems used to handle produced fluids, particularly produced water, are currently operating near or at maximum capacity.[1] As such, Breitburn has been limited in its ability to efficiently operate at current production rates, or to potentially increase production at the site in the future. To account for this, Breitburn proposes to modify existing on-site equipment, add a new oil/gas/water separation system, and a new wastewater treatment/injection system. Breitburn also proposes to expand an existing crude oil truck loading system at the site. In addition, Breitburn proposes to replace the existing low efficiency flare with a Best Available Control Technology (BACT) burner, as well as to add up to three additional BACT burners for redundancy and in case a burner requires maintenance and is unable to operate. South Coast Air Quality Management District (SCAQMD) permits to construct are required for this multi-component upgrade project.

Breitburn submitted three separate permit application packages to the SCAQMD for the Breitburn Santa Fe Springs Facilities, located in the City of Santa Fe Springs in Los Angeles County. The first group of three permit applications, submitted March 26, 2013, and modified July 1, 2014, is for a new produced fluid processing facility that would include a new crude oil/water/gas separation system, a new produced water treatment and injection system, and a new vapor recovery system at the 400 Block. The second group of three permit applications, dated March 20, 2014 is for a Consolidated Bulk Truck Loading System, which includes addition of a new crude oil truck loading connection adjacent to the existing connection, and minor modification to the existing thermal oxidizer and the existing crude oil/gas/water separation system to allow venting of loading vapors to the thermal oxidizer. These actions would occur at the Main Facility and the Baker Humble Lease Facility, which is located entirely within the Main Facility in the 700 Block. A third group of permit applications, submitted April 11, 2014, is for the replacement of the existing flare with one new low-emissions Flare Industries CEB-800 Burner ("burner"), plus up to three more identical CEB-800 burners at the 400 Block.[2] Obtaining permit approvals and implementing the proposed Project is necessary to allow Breitburn to efficiently operate at current production rates or to accommodate any potential increases in production that may occur in the future, up to the maximum allowed capacity of the equipment. The environmental assessment evaluates impacts if operating all the new equipment at the maximum allowed capacity.

The project objectives are as follows:

> 1. Increase the ability to process produced water, oil and gas separation capacity to produce oil from currently shut-in wells and eventually future wells, when economics (consumer demand and world supply) are favorable;

[1] The facility is an existing oil and gas production site. The oil extraction process does not involve hydraulic fracturing nor are there plans to conduct hydraulic fracturing. Once extracted, oil is transported by either pipeline or truck off-site.

[2] SCAQMD consolidated its three separate Breitburn facilities under one (Facility ID # 150201) for air quality permitting purposes in August 2014.

2. Replace the older existing flare with a BACT burner to reduce emissions, and to add additional burners to the extent they are needed for safety and redundancy;

3. Increase produced oil truck loading capacity for use when warranted by market conditions and/or there are pressure balance issues or other issues rendering the Crimson Pipeline unavailable; and

4. Maintain operational efficiency, safety, flexibility, and economic viability of the Breitburn Facilities and continue oil production operations from the mature Santa Fe Springs Oil Field.

This Environmental Impact Report (EIR) has been prepared by the SCAQMD for the evaluation of potential environmental effects that could result from the proposed Project.

1.2 California Environmental Quality Act

The proposed Project requires discretionary approvals from the SCAQMD and therefore, it is considered a "project" and is subject to the provisions of the California Environmental Quality Act of 1970 (CEQA). This EIR has been prepared in conformance with CEQA (Public Resources Code §21000 et seq.) and the State CEQA Guidelines (Title 14, California Code of Regulations, §15000 et seq.).

1.3 Agency Authority

The lead agency is the public agency that has the greatest responsibility for supervising, carrying out or approving a project which may have a significant effect upon the environment [Public Resources Code §21067, CEQA Guidelines §15051(b)]. As noted in Section 1.1, the proposed Project would require SCAQMD permits to construct and then operate Project equipment. Project activities would be performed in accordance with the applicable City of Santa Fe Springs Municipal Code Zoning regulations for the facilities' M-2 Industrial zone, which allows for oil and gas development as a principal permitted land use, and the applicable regulations of the California Department of Oil, Gas, and Geothermal Resources (DOGGR) for oil-related activities. Under the applicable regulations, discretionary permits for Project construction or operations and secondary related activities are not expected but could be required from the City of Santa Fe Springs or DOGGR. Both DOGGR and the City of Santa Fe Springs are included in CEQA notifications for the Project.

Because the SCAQMD has the principal responsibility for approving the proposed Project, including issuing several air quality permits, the SCAQMD is the most appropriate lead agency for the proposed Project and thus, has prepared this EIR. Health and Safety Code Section 42300(a) states that air districts may establish a permit system requiring persons to obtain permits before constructing any article that issues air contaminants "…from the air pollution control officer of the district." SCAQMD Rule 201 requires that persons obtain written permits to construct, "…from the Executive Officer." With the delegated authority as the final decision maker for the proposed Project, the SCAQMD's Executive Officer is responsible for review and certification of the EIR.

SCAQMD staff previously prepared an Initial Study (IS) and concluded that an EIR was warranted (Appendix A). The IS, along with a Notice of Preparation (NOP), was circulated for a

30-day public review period to responsible agencies and interested parties to solicit comments on potential impacts from the proposed Project. The comment period was open from December 4, 2014 through January 2, 2015. Two comment letters were received by the SCAQMD during the public comment period on the NOP/IS. These letters and the SCAQMD's responses can be found in Appendix A-1. The NOP/IS identified potential adverse impacts with respect to air quality and greenhouse gases (GHG) as a result of the proposed Project. In addition, the NOP/IS identified additional environmental areas for which the proposed Project is expected to result in less than significant impacts, but which the SCAQMD determined warranted additional analysis. These environmental areas include: energy, geology/soils, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste.

1.4 Intended Use of EIR

In general, a CEQA document, such as an EIR, is an informational document that informs a public agency's decision-makers and the public of potentially significant environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines §15121). A public agency's decision-makers must consider the information in a CEQA document prior to making a decision on the project. Accordingly, this Draft EIR is intended to: a) provide the lead agency, responsible agencies, decision makers, and the general public with information on the environmental effects of the proposed Project; and, b) be used as a tool by the SCAQMD to facilitate decision making on the proposed Project.

1.5 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. The two comment letters on the IS (Appendix A-1) do not address the specifics of the Project, but identify standard procedures to be followed related to Native American artifacts, if discovered, and oil/gas wells. Although no public comments related to air quality were received, potentially significant impacts were identified in the IS and are discussed and evaluated in more detail in this EIR. ***Based on this EIR analysis, only air quality impacts have been found to be significant.***

This EIR focuses on the environmental impacts identified as potentially significant during the IS process and addresses the comments received in response to the NOP. In addition, the EIR focuses on environmental areas that are anticipated to be less than significant, but that the lead agency believed warrant a more detailed analysis. The environmental areas analyzed in detail in this EIR include air quality, energy, geology and soils, GHG emissions, hazards and hazardous materials, hydrology/water quality, noise, and solid and hazardous waste. Effects not found to be significant are addressed in Chapter 3, Section 3.13, Environmental Effects not Found to be Significant.

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 were prepared in accordance with §15126.6 of the CEQA Guidelines and are provided in Chapter 4.

This Draft EIR is being circulated for 45 days for public review and comment. The time frame of the public review period is identified in the Notice of Completion (NOC) attached to the Draft EIR. During this period, comments from the general public, organizations, and agencies regarding environmental issues analyzed in the Draft EIR and the Draft EIR's accuracy and completeness may be submitted to the lead agency at:

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Fax: (909) 396-3324
E-Mail: jwong@aqmd.gov

General questions about this Draft EIR and the EIR process may also be submitted to the lead agency at the address above. The SCAQMD will prepare written responses to comments pertaining to environmental issues raised in the Draft EIR if they are submitted in writing (i.e., via postal mail or e-mail) and postmarked by the last day of the public review period identified in the NOC. Prior to approval of the proposed project, the SCAQMD, as the lead agency and decision-making entity, is required to certify that this EIR has been completed in accordance with CEQA, that the proposed project has been reviewed, and the information in this EIR has been considered, and that this EIR reflects the independent judgment of the SCAQMD. CEQA also requires the SCAQMD to adopt "findings" with respect to each significant environmental effect identified in the EIR (Pub. Res. Code §21081; Cal. Code Regs., Title 14, §15091). For each significant effect, CEQA requires the approving agency to make one or more of the following findings:

- The proposed project has been altered to avoid or substantially lessen significant impacts identified in the Final EIR (FEIR).
- The responsibility to carry out such changes or alterations is under the jurisdiction of another agency.
- Specific economic, legal, social, technological, or other considerations, which make infeasible the mitigation measures or alternatives identified in the FEIR.

If the SCAQMD concludes that the proposed project would result in significant effects that cannot be substantially lessened or avoided by feasible mitigation measures and alternatives, the SCAQMD must adopt a "Statement of Overriding Considerations" prior to approval of the proposed project (Pub. Res. Code §21081(b)). Such statements are intended under CEQA to provide a written means by which the lead agency balances the benefits of the proposed project and the significant and unavoidable environmental impacts. Where the lead agency concludes that the economic, legal, social, technological, or other benefits outweigh the unavoidable environmental impacts, the lead agency may find such impacts "acceptable" and approve the proposed project.

In addition, public agencies, when approving a project, must also adopt a Mitigation Monitoring or Reporting Plan (MMRP) describing the changes that were incorporated into the proposed project or made a condition of project approval in order to mitigate or avoid significant effects on

the environment (Pub. Res. Code §21081.6). The MMRP is adopted at the time of project approval and is designed to facilitate compliance during project implementation. Upon approval of the proposed project, Breitburn would be responsible for implementation of the proposed project's MMRP.

1.6 Organization of Remaining Sections of this EIR

Below is an overview of each EIR chapter.

1.6.1 Chapter 2 – Project Description

Chapter 2 describes the project background, the Project location and setting, the Project purpose, the Project description, and Project objectives. It includes a description of Project characteristics and a summary of Project approvals that would be required with the implementation of the proposed Project, as well as the estimated construction and operation schedule. This information is provided pursuant to the CEQA Guidelines §15124.

1.6.2 Chapter 3 – Existing Setting, Impacts and Mitigation

Pursuant to the CEQA Guidelines §15125, Chapter 3 provides the description for each of the environmental areas evaluated, including the affected environment and setting, regulatory framework, an analysis of the environmental impacts (including significance thresholds and methodology), and discussion of mitigation measures to reduce or eliminate any significant environmental impacts associated with the proposed Project. The existing environmental setting for each area provides a baseline for assessing environmental impacts, formulating mitigation measures, and evaluating alternatives to the Project. Measures that reduce or eliminate any significant environmental impacts include: i) existing plans, programs, and policies, which include existing regulatory requirements or plans and programs that would be applicable to the proposed Project; and ii) mitigation measures that are recommended where the impacts analysis determines that implementation of the proposed Project would result in significant impacts. In addition, Chapter 3 provides an introduction to the environmental areas that were determined, through the completion of an IS for the Project, to not result in a significant environmental effect and require no further environmental analysis.

It should be noted that the analysis of impacts for each environmental area assumes and accounts for Project features and existing plans, programs, and applicable laws, rules, and regulations that serve to avoid or reduce potentially significant impacts associated with the proposed Project. Mitigation measures were formulated only for those issue areas where the results of the impacts analysis identified significant impacts. All mitigation measures identified and required to be implemented as part of the Project will be included in the MMRP for the project (which will be prepared along with the FEIR). If during the course of Project implementation it is determined that a specific measure cannot be carried out because it is infeasible, unnecessary, or otherwise undesirable, the measure may, if necessary, be substituted for another feasible measure(s) which is (are) determined to be equivalent or more effective. "Equivalent or more effective" means that the new measure will avoid or reduce the potential environmental effect addressed in the EIR to at least the same degree as, or to a greater degree than, the original measure and will create no more adverse effect of its own than would have the original measure.

The following subsections briefly highlight the impacts on air quality, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise,

and solid and hazardous waste, which are analyzed in this EIR. Table 1-1 provides an overall summary of the potential significance conclusions from the analyses conducted in this EIR for the identified environmental resource areas.

Table 1-1. Overall Environmental Analysis Conclusion

Resource Area	Project
Air Quality	Significant *
Energy	Less than Significant
Geology and Soils	Less than Significant
Greenhouse Gases	Less than Significant
Hazards	Less than Significant
Hydrology and Water Quality	Less than Significant
Noise	Less than Significant
Solid Waste	Less than Significant

*Significant if potential drilling impacts included. Project equipment impacts only are less than significant.

Air Quality

The Project has significant 24-hour average particulate matter less than 10 micron in diameter (PM_{10}) and PM less than 2.5 microns in diameter ($PM_{2.5}$) impacts resulting from potentially related oil well drilling. New Project equipment has less than significant ambient air quality impacts from operation and construction.

However, the Project has significant regional oxides of nitrogen (NO_x) and volatile organic compounds (VOC) emission impacts resulting from potentially related oil well drilling. The health risk impacts with or without potential related oil well drilling has been determined to be less than significant.

Energy

The Project would result in less than significant increases in electrical demand. With the existing dedicated substation, as well as energy supplied from on-site microturbines, the Project would not result in the need for new or substantially altered power or natural gas utility systems, nor would it create any significant effects on local or regional energy supplies or peak demand.

Geology and Soils

Well drilling and waterflood operations have occurred at the Field for nearly 100 years and have not affected or change the structure of the geologic formations below the Field. Waterflood operations are implemented to counter subsidence so not to have adverse impact on geology and soils. Moreover, Breitburn would design and construct the Project components in conformance to the most recently adopted building codes to minimize seismic risks. Therefore, the proposed Project and continued oil field operations would have no impacts with regard to causing any seismic shaking, surface rupture, liquefaction, or ground-shaking.

Greenhouse Gas Emissions

The Breitburn Facility is subject to the California Air Resources Board (CARB) AB32's Cap and Trade Program that requires offsetting almost all greenhouse gas (GHG) emissions for operational equipment because its existing annual GHG emissions exceed the applicable threshold (see Section 3.5).[3] Therefore, any incremental increase in GHG emissions associated with the proposed Project operational equipment will also have to be offset as part of on-going compliance. The remaining incremental increase in GHG emissions for the proposed Project is only related to construction and some operational[4] emissions. After compliance with Cap and Trade offset requirements, the proposed Project is expected to result in less than significant impacts related to Greenhouse Gases.

Hazards and Hazardous Materials

The Project may result in a slight increase in use, storage and transport of hazardous materials. These materials would be handled and stored in accordance with applicable regulations. In addition, there are operational, response, and emergency plans in place in the event of an unexpected release. Moreover, future drilling of any new well at the Project site would be conducted in accordance with these plans and would be conducted in the same manner as current well drilling operations, which has not resulted in an adverse risk of upset. Therefore, the project would result in a less that significant hazard to the public or the environment due to the routine transport, use, disposal or unexpected release of hazardous materials.

Hydrology and Water Quality

Construction and operation of the proposed Project would not utilize groundwater and therefore would not have any impact on groundwater extraction. Construction of the proposed Project would only add a minor additional area of impermeable surface and therefore would have no impact on groundwater recharge. Moreover, future stormwater discharges would be managed in accordance with a Stormwater Pollution Prevention Plan so any increases in stormwater volume would result in less than significant impacts. Therefore the Project would have less than significant impact to groundwater quantity.

Noise

Estimated noise associated with construction and operational activities of the proposed Project are well below the thresholds of significance (construction ranging from 68 to 69 dBA and operation ranging from 65 to 69 dBA) and are considered less than significant. Construction and operational activities are below the vibration threshold level of 0.24 inches/second at the nearest receptor. With the incorporation of Project Design Features the Project would not exceed noise thresholds and therefore result in less than significant impacts.

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[3] Mobile source emissions are not subject to CARB's GHG Mandatory Reporting Requirement (MRR) per Title 17 of the California Code of Regulations (CCR) Section 95152, and are thus not required to be offset per CARB's Cap and Trade program per CCR Section 95852(h).

[4] The amount of AB 32 offsets that are required is based on the categories for which a compliance obligation is required per CARB's Cap and Trade program. In addition to mobile source emissions, vented and fugitive emissions from storage tanks (2.4 MT/yr) used in petroleum and natural gas production and sources for which emissions are estimated using leak detection and leaker emission factors as required by Section 95153(q) of the MRR (30.6 MT/yr) are not counted towards a facility's compliance obligation per CARB's Cap and Trade program per 17 CCR Section 95852.2.

Solid and Hazardous Waste

Sufficient landfill capacity currently exists to handle the one-time disposal of the minimal amount of construction related waste. During operation, the proposed Project is expected to generate only small volumes of solid waste. Therefore, the net amount of solid waste would not contribute to exceeding the permitted capacity of a landfill and would result in less than significant impacts.

1.6.3 Chapter 4 – Alternatives

Chapter 4 addresses the five alternatives to the proposed Project. The proposed Project and the alternatives are summarized below in Table 1-2: Alternative 1 (No Project), Alternative 2 (Gas Reinjection), Alternative 3 (Additional Microturbines), Alternative 4 (Gas Sales), and Alternative 5 (Electrification of Oil/Injection Well Drilling).[5] Pursuant to CEQA Guidelines §15126.6 (b), the purpose of an alternatives analysis is to reduce or avoid potentially significant adverse effects that a project may have on the environment. The environmental areas identified in the NOP/IS that may be adversely affected by the proposed Project were air quality and greenhouse gas. In addition, the NOP/IS identified additional environmental areas for which the proposed Project could potentially result in significant impacts such that the SCAQMD determined additional analysis was warranted. These environmental areas include: energy, geology/soils, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. In addition to identifying project alternatives, Chapter 4 provides a comparison of the potential operational impacts to these environmental areas from each of the analyzed Project alternatives relative to the impacts analyzed for the proposed Project in Chapter 3; the air quality results are summarized below in Table 1-3. (Note: Alternatives 3, 4 and 5 were deemed infeasible and further evaluation was not required. See Section 4.3.2 for details.) Aside from air quality impacts, no other potential significant adverse impacts were identified for the proposed Project. In addition, noise impacts under Alternative 3 were found to be significant. As indicated in the following discussions, the proposed Project is considered to provide the best balance between meeting the objectives of the Project while minimizing potentially significant adverse environmental impacts.

[5] The Project does not include well drilling, although the impacts of potential related well drilling is assessed in this EIR because the Project will allow for an increase in gas and water handling (see IS Section 1.5.1.1 and EIR section 2.6.4.1).

Table 1-2. Summary of the Proposed Project and Project Alternatives

	Project Description
Proposed Project	Under the proposed Project, the Santa Fe Springs Facility would upgrade and augment its fluid (e.g. oil, gas, and water) handling systems to facilitate the potential increase in the amount of produced fluids that can be treated at the site. To account for this, Breitburn proposes to install a new produced fluid processing facility that would include a new crude oil/water/gas separation system, a new produced water treatment and injection system, and a new vapor recovery system at the 400 Block. The proposed Project also includes addition of a new crude oil truck loading connection adjacent to the existing connection, minor modification to the existing thermal oxidizer and the existing crude oil/gas/water separation system to allow venting of loading vapors to the thermal oxidizer. In addition, Breitburn proposes to replace the existing flare with one new low-emissions Flare Industries CEB-800 burner, plus up to three more identical CEB-800 burners at the 400 Block.
Alternative 1 (No Project)	Under the No Project Alternative the Santa Fe Springs Facility would continue to operate with the existing equipment. The proposed 400 Block Reinjection Facility would not be constructed, produced water would continue to be processed at the existing 700 Block Facility, and the additional truck loading connection would not be installed. As such, oil would continue to be trucked off-site using only the existing connection. Under this alternative, the lower-emission enclosed burners (Flare Industries' CEBs) would not be installed to process field gas and the existing John Zink Flare would remain in place.
Alternative 2 (Gas Reinjection)	Under this alternative, field gas would be re-injected into an existing oil producing formation within the Santa Fe Springs Oil Field rather than being flared on-site. This alternative would utilize a previously drilled well for re-injection of excess oil field gas. Conversion of the existing well for gas re-injection purposes would require a workover rig, a small crane, and several truck trips. The gas re-injection system would involve the use of a four stage electric compressor, inter-stage coolers and scrubbers, and would require minor re-piping of existing flow lines and the use of temporary well servicing equipment to prepare the existing well for this use. The compressor will be installed as part of the gas management system and would reduce combustion emissions over the long-term. DOGGR is the agency with regulatory authority to approve gas re-injection operations. The Project has an application on file with DOGGR seeking approval of the use of a pre-existing well as a potential gas re-injection well. While discussions with DOGGR on the application are on-going, DOGGR has informed Breitburn that no other gas injection projects are currently approved in District 1 at this time. All other Project components would proceed as described under the proposed action. For this alternative, one CEB would be available in ready-standby mode in case there is a problem with the gas injection process.
Alternative 3 (Additional Microturbines)	In November 2014 Breitburn installed 14 CARB-certified microturbines to increase on-site electricity by burning field gas. Under this alternative Breitburn would install up to an additional 175 microturbines to further increase electricity capacity and reduce the amount of gas flared on-site. All other project components would proceed as described under the proposed action. The CEBs would be installed as a safety back-up, but would be off during standard operation of the microturbines.

Table 1-2. Summary of the Proposed Project and Project Alternatives

	Project Description
Alternative 4 (Gas Sales)	Under this alternative, instead of flaring field gas on-site (as described for the Proposed Project), the majority of the field gas would be sold to the Southern California Gas Company (SoCalGas). The gas quality of the process gas and volume of gas throughput levels must meet certain standards before SoCalGas will approve metering and odorizing equipment necessary to sell the gas. Currently, field gas production levels do not meet the consistent minimum gas volume of roughly 1 million scf/day (consistent production) required by SoCalGas for gas sales. In order for SoCalGas to agree to lay pipe to tie into a Gas Plant, Breitburn would have to produce sufficient volume of gas to be economically favorable to SoCalGas, which is estimated not to be possible based on historical data and current forecasts. Further, because field gas does not meet standards set by SoCal Gas, construction of a gas processing plant (Gas Plant) would be required to meet SoCalGas specifications. The Gas Plant may be comprised of initial compression of field gas (i.e. compressor, scrubbers), dehydration (i.e. separators, scrubbers, condensers, stabilization units, heat exchangers, chillers, glycol separators and filters, glycol pumps, glycol regenerator/reboiler, compressors, other refrigeration equipment items, natural gas liquids (NGL) vessel/tanks), potential CO2 removal in an amine unit (gas and liquid separators, amine contactor, amine filter, amine vessel/tank, heat exchanger and reboiler, cooler, pumps, etc.), and flares and/or permitted microturbines to combust tail gas from the gas sales equipment. In addition to the Gas Plant, gas metering and odorizing equipment required by SoCalGas and the US DOT would also need to be constructed and installed as part of this alternative. All other Project components would proceed as described under the proposed action. Although up to four new CEBs would be installed, the CEBs would be in ready-standby mode. This alternative was rejected as infeasible – see Section 4.3.2 for the detailed analysis.
Alternative 5 (Electrification of Oil/Injection Well Drilling)	Under this alternative, electric drill rigs, instead of diesel-fired units, would be used for drilling one well at a time. Wells at the Breitburn Santa Fe Springs Facilities are drilled by contracted stand-alone well-drilling rigs because there is no set program of drilling as one would have at a newly established oil field. The contractor brings the drilling rig and related equipment to the site. Currently, almost all well-drilling rigs are diesel-powered for both the drawworks (the primary hoisting machinery that is a component of the rig) and to run the electrical generator, because of the large power requirements and the lack of proper electric power facilities at the existing drill sites. To replace these diesel-powered drill rigs with electric drill rigs, Breitburn would need to obtain custom-built, pure electric drill rigs, specially made on a by-request basis, because electric drill rigs are not available for rental. All other project components would proceed as described under the proposed action. This alternative was rejected as infeasible – see Section 4.3.2 for the detailed analysis.

Table 1-3. Comparison of Significant Adverse Environmental Impacts of the Analyzed Alternatives

Category	Air Quality Impacts	Significance Impact and Comments
Proposed Project[6]	The Project has significant 24-hour average PM_{10} and $PM_{2.5}$ impacts resulting from potentially related oil well drilling. (Project equipment has less than significant ambient air quality impacts in operation or construction). The Project has significant impact regional NO_x and VOC emission impacts resulting from potentially related oil well drilling. (Project equipment has less than significant operational and construction emissions). The proposed Project (with or without potential related oil well drilling) has less than significant health risk impacts.	Significant for regional NO_x and VOC emissions and 24-hour average PM_{10} and $PM_{2.5}$ impacts for operations once potential related drilling impacts are included. Less than significant impacts for Project equipment only.
Alternative 1 (No Project) [6]	Emissions would be the same as the baseline scenario and thus, no incremental impact to air quality is expected.	No impact.
Alternative 2 (Gas Reinjection) [6]	During typical operating scenarios (i.e., when all gas reinjection equipment is operating), Alternative 2 would have lower air quality impacts than the proposed Project.	Lower emissions and impacts compared to the Project. Still significant for regional NO_x emissions for operations once potential related drilling impacts are included.

[6] This comparison addresses air quality impacts associated with standard operation of the Project and each alternative. The impacts vary with regard to air emissions, but are the same for all other impact areas. The impact analysis was conducted assuming normal operation of the above alternatives. Impacts during non-operation of the gas reinjection system are presented in Appendix B.

1.6.4 Chapter 5 – Other CEQA Considerations

Chapter 5 presents the other mandatory CEQA sections, including the following:

Unavoidable Significant Adverse Impacts - This subsection identifies and summarizes the unavoidable significant impacts described in detail in Chapter 3.

Effects Not Found to Be Significant - This subsection identifies and summarizes the issue areas that were determined to have no adverse environmental effect or a less than significant environmental effect given the established significance criteria.

Cumulative Impacts - This subsection addresses the potentially significant cumulative impacts that may result from the proposed Project when taking into account related or cumulative impacts resulting from other past, present, and reasonably foreseeable future projects.

Irreversible Environmental Changes - This subsection addresses the extent to which the proposed Project would result in the commitment of nonrenewable resources.

Growth-Inducing Impacts - This subsection describes the potential of the proposed Project to induce economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment.

1.6.5 Chapters 6, 7 and 8 – Acronyms and Abbreviations, Preparers and References

Additional information related to the EIR is provided.

CHAPTER 2

2 PROJECT DESCRIPTION

2.1 Introduction

This chapter describes the project background, the project location and setting, the project purpose, the project description, and project objectives. It includes a description of project characteristics and a summary of project approvals that would be required with the implementation of the proposed project, as well as the estimated construction and operation schedule. This information is provided pursuant to the CEQA Guidelines §15124.

2.2 Project Background

Breitburn has been operating in California for over 25 years. Breitburn has interests in and operates approximately 480 productive wells in California. Breitburn acquired its facilities in the Santa Fe Springs Oil Field (Field) in 1998, making it one of the five largest fields that Breitburn operates (Breitburn 2014).

The Santa Fe Springs Oil Field is one of approximately 70 oil fields in the Los Angeles Basin (Figure 2-1). California is the third largest oil producing state in the U.S. (U.S. Energy Information Agency 2014). In addition, the Los Angeles Basin is the richest oil basin in the world based on the volume of hydrocarbons per volume of sedimentary fill (Biddle 1991).

Santa Fe Springs has a long history of oil production. Oil was first discovered in the Santa Fe Springs Oil Field in 1919, and at that time it was considered one of the richest pools in petroleum history (Biddle 1991). Overall oil production at the Field peaked at a rate of 223,000 barrels (bbl) of oil per day in 1923. Since the first well was installed more than 1,900 oil wells have been drilled within the Field with a cumulative production of 632 million barrels (MMbbl) of oil. However, the Santa Fe Springs Oil Field is mature and thus, production levels have declined over time.

According to DOGGR, approximately 40 different providers have actively operated in the Field since 1977.[7] Breitburn is currently the only active operator in the Field.

[7] On-line DOGGR records for oil production from the field go back as far as 1977.

Figure 2-1. Oil Fields of the Los Angeles Basin.

2.3 Project Location

The Breitburn Santa Fe Springs Facilities, under the newly-consolidated SCAQMD Facility ID 15201, are located in the City of Santa Fe Springs in Los Angeles County. They are located near the intersection of Interstate (I)-5 and I-605, between the cities of Whittier and Downey and approximately 12 miles southeast of Downtown Los Angeles. Figure 2-2 shows the location of the facility on a regional map.

Figure 2-3 shows the Project site location map. The Project site is bounded to the north by Bell Ranch Drive, to the east by Shoemaker Avenue and Painter Avenue, and to the west by Norwalk Boulevard. Florence Avenue bisects the Project site just north of the southern boundary. Two major streets also bisect the site, Telegraph Road from east to west and Bloomfield Avenue from north to south. More specifically, the proposed Project is located at three facilities located within Breitburn's Santa Fe Springs Facilities. The Main Facility is located at 12720 Telegraph Road in the 700 Block, and the Baker Humble Lease Facility is located entirely within the Main Facility. The new facility, called the "400 Block Reinjection Facility," would be located at 10065 Bloomfield Avenue in the 400 Block.

The Breitburn Santa Fe Springs Facilities are in an area zoned as M-2 Industrial by the City of Santa Fe Springs' Municipal Code Zoning regulations, which allows for oil and gas development as a principal permitted land use (City of Santa Fe Springs Planning Department 2013). Breitburn operates in accordance with the provisions of the Municipal Code and applicable DOGGR regulations for oil well-related activities; therefore, drilling and operations within the Santa Fe Springs Oil Field may occur independent of approval of the proposed Project.

The area surrounding the Breitburn Santa Fe Springs Facilities consists of distribution centers and warehouses. There is one new residential area located south of Telegraph Road between Norwalk Boulevard and Bloomfield Avenue.

Figure 2-2. Regional Location Map.

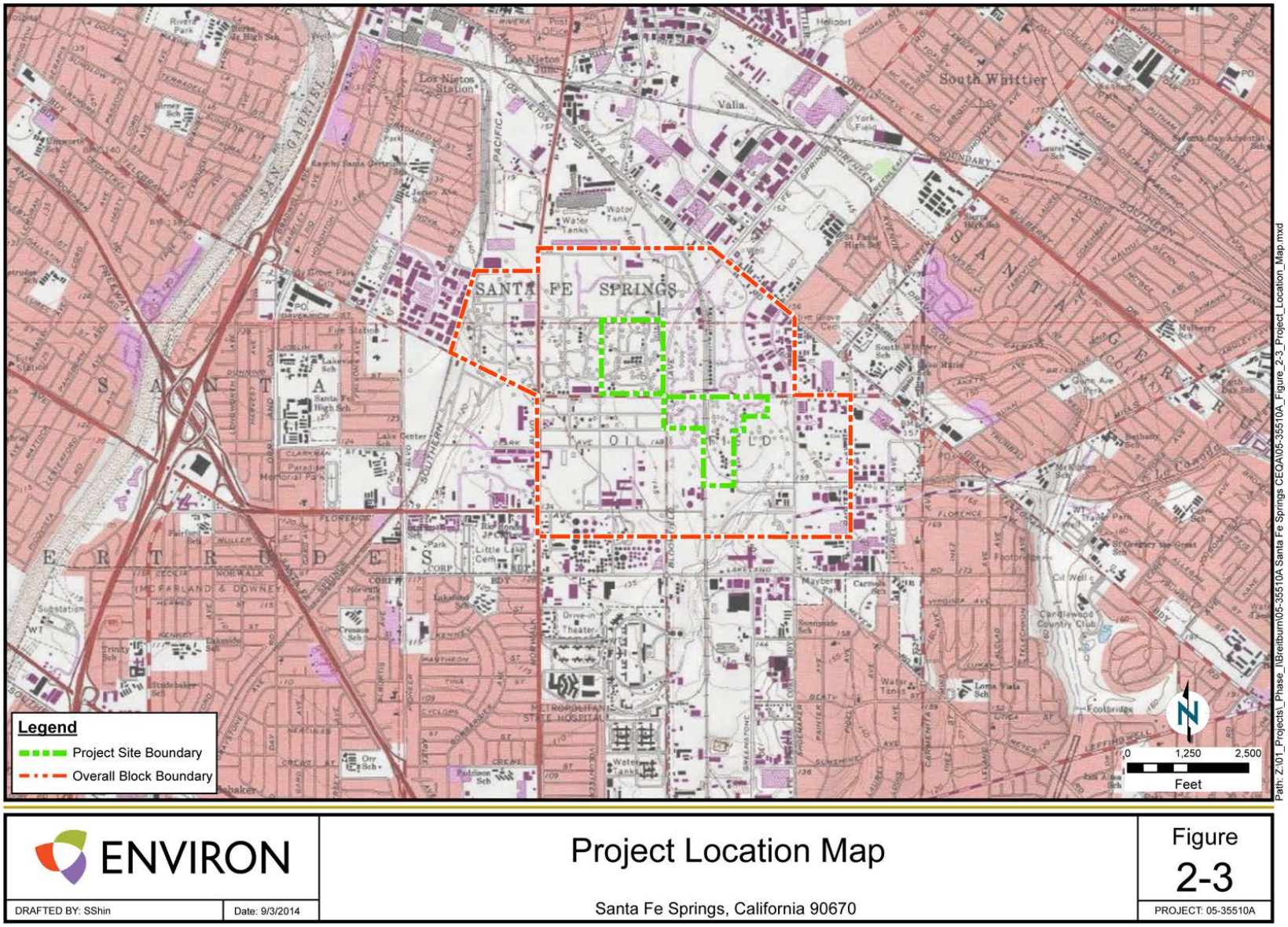

Figure 2-3. Project Location Map.

2.4 Current Operations

Breitburn operates on ten city "blocks" within the Field that covers approximately 784 acres (Figure 2-4). The Main Facility and Baker Humble Lease Facility, located in the 700 Block, contain a variety of tanks and processing equipment. The existing flare is located at the 400 Block, which is also the location of the proposed new "400 Block Reinjection Facility." These are the only Blocks that contain SCAQMD-permitted equipment, although there are production and injection wells located in other Blocks.

Total fluids (liquid fluids are approximately 2% oil and 98% water) produced from the wells are gathered into a pipeline system and delivered under well head pressure to the Main Tank Farm located at the Main Facility, south of Telegraph Road (700 Block). At the facility, the oil, gas, and water are separated by a three stage process – each stage removing incrementally less oil until the water has an oil content of typically less than 10 ppm. The process also removes solids, mainly sands, which are entrained in the fluid stream. The separation process includes one or more free water knockout tanks, clarifier tanks, and WEMCO® flotation separators (WEMCOs), as well as surge tanks, slop tanks, crude oil holding tanks and a vapor recovery unit.

The separated oil is generally exported on a continuous basis to a third-party commercial pipeline system, the Crimson Pipeline. Export via pipeline is the preferred method based on costs, safety, and environmental reasons. However, the Crimson Pipeline provides service to many producers, so the volume and pressure of the separated oil that Breitburn can export to Crimson Pipeline may be reduced on occasion. In addition, the pipeline is occasionally shut down for maintenance and repairs. A crude oil buffer storage tank allows for changes in production or pipeline shipping availability, but it is not always large enough to account for a lack of Crimson Pipeline capacity. As such, a portion of the crude oil may be taken from the site by truck. Trucking oil off-site also allows a portion of the oil to be sold in a different market. The oil is loaded at a truck loading station at the 700 Block. Currently, approximately three truckloads of oil (approximately 150-165 bbl in each truck for a total of approximately 475 bbl per day [bpd]) may be transported from the site daily based on the permitted maximum loading rate.

The separated produced water is treated to reduce solids and reinjected into the existing injection wells. Initially, the water is treated to reduce total suspended solids (TSS) and remove any basal sediments. The water is fed to a buffer tank using a series of electric pumps. The pumps operate at a discharge pressure sufficient to reinject the water into the well reservoirs for enhanced secondary oil recovery. This technique is not the same as hydraulic fracturing that applies high-pressure water injection to break up the reservoir. A pipeline system delivers the water to the injection wells which are scattered throughout the Field. In 2013, average water injection into various zones was about 144,000 bpd (4.536 million gallons per day [gpd]) of water.

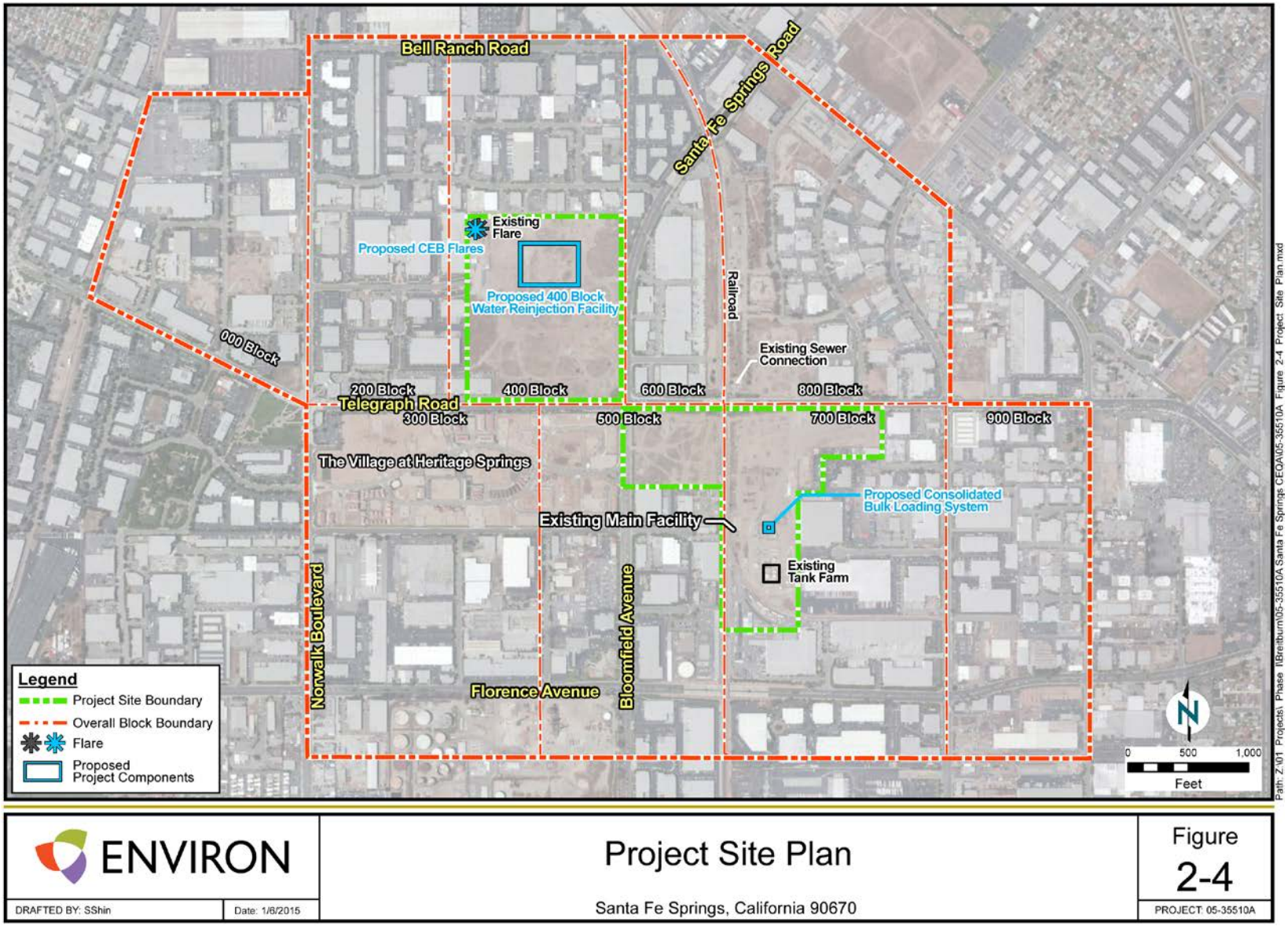

Figure 2-4 Project Site Plan.

Some produced water is also disposed of via the Los Angeles County Sanitation District's (LACSD) public sewer system. Breitburn operates under an Industrial Wastewater Discharge Permit to discharge up to 12,500 bpd (532,000 gpd) of water via the LACSD public sanitation system (LACSD 2012). Prior to discharge into the public sanitation system, the produced water is treated on-site in a wastewater treatment system connected to an air stripper, which removes benzene and other organics. These vapors are combusted in the thermal oxidizer at the Main Facility. The water is transported by pipeline to the sewer connection, located in the southwest corner of the 800 Block. In 2013, approximately 11,000 bpd (346,500 gpd) of water were discharged into this system (LACSD 2014). The proposed Project will not result in a modification to the existing wastewater pipeline or the associated discharge limit under Breitburn's Industrial Wastewater Discharge Permit.

The produced field gas is separated in the oil/gas/water separation system. A portion of the produced gas (approximately 300,000 - 400,000 cubic feet per day) is used to power 20 small third-party microturbines located on-site at the 700 Block. These microturbines generate approximately 1.3 megawatts (MW) of electricity for purchase by Breitburn for on-site equipment. In addition, Breitburn owns and operates 14 microturbines which use approximately 250,000 cubic feet per day of produced gas generating 0.9 MW of electricity also used for on-site equipment (see Section 2.6.4.2 for additional details). The majority of the operational equipment on-site is electrically-driven, including all of the pumps, with a total load of approximately 17 MW; thus, most of the electricity comes from Southern California Edison (SCE), via a small SCE substation located on-site. The remainder of the produced gas is moved by pipeline to the existing SCAQMD-permitted flare.

During most of 2014, Breitburn Santa Fe Springs Facilities had two flares on-site – the SCAQMD-permitted John Zink Company ground Bell flare (Bell flare) and a third-party rental flare from GEM Mobile Treatment Services (GEM flare; permanently removed December 9, 2014). An unexpectedly high gas production was initially encountered in December 2013 (higher than any concentrations of gas previously encountered at the Field since approximately 1977), exceeding the capacity of the existing Bell flare. For much of 2014, the temporary SCAQMD-permitted GEM flare was staged in the 400 Block to help accommodate the excess gas. Gas levels are decreasing, and have nearly returned to the lower levels historically encountered at the site.

2.5 Project Objectives

CEQA Guidelines §15124(b) requires the project description to include a statement of objectives sought by the proposed project, including the underlying purpose of the proposed project. Compatibility with project objectives is one criterion for selecting a range of reasonable project alternatives and provides a standard against which to measure project alternatives. The Project objectives listed below were developed: 1) in compliance with CEQA Guidelines §15124 (b); and, 2) to be consistent with policy objectives of the SCAQMD's New Source Review program.

Breitburn developed the proposed Project in response to its current fluids handling systems operating near or at maximum capacity, limiting its ability to produce oil from existing wells (some of which are now shut-in), as well as from potential future wells. As a mature oil field that has been producing for over 100 years, Breitburn wells typically produce approximately

49 barrels of water for every barrel of oil produced (total produced fluids are approximately 2% oil and 98% water) and the water must be separated and treated.

Breitburn currently beneficially uses its produced gas in 20 third-party microturbines as well as in 14 new on-site microturbines owned by Breitburn to produce electricity for the facility. The remaining produced gas is combusted in the existing John Zink Flare that was permitted prior to the most recent and more stringent BACT standards. Breitburn proposes to replace this flare with a new Flare Industries CEB that meets these newer BACT standards. In addition to being newer, the CEB is 80% more efficient in removing nitrogen oxide (NO_x) and can process 55% more gas. Up to three additional CEBs may also be installed (although one additional CEB would sufficiently handle all previously seen levels of produced gas, including recent atypically high levels observed in early 2014) in the event another high gas production is encountered and to ensure redundancy in the system.

Although almost all of the oil from the Breitburn facility is transported by the Crimson Pipeline, a portion of the oil is trucked off-site. In the past there have been times when the Crimson Pipeline has been unavailable to Breitburn, primarily due to pressure balance issues (i.e. the pressure of the pipeline is different from that which Breitburn is able to connect with). The truck capacity allows some oil to be transported when the pipeline is not available. In addition trucking may be used when warranted by favorable market conditions for local refineries or special use customers. The existing system only allows 476 barrels per day of oil to be trucked off-site, which is much lower than the current oil production capacity of about 4,000 barrels per day. The addition of one additional truck loading connection to the existing connection would allow two trucks to be loaded simultaneously (17 additional trucks per day), and up to 3,100 barrels per day of oil to be trucked off-site (which is still within current production levels).

The Project objectives are as follows:

1. Increase the ability to process produced water, oil and gas separation capacity to produce oil from currently shut-in wells and eventually future wells, when economics (consumer demand and world supply) are favorable;

2. Replace the older existing flare with a BACT burner to reduce emissions, and to add additional burners to the extent they are needed for safety and redundancy;

3. Increase produced oil truck loading capacity for use when warranted by market conditions and/or there are pressure balance issues or other issues rendering the Crimson Pipeline unavailable; and

4. Maintain operational efficiency, safety, flexibility, and economic viability of the Breitburn Facility and continue oil production operations from the mature Santa Fe Springs Oil Field.

2.6 Project Description

The Breitburn Santa Fe Springs Facilities are currently operating near or at the maximum capacity for the fluids processing systems. In addition, although produced gas levels are declining to the lower historical levels, any future excursion to the type of high levels seen in late

2013/early 2014 could exceed current flaring capacity resulting in the need for an additional on-site burner. Breitburn has determined that it is likely that sufficient oil reserves remain at the Santa Fe Springs Oil Field to economically justify construction of additional facilities. The proposed Project aims to provide additional capacity to accommodate existing well production capacity, including any pockets with unusually high amounts of gas in the future. But it would also accommodate potential future increases in production. Therefore, while there are no current plans to expand production, this EIR analyzes increases in daily production up to the maximum design capacity of the subject equipment.

The scope of the Project is divided into three components that are covered by three distinct SCAQMD permit application submittals. Each component is independent, i.e., not contingent on the permitting and/or implementation of the others.

Component 1: A new oil/water/gas processing plant in the 400 Block, referred to as the "400 Block Reinjection Facility," would serve the following purposes:

1. Separate the oil, gas, and water that is produced from wells within a proposed new crude oil/water/gas separation system, able to process up to the equipment design maximum of an additional 4,000 bpd of oil, 196,000 bpd of produced water, and 2 million standard cubic feet per day (MMscfd) of produced gas for the Breitburn Santa Fe Springs Facilities;

2. Export the oil via the existing Crimson Pipeline system or via the truck loading system discussed in Component 2;

3. Recover gas, up to approximately 2 MMscfd, from the new storage tanks and process vessels in the new proposed vapor recovery system; and

4. Treat water, up to a total of 196,000 bpd, using a proposed new wastewater treatment system so that it can be reinjected (without chemicals).

Any produced gas not used for electricity generation in the microturbines would be sent to the flares discussed in Component 3 below. The proposed Project site covers approximately 2 acres of the Field for the 400 Block Reinjection Facility (an approximately 480' by 220' area for the plant), as well as less than one acre for a new, paved access road (approximately 1,200' by 24').

Component 2: An upgrade to the existing truck loading system, located at the Main Facility (700 Block) would increase the volume of oil that could be transported from the site via trucks. The proposed upgrade is referred to as the "Consolidated Bulk Truck Loading System" and includes:

1. Addition of one new crude oil truck loading connection;

2. Modification to the existing thermal oxidizer (Figure 2-12) to control emissions from the new loading connection; and

3. Modification of the existing truck loading connection on the crude oil/gas/water separation system to accommodate the new connection.

These additions and modifications would accommodate the additional oil that is processed at either the new "400 Block Reinjection Facility" discussed in Component 1 or the existing 700 Block Facility. Oil would continue to be exported via the Crimson Pipeline pursuant to Crimson's conditions and requirements at the time. This expanded truck loading system would serve as a back-up to the Crimson Pipeline if the Pipeline is undergoing maintenance, testing, is under repairs or is otherwise unable to transport the Santa Fe Springs crude oil to market. The truck loading may occasionally be used to transport crude oil to other refineries/markets not served by Crimson due to favorable market conditions at local refineries or when there are pressure balance issues or other issues rendering the Crimson Pipeline unavailable. The Crimson Pipeline would remain the primary method of crude oil shipment.

Component 3: Replacement of the existing flare system, located within the 400 Block, with the Flare Industries CEB low-emission burners to dispose of volumes of produced gas anticipated during oil field operations and any unanticipated high produced gas/oil levels as observed in late 2013/early 2014. Note that the high gas levels seen in are atypical and that high levels of gas production are not necessarily related to oil production levels. Two CEBs would be sufficient for such high gas levels, which had rarely been experienced before in this field. Two additional CEBs (for a total of four) were added to the proposed Project to provide redundancy and a large margin of safety in the event high gas levels are experienced again.

1. Replace the SCAQMD permitted Bell (John Zink) flare with one new, low-emission enclosed burner, Flare Industries CEB-800-CA (CEB); and

2. Add up to three additional identical CEBs to accommodate the additional produced gas from the wells or a reoccurrence of an atypical high gas pocket in the wells.

The four CEB units would be capable of running at full capacity to accommodate disposal of any produced gas not burned in the microturbines. The proposed CEBs would cover approximately 0.1 acres total (the footprint dimensions for each CEB are approximately 28 ft x 10 ft, with 10 ft between each CEB).

Existing and proposed Project components are identified in Figure 2-4. The following sections provide additional detail on each proposed Project component.

2.6.1 400 Block Reinjection Facility (Total Fluids Processing Facility)

A new total fluids handling system is proposed to be installed within the 400 Block. The facility would be located north of Telegraph Road and approximately 0.25 miles west of the existing 700 Block facilities. The new facility would occupy approximately two acres of the 37-acre 400 Block (Figure 2-4). The primary purpose of the proposed new 400 Block Reinjection Facility is to process the total produced fluids. The proposed facility has been designed in two phases, each with a capacity of 100,000 bpd of total fluids (i.e. oil and wastewater).[8] The proposed facility components and processes, construction, and operation are described in detail below.

[8] The maximum capacity of the facility was established based on the largest unit easily transportable by road; Breitburn concluded that there would be no significant economic savings in installing a smaller unit.

2.6.1.1 Overview of 400 Block Reinjection Facility Equipment and Processes

A mixture of oil, gas, and water would be pumped via flowlines and gathering lines from producing wells to the new 400 Block Reinjection Facility. The mixture, which typically consists of approximately 98% water and 2% oil, would be processed by the proposed new oil/gas/water separation system to separate it into its components. The oil/gas/water separation system includes two free water knockout tanks, a crude oil storage tank with a capacity of 2,000 bbls, one 100 bbl slop tank, one pressure vessel, and miscellaneous electric pumps. The wastewater treatment and injection system includes two WEMCOs, two water surge tanks (7,500 bbls and 3,000 bbls), one 7,500 bbl clarifier tank, and miscellaneous electric pumps. The vapor recovery system will consist of two compressors and several pressure vessels.

The produced fluid comes out of the well at a pressure of 30 psi and temperature of ~180 degrees Fahrenheit and would first travel through the free water knockout (Figure 2-5). Because the produced fluid temperature is naturally high, separation of the constituents is easier than for lower-temperature produced fluids. The free water knockout is a pressure vessel built to American Society of Mechanical Engineers (ASME) code and rated for a pressure of 75 psi. Fluids in any particular well do not flow out of the well on their own; the inlet pressure is a function of the design of the downhole pumps, which would not be rated to produce 75 psi at the processing facility. In the extremely unlikely event of overpressure (since this is a very mature, de-pressurized field), the pressure release valve would vent to the atmosphere via the pressure safety valve blowout vessel.

Figure 2-5. Free Water Knock Out Vessel at the 700 Block Main Facility.
Two comparable Free Water Knock Out Vessels will be included at proposed 400 Block Reinjection Facility.

After this stage the oil is “dry” enough to meet required pipeline specifications. The oil would be temporarily stored in the proposed 2,000 barrel oil storage tank (Figure 2-6) before it is pumped to a metering system in the 700 Block Main Facility and then transferred to the Crimson Pipeline system connection. There would be no loading of crude oil or other petroleum hydrocarbons to trucks at 400 Block facility. Instead, if the oil is not shipped via the Crimson Pipeline once at the

Main Facility, the oil would be loaded to trucks at the new Consolidated Bulk Truck Loading station at the 700 Block (Figure 2-7).

Figure 2-6. Storage Tanks at the 700 Block Main Facility.
Similar to those that will be a part of Proposed 400 Block Reinjection Facility.

Figure 2-7. Existing Truck Loading Connection.
In the foreground of the Baker Humble tank, located at the 700 Block.
The proposed new connection would be added immediately adjacent to existing connection.

From the free water knockout, the water flows to the clarifier. This is a large tank that is designed to allow sufficient time for the oil that remains in the water to float to the surface. This oil is occasionally skimmed off the water and sent to a slop tank.

The water from the clarifier tank flows to the WEMCOs (Figure 2-8). Each WEMCO would have the capacity to process approximately 4.12 million gpd (~130,800 bpd). This is the last stage of separation, and by this point most of the oil has already been removed and any remaining oil is emulsified in the water. The WEMCOs generate air bubbles in the water at the bottom of the tank, and as they rise to the surface oil droplets and small solids cling to them. The residue is skimmed off of the surface of the water and sent to the slop tank. The liquids that are collected in the slop tank, primarily oily water, are pumped back into the inlet of the separation and treatment system for reprocessing. The WEMCOs are divided into four cells in series that progressively reduce the oil in the water until the oil content is about 10 ppm (for comparison, the offshore produced water discharge limit is 29 ppm oil averaged monthly).

Figure 2-8. WEMCO Separator at the 700 Block Main Facility.
Similar to that which will be installed at the proposed 400 Block Reinjection Facility.

From the WEMCO unit, the clean water is pumped to a surge tank where it is held briefly before it is reinjected into the producing reservoir wells; currently there are 80 active and 3 idle reinjection wells at the Breitburn Santa Fe Springs Facilities (Figure 2-9). Injection occurs using large horsepower electric pumps that are each designed to inject about 25,000 bpd at approximately 2,000 psi. Water is reinjected more or less continuously. As noted in Section 1.4.1, up to 12,500 bpd of produced water are also permitted to be disposed of in the public sewer system via pipeline to the connection in the 800 Block (Figure 2-10).

The sand that is entrained in the produced fluid drops out during the free water knockout and clarifier tank stages of the separation process. These solids are dewatered and these nonhazardous components are trucked off-site for disposal at licensed disposal facility regularly (e.g., up to several times per month). The solids removed by the WEMCOs are much smaller. The free water knockout, the clarifier tank, and the water surge tank all utilize pipework and nozzles to propel the accumulated sand into a slurry that is sent to the cone bottom tank. The solids settle in that tank, where they are removed by a vacuum truck, dewatered and then sent off-site for proper disposal. At full capacity of 196,000 bpd of water, these periodic solids removals could produce approximately 37 to 42 bpd of a wet solids/slurry mixture that will be trucked off-site. At peak capacity, approximately 11 to 13 trucks per month of this mixture will be transported off-site from the new 400 Block Facility. For comparison, the current operation at

the 700 Block, with approximately 160,000 bpd of water, produces approximately 30 bpd of solids, requiring about 9 trucks per month to transport the mixture off-site. On a peak day, however, the Project will not result in an increase above baseline conditions in trucking this wet solids/slurry mixture off-site.

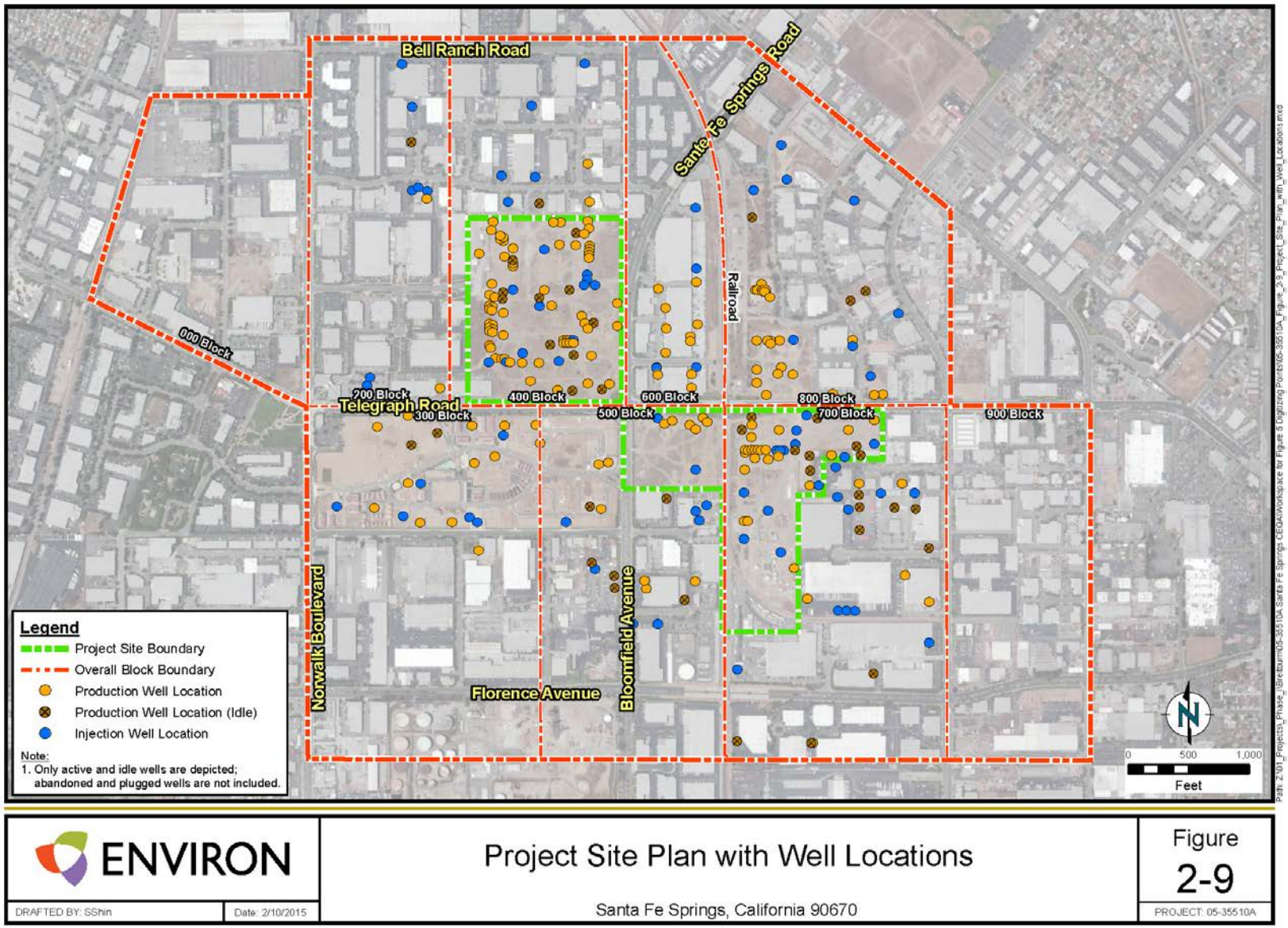

Figure 2-9. Project Site Plan with Well Locations

Figure 2-10. 700 Block Main Facility Pump and Ancillary Equipment Area.

Gas that is dissolved in the oil is for the most part released during the free water knockout phase and is sent to a vapor recovery unit. Small amounts of gas may be released from the oil during each subsequent phase of the separation process; this gas would also be piped to the vapor recovery unit. As the gas cools in the vapor recovery unit, liquids may drop out. The liquids are collected in the vapor recovery unit inlet knockout vessel and pumped to the slop tank. Two rotary screw compressors provide the suction for the vapor recovery system. After the gas is compressed it is cooled in a heat exchanger to induce any remaining liquids to drop out. The compressed gas would then be delivered to the proposed low emission burners. The vapor recovery system would operate at a 95% or greater control efficiency, as required by SCAQMD Rule 463, Organic Liquid Storage. Actual control efficiency is approximately 98%.

2.6.1.2 400 Block Reinjection Facility Construction and Operation Phases

The 400 Block Reinjection Facility would be developed in two phases that would be spaced at least 12 months apart.

During the first phase, Breitburn anticipates that approximately 2,000 bpd oil would be produced from wells, processed at the 400 Block Reinjection Facility, and transferred to the export system of the 700 Block Main Facility, which includes export via the Crimson Pipeline or via truck using the Consolidated Bulk Truck Loading System. All produced water, up to 98,000 bpd, would be treated and injected into reinjection wells. All rainwater would also be treated and injected. All gas would be transferred to the new flare system discussed in Section 2.6.3 or utilized for electricity generation in the microturbines.

During the second phase, Breitburn proposes to double the additional processing capacity described for the first phase. As such, processing would increase by approximately an additional 2,000 bpd in the first phase of operation and then an additional 2,000 bpd of oil with the second phase of construction, which would continue to be transported to the Main Facility for export. All additional produced water would be treated and re-injected, up to a maximum of 196,000 bpd. The proposed 400 Block Reinjection Facility would allow for a total increase in current oil processing capacity at the Breitburn Santa Fe Springs Facilities by 4,000 bpd, but it may also be

used to transfer some fluid service from the current main 700 Block fluid handling facility to this newer, more efficient facility.

The majority of the new equipment would be installed during Phase 1, including one free water knockout, the water tanks, the oil storage tank, the water surge tanks, one WEMCO flotation separator, oil transfer and skim pumps, water charge pumps, injection pumps and the vapor recovery system. During Phase 2, additional equipment would be installed to accommodate increased processing, including the second free water knockout tank and the second WEMCO; additional oil skim, water charge and injection pumps, and additional collection lines on the vapor recovery unit.

No additional employees would be required on-site to operate the new equipment.

The tank farm would be enclosed within a secondary containment system consisting generally of concrete block walls, and the tanks contained within it would be painted according to the City of Santa Fe Springs requirements and have maximum heights of approximately 32 feet. The tanks would all have leak detection systems as required by DOGGR. Non-hydrocarbon equipment, such as the injection pumps, would be located outside the secondary containment system. In addition, there would be new sources of light at the 400 Block Reinjection Facility similar to equipment/area lighting used at the 700 Block Main Facility.

Construction of the tank farm enclosure and storage tanks, and installation of the pumps and compressors would require grading of approximately two acres during Phase 1. Installation of the new 400 Block Reinjection Facility would involve bringing new equipment on-site and installing the equipment, requiring a large crane for tank construction, installation of the WEMCOs and free water knockout; however, construction would not require any demolition. During the installation of new equipment, Breitburn would comply with SCAQMD Rule 403, Fugitive Dust, to minimize fugitive dust during construction. Additional truck and commuter trips will be generated during the construction phase; however, this will be short term and is expected to be small. Construction equipment activity details are included in Appendix B.

2.6.2 Consolidated Bulk Truck Loading System

The second component of the proposed Project is the modification of the truck loading connection at the 700 Block Main Facility, which includes the addition of a new loading connection and the minor modification of the existing thermal oxidizer system. This is necessary to accept vapors from the one modified truck loading connection and the new truck loading connection.

2.6.2.1 Overview of Consolidated Bulk Truck Loading System Equipment and Processes

The Main Facility is currently the primary oil and water processing facility for Breitburn's operations; however, with the addition of the proposed 400 Block Reinjection Facility, oil, gas, and water would be separated and processed at both facilities. After processing and temporary storage in a holding tank, all of the oil would be transported to the Main Facility, and the majority of the oil would be sold and transported via the Crimson Pipeline. However, a portion of the oil could continue to be trucked off-site, primarily when there are pressure balance issues with the Crimson Pipeline and/or when warranted by market conditions.

When trucked, the oil is currently loaded to trucks from a single loading connection at the Baker Humble Lease facility, immediately adjacent to the Main Facility tank farm. The proposed new Consolidated Bulk Truck Loading System would add a new loading connection near the existing Baker Humble Lease connection. The purpose of the Consolidated Bulk Truck Loading System is to accommodate current production and potential future increases in production.

The new loading connection would be positioned so that two trucks could load simultaneously within the loading station. Breitburn would load crude oil directly from the shipping tanks at the Main Facility tank farm to either of these two loading connections, in addition to retaining the ability to transport crude oil off-site via pipeline. Current operations, which are limited by the SCAQMD permit, allow for loading of approximately 476 bpd (approximately three trucks per day). The proposed future maximum loading rate would be approximately 3,100 bpd, which is within current production levels. Breitburn has proposed in its SCAQMD permit applications to load up to a maximum of 20 trucks per day using this upgraded loading system. It takes approximately one hour to load a truck, and the proposed new facility would allow two trucks to be loaded simultaneously. The trucks would be loaded mostly during daylight hours; however, scheduling may require loading at night if production levels or truck scheduling warrant the loading of the maximum of 20 trucks in one day.

The proposed modification would involve the installation of one new oil loading connection, comprised of one oil loading hose and one vapor recovery hose, as well as minimal modifications to other system components to adjust for the second connection, described below (Figure 2-11).

Figure 2-11. Existing Truck Loading Connection/Hoses at 700 Block.
The proposed new connection would add one crude oil loading hose and one vapor recovery line such that trucks could be loaded simultaneously.

At the Main Facility on the 700 Block, the existing thermal oxidizer controls vapors vented from the air stripper that is used to remove volatile organic compounds (VOCs) and toxics from produced water that is treated prior to discharge to the sewer connection. See Figure 2-12. The

primary purpose of the proposed thermal oxidizer modification is to enable the system to accept vapors from both loading connections associated with the Consolidated Bulk Truck Loading System. The vapors would join in a header prior to being sent to the modified thermal oxidizer. The thermal oxidizer would be used to control hydrocarbons vented from the wastewater that goes into the air stripper system.

Figure 2-12. Existing Thermal Oxidizer at the 700 Block

Pressure and flow transmitters would provide measurements to the control system to optimize combustion of the combined vapors removed from the produced water currently vented from the Main Facility air stripper and the truck loading system in the thermal oxidizer. The vacuum relief valve on the truck loading header protects the truck tank against vacuum or over pressure. The thermal oxidizer, which runs continuously, is fueled by make-up gas from the vapor recovery unit.

The Consolidated Bulk Truck Loading System would be designed, installed, and operated in compliance with SCAQMD Rule 462 for Organic Liquid Loading for a Class A loading operation, with a volume of 20,000 gpd or greater loaded. In addition to the increased loading capacity, the major change would be to improve the vapor recovery efficiency. This would be accomplished with the installation of a blower that would send the vapor to the small existing thermal oxidizer.

No additional employees would be required on-site to operate the new equipment. There will be an increase of up to 17 truck trips per day (for a maximum of 20 trucks per day) as a result of the increased capacity provided by the Consolidated Bulk Truck Loading System. Consistent with current configurations, the trucks would access the loading station by traveling eastbound on Telegraph Road. Once loaded, the trucks would exit and continue eastbound onto Telegraph Road, turn south onto Shoemaker Avenue and turn west onto Florence Avenue to access I- 5 or I-605.

2.6.2.2 Consolidated Bulk Truck Loading System Construction

No demolition or ground disturbing activities are required during modification of the bulk truck loading station. Construction of the modified bulk truck loading system would be limited to the equipment required to bring new Project components on-site and install them. Installation of new equipment or modification of existing equipment would require light-duty trucks and welding equipment over the course of approximately two weeks.

2.6.3 Flare Replacement

Breitburn currently operates one permitted John Zink ground flare (Figure 2-13), located in the 400 Block, which has a maximum capacity of 0.450 MMscfd. In December 2013/early 2014, Breitburn experienced an unexpected and atypical surge in gas production resulting in a volume of gas production up to 1.4 MMscfd. In response, Breitburn brought a rental GEM flare on-site to combust the excess gas, which has declined over the second half of 2014 to a gas-to-oil ratio that is more typical of historic produced fluid ratios at the Breitburn Santa Fe Spring Facilities. In the future, an increase in oil production could also increase gas production (although generally not on a 1:1 ratio). Owing to a combination of the natural characteristics of the petroleum-bearing reservoir, and the manner in which it is developed, the ratios of oil, gas, and water typically change over time. This ratio is monitored by the operator and used to modify the extraction and injection array as needed. The Project proposes to replace the existing John Zink flare with a newer, lower-emitting CEB-800 burner with a gas-combusting capacity of up to 0.70 MMscfd capacity. In addition, Breitburn proposes to install up to three additional new, identical lower-emitting burners on-site, which would more than double the gas combustion capacity required historically on-site.

Figure 2-13. Existing Flare Located at the 400 Block.
This will be replaced with one new, low emitting CEB in the same location with the possible addition of up to three more identical CEBs for redundancy and contingencies.

2.6.3.1 Flare Replacement Equipment and Processes

Breitburn proposes to replace the existing flare unit with one new lower-emission enclosed burner. In addition to the replacement burner, up to three additional identical enclosed burners would be installed, one to handle more gas at the peak levels and two for redundancy. As such, the proposed burners would be capable of handling double the recent peak capacity of gas. The four new proposed burners would be Flare Industries CEB-800-CA units (CEBs) with a heat rating of 39 MMBTU/hr each. Each would have a maximum capacity of approximately 0.70 MMscfd. While the capacity is larger, the new CEBs have more efficient burners and lower emission guarantees, with a destruction and removal efficiency of at least 99% for each unit (99.9% based on manufacturer's specifications). Even if future production levels call for operation of all four units, the operation of the new CEBs would reduce emissions from flaring activities at the Project site as compared to current emission levels.

2.6.3.2 Flare Replacement Equipment Construction and Operation

The CEBs would be located in the 400 Block to the west of the proposed 400 Block Reinjection Facility. The CEBs would combust produced gas from both the proposed new facility and the existing 700 Block Main Facility. The CEBs would be brought online and made operational as needed to accommodate increased gas production with the ability to run full-time, if necessary. The CEBs would combust the produced gas at the Breitburn Santa Fe Springs Facilities only for gas above that which is beneficially reused in the existing 20 third-party microturbines, as well as in the new 14 Breitburn-owned microturbines installed in November 2014.

The installation of the CEBs would require the removal and hauling off of the existing Bell (John Zink) flare. The footprint for the concrete foundation for each new CEB would be approximately 250 square feet; therefore, minimal grading is anticipated. Welding equipment and a lightweight crane (20 ton) would be required to install the new CEBs. Additional traffic generated during the construction phase would be minimal consisting of truck trips for delivery of the two CEBs (two are already on-site), removal of the existing flare, and commuter trips for workers to install the four units. Construction schedule and equipment details are included in Appendix B.

2.6.4 Related Oil Field Activities

As part of its ongoing operations, Breitburn plans to continue to operate and produce oil within the Santa Fe Springs Oil Field. Existing wells located throughout Breitburn's oil field lease area (Figures 2-3 and 2-4) may be reworked, as necessary, as part of on-going maintenance and production activities at the Field. Reworking refers to any well maintenance that is undertaken to improve the condition or safety of a well. In addition, wells that are currently shut-in may be brought back on-line. Breitburn may also drill reinjection and/or production wells throughout its oil field lease area. These activities are a part of normal, ongoing operations and necessary for prudent reservoir management (See Section 2.6.4.1 below). No new drilling would occur in the one residential area near the site.

Based on the chemical disclosure lists provided by oil field contractors, reworking and drilling typically involves primarily injection of sand and water (99%) with minimal amounts of non-hazardous additives to improve viscosity and provide a pH buffer. Note that the sand/water/chemical mixture injected into the well is not hydraulic fracturing; it is used as part of normal drilling operations and is not injected at high pressure. All chemical containers are

maintained within appropriate secondary containment or in a location where fluids cannot spill off-site, in accordance with the facility's Spill Prevention, Containment, and Countermeasures Plan (SPCC Plan).

These activities would all be performed in accordance with the City of Santa Fe Springs Municipal Code Zoning regulations for the M-2 zone and applicable DOGGR regulations for oil well-related activities. Breitburn also has installed fourteen new microturbines that operate on field gas. The microturbines are CARB distributed generation (DG)-certified to run on this fuel and do not require permits (see Section 2.6.4.2 below). Although these activities are not part of the proposed Project, the potential indirect environmental impacts of these activities are evaluated within the appropriate environmental area discussions in this EIR.

2.6.4.1 Oil Field Production

The production of oil from a reservoir is never completely efficient. Worldwide, oil recovery efficiency is typically around 35%. The Field is a mature oil field, and it is not unusual for a mature oil field to have significant remaining reserves that are untapped due to inefficient drainage, declining pressure, sand production problems, aging production systems, uneconomic conditions, and recent evolution in production technology. At the Field, even a 0.5% increase in recovery would produce on the order of 8 million barrels. A substantial amount of effort is needed to extract oil from the Field currently. Maintaining and potentially increasing recovery requires a detailed understanding of the geology and reservoir conditions and the application of new technologies.

Oil and water injection wells (Figure 2-14 and 2-15) are present throughout the Project site and additionally in the lease Blocks that overlay the Field. Under normal operating conditions, Breitburn operates about 250 active wells: 169 production wells and 80 injection wells. In 2013, Breitburn produced an average of approximately 2,850 barrels of oil per day from approximately 129-149 active production wells. Of the 169 active production wells at the field, 20 active wells are typically off-line due to capacity limitations, mechanical problems or uneconomic oil production rates. These wells, if brought back on-line, could potentially produce approximately 287 barrels of oil per day and approximately 35,000 barrels of produced water per day (although production rates naturally vary dependent on the arrangement of wells on-line at any one time and the characteristics of the reservoir at the location point of each well). This incremental projected increase in produced fluids may be sufficient on its own for Breitburn to economically justify the construction of the Proposed 400 Block Reinjection Facility. In addition to the active wells described above, Breitburn maintains approximately 55 idle production wells, and 3 idle injection wells.

Figure 2-14. Typical Well with Electric Pumpjack Located at 700 Block.

In the future, Breitburn may drill additional wells to maintain production at the Field (i.e. to replace wells that are no longer economically viable or to improve waterflood efficiency). The rate of drilling new wells varies substantially each year. For example, between January 2012 and January 2014, approximately 40 wells were drilled. In contrast, between 2010 and 2012, approximately 7 wells were drilled. Breitburn conducts evaluations of the geology of the Field to help increase recovery and optimize locations for new wells. Also, a modern well logging tool has been used in about 100 wells.[9] New developments in well logging technology may further enhance the ability to further evaluate the Field. Consequently, at this time there are no established plans or applications for new well permits to be filed by Breitburn for the Breitburn Santa Fe Springs Facilities, and any estimates about future drilling would be speculative. However, it is reasonably foreseeable that new wells will be drilled in the future, in connection with Breitburn's ongoing operations in an active oil field. In addition, the new facilities proposed as part of this Project would increase the capacity to process an increased volume of produced water and gas which would accompany any increases in oil production (achieved through new wells, reestablishing shut-in wells, or other common means as described below). If Breitburn were to drill new wells at the Field in the future, Breitburn would not drill more than one new well at any given time at the Project site. For this purpose, Breitburn has included an analysis in this EIR of the potential impacts of drilling one new well at any given time. Drilling one new well would be completed in no more than 20 days and involve a number of pieces of equipment.[10] Potential environmental impacts from any increased oil production resulting from

[9] The well log provides information about the characteristics of the rock at every depth over the productive zones. Incremental knowledge about the reservoir is gained with each new well. At the Santa Fe Springs Oil Field, the productive zones extend more or less continuously from the Foix reservoir at 3,400 feet to the Upper Santa Fe reservoir at a depth of 8,100 feet. Not every well is drilled to the deepest producing horizon. Geologists combine the log data with the seismic data to produce structure maps at each producing zone, which show the sands that are most likely to be hydrocarbon bearing. The reservoir engineers can then estimate the location and likely volumes of remaining oil in the formations.

[10] No unconventional resources exist beneath the Santa Fe Springs Oil Field; therefore, no wells would be completed using hydraulic fracturing techniques.

one new well on a given day or any other oil field enhancements described above are considered as part of the analysis of the operations of the proposed 400 Block Reinjection Facility and other Project oil-related equipment modifications.

Figure 2-15. Typical Water Injection Well Located at 700 Block.

Current production rates would also be maintained or increased in ways other than the drilling of new wells. There are a number of methods to achieve this, especially at a mature oil field. The oil bearing sands are continuous in some parts of the field and one well can drain a fairly wide area. Therefore, another method to enhance production without drilling new wells is to recomplete an unproductive well at a different depth by isolating the existing perforations, closing off production from that layer and then perforating the well at a more productive depth. For idle or uneconomic wells, this approach is normally used. Another method is to change the depth or the size of the downhole pump. This method can help sometimes by producing more fluid and by sometimes increasing the percentage of oil produced in comparison to water. In addition, it is common to convert uneconomic production wells to water injection wells if they are favorably located to enhance secondary oil recovery.[11]

Breitburn uses a large variety of tools and equipment that can be placed within an existing well bore to reduce the percentage of produced water, increase the percentage of produced oil, reduce sand production, or increase the lifespan of a pump. Breitburn uses the waterflood method of enhanced oil recovery, which utilizes carefully placed water injection wells to sweep the remaining oil towards the production wells. Breitburn may change the distribution of wells that are shut-in and online based on review of water production/oil production ratios in order to increase production. Well workovers are performed continuously throughout the year, which can

[11] Secondary oil recovery is a form of enhanced oil recovery that uses Class 2 injection wells (permitted through the Safe Drinking Water Act (SDWA) Underground Injection Control program) to inject water (typically treated produced water) into the producing formation at locations and depths that result in greater rates of oil recovery. Secondary recovery also minimizes the potential for ground subsidence.

also help increase production. A typical well workover rig used at the Santa Fe Springs Oil Field is depicted in Figure 2-16. Most workovers are for maintenance, replacing a pump, removing scale build up, replacing worn tubing or pump rods, etc. As such, water production is independent of drilling operations and rates can increase without the drilling of new wells.

Figure 2-16. Typical Well Workover Rig.

2.6.4.2 Fourteen New Microturbines

Breitburn sends a portion of its produced gas to 34 microturbines located on-site. Twenty of the micro-turbines are owned and operated by a third-party which are part of the existing baseline. The other fourteen micro-turbines are owned and operated by Breitburn to increase on-site electrical generation; the 14 microturbines were installed at the end of 2014 and are being assessed as part of the cumulative impacts. These microturbine operations will continue to operate.

In early November 2014, Breitburn installed 14 additional microturbines (Figure 2-17), owned and operated by Breitburn, to increase on-site electrical generation. The proposed turbines are CARB DG-certified microturbines (Capstone, 65kW). The installation of these 14 microturbines did not require a discretionary SCAQMD air permit because they are exempt per SCAQMD Rule 219(b)(1) (i.e., CARB certified, less than 2 MW in total). However, as required, they have been registered with the SCAQMD pursuant to Rule 222. Breitburn began operation of the microturbines in November 2014.

Figure 2-17. Breitburn's Microturbines.
Noise dampers are visible on the top of each turbine.

2.7 Construction of the Proposed Project

Construction activities for the proposed Project are expected to begin when the EIR is certified and required agency permits and approvals are received. The actual dates of each construction phase may change, but the construction analysis and emissions will remain the same (i.e., the construction analysis is conservative and all reported emissions will be the same or greater than actual emissions if construction is delayed). An estimated construction schedule is provided below assuming that the necessary air quality permits are issued by June 2015; construction schedule and equipment details are included in Appendix B.

Project Construction Component	Estimated Start Date of Construction[1]
Flare Replacement and up to 3 Additional CEBs	Quarter 3, 2015
Modifications for Consolidated Bulk Truck Loading System	Quarter 3, 2015
400 Block Reinjection Facility	Quarter 1 or 2, 2016

[1] Estimated construction schedule assumes that the necessary air quality permits are issued by June 2015.

2.8 Operation of the Proposed Project

The multiple components of the proposed Project would be implemented in phases after the EIR is approved and the required permits are obtained. An estimated operational start date for each Project component is provided below, illustrating the transition from current operations to full proposed Project implementation.

Project Component	Estimated Start Date of Operation[1]
Flare Replacement and up to 3 Additional CEBs	Quarter 3, 2015
Modifications for Consolidated BulkTruck Loading System	Quarter 3, 2015
400 Block Reinjection Facility	Quarter 3 or 4, 2016

[1] Estimated construction schedule assumes that the necessary air quality permits are issued by June 2015.

2.9 Permits and Approvals

The proposed Project requires Permits to Construct and to Operate from the SCAQMD. A building permit from the City of Santa Fe Springs will be required for the tank farm structure at the 400 Block Reinjection Facility. These permits are ministerial in nature. Grading permits are not required for the miscellaneous project construction activities per applicable ordinances. No other permits are expected to be required.

Breitburn may drill additional injection and/or production wells, or rework an existing well, as needed. These activities would all be performed in accordance with the City of Santa Fe Springs Municipal Code Zoning regulations for the M-2 zone and applicable DOGGR regulations and permitting procedures for oil well-related activities when, and if, Breitburn elects to apply for a new well permit in the future.

CHAPTER 3

3 EXISTING SETTING, IMPACTS AND MITIGATION

3.1 Introduction

CEQA Guidelines §15360 (see also Public Resources Code §21060.5) defines "environment" as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." According to CEQA Guidelines §15125, a CEQA document must include a description of the physical environment in the vicinity of the project, as it exists at the time the NOP is published, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives.

Pursuant to CEQA Guidelines §15126.2(a), Chapter 3 evaluates those impacts that are considered potentially significant for those environmental areas identified in the NOP/IS as being potentially significant (see Appendix I-A). An impact is considered significant under CEQA if it leads to a "substantial, or potentially substantial, adverse change in the environment" (Public Resources Code §21068). Impacts from the project fall within one of the following categories:

Beneficial - Impacts would have a positive effect on the environment.

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 less than significant. Impacts are frequently considered less than significant 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 impacts to less than significant – Significant impacts may occur; however, with proper and feasible mitigation the impacts can be reduced to a less than significant level.

Potentially significant and mitigation measures are not available to reduce impacts to less than significant - Impacts may occur that would be significant even after mitigation measures have been applied to lessen their severity or no mitigation measures are available.

The following sections summarize the existing setting for the environmental areas identified in the IS as either having potentially significant impacts (Air Quality) or requiring further description/analysis in the EIR (Energy, Geology and Soil, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Solid and Hazardous Waste). The last section (Section 3.12) discusses those areas where environmental effects were found to not be significant in the IS.

3.2 Air Quality

As discussed in Chapters 1 and 2, the project site is located at the Santa Fe Springs Facilities, in the City of Santa Fe Springs in Los Angeles County within the South Coast Air Basin (SCAB).

Therefore, air quality and potential impacts will be discussed relative to the SCAB for construction and operation of the project.

3.2.1 Existing Setting

3.2.1.1 South Coast Air Basin

The SCAB includes the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties, and all of Orange County (Figure 3-1). This area of 10,743 square miles is home to over 16.8 million people - about half the population of the whole state of California. It is the second most populated urban area in the United States and one of the smoggiest. The air quality within this basin is primarily influenced by a wide range of emissions sources (e.g., dense population centers, heavy vehicular traffic, and industry) and meteorology. The SCAB currently exceeds state standards for ozone (O_3), particulate matter (PM) less than 2.5 microns in diameter ($PM_{2.5}$), nitrogen dioxide (NO_2), and lead (Pb), but meets the state standards for carbon monoxide (CO), PM less than 10 microns in diameter (PM_{10}), sulfur dioxide (SO_2), and sulfate. The basin currently exceeds federal standards for O_3, $PM_{2.5}$, and Pb, but meets the federal standards for PM_{10},[12] CO, NO_2, and SO_x. The attainment status is described in further detail below in Section 3.2.2.

Local ambient air quality data are available from the La Habra air quality monitor (Source Number 16: "Northern Orange County") for NO_2 and CO and from the Los Angeles (Main St.) air quality monitor (Source Number 1 "Central LA") for SO_2, which are the closest monitoring stations to Breitburn Santa Fe Springs Facilities. The most recent maximum background pollutant concentrations data were from years 2011, 2012, and 2013 and are shown in Table 3-1.

[12] The USEPA found that the South Coast Air Basin is in attainment for PM_{10} (USEPA 2013a).

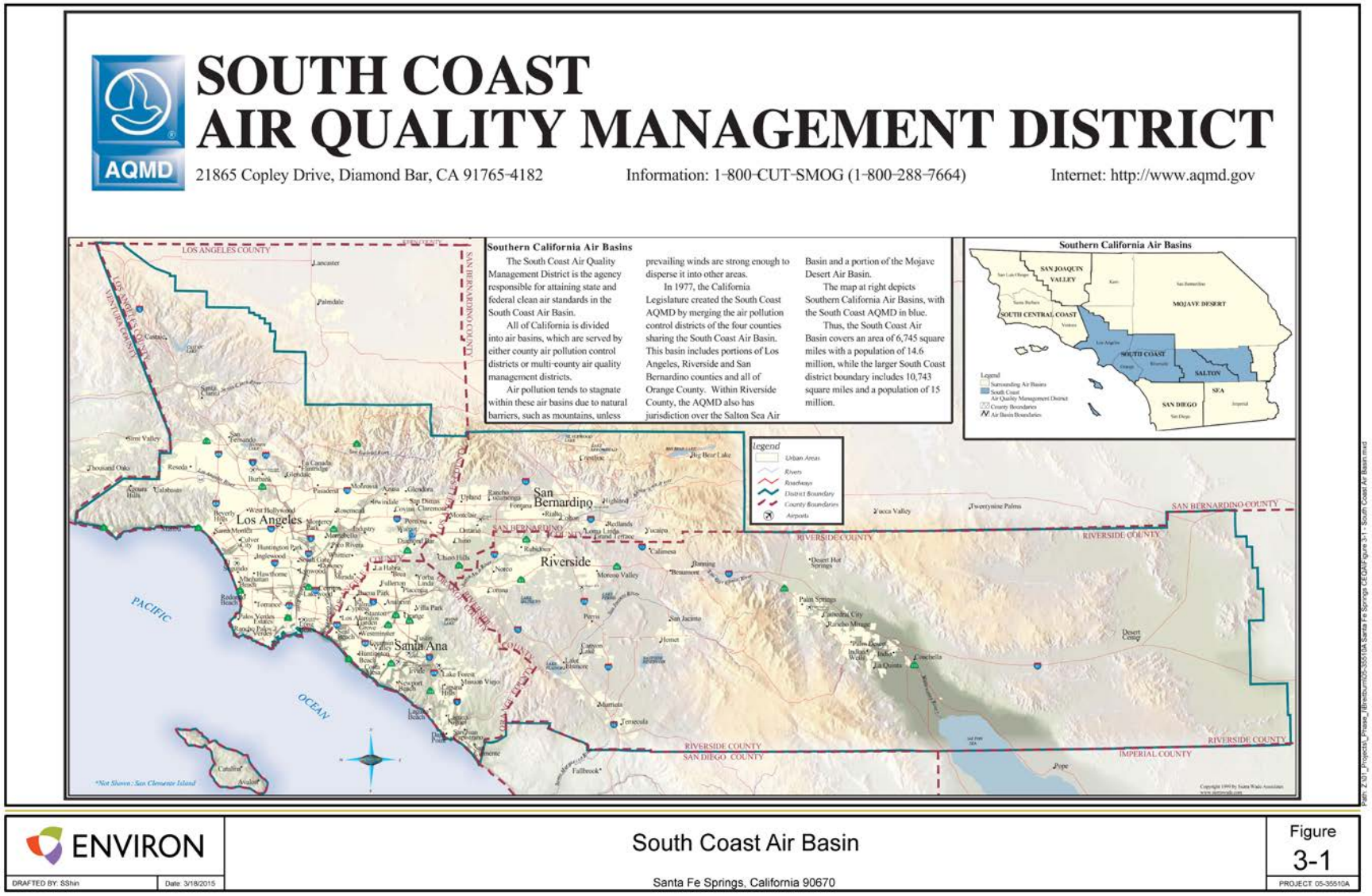

Figure 3-1. South Coast Air Basin.

Table 3-1. Historical Ambient Air Concentration Levels in the SCAB				
	Year	**2011**	**2012**	**2013**
SO_2 (ppb)	1-hr (maximum)[1]	19.8	5.2	6.3
	1-hr (99th percentile)[1]	11	5	5.2
	24-hr[2]	5.4	1.8	1.7
CO (ppm)	1-hr[3]	3.4	3.6	6.5
	8-hr[1]	2.1	2.4	2.2
PM_{10} (µg/m^3)	24-hr [4]	53	80	57
	Annual [4]	29	30.2	29.5
$PM_{2.5}$ (µg/m^3)	24-hr [4]	49.3	58.7	43.1
	Annual [4]	13	12.55	11.95
Sulfate (µg/m^3)	24-hr [4]	8	5.7	5.8
Lead (µg/m^3)	Monthly[4]	0.012	0.014	0.013
	Rolling 3-Month[4]	0.011	0.011	0.011
	Quarterly[4]	0.011	--	--
NO_2 (ppb)	1-hr (maximum) [1]	69.8	67.5	85
	1-hr (98th percentile)[1]	60.7	53.2	53.3
	Annual [1]	17.7	18	14.8

[1] South Coast data from SCAQMD. Historical Data. La Habra (North Orange County) monitoring station (SCAQMD N.D.).

[2] South Coast data obtained from CARB. AQMIS: Air Quality and Meteorological Information Site. Los Angeles Main St. monitoring station (CARB 2014a).

[3] South Coast data obtained from CARB. AQMIS: Air Quality and Meteorological Information Site. La Habra monitoring station (CARB 2014a).

[4] South Coast data from SCAQMD. Historical Data. Los Angeles Main St. (Central LA) monitoring station (SCAQMD N.D.).

3.2.1.2 Baseline Operating Conditions Used in Analysis

As discussed in Section 2.4, Breitburn operates on ten city "blocks" within the Field that cover approximately 784 acres (Figure 2-4). The Main Facility and Baker Humble Lease Facility, located in the 700 Block, contain a variety of tanks and processing equipment. The existing flare is located at the 400 Block, which is also the location of the proposed new "400 Block Reinjection Facility." These are the only Blocks that contain SCAQMD-permitted equipment, although there are production and injection wells located in other Blocks.

Because the CEQA environmental analysis is based on incremental changes from the project compared to the baseline, the baseline emissions were calculated for current equipment/ operations that will be affected by the proposed Project. The usual baseline year is the NOP year. However, for the air quality analysis, 2013 was chosen as the baseline year because 1) complete ambient air quality data or emissions data for 2014 was not available when work on the air quality technical study began, and 2) the 2014 annual process gas levels were abnormally high, leading to abnormally high NO_x and other pollutant levels. Emission levels from 2013 are more typical, even with the unusually high gas production amount that began in December 2013, and represent a more conservative (i.e., lower emission) baseline. In addition, the 2013 annual emission reports (AER) was the latest complete AER at the time the analysis began. During the 2013 baseline year, the John Zink flare was in operation. In addition, crude oil was loaded in up to 3 trucks per day at the existing 700 Block truck loading station. Criteria pollutant emissions were calculated for the John Zink flare based on 2013 fuel usage. Combustion emissions for the idling trucks (up to 5 min/truck) were calculated using CARB's EMFAC 2011 Idling Emission Rates (CARB 2013) for 2014. In addition, the associated volatile organic compound (VOC) emissions for the loading of crude oil into these 3 trucks/day were calculated for the baseline scenario. Appendix B provides a detailed summary of the baseline emissions and the methodology used. Table 3-2 provides the 2013 baseline operating scenario emissions.

Table 3-2. 2013 Baseline Operating Scenario

Baseline Operations		Baseline Emissions (lb/day)				
		VOC	**NO_x**	**SO_x**	**CO**	**PM**
Main Facility	Truck Travel (off-site)	0.11	2.74	0.01	0.54	0.09
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00
400 Block	Existing Flare	2.25	41.78	0.19	11.25	2.41
Total Baseline Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**

3.2.2 Regulatory Setting

The following sections summarize the regulations governing air quality in the affected air basin (SCAB).

3.2.2.1 Federal

The Air Pollution Control Act of 1955 was the first federal legislation involving air pollution, which provided funds for federal research in air pollution. The Federal Clean Air Act (CAA) in 1963 was the first federal legislation regarding air pollution control and has been amended numerous times in subsequent years, with the most recent amendments occurring in 1990. At the federal level, the USEPA is responsible for implementation of some portions of the CAA (e.g., certain mobile source and other requirements). Other portions of the CAA (e.g., stationary source requirements) are implemented by state and local agencies.

The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS) and specifies 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 California ambient air quality standards (CAAQS), are limits set to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly (USEPA 2014a). The CAAQS define clean air and are established to protect even the most sensitive individuals in our communities (CARB 2009).

Table 3-3 includes the NAAQS and CAAQS currently in effect for each of the criteria pollutants as well as other pollutants recognized federally. Table 3-4 includes a summary of the health effects of the various criteria pollutants.

Under the CAA, the USEPA is responsible for setting and enforcing the NAAQS. 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 may have potential impacts in the SCAB, which is an area designated as non-attainment for specific pollutants regulated under the CAA.

Table 3-3. California and National Ambient Air Quality Standards

Pollutant	Averaging Period	California Standard[1]	Federal Standard[2]	Attainment Status for SCAB	
				California Standard[3]	Federal Standard[4]
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m^3)	Revoked	Nonattainment	---
	8 hour	0.07 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Nonattainment	Nonattainment
Respirable Particulate Matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	Nonattainment	Attainment
	Annual	20 µg/m^3	Revoked	Nonattainment	--
Fine Particulate Matter ($PM_{2.5}$)	24 hour	---	35 µg/m^3	---	Nonattainment
	Annual	12 µg/m^3	12 µg/m^3	Nonattainment	Nonattainment
Carbon Monoxide (CO)	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Attainment	Attainment
	8 hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	Nonattainment	--
	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	--	Maintenance
Lead (Pb)	30 day average	1.5 µg/m^3	--	Nonattainment	---
	Rolling 3-month average	--	0.15 µg/m^3	---	Nonattainment
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm (655 µg/m^3)	0.075 ppm (197 µg/m^3)	Attainment	---
	3 hour [5]	---	0.5 ppm (1300 µg/m^3)	---	Attainment
	24 hour	0.04 ppm (105 µg/m^3)	--	Attainment	---
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m^3)	---	Unclassified	---

Table 3-3. California and National Ambient Air Quality Standards

Pollutant	Averaging Period	California Standard[1]	Federal Standard[2]	Attainment Status for SCAB	
				California Standard[3]	Federal Standard[4]
Vinyl Chloride	24 hour	0.01 ppm (26 µg/m^3)	---	Unclassified	---
Sulfates	24 hour	25 µg/m^3	---	Attainment	---
Visibility-Reducing Particles	8 hour	Extinction coefficient of 0.23 per kilometer (visibility of ten miles or more due to particles when relative humidity is less than 70 percent)	---	Unclassified	---

[1] California standards as listed on CARB website (CARB 2009).

[2] Federal Standards as listed on USEPA website (USEPA 2014a).

[3] California standard attainment status as listed on CARB website (CARB 2014b).

[4] Federal standard attainment status as listed on USEPA websites (USEPA 2015a).

[5] This is a secondary standard.

Table 3-4. Criteria Pollutants, Their Precursors, and Related Health Effects [1]

Pollutant	Health Effects
$PM_{2.5}$ and PM_{10} In addition to directly emitted particulates, NO_x, SO_x are precursors of $PM_{2.5}$ and PM_{10}.	Respirable particulates ($PM_{2.5}$ and PM_{10}) pose a serious health hazard, alone or in combination with other pollutants. More than half of the smallest particles inhaled get deposited in the lungs and can cause permanent lung damage. Respirable particles have been found to increase morbidity and mortality via the following adverse health effects: decreased lung function, aggravated asthma, exacerbation of lung and heart disease symptoms, chronic bronchitis and irregular heartbeats. In addition, respirable particles can act as a carrier of absorbed toxic substance.[2]
Ozone Ozone is not a directly emitted pollutant from project sources; VOCs and NO_x are precursors of ozone.	Elevated ozone concentrations have been shown to induce airway irritation, cause airway inflammation, induce wheezing and difficulty breathing, aggravate preexisting respiratory conditions such as asthma, and can lead to permanent lung damage after repeated exposure to elevated concentrations.[3]

Table 3-4. Criteria Pollutants, Their Precursors, and Related Health Effects [1]

Pollutant	Health Effects
CO	Carbon monoxide is a colorless and odorless gas that is known to cause aggravation of various aspects of coronary heart disease, dizziness, fatigue, impairment to central nervous system functions, and possible increased risk to fetuses.
SO_2	Sulfur dioxide is known to cause irritation in the respiratory tract, shortness of breath, and can injure lung tissue when combined with fine PM. It also reduces visibility and the level of sunlight.
NO_2	Long-term exposure to nitrogen dioxide has the potential to decrease lung function and worsen chronic respiratory symptoms and diseases in sensitive population. It has also been associated with cardiopulmonary mortality and emergency room asthma visits. USEPA recently adopted a 1-hour federal standard to address short-term exposure impacts (e.g., adverse respiratory effects), particularly near major roadways.

[1] SCAQMD 2012a.
[2] USEPA 2014b.
[3] USEPA 2014c.

The USEPA also promulgated New Source Performance Standards (NSPS) for major and minor sources on a category-by-category basis. The 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 impose uniform requirements on new and modified sources throughout the nation. These standards are based on the Best Demonstrated Technology (BDT). BDT refers to the best system of continous 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 best available control system currently in use within that industry.

3.2.2.2 State

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, CARB conducts research, sets CAAQS, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. 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 3-3 includes the CAAQS currently in effect for each of the criteria pollutants as well as other pollutants recognized by the State. The CAAQS include more stringent standards than the NAAQS for many pollutants.

3.2.2.3 Local

City of Santa Fe Springs

There are no specific City air quality requirements that apply to this project. As the lead agency, the SCAQMD has relied on its own CEQA Guidance. These thresholds are described in more detail below.

South Coast Air Quality Management District

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles. This area includes all of Orange County, Los Angeles County except for the Antelope Valley, the urban portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The Basin is a sub-region of the SCAQMD jurisdiction.

The SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the CAAQS and NAAQS. These AQMPs contain a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources. The most recent AQMP, *Final 2012 Air Quality Management Plan* was adopted by the Governing Board in December 2012 and amendments in February 1, 2013 (2012 AQMP). The 2012 AQMP employs the most up-to-date science, primarily in the form of updated emissions inventories, ambient measurements, meteorological data, and air quality modeling tools (SCAQMD 2012a). An inventory of existing emissions from industrial facilites is included in the baseline inventory for the 2012 AQMP. The 2012 AQMP builds upon improvements accomplished from previous plans and aims to incorporate all feasible control measures while balancing costs and socioeconomic impacts for the attainment of air quality standards. The 2012 AQMP also identifies emission reductions from existing sources and air pollution control measures that are necessary in order to comply with applicable state and federal ambient air quality standards. The 2012 AQMP demonstrates that applicable ambient air quality standards can be achieved within the timeframes required under federal law.

The 2012 AQMP focuses on a comprehensive and integrated control approach aimed at achieving the $PM_{2.5}$ standard by 2014 through implementation of short- and mid-term control measures and provides an update on the strategy to achieve the O_3 standard by 2023 (SCAQMD 2012a). These reductions are expected to be achieved through implementation of new and advanced control technologies as well as improvements on existing control technologies. Control techniques requiring substantial levels of committed funding for implementation would also fall under this category of long-term emission reductions. The 2012 AQMP control measures consist of four categories: (1) basin-wide short-term $PM_{2.5}$ measures, (2) contingency measures, (3) 8-hour O_3 measures, and (4) transportation control measures. Overall, the Plan includes 23 stationary and 17 mobile source measures. The SCAQMD's control measures were chosen based on the following: (1) technical feasibility, (2) economic feasibility, (3) fair share responsibility, and (4) maximizing private and public partnerships.

The SCAQMD implements conclusions in the AQMP through rule development. This proposed Project must comply with applicable SCAQMD rules and regulations for new or modified sources. For example, new emission sources associated with the proposed Project are required to comply with the SCAQMD's Regulation XIII - New Source Review, including BACT, offsets, and modeling requirements, as applicable. The proposed Project must also comply with

prohibitory rules, as applicable, such as Rule 403, for the control of fugitive dust. SCAQMD Rule 403 requires the implementation of best available fugitive dust control measures during active construction periods capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. Other rules regulate the sulfur content of the fuel, and emissions from operational sources such as electric power generating equipment and steam generating equipment.

The SCAQMD has prepared the *California Environmental Quality Act (CEQA) Air Quality Handbook* (Handbook) to assist project proponents, as well as consultants, and other interested parties and lead agencies, in evaluating potential air quality impacts of plans and projects proposed in the Basin (SCAQMD 2014a).

The SCAQMD published the Handbook in November 1993 to provide local governments with guidance for analyzing and mitigating project-specific air quality impacts. The Handbook provides standards, methodologies, and procedures for conducting air quality analyses in EIRs, and was used extensively in the preparation of this analysis. However, the SCAQMD is currently in the process of replacing the Handbook and has provided several updates to the tables and methods in the original Handbook on its website. The SCAQMD recommends using approved models to calculate emissions from projects, such as the California Emissions Estimator Model® Version 2013.2.2 (CalEEMod®) (CAPCOA 2013) and other online models. These recommendations were followed in the preparation of this analysis.

The SCAQMD also has developed the Localized Significance Thresholds (LSTs) in response to the SCAQMD Governing Board's environmental justice initiatives in recognition of the fact that criteria pollutants can have local impacts as well as regional impacts (SCAQMD 2008). A methodology for $PM_{2.5}$ was established in October 2006. The mass emission LSTs represent the maximum emissions resulting from the construction or operation of a project that will not cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standard for CO, NO_2, PM_{10}, and $PM_{2.5}$. This methodology is voluntary and applies only to projects that are five acres or smaller in size. The analyses included in this EIR are based on methodologies developed by the SCAQMD for CEQA (i.e., the SCAQMD Handbook).

3.2.3 Environmental Impacts and Mitigation

Environmental impacts of the proposed Project were assessed based on the SCAQMD's CEQA significance thresholds. This section outlines the thresholds of significance and describes the air quality impact analysis for construction and operation of the proposed Project as well as the related drilling operations.

3.2.3.1 Project Design Features

The proposed Project will comply with SCAQMD Rule 403 requirements to reduce fugitive dust PM emissions during construction. Specifically, Breitburn shall water active construction areas

with exposed soil at least twice daily to minimize fugitive dust emissions.[13] This design feature is accounted for in the construction analysis.

In addition, the proposed Project shall implement and include in construction contracts control measures in accordance with SCAQMD Rules 403. These measures shall be at least as effective as the following:

- Maintain soil stabilization of inactive construction areas with exposed soil via water, non-toxic soil stabilizers, or replaced vegetation;
- Covering all haul trucks or maintaining at least six inches of freeboard;
- Suspending earthmoving operations or increasing watering to meet Rule 403 criteria if winds exceed 25 mph;
- Minimizing track-out emissions using the allowable methods;
- Limiting vehicle speeds to 15 mph or less in staging areas; and
- Prevent any visible fugitive dust plume from exceeding 100 feet in any direction.

3.2.3.2 Significance Criteria

The SCAQMD's CEQA Thresholds Guide indicates that a significant impact related to air quality may occur if the proposed project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

d) Expose sensitive receptors to substantial pollutant concentrations.

e) Create objectionable odors affecting a substantial number of people.

The SCAQMD has established significance thresholds (SCAQMD 2011) to assess the impacts of project-related construction and operational emissions on regional ambient air quality (Table 3-5). The analysis summarized in this EIR estimates project-related construction and operational mass emissions and compares the emissions to the mass daily significance thresholds. SCAQMD has established concentration significance thresholds for one-hour average (NO_2, CO and SO_2), eight-hour average (CO), 24-hour average ($PM_{2.5}$., PM_{10}, and SO_2), and annual average (NO_2, PM_{10}, and SO_2) concentrations, as well as 30-day average, rolling 3-month average, and quarterly average concentrations for Pb. This EIR analysis estimates and compares the proposed Project's impacts to these concentration standards (i.e. NO_2 and CO) and

[13] Note that the control efficiency of watering is dependent on numerous variables such as soil/ground conditions, temperature, and vehicle travel specifics. For unpaved roads, increased frequency and/or water amounts are expected to improve control efficiency.

to incremental standards for pollutants for which the Basin is in nonattainment (i.e. PM_{10}, $PM_{2.5}$, and sulfate).[14]

In addition, the SCAQMD has developed mass-equivalent localized significance thresholds (LSTs) for oxides of nitrogen (NO_x), CO, PM_{10} and $PM_{2.5}$ (SCAQMD 2008). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. For PM_{10}, LSTs were derived based on requirements in SCAQMD Rule 403. LSTs only apply to projects that are five acres or less such as the proposed Project. This EIR analysis compares the construction emission activities to these LSTs to assess the potential impact on the localized air quality.

Table 3-5. SCAQMD Significance Thresholds

Mass Daily Thresholds (lbs/day)		
Pollutant	**Construction**	**Operation**
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550
Lead	3	3
Toxic Air Contaminant (TAC) Thresholds		
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants		
NO_2 1-hour Average Annual Arithmetic Mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour Average Annual Average	10.4 µg/m^3 (construction); 2.5 µg/m^3 (operation) 1.0 µg/m^3	
$PM_{2.5}$ 24-hour Average	10.4 µg/m^3 (construction); 2.5 µg/m^3 (operation)	

[14] The USEPA found that the Basin is in attainment for PM_{10}. This attainment status refers to the Federal standard; the Basin is in nonattainment for the State standard, which is the standard used for this analysis. The SCAQMD significance threshold is still based on the incremented concentration only.

Table 3-5. SCAQMD Significance Thresholds	
SO_2 1-hour Average 24-hour Average	0.25 ppm (state); 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	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)
Lead 30-day Average Rolling 3-month Average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)

3.2.4 Environmental Impact Analysis

As indicated in Section III of the December 4, 2014 IS, there are less than significant impacts for item (a) and (e) of the checklist included in Section 3.2.3.2 above:

a) Conflict with or obstruct implementation of the applicable air quality plan; and

e) Create objectionable odors affecting a substantial number of people.

Therefore, this impacts analysis focuses only on items (b) through (d).

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard; or

d) Expose sensitive receptors to substantial pollutant concentrations.

3.2.4.1 Methodology

This analysis concentrates on the change in the air quality environment due to implementation of the proposed Project. The proposed Project would result in air emissions of criteria pollutants and toxic air contaminants (TACs) from both construction and operational sources.

The construction and operational emissions were estimated using commonly accepted techniques. The methodology uses site-specific data and calculations as appropriate, or assumptions when site specific data were not available, as the basis for identifying applicable emission factors. The emission factors are obtained from standard sources such as SCAQMD and USEPA AP-42. The CalEEMod® tool was also used to assist with emission estimates, when applicable. Additional details for each emissions activity are discussed below. Assumptions, emission factors and detailed calculations are included in the tables found in Appendix B.

Construction

The proposed Project will involve the replacement of the existing John Zink flare with one new CEB, the addition of up to three more CEBs, modification of the truck loading system to allow for loading of up to 20 trucks/day with crude oil, and construction of the new 400 Block Reinjection Facility. Construction activities would generate emissions at the Project site from off-road construction equipment activity, and on roadways resulting from construction-related truck hauling, vendor deliveries, and worker commuting. As summarized in Section 2.6, the proposed Project will require the installation of the following:

- Up to four CEBs;
- Two free water knockout tanks, a crude oil storage tank, one slop tank, one pressure vessel, two WEMCOs, two water surge tanks, one clarifier tank, and several electric pumps, compressors and pressure vessels, as well as adequate secondary containment for the new 400 Block Reinjection Facility; and
- One new oil loading connection, comprised of one oil loading hose and one vapor recovery hose, as well as minimal modifications to other system components to adjust for the second connection, and modification of the existing thermal oxidizer.

The proposed construction schedule for the Project is estimated to begin in the 3rd quarter of 2015 and end the 2nd quarter of 2016, assuming the necessary air quality permits are issued by June 2015 (Section 2.7). Depending on the project phase, start-up is projected to begin in the 3rd quarter of 2015 for the new CEBs and the truck loading modification and in the 3rd quarter of 2016 for the new 400 Block Reinjection Facility (Section 2.8). If any phase is deferred or delayed, the phase, when later implemented, would be the same as originally proposed and potential impacts would be the same as discussed in this EIR.

Construction vehicles consist of off-road construction equipment (e.g. excavators, loaders, dozers, backhoes, concrete trucks, cranes, etc.), on-road trucks (e.g. water trucks, delivery trucks, boom truck, and haul trucks), and worker commuter trips. Only minimal painting is expected, if any, and will comply with the VOC limits specified in SCAQMD Rule 1113. Construction emissions will result from welding, on-site diesel-powered construction equipment, on-road gasoline powered trucks, on-site fugitive dust from earthmoving activities and vehicular travel, and off-site vehicular activity from workers commuting, dump trucks trips, and vendor delivery trucks trips.

Construction is comprised of two main phases:

1. Phase 1
    a. Consolidated Bulk Truck Loading System modifications;
    b. Grading and removal of the John Zink Flare; and
    c. Installation of up to four CEBs.
2. Phase 2
    a. Construction of the 400 Block Reinjection Facility which includes

i. Site preparation

ii. Grading

iii. Construction

The emissions were estimated utilizing the CalEEMod® tool which is based upon CARB-approved Off-Road and On-Road Mobile-Source Emission Factor models (OFFROAD and EMFAC, respectively), and is designed to estimate construction and operational emissions and allows for the input of project specific information (CAPCOA 2013). OFFROAD is an emissions factor model used to calculate diesel emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment) (CARB N.D.). EMFAC is an emissions factor model used to calculate emissions rates from on-road vehicles (e.g. passenger vehicles, haul trucks) (CARB 2013). Instead of using CalEEMod®, EMFAC alone was also used to calculate on-road emissions directly. The number of equipment units and hours of usage were based on a combination of project-specific information, similar construction activities, and model defaults. The amount of material to be removed from the facility during construction and the number of construction workers expected were based on information provided by Breitburn. For other parameters such as horsepower, load factor, and trip length, the model defaults were used. The detailed construction analysis can be found in Appendix B.

Operation

Operational activities would generate emissions at the Project site from the equipment operations summarized in Section 2.6, as well as on-site truck idling and travel emissions. No additional workers or deliveries are expected to be needed for the proposed Project operations compared to the 2013 baseline; thus, emissions from worker commuting trips or vendor deliveries during the operation phase were not calculated. The following is a summary of the on-site operational equipment and operations for which emissions were calculated:

- Combustion emissions from operation of up to four CEBs;
- Fugitive VOC emissions from the oil/water/gas separation system, WEMCO separators, and tank farm at the new 400 Block Reinjection Facility;
- Combustion emissions from truck idling (5 min/truck) and travel (30 miles/each way) associated with truck loading operations;
- Fugitive VOC emissions from loading of the trucks and from additional components required in the Consolidated Bulk Truck Loading System; and
- VOC emissions assicated with the storage tanks.

The off-site operational emissions result from worker commuting trips and additional truck trips to the Consolidated Bulk Truck Loading System. Up to 17 additional truck trips will occur each day (for a total of 20 trucks/day). No additional workers will be required for the project operations. Additional trucking needs related to deliveries, off-site removal of material, such as the wet solids/slurry mixture from the oil processing, to landfills, etc. were assessed. The Project was found to not result in an increase in peak daily trucking related to these activities beyond baseline trucking requirements and thus, air quality emissions associated with trucking other than from the Consolidated Bulk Loading System were not included in this analysis.

Operational emissions from the on-site equipment were calculated using emission data provided by the manufacturer, standard emission factors from AP-42, EMFAC or SCAQMD guidance, as applicable, estimated tank turnovers associated with the 400 Block Reinjection Facility tank farm, and other equipment specific assumptions. Emissions from off-site mobile sources (i.e. worker and truck trips) were based on anticipated vehicle type, expected number of trips, CalEEMod® default trip lengths, and default emission factors. Detailed emission estimation information is included in Appendix B.

Related Project Operations – Drilling

In addition, as discussed in Section 2.6.4.1, this EIR includes analysis of the potential impacts of drilling one new well at any given time. Drilling of one well would be completed in no more than 20 days and involve a number of pieces of equipment.[15] Potential environmental impacts from any increased oil production resulting from one new well on a given day or any other oil field enhancements described above are considered as part of the analysis of the operations of the proposed 400 Block Reinjection Facility and thus, would not begin until the 400 Block Reinjection Facility is constructed and operational (i.e. in 2016). The CalEEMod® tool was used for estimating criteria pollutant emissions from drilling. Emissions were estimated based on the schedule and equipment list provided by Kenai Drilling for a Kenai Drill Rig #15. The Kenai Drill Rig #15 is a typical drill rig that Breitburn would use, and is representative of emissions from other drill rigs. It is assumed that there would be 20 workers trips per day and a total of 12 tractor trailer truck trips for each phase of drilling. A detailed equipment list, schedule and emission estimation results are included in Appendix B.

As part of its ongoing operations, Breitburn reworks wells within the Block boundaries, industrial area, and within the residential area. Reworking rigs are significantly shorter than drilling rigs (40 feet versus 120 feet). Reworking is typically done during daytime hours and is completed in approximately 1 day or less. Reworking rigs are powered by truck-mounted engines, which are much smaller than new well-drilling rigs. Fuel use for reworking is approximately 60 percent to 85 percent less fuel than that used for new well drilling.[16] Reworking potentially attributable to the Project is small compared to reworking that would be done for maintenance, pump replacement, removal of scale build-up, replacing worn tubes, etc. Air quality emissions from re-working a well are short-term (one day), and much lower than new well drilling, which requires substantially larger diesel engines running over several days on much higher fuel throughput. Thus, any air quality impacts from well workovers potentially attributable to the Project, if any, would be significantly less than those associated with new well drilling.

Dispersion Modeling

The ambient air quality impacts and potential impacts to human health from on-site operations and associated drilling were estimated by comparing air dispersion modeling results to the SCAQMD's ambient air quality criteria in Table 3-5. The AMS/EPA Regulatory Model

[15] No unconventional resources exist beneath the Santa Fe Springs Oil Field; therefore, no wells would be completed using hydraulic fracturing techniques.

[16] From Appendix B, average daily fuel use for drilling is 400-420 gallons. Truck-mounted reworking rigs (see Figure 2-16) use truck fuel from their fuel tank (e.g. no more than 100-200 gallons on even peak use day).

Improvement Committee (AERMIC) Model (AERMOD), Version 14134, was used to predict the concentrations of emitted pollutants at individual receptor locations from on-site operational emissions. AERMOD is recommended by the USEPA and is a steady-state model used to estimate off-site ambient air concentrations in simple and complex terrain (USEPA 2014d, USEPA 2005). This analysis followed the SCAQMD's guidance using data from the associated permit applications, industry assumptions, and in the case of impacts from the drilling engines, from default parameters provided by a contractor for the Bay Area Air Quality Management District (BAAQMD) (Sonoma 2011). A detailed description of the methodology is found in Appendix B.

Health Risk Assessment

The proposed Project will generate various air contaminants that are potentially carcinogenic, toxic, or hazardous, depending on concentration levels and the duration of exposure. Cancer risks, chronic hazard indices, and acute hazard indices were calculated at each receptor following the risk assessment procedures for SCAQMD's Rule 1401 New Source Review of Toxic Air Contaminants (SCAQMD 2014b) and using AERMOD outputs. The remaining required parameters were from Attachment L of the SCAQMD's Risk Assessment Procedures (SCAQMD 2012b).

The HRA included in this EIR incorporates various conservative assumptions. For example, risk is calculated for residential exposure using the standard upper-bound assumptions that every resident is exposed for every hour of every day for 70 years. However, it is unlikely that any person will actually be present at any of the receptor locations for the entire duration of operational activities, 24 hour per day every day for 70 years. Similarly for off-site worker exposure, risk is calculated using the standard upper-bound assumption that all off-site workers are exposed to operational emissions continuously every working day (e.g., 250 days as estimated based on a standard five day work week) for every working hour (e.g., 8 hours as estimated based on a standard work day) for 40 years. It is unlikely that such worker exposures actually will occur, every day for 40 years. Furthermore, for both residential and off-site workers, risks are calculated assuming continuous exposure to outdoor/ambient concentrations, even though people typically spend a majority of their time indoors. People also move from place to place (and often away from project emissions) during the day for work, school, shopping, or other purposes. For this reason, the estimated cancer risks and noncancer hazard indices reported in this analysis are likely upper-bound estimates for potential exposure to project-related emissions. In addition, the estimated cancer risks and noncancer hazard indices represent the maximum exposed individual (resident and worker) and do not represent the risk over a broad area. The actual risks of cancer or noncancer effects from the proposed Project are likely to be lower than presented herein. A detailed description of the methodology is found in Appendix B.

On March 6, 2015, the Office of Environment Health Hazard Assessment (OEHHA) approved the updated *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA Guidance Manual, 2015). At the March 6, 2015 SCAQMD Governing Board meeting, the Governing Board approved a work plan for implementing the OEHHA Guidance Manual. According to the SCAQMD, the updated OEHHA Guidance Manual is anticipated to result in HRAs estimating a 2.7-fold increase in residential cancer risk. Although the updated OEHHA Guidance Manual came out after the EIR NOP date and this analysis, even

a 3-fold increase to the Project's estimated cancer risk would still be well below the health risk significance threshold (see Section 3.2.4.4, Table 3-12).

3.2.4.2 Maximum Mass Emissions and Results

Construction

The estimated maximum daily construction emissions are shown in Tables 3-6 and 3-7. The construction phases were separated by those that would potentially occur at the same time (e.g. modifications for the Consolidated Bulk Truck Loading System and installation of the CEBs) and those that would occur at distinct times such as different phases of grading or construction activities for the 400 Block Reinjection Facility. Additional detail can be found in Appendix B.

The maximum peak day emissions for the different potential construction phases were compared to the SCAQMD thresholds. The estimated emissions are below the SCAQMD's mass daily significance thresholds from Table 3-5 for peak day construction activities for all pollutants. In addition, the peak day construction emissions were compared to the SCAQMD's LSTs and found to be below the applicable thresholds for each pollutant. Less than significant impacts are expected due to construction activities. Therefore, additional analysis (e.g. dispersion modeling) is not required.

Table 3-6. Summary of Total Construction Criteria Air Pollutant Emissions (Peak Day, Regional)

Year	Activity	Construction Phase	VOC	NO_x	CO	SO_2	PM_{10} Total	$PM_{2.5}$ Total
			Maximum (lbs/day) [a]					
2015	Main Facility (700 Block) Construction	Construction (bulk truck loading, thermal oxidizer modification, O/G/W modification)	0.65	1.93	2.10	0.003	0.16	0.16
	4 CEBs	Grading	0.93	9.03	5.90	0.01	0.68	0.57
		Installation of 4 CEBs	1.35	8.72	5.85	0.01	2.85	0.76
	Total Daily Emissions (700 Block construction, 4 CEBs)		2.92	19.68	13.85	0.02	3.70	1.49
2016	400 Block Reinjection Facility Construction	Site Preparation	0.50	6.71	6.26	0.02	10.00	1.18
		Grading 1	2.53	29.17	15.71	0.03	3.87	1.68
		Grading 2	0.002	0.003	0.04	0.00004	7.46	0.75
		Construction 1	5.26	45.33	26.26	0.07	13.92	3.24
		Construction 2	0.66	6.97	3.41	0.004	2.67	0.58
Maximum Daily Emissions [a]			**5**	**45**	**26**	**0.1**	**14**	**3**
SCAQMD Threshold			75	100	550	150	150	55
Above Threshold?			**No**	**No**	**No**	**No**	**No**	**No**

[a] The maximum daily emissions are based on the overall maximum for each pollutant. For the proposed Project, all maximum daily emissions occur during the Construction 1 phase of the 400 Block Reinjection Facility construction.

Table 3-7. Summary of On-site Construction Criteria Air Pollutant Emissions (Peak Day, Local)

Activity	Construction Phase	Year[1]	NO_x	CO	PM_{10} Total	$PM_{2.5}$ Total
			Maximum Day (lb/day)			
Main Facility (700 Block) Construction	Construction (bulk truck loading, thermal oxidizer modification, O/G/W modification)	2015	1.9	2.1	0.2	0.2
4 CEBs	Grading	2015	8.9	5.3	0.6	0.5
	Installation of 4 CEBs	2015	8.6	5.3	2.8	0.7
Total Daily Emissions (700 Block Bulk Truck Loading Construction, 4 CEBs)		**2015**	**19.4**	**12.7**	**3.5**	**1.4**
SCAQMD Localized Significance Threshold[2]			80	571	4	3
Above Threshold?			**No**	**No**	**No**	**No**
400 Block Reinjection Facility Construction	Site Preparation	2016	0.02	0.05	9.3	0.9
	Grading 1[3]	2016	28.9	14.5	3.7	1.6
	Grading 2[4]	2016	0.003	0.04	7.5	0.7
	Construction 1[5]	2016	**44.2**	**23.3**	**13.5**	**3.1**
	Construction 2[6]	2016	7.0	3.4	2.7	0.6
Maximum Daily Emissions (All 400 Block Phases)		**2016**	**44.2**	**23.3**	**13.5**	**3.1**
SCAQMD Localized Significance Threshold[7]			111	1,082	21	6
Above Threshold?			**No**	**No**	**No**	**No**

[1] The exact construction schedule may vary from what was assumed in CalEEMod®.
[2] SCAQMD CEQA localized significance thresholds (LSTs) for a 1 acre site in Southeast LA County at a 25 m receptor distance.
[3] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 1" phase includes all of the construction equipment except for the 3/4-ton pickup trucks.
[4] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 2" phase includes only the 3/4-ton pickup trucks.
[5] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 1" phase includes all of the construction equipment except for the 60-ton crane and boom truck.
[6] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 2" phase includes only the 60-ton crane and boom truck.
[7] SCAQMD CEQA localized significance thresholds (LSTs) for a 2 acre site in Southeast LA County at a 50 m receptor distance.

Operation

The estimated maximum daily operational emissions associated with the proposed Project and emissions from drilling of up to one well at a time (consistent with current operations) are shown in Table 3-8. Additional detail can be found in Appendix B. The emission summary includes overall operational emissions from operation of the Consolidated Bulk Truck Loading System, operation of up to four CEBs after removal of the existing John Zink flare, and operation of the 400 Block Reinjection Facility. The maximum peak day emissions are taken to be final operational emissions and will not overlap with the construction phase; potential project-related oil well drilling would not begin until all construction is complete. Regardless of whether the 400 Block Reinjection Facility is constructed, oil well drilling will still occur. Table 3-8 also includes a comparison of the incremental change in emissions of the proposed Project operational equipment alone, and the proposed Project plus drilling, to the baseline emissions. Total equipment operational emissions alone are below the SCAQMD mass daily significance thresholds in Table 3-5 for all pollutants. As discussed in Section 2.6.4.1, the proposed Project includes analysis of drilling of up to one additional well per day. As shown in Table 3-8, with the incremental increase in emissions associated with drilling of one well, the mass daily incremental emission increase are greater than the SCAQMD's significance thresholds for VOC and NO_x. Thus, operation of the proposed Project may result in potentially significant impacts due to mass emissions associated with peak-day drilling of one well at any one time. This represents the maximum daily impact and would not occur on most days.[17]

Table 3-8. Comparison of Proposed Project Operational Emissions and Drilling to Baseline Emissions

Project Phase	Peak Day Emissions (lb/day)				
	VOC	**NO_x**	**SO_x**	**CO**	**PM**
Total 2013 Baseline Emissions	3.95	44.57	0.20	11.81	2.50
Proposed Project Operational Equipment Components					
Up to 4 CEBs	15.91	68.19	18.91	28.03	6.99
Consolidated Bulk Truck Loading System	11.49	15.01	0.04	3.51	0.55
400 Block Reinjection Facility	14.04	0.00	0.00	0.00	0.00
Total Operational Equipment Emissions	**41.44**	**83.20**	**18.96**	**31.54**	**7.54**
Incremental Emissions Increase - Operational Equipment Only	37.49	38.63	18.76	19.72	5.04
SCAQMD Significance Threshold (lb/day)	*55*	*55*	*150*	*550*	*55*
SCAQMD Significance Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*
Maximum Incremental Drilling Emissions *	31.51	378.67	0.68	151.29	11.89

[17] Regardless of whether the 400 Block Reinjection Facility is constructed or not, oil drilling in support of existing operations will continue.

Table 3-8. Comparison of Proposed Project Operational Emissions and Drilling to Baseline Emissions

Project Phase	Peak Day Emissions (lb/day)				
	VOC	**NO_x**	**SO_x**	**CO**	**PM**
Total Operational and Drilling Emissions	**72.96**	**461.87**	**19.63**	**182.83**	**19.43**
Incremental Emissions Increase With Drilling	**69.00**	**417.30**	**19.44**	**171.02**	**16.93**
SCAQMD Significance Threshold (lb/day)	*55*	*55*	*150*	*550*	*55*
SCAQMD Significance Threshold Triggered?	**Yes**	**Yes**	No	No	No

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

3.2.4.3 Maximum Air Dispersion Emission Analysis

The operational ambient air quality impacts were based on the on-site emission rates and air dispersion modeling as described in Section 3.2.4.1 and Appendix B. Criteria pollutant impacts from operation of the proposed Project equipment as well as the proposed Project equipment plus drilling of one additional well per day are summarized in Tables 3-9 and 3-10, respectively. For all pollutants, averaging times and standards, the incremental concentration was taken as the maximum incremental concentration among all receptors. The 1-hour NO_2 and 1-hour SO_2 NAAQS is for the 98^{th} and 99^{th} percentile, respectively, of the daily maximum 1-hour concentration; however, using the absolute maximum incremental concentration is a more conservative approach. The air quality impacts of the proposed Project equipment alone are below all of the ambient air quality standards as shown in Table 3-9. Air quality impacts from operations plus drilling would exceed the 24-hour PM_{10} and 24-hour $PM_{2.5}$ incremental impact thresholds but would not exceed SCAQMD air quality significance thresholds for the 1-hour and annual NO_2 thresholds, annual PM_{10} thresholds, 1-hour and 24-hour SO_2 thresholds, 1-hour and 8-hour CO thresholds, and 24-hour sulfates thresholds. The proposed Project when accounting for incremental drilling impacts will be potentially significant for PM_{10} and $PM_{2.5}$. Significant PM_{10} and $PM_{2.5}$ could result in adverse health effects such as those listed in Table 3-4.

Table 3-9. Ambient Air Quality Impacts from Proposed Project Equipment Alone

Pollutant	Averaging Time	Background Concentration[1]		Incremental Concentration[2]		Total Concentration[3]		Ambient Air Quality Standard or Threshold[4]		
NO_2 [5]	1-Hour	85	ppb	1	ppb	86	ppb	180	ppb	CAAQS
		53.3	ppb	1	ppb	54	ppb	100	ppb	NAAQS (98th percentile)
	Annual	14.8	ppb	0.8	ppb	16	ppb	30	ppb	CAAQS
								53.4	ppb	NAAQS
PM_{10} [6]	24-Hour	--		0.1	µg/m³	--		2.5	µg/m³	SCAQMD
	Annual	--		0.0	µg/m³	--		1.0	µg/m³	SCAQMD
$PM_{2.5}$ [6]	24-Hour	--		0.1	µg/m³	--		2.5	µg/m³	SCAQMD
SO_2 [6]	1-Hour	6.3	ppb	5.9	ppb	12.2	ppb	250	ppb	CAAQS
								75	ppb	NAAQS (99th percentile)
	24-Hour	1.7	ppb	1.8	ppb	3.5	ppb	40	ppb	CAAQS
CO	1-Hour	6.5	ppm	0.00	ppm	6.50	ppm	20	ppm	CAAQS
								35	ppm	NAAQS
	8-Hour	2.2	ppm	0.00	ppm	2.2	ppm	9	ppm	CAAQS, NAAQS
Sulfates[7]	24-Hour	--		0.1	µg/m³	--		25	µg/m³	CAAQS

[1] From the SCAQMD 2013 Air Quality Data Table; NO_2 and CO are from the La Habra air quality monitor (Source Number 16, "Northern Orange County") and SO_2 is from the Los Angeles (Main St.) air quality monitor (Source Number 1, "Central LA"). Available at: http://www.arb.ca.gov/aqmis2/aqdselect.php?tab=specialrpt for 1-hr SO_2 and 1-hr CO and at: http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year for the other background concentrations.
[2] For all pollutants, averaging times, and standards, the incremental concentration is the maximum incremental concentration among all the receptors. The 1-hour NO_2 NAAQS is for the 98th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum incremental concentration is a more conservative approach. The 1-hour SO_2 NAAQS is for the 99th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum is more conservative.
[3] For NO_2, SO_2, and CO, the incremental concentrations were added to the background concentrations to get the total concentrations.
[4] SCAQMD 2011.
[5] The annual NO_2:NO_x ratio is 75%, as specified in the USEPA guidance (USEPA 2014e). According to Table 2-4 of the SCAQMD Final Localized Significance Threshold Methodology (SCAQMD 2008), the hourly NO_2:NO_x ratio is 11.4% for receptors within 200 m and 25.8% for receptors between 200 and 500 m. The 1-hour NO_2:NO_x ratio used for the remaining receptors was the most recent value of 80% from the USEPA guidance.
[6] To be conservative, it is assumed that all PM is PM_{10} and $PM_{2.5}$ and all SO_x is SO_2.
[7] Sulfates are estimated by assuming 2% of SO_x emissions are sulfate. It is assumed that maximally impacted receptors are located within 100 m of sources and atmospheric conversion from SO_x to sulfates is minimal.

Table 3-10. Ambient Air Quality Impacts for Proposed Project Equipment Plus Drilling

Pollutant	Averaging Time	Background Concentration[1]		Incremental Concentration[2]		Total Concentration[3]		Ambient Air Quality Standard or Threshhold[4]			Exceeds Standard?
NO_2 [5]	1-Hour	85	ppb	19	ppb	104	ppb	180	ppb	CAAQS	NO
		53.3[5]	ppb	19	ppb	72	ppb	100	ppb	NAAQS (98th percentile)	NO
	Annual	14.8	ppb	0.8	ppb	16	ppb	30	ppb	CAAQS	NO
								53.4	ppb	NAAQS	NO
PM_{10} [6]	24-Hour	--		3.5	µg/m³	--		2.5	µg/m³	SCAQMD	**YES**
	Annual	--		0.0	µg/m³	--		1.0	µg/m³	SCAQMD	NO
$PM_{2.5}$ [6]	24-Hour	--		3.5	µg/m³	--		2.5	µg/m³	SCAQMD	**YES**
SO_2 [6]	1-Hour	6.3	ppb	5.9	ppb	12.2	ppb	250	ppb	CAAQS	NO
								75	ppb	NAAQS (99th percentile)	NO
	24-Hour	1.7	ppb	1.8	ppb	3.5	ppb	40	ppb	CAAQS	NO
CO	1-Hour	6.5	ppm	0.11	ppm	6.61	ppm	20	ppm	CAAQS	NO
								35	ppm	NAAQS	NO
	8-Hour	2.2	ppm	0.08	ppm	2.3	ppm	9	ppm	CAAQS, NAAQS	NO
Sulfates[7]	24-Hour	--		0.1	µg/m³	--		25	µg/m³	CAAQS	NO

[1] From the SCAQMD 2013 Air Quality Data Table; NO_2 and CO are from the La Habra air quality monitor (Source Number 16, "Northern Orange County") and SO_2 is from the Los Angeles (Main St.) air quality monitor (Source Number 1, "Central LA"). Available at: http://www.arb.ca.gov/aqmis2/aqdselect.php?tab=specialrpt for 1-hr SO_2 and 1-hr CO and at: http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year for the other background concentrations.

[2] For all pollutants, averaging times, and standards, the incremental concentration is the maximum incremental concentration among all the receptors. The 1-hour NO_2 NAAQS is for the 98th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum incremental concentration is a more conservative approach. The 1-hour SO_2 NAAQS is for the 99th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum is more conservative.

[3] For NO_2, SO_2, and CO, the incremental concentrations were added to the background concentrations to get the total concentrations.

[4] SCAQMD 2011.

3.2.4.4 Health Risk Assessment

The estimated annual TAC emissions are shown in Table 3-11 for both the equipment operational emissions and for worst-day incremental drilling emissions as well as comparison to the baseline operational emissions. The incremental operational health risk impact analysis is based on the on-site TACs emission rates and the air dispersion modeling discussed in Section 3.2.4.1 and the SCAQMD's Rule 1401 guidance. For acute impacts, the maximum daily emission rates were used to calculate the maximum hourly emissions; for all other impacts, the maximum annual emission rates were used. The incremental health risk impacts from the operation of the proposed Project equipment with the incremental impact associated with drilling are summarized in Table 3-12. Additional detail can be found in Appendix B. Results indicate that the potential health risk impacts associated with the proposed Project will be below all of the SCAQMD significance thresholds.

According to the SCAQMD, the updated OEHHA Guidance Manual is anticipated to result in HRAs estimating a 2.7-fold increase in residential cancer risk. Although the updated OEHHA Guidance Manual came out after the EIR NOP date and this analysis, even a 3-fold increase to the Project's estimated cancer risk would still be well below the health risk significance threshold (see Section 3.2.4.4, Table 3-12). The potential increase in residential cancer impacts of 3.39×10^{-6} after accounting for an estimated 3-fold increase from the updated OEHHA Guidance Manual would still be well below the health risk significance threshold of 1×10^{-5}.

Table 3-11. Annual TAC Emissions Resulting from the Proposed Project Operational Equipment and Related Drilling Compared to Baseline Emissions

Project Phase	Peak Day Emissions (lb/day)									
	PAH	**Formaldehyde**	**Benzene**	**1,3-Butadiene**	**Naphthalene**	**Acetaldehyde**	**Acrolein**	**Ammonia**	**Ethylbenzene**	**Propylene oxide**
Total Baseline Emissions	0.00	0.38	0.06	0.00	0.00	0.01	0.00	0.00	0.47	0.00
Proposed Project Operational Equipment Components										
Up to 4 CEBs	0.01	3.27	0.45	0.00	0.03	0.12	0.03	0.00	4.04	0.00
Consolidated Bulk Truck Loading System	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.04	0.00
400 Block Reinjection Facility	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Total Operational Equipment Emissions	**0.01**	**3.27**	**0.61**	**0.00**	**0.03**	**0.12**	**0.03**	**0.00**	**4.13**	**0.00**
Incremental Emissions Increase - Operational Equipment Only	0.01	2.90	0.55	0.00	0.03	0.11	0.02	0.00	3.66	0.00
Maximum Day Incremental Drilling Emissions *	0.03	0.86	0.09	0.11	0.00	0.00	0.00	0.40	0.00	0.00
Total Operational and Drilling Emissions	**0.04**	**4.14**	**0.70**	**0.11**	**0.03**	**0.12**	**0.03**	**0.40**	**4.13**	**0.00**
Incremental Emissions Increase With Drilling	**0.04**	**3.76**	**0.64**	**0.11**	**0.03**	**0.11**	**0.02**	**0.40**	**3.66**	**0.00**

Project Phase	Peak Day Emissions (lb/day)								
	Toluene	**Xylene**	**Hexane**	**Cadmium**	**Hexavalent chromium**	**Arsenic**	**Lead**	**Nickel**	**DPM**
Total Baseline Emissions	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.05
Proposed Project Operational Equipment Components									
Up to 4 CEBs	0.16	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Consolidated Bulk Truck Loading System	0.11	0.15	0.04	0.00	0.00	0.00	0.00	0.00	0.29
400 Block Reinjection Facility	0.13	0.16	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Total Operational Equipment Emissions	**0.40**	**0.40**	**0.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.29**
Incremental Emissions Increase - Operational Equipment Only	0.36	0.36	0.19	0.00	0.00	0.00	0.00	0.00	0.24
Maximum Day Incremental Drilling Emissions *	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Operational and Drilling Emissions	**0.40**	**0.40**	**0.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.29**
Incremental Emissions Increase With Drilling	**0.36**	**0.36**	**0.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.24**

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

Table 3-12. Maximum Health Risk Impacts from Operation of the Proposed Project

Health Endpoint	Receptor	Maximum Estimated Incremental Risk for Project Equipment Only	Maximum Estimated Incremental Risk with Drilling	SCAQMD Significance Threshold	Above SCAQMD Threshold?
Cancer Risk	Resident*	9.84×10^{-7}	1.13×10^{-6}	1.00×10^{-5}	No
	Worker	5.84×10^{-7}	6.14×10^{-7}	1.00×10^{-5}	No
Chronic Noncancer Hazard Index	Resident	0.00	0.00	1.00	No
	Worker	0.01	0.01	1.00	No
Acute Noncancer Hazard Index	PMI/Maximum	0.07	0.07	1.00	No
	Resident	0.01	0.01	1.00	No
	Worker	0.03	0.04	1.00	No

*As noted in Section 3.2.4.4, even with the recent OEHHA adopted updated Guidance for HRAs (residential cancer risks were as high as 3 times higher, the Project's residential cancer risk would be less than the current SCAQMD threshold and impacts would still be less than significant.

3.2.5 Significance Determination

As noted above, the IS determined that the Project had less than significant impacts for the following criteria:

a) Conflict with or obstruct implementation of the applicable air quality plan;

e) Create objectionable odors affecting a substantial number of people.

Project equipment would result in less than significant ambient air quality impacts during Project construction and operation. With the potential related drilling of one new well at a time, the Project has significant 24-hour average PM_{10} and $PM_{2.5}$ impacts.

Project equipment would result in less than significant operational and construction emissions. With the potential related drilling of one new well at a time, the Project would result in significant regional NO_x and VOC emission impacts.

Thus, the proposed Project does exceed the significance criteria outlined in Section 3.2.4:

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

However, the proposed Project (both with or without potential related oil well drilling) would result in less than significant health risk impacts and thus, does not (see Section 3.2.4):

d) Expose sensitive receptors to substantial pollutant concentrations.

3.2.6 Mitigation Measures

No significant air quality impacts are anticipated due to construction of the proposed Project and thus, no additional mitigation measures for construction-related emissions are required.

The operation of the proposed Project results in a significant impact due to the incremental emissions associated with potential drilling related to maximum daily emissions of NO_x and VOC, and ambient air quality impacts of 24-hour PM_{10} and 24-hour $PM_{2.5}$. A review of SCAQMD guidance, similar projects, and available guidelines identified the following potential mitigation measures that could be incorporated into this proposed Project.

The SCAQMD recommends limiting the maximum speed of on-site vehicles to 25 miles per hour and to implement watering twice a day to mitigate fugitive dust during drilling operations. Breitburn will continue to incorporate this mitigation measure as part of its drilling operations.

In addition, the cleanest drill rigs in the South Coast Air Basin are generally Tier 3 engines. The Kenai Drill Rig #15 has been used by Breitburn in the past and is representative of a typical drill rig Breitburn would use for future drilling operations. Breitburn will be hiring the drilling company, and, thus, not purchasing the rigs. As a mitigation measure, Breitburn will require that at a minimum the drilling contractor shall use Tier 3 engines for offroad equipment and conduct a due diligence effort to secure available Tier 4 engines for new oil well drilling on its site.

The Project operations are permittable under SCAQMD and federal requirements, which means that BACT has been met where required, such as for the proposed CEBs.

The SCAQMD provides recommendations online under "Mitigation Measures and Control Efficiencies" (SCAQMD 2010)[18], including those for on-road mitigations[19] and off-road mitigations.[20] The trucking fleet used to transport the crude oil is expected to incorporate model year 2007 or newer trucks, which have much lower PM and NO_x emissions than older trucks. Note that, as stated above, applicable construction related on- and off-road measures have been included in the Project design feature or are required by rule and thus, are not considered mitigation measures. No additional applicable operational or construction mobile source mitigation measures were identified for these sources.

Therefore, the following mitigation measures were identified for this proposed Project:

> MMAir1 – Limit maximum speed for on-site vehicles on unpaved roads to 25 miles per hour during drilling activities.

[18] www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies

[19] www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/on-road-engines

[20] www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies/off-road-engines

MMAir2 – Water unpaved roads twice a day during drilling activities.

MMAir3 – Require the drilling contractor to use, at a minimum, Tier 3 engines, and to conduct due diligence effort to secure available Tier 4 engines for new oil well drilling at the site (e.g., contact 3 separate contractors requesting written confirmation regarding availability of Tier 4 engines).

3.3 Energy

3.3.1 Existing Setting

The Breitburn Santa Fe Springs Facilities are currently served by Southern California Edison (SCE) for electricity supply. SCE supplies more than 99 gigawatt hours (GW-h) of electricity each year to customers throughout Southern California. The California Energy Commission's (CEC) 2014-2024 Preliminary Forecast Report indicates that electricity consumption is expected to increase by 0.64% to 1.37% each year in the SCE Planning area (service territory), resulting in a projected electricity consumption of 107,929 to 118,193 GW-h within SCE's Planning area by 2024 (peak demand is projected to be 23,499 to 26,602 MW by 2024) (CEC 2013).

3.3.1.1 Existing Energy Use

The facility is energy confined, meaning that the transmission lines that serve the field can only supply a small amount of energy that is negligible in comparison to the greater service area. The historic average electrical supply from SCE to the Breitburn Santa Fe Springs Facilities was 15 to 16 MW per day, distributed around the site on Breitburn's own 12 kV distribution system. The facility also purchases electricity supplied by 20 small on-site, third-party microturbines to supply additional electricity needs (~1.3 MW). The third-party microturbines were installed in October 2011. These existing third-party microturbines use produced gas from the Breitburn Santa Fe Springs Facilities to generate electricity for purchase by Breitburn for use on-site. In addition, in November 2014, Breitburn installed 14 additional microturbines on-site to beneficially use more produced gas from Breitburn's operations to generate additional electricity for use on-site. Also in 2014, SCE up-rated a dedicated substation for Breitburn; SCE can now supply a minimum of 28 MW to the Breitburn Santa Fe Springs Facilities: 26 MW per day from the dedicated uprated substation for the Breitburn Santa Fe Springs Facility and 2 MW per day from a dedicated feed in the 400 Block.

3.3.1.2 Regulatory Background

No specific federal, state, or local regulations apply to energy demand at the Breitburn Facilities. Energy supply and demand is provided by a public utility company that is regulated by a number of federal and state laws.

3.3.2 Environmental Impacts and Mitigation

3.3.2.1 Significance Criteria

The impacts to energy will be considered significant if any of the following criteria are met:

- The proposed project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.

The Project was determined to have no impact with regard to the following two significance criteria in the IS; therefore, these impacts are not addressed further in the EIR:

- The proposed project conflicts with adopted energy conservation plans or standards.
- The proposed project uses non-renewable resources in a wasteful and/or inefficient manner.

In the IS, the proposed Project was found to be less than significant for the remaining two criteria above; however, because the Project alternatives may be potentially significant related to energy impacts, the potential energy impacts of the proposed Project are further discussed in the following section.

3.3.2.2 Environmental Impacts

Would the project result in the need for new or substantially altered power or natural gas utility systems?

Less Than Significant Impact

Construction of the proposed Project would not increase electricity demand because most of the construction equipment is powered by diesel fuel. Following completion of construction activities and commencement of operations at the new 400 Block Reinjection Facility, the proposed Project would increase the power load used by Breitburn. The 400 Block Reinjection Facility will require approximately 10 to 20 MW per day, depending on the throughput of produced fluids. The majority of the additional power load increase will be due to increased use of electrical pumps for reinjection of produced water generated from the optimization or rework of existing idle wells, and potentially newly drilled wells, as well as any additional lighting required for the facilities. It is anticipated that the 28 MW available from these confirmed SCE sources, in addition to the energy provided by the on-site microturbines and third-party microturbines, would be sufficient to meet the facility's needs for the Project. The Project would result in less than significant increases in electrical demand. With the existing dedicated substation, as well as energy supplied from on-site microturbines, the Project would not require new or substantially altered power or other natural gas utility systems.

Would the project create any significant effects on local or regional energy supplies and on requirements for additional energy?

Less Than Significant Impact

Construction of the proposed Project would not increase electricity demand because most of the construction equipment is powered by diesel fuel. The amount of diesel fuel used to run construction equipment is not considered significant relative to the pool of diesel fuel available for purchase.

Operation of the proposed Project would not result in significant effects to energy supplies because the electricity used would represent only approximately 0.095% of the current peak SCE Planning area supply of ~21,000 MW per day. As noted in Chapter 1, related field activities, such as drilling of new wells or reworking existing wells, would continue in and around the Project site. Any drilling that occurs would require small amounts of electricity to operate portable lighting near the construction staging areas. In addition, the drill rigs themselves require

energy to operate. However, both the lights and the rigs themselves are powered by diesel-fired electrical generators and thus would result in no impacts on the electricity demand from the power grid. Electrical supply at the Breitburn Santa Fe Facilities includes power provided by SCE, existing third-party oil field gas-fired microturbines, as well as 14 new oil field gas-fired, CARB-certified, microturbines that were installed in 2014 to supply additional electrical needs. Energy use would increase by approximately 10-20 MW per day, which would be supplied from SCE and the gas-fired microturbines. No significant additional energy sources would be required for the proposed Project.

The gas used to power the microturbines is produced from the field during oil extraction. Any produced gas at the field that is not used to provide electricity via the microturbines would be sent to the CEB(s). The gas produced at the field does not meet the quality standards set by SoCalGas (i.e., it is not pipeline quality gas) and is not suitable for sale and distribution on local gas lines. Thus, in order to sell the produced gas, a gas processing/conditioning plant would need to be constructed that would process the gas such that it is pipeline quality. Historically and currently, the volume of gas produced at the Field is not sufficient to make a connection project, the necessary clean up equipment, or a contract with SoCal Gas economically feasible. Therefore, the Project, production of gas at the Field, and operation of the gas-fired microturbines would have no effect on regional pipeline gas supplies or demand for natural gas.

Would the project create any significant effects on peak and base period demands for electricity and other forms of energy?

Less Than Significant Impact

Construction of the proposed Project would rely on diesel fuel and would therefore have no impact on the electricity demand. Once Project components are operational, the relatively small increases in electricity of about 10- 20 MW per day (or only 0.095% of the current peak SCE Planning area supply of ~21,000 MW) that would result from the proposed Project would not result in any significant adverse effects on local or regional energy supplies and would not significantly increase either peak or base-load energy demand. Demand for natural gas would not be impacted as a result of the proposed Project because all natural gas used in the on-site microturbines is field gas produced on-site.

3.3.2.3 Significance Determination

The Project would result in less than significant impacts related to energy.

3.3.2.4 Mitigation Measures

The Project would not result in any significant impacts related to energy. No mitigation measures are required.

3.4 Geology and Soil

3.4.1 Environmental Setting

3.4.1.1 Soils and Topography

The City of Santa Fe Springs is situated on a broad alluvial fan that slopes gently from the San Gabriel Mountains to the Pacific Ocean. The land is underlain by bedrock and surficial deposits characteristic of the region as a whole. The bedrock units derive from the Miocene Age (Puente

Formation), the Pliocene Age (Fernando Formation), and the Pleistocene age (La Habra Formation). The surficial deposits are composed of poorly consolidated sediments of the Pleistocene and Holocene ages including colluvium/alluvium and ancient landslide debris. Topography in the City ranges from 135 feet above sea level to 170 feet above sea level. Although the Puente Hills are located north of the City, no significant landforms or topographic features are present within the City. The Breitburn Santa Fe Springs Facilities are generally flat at an elevation of 158-160 feet above mean sea level throughout the facility. Soils at the Project site were not mapped in the more recent efforts by the Natural Resources Conservation Service in Los Angeles County. Review of the printed Soil Survey for southeastern Los Angeles County indicates that soils in all of the City of Santa Fe Springs consist of Placentia sandy loam. This soil type is described as well-drained, occupying low-rolling hills, mesas and sloping plains (Mesmer 1903). Soil testing at the Project site prior to installation of the SCE substation found natural soils consist of silty sand, overlying fill to a depth of approximately 6 feet below ground surface (Geo-Etka 2013).

3.4.1.2 Seismic Hazards

Seismic hazards include ground motion, ground surface fault rupture, liquefaction, settlement, lateral spreading, and seismically-induced slope instabilities. The Project site is located in a seismically active region of California. There are no known faults within the City. The nearest fault systems are the Sierra Madre fault system, located approximately 25 miles north of the City and the San Andreas Fault of which the south-central segment is located approximately 37 miles east of the City. Surface faulting develops scarps, trenches (grabens), fractures, and pressure ridges in the areas directly associated with the fault line. Because there are no known fault systems within the City, the likelihood of surface faulting is minimal to none. However, the degree of ground shaking from an earthquake is dependent on the distance from the epicenter. Ground shaking in Santa Fe Springs can be expected from any moderate earthquake in the Los Angeles basin. The Project site is not located within the liquefaction hazard zone designated by the California Geologic Survey (CGS). As stated in the Santa Fe Springs General Plan, Safety Element, the potential for liquefaction to occur at the Project site is considered remote (City of Santa Fe Springs 1994a).

3.4.2 Regulatory Background

3.4.2.1 Federal Regulations

Underground Injection Control Programs

The 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. 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.

3.4.2.2 State Regulations

California Building Code

The California Building Standards Commission provides a minimum standard for building design with the 2013 California Building Code (CBC 2013), which is based on the International Code Council but has been modified for California conditions. Chapter 16 of the 2013 CBC contains specific requirements for seismic safety. Chapter 18 of the 2013 CBC regulates excavation, foundations, and retaining walls. Appendix J of the 2013 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 2014). 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. The Project site is not located in zones identified by the Seismic Hazards Mapping Act (CGS 1998).

3.4.3 Environmental Impacts and Mitigation

3.4.3.1 Significance Criteria

The impacts on the geological environment will be considered significant if any of the following criteria apply:

- Expose people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction, or landslides.
- Expose people or structures to geologic hazards such as subsidence.

The Project was determined to have no impact with regard to the following significance criteria in the IS; therefore, these criteria are not addressed further:

- 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.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.

3.4.3.2 Environmental Impacts

Would the project expose people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction, or landslides?

Less Than Significant Impact

The Project site is located in a seismically active region of Southern California. Therefore, it is conceivable that a strong ground-shaking event could occur during construction or operation of the facilities. As with all properties in the seismically active southern California region, the area is susceptible to ground-shaking and ground failure during seismic events. Seismic ground-shaking could damage the proposed structures and oil field operations. The Project would result in the construction and installation of equipment that is similar to that already in place at the facility. Breitburn would design and construct the Project components in conformance to the most recently adopted building codes. Operation of the Project would not require any additional employees at the Field; therefore, the Project would not expose a greater number of people to any impacts that could result from major ground-shaking. All oil field employees are required to wear personal protective equipment at all times on the field, in accordance with Occupational Safety and Health Administration standards. Further, all oil field employees are trained in emergency response procedures. Therefore, in the event of major ground-shaking, all persons on the field would be expected to follow specific safety and health procedures.

As discussed in Chapter 1, Breitburn Santa Fe Springs Facilities will continue to drill new wells and rework existing wells are part of regular operations in the future.[21] Well drilling and waterflood operations have occurred at the Field for nearly 100 years and occur at pressures that do not affect or change the structure of the geologic formations below the Field. Moreover, produced water is reinjected into the same formations from which oil has previously been

[21] The oil extraction process does not involve hydraulic fracturing, nor are there plans to conduct hydraulic fracturing in the future.

extracted such that the reservoir is pressure depleted which can be offset by fluid reinjection. As such water injection would not increase the risk of an earthquake. Therefore, well drilling and reworking operations would have no impacts with regard to causing any seismic shaking, surface rupture, or ground-shaking.

Would the project expose people or structure to major geologic hazards such as subsidence?

No Impact

There is no evidence of existing or historic ground subsidence at the Project site. Subsidence is caused by the reduction of pore pressure within the reservoir resulting from fluids production. Poorly consolidated sediment may be compacted after fluids (oil, water and gas) are removed from producing reservoirs, potentially resulting in the sinking of the ground surface. The resulting increase in the effective stress causes compaction that is propagated to the surface, typically causing a bowl-shaped subsidence at the surface, centered over the oilfield. The most well-known example of such subsidence occurred at the Wilmington Oil Field. Since then it has become public policy in the State of California to arrest subsidence, especially in coastal areas, through the use of water injection (Chilingar and Endres 2005). As such, reinjection of water into the depleted reservoir is a widely practiced and accepted method of countering subsidence. Water reinjection is also used to enhance secondary oil recovery. At the Field, produced water is currently almost entirely reinjected into oil-bearing zones, via Class II injection wells permitted by DOGGR, in an essentially "closed loop system" (the majority of produced water is reinjected back into the formation, with the exception of up to 12,500 bpd that is discharged under permit to the public sewer system). As such, water is generally reinjected to the same depth from which it is extracted. The formation depth ranges from approximately 3,450 feet in the shallowest formation to more than 8,000 feet in the deepest formation. Any increases in volumes of produced water generated that may result from the proposed Project (up to an additional 196,000 bpd) would also be reinjected into depleted reservoirs to counter subsidence and help increase oil production; water is reinjected into the producing formations in effort to guide oil towards producing wells. The production to injection ratio would remain relatively constant over time, and all reinjection wells are permitted by DOGGR. Therefore, the Project would not result in exposure of people or structures to hazards related to subsidence.

3.4.3.3 Significance Determination

The Project would result in less than significant impacts related to geology and soils.

3.4.3.4 Mitigation Measures

The Project would not result in any significant impacts related to geology and soils. No mitigation measures are required.

3.5 Greenhouse Gas Emissions

3.5.1 Existing Setting

3.5.1.1 Background

Unlike criteria pollutants emissions, GHGs emissions do not cause direct adverse human health effects. Rather, the environmental effect of GHG emissions is a result of their accumulation in the atmosphere. GHGs absorb long wave radiant energy reflected by the earth both upward to space and back down toward the surface of the earth. The downward part of this long wave

radiation that accumulates in the atmosphere is known as the "greenhouse effect." The accumulation of GHGs in the atmosphere causes climate change. Global climate change refers to changes in average climatic conditions on earth as a whole, including temperature, wind patterns, precipitation, and storms. Some studies indicate that the potential effects of global climate change may include rising surface temperatures, loss in snow pack, rising sea levels, more extreme heat days per year, and more drought years. These climatic changes in turn may have numerous indirect effects on the natural environment and humans.

The six major GHGs identified by the Kyoto Protocol are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). The first three (CO_2, CH_4, and N_2O) occur naturally in the atmosphere whereas the last three are not naturally present in the atmosphere but result from anthropogenic activities. There are other GHGs that are not recognized by the Kyoto Protocol or the State of California because of the smaller role that they play in climate change or the uncertainties surrounding their effects. Atmospheric water vapor is not recognized by the governments because there is not an obvious correlation between water vapor concentrations and specific human activities. Water vapor appears to act in a positive feedback manner; higher temperatures lead to higher water concentrations, which in turn cause more global warming.

Atmospheric concentrations of GHGs have increased since the pre-industrial era compared to modern-time concentrations in 2012: CO_2 increased from 275 ppm to 391 ppm; CH_4 increased from approximately 700 ppb to 1,803 ppb; and N_2O increased from 270 ppb to 324 ppb (IPCC 2013).

The effect of GHGs is a combination of their emissions and their global warming potential (GWP). Global warming potential is a relative measure that indicates, on a mass for mass basis, how much a gas will contribute to climate change relative to CO_2. Both CH_4 and N_2O are more potent GHGs than CO_2, with GWPs (100-year horizon) of 21 and 310, respectively.[22] The other GHGs that are not naturally found in the atmosphere are also more potent and have greater GWPs than CO_2 (e.g., SF_6 GWP = 23,900; HFCs and PFCs GWP = 140 to 11,700).

3.5.1.2 Baseline Operating Conditions Used in Analyses

As discussed in Section 2.4, Breitburn operates on ten city "blocks" within the Field that cover approximately 784 acres (Figure 2-4). The Main Facility and Baker Humble Lease Facility, located in the 700 Block, contain a variety of tanks and processing equipment. The existing flare is located at the 400 Block, which is also the location of the proposed new "400 Block Reinjection Facility." These are the only Blocks that contain SCAQMD-permitted equipment, although there are production and injection wells located in other Blocks.

Because the CEQA environmental analysis is based on incremental changes from the project compared to the baseline, the baseline emissions were calculated for current equipment/ operations that will be affected by the proposed Project. The usual baseline year is the NOP year.

[22] GWP values from IPCC's Second Assessment Report (SAR, 1996) are still used by international convention and are used in this analysis, even though more recent (and slightly different) GWP values were developed in the IPCC's Third, Fourth, and Fifth Assessment Report (TAR, 2001). The values cited here and most commonly used refer to the gases' global warming potential averaged over 100 years' time in the atmosphere.

However, for the air quality analysis, 2013 was chosen as the baseline year because 1) complete ambient air quality data or emissions data for 2014 was not available when work on the air quality technical study began, and 2) the 2014 process gas levels were abnormally high, leading to abnormally high NO_x and other pollutant levels. Emission levels from 2013 are more typical and represent a more conservative (i.e., lower emission) baseline. Specifically, during the 2013 baseline year, the John Zink flare was in operation. In addition, crude oil was loaded at the existing truck loading station at the 700 Block up to 3 trucks per day. GHG emissions for the John Zink flare were obtained from Breitburn's 2013 CARB GHG report. GHG emissions for the idling trucks (up to 5 min/truck) were calculated using CARB's EMFAC 2011 Idling Emission Rates for 2014. GHG emissions associated with truck travel were calculated using 2014 emission factors from EMFAC2011 (CARB 2013), assuming 30 miles of travel to and from loading of crude oil. GHG emissions from truck loading operations and fugitive emissions were calculated based on the annual VOC emissions reported on the 2013 AER and calculation of associated CH_4 emissions. Appendix B provides a detailed summary of the baseline emissions and the methodology used. Table 3-13 provides the 2013 baseline operating scenario GHG emissions.

Table 3-13. 2013 Baseline Operating Scenario		
Baseline Operations		**Baseline Emissions (MT/yr)**
		CO_2e
Main Facility	Truck Travel	113
	Truck Idling	0.6
	Truck Loading Operations	5.8
400 Block	Existing Flare	11,166
Total Equipment Operational Emissions		**11,285**

3.5.2 Regulatory Setting

In response to growing scientific and political concern regarding global climate change, a series of laws at the state and federal level have been adopted to reduce both the level of GHGs in the atmosphere and to reduce emissions of GHGs from commercial and private activities within the state.

3.5.2.1 Federal

April 2007 Supreme Court Ruling

In Massachusetts *et al*. vs. Environmental Protection Agency *et al*., the US Supreme Court ruled that GHGs were air pollutants under the CAA and that provided authorization to the USEPA to regulate CO_2 emissions from new motor vehicles, should those emissions endanger the public health or welfare. The USEPA was not required to implement regulations to reduce GHG emissions under this decision; instead, the Court found that the only times when the USEPA could avoid taking action were (1) if it found that GHGs do not contribute to climate change or (2) if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change. In 2009, the USEPA Administrator signed two separate and distinct findings related to GHGs.

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs – CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 – in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

There were no requirements imposed on industry or other entities as a result of these findings; the findings instead were a prerequisite for setting GHG emissions standards for vehicles and allowed the USEPA to finalize the proposed emissions standards for light-duty vehicles (USEPA 2013b).

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (EISA) was signed into law on December 19, 2007, and includes provisions covering:

- renewable fuel standard;
- biofuels infrastructure;
- building energy efficiency; and
- average fuel economy standards.

The EISA also addressed 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" (USEPA 2014f).

The Renewable Fuel Standard (RFS) regulations require annual increases in the amount of renewable fuel that is blended into gasoline. The EISA expanded this program to include diesel as well as gasoline, and increased the volume to 36 billion gallons by 2022 (USEPA 2014g).

Reporting Requirements

The Consolidated Appropriations Act of 2008 (HR 2764), which was passed by Congress in December 2007, required the USEPA to develop a rule for mandatory reporting of GHGs. As a result, the GHG Reporting Rule was issued in 2009 (USEPA 2013c). The stated purpose of the rule is to collect accurate and timely GHG data to inform future policy decisions. Facilities that emit 25,000 metric tonnes (MT) or more per year of GHGs are required to submit annual reports to the USEPA. Direct emissions from on-site sources counted toward the threshold. Suppliers of certain products that result in GHG emissions if released, as well as facilities that inject CO_2 underground for geologic sequestration, are also covered (USEPA 2015b).

Clean Air Act Permitting for GHGs

GHG emissions from the largest stationary sources are covered by the Prevention of Significant Deterioration (PSD) and Title V Operating Permit Programs. The PSD program applies to new major sources and major modifications to existing major sources in attainment areas. 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 trigger a source "major" classification, 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, the USEPA's GHG Tailoring Rule, issued in May 2010, established a phased approach to incorporating facilities emitting GHG emissions at higher thresholds into these programs. Under the rule, GHG permitting initially focused on the largest industrial sources. Effective July 1, 2011, PSD permitting requirements covered new 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_2 equivalents (CO_2eq) are also subject to Title V permitting requirements. However, in June 2014, the U.S. Supreme Court issued a decision in which the USEPA is no longer allowed to permit sources under PSD or Title V solely on a facility's GHG exceeding the above limits (USEPA 2015c). Instead, a source has to first have exceed the 100 or 250 tpy thresholds under PSD and Title V applicable to the other criteria pollutants. The USEPA is currently evaluating the implications of the Court's decision.

3.5.2.2 State

Executive Order S-3-05

This executive order established GHG emissions reduction targets for the State, as well as a process to ensure that the targets are met. As a result of this executive order, the California Climate Action Team (CAT), led by the Secretary of the California State Environmental Protection Agency (CalEPA), was formed (Executive Order S-3-05).

AB 32

AB 32 required CARB to establish a statewide GHG emissions cap for 2020, adopt mandatory reporting rules and an emission reduction plan for significant sources of GHG emissions, and adopt regulations to achieve the maximum technologically feasible and cost effective reductions of GHGs (CARB 2014c).

AB 32 Reporting Requirements

AB 32 specified mandatory reporting of GHG emissions from certain facilities in California. CARB's mandatory GHG reporting regulation 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 25,000 MT of direct emissions from operations (CARB 2015a).

AB 32 Cap-and-Trade

As a result of AB 32, the cap-and-trade program established an enforceable GHG limit (i.e., cap), with this limit decreasing over time. Allowances (i.e., tradable permits) are distributed by ARB as well as traded. Facilities from capped sectors will be allowed to trade these allowances to emit GHGs (CARB 2015b).

Senate Bill (SB) 97

SB 97 required the Office of Planning and Research (OPR) to develop and adopt CEQA guidelines for GHGs by January 1, 2010. As a result, the amendments to the CEQA Guidelines related to GHGs were adopted on December 30, 2009, and became effective on March 18, 2010 (Dutton 2007). These amendments state that the lead agency must "make a good-faith effort… to describe, calculate or estimate the amount of GHG emissions resulting from a project" (CEQA Guidelines Section 16064.4). When determining the significance of a project's GHG emissions, SB 97 directs a lead agency to consider:

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;

- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project (Natural Resources Agency 2009).

3.5.3 Environmental Impacts and Mitigation

The proposed Project site is located within the SCAB. As the lead agency, cumulative environmental impacts of the proposed Project will be calculated and compared to the SCAQMD's CEQA significance thresholds for industrial projects. This section describes the SCAQMD's thresholds of significance and the GHG impact analysis for construction and operation of the proposed Project.

3.5.3.1 Significance Criteria

The SCAQMD's CEQA Thresholds Guide indicates that a significant impact related to greenhouse gases may occur if the proposed project would:

a) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s);

b) Generate greenhouse gases, either directly or indirectly, that may have a significant impact on the environment; or

c) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed Project is located in the City of Santa Fe Springs, which is part of the SCAB; the SCAB is under the jurisdiction of the SCAQMD. In December 2009, the SCAQMD adopted an interim significance threshold for industrial projects of 10,000 MT CO_2eq per year for assessment of the above significance criteria. Consistent with OPR's guidance and for this specific evaluation and case, the GHG emissions of the proposed Project are calculated and reported herein. In addition, the GHG emissions have been compared to the SCAQMD's significance threshold after taking into account offsets required under the AB 32 program.

3.5.4 Environmental Impact Analysis

3.5.4.1 Methodology

This analysis concentrates on the change in the GHG emissions due to implementation of the proposed Project. The proposed Project would result in GHG emissions from both construction and operational sources. The construction and operational emissions were estimated using commonly accepted techniques. The methodology used site-specific data, or assumptions when site specific data was not available, as the basis for identifying applicable emission factors and for calculations as appropriate. The emission factors were obtained from standard sources such

as SCAQMD and USEPA AP-42. The CalEEMod® tool and EMFAC were also used to assist with emission estimates. Additional details for each emissions activity are discussed below. Assumptions and emission factors are included in the tables found in Appendix B.

Construction

The proposed Project will involve the replacement of the existing John Zink flare with one new CEB, the addition of up to three more CEBs, modification of the truck loading system to allow for loading of up to 20 trucks/day with crude oil, and construction of the new 400 Block Reinjection Facility. Construction activities would generate emissions at the Project site from off-road construction equipment activity, and on roadways resulting from construction-related truck hauling, vendor deliveries, and worker commuting. As summarized in Section 2.6, the proposed Project will require the installation of the following:

- Up to four CEBs;
- Two free water knockout tanks, a crude oil storage tank, one slop tank, one pressure vessel, two WEMCOs, two water surge tanks, one clarifier tank, and several electric pumps, compressors and pressure vessels, as well as adequate secondary containment for the new 400 Block Reinjection Facility; and
- One new oil loading connection, comprised of one oil loading hose and one vapor recovery hose, as well as minimal modifications to other system components to adjust for the second connection, and modification of the existing thermal oxidizer.

Construction vehicles consists of off-road construction equipment (e.g. excavators, loaders, dozers, backhoes, concrete trucks, cranes, etc.), on-road trucks (e.g. water trucks, delivery trucks, and boom truck, haul trucks), and worker commuter trips. Construction GHG emissions will result from on-site diesel-powered construction equipment, on-road gasoline powered trucks, on-site vehicular travel, and off-site vehicular activity from trips for workers commuting, dump trucks, and vendor delivery trucks. The same construction phases that were used for the air quality analysis were used for estimating GHG emissions (see Section 3.2.4.1).

As with criteria pollutant emissions in Section 3.2, GHG emissions were estimated utilizing CalEEMod® and EMFAC. The number of equipment and hours of usage were based on a combination of project-specific information, similar construction activities, and model defaults. The amount of material to be removed from the facility during construction and the number of construction workers expected were based on information provided by Breitburn. For other parameters such as horsepower, load factor, and trip length, the model defaults were used. This analysis assumes that individual construction phases and activities listed above do not occur concurrently. The detailed construction analysis can be found in Appendix B.

The estimated maximum annual construction emissions are shown in Table 3-14. For this analysis, total annual construction emissions were amortized over 30-years. Additional detail can be found in Appendix B.

Table 3-14. Incremental Increase in Construction Emissions					
Construction Activity	**Construction Phase**	**Year[1]**	**Off-road Equipment[2]**	**On-road Vehicles**	**Total**
			CO_2e Emissions (MT/year)		
Main Facility (700 Block) Construction	Construction (bulk truck loading, thermal oxidizer modification, O/G/W modification)	2015	1.1	0.0	1.1
4 CEBs	Grading	2015	3.6	0.5	4.1
	Installation of 4 CEBs	2015	8.7	1.3	10.1
400 Block Reinjection Facility Construction	Site Preparation	2016	0.05	9.4	9.5
	Grading 1[3]	2016	13.0	1.2	14.1
	Grading 2[4]	2016	0.03	0.0	0.03
	Construction 1[5]	2016	309.4	27.4	336.8
	Construction 2[6]	2016	20.9	0.0	20.9
Total for All Construction (MT CO_2e)					**396.5**
30-year Amortized (MT/year CO_2e)					**13.2**

Notes:

[1] The exact construction schedule may vary from what was assumed in CalEEMod®.

[2] The off-road equipment category also includes on-road vehicles that primarily travel on-site (pickup trucks, water trucks, boom trucks).

[3] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 1" phase includes all of the construction equipment except for the 3/4-ton pickup trucks.

[4] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 2" phase includes only the 3/4-ton pickup trucks.

[5] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 1" phase includes all of the construction equipment except for the 60-ton crane and boom truck.

[6] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 2" phase includes only the 60-ton crane and boom truck.

Operation

Operational activities would generate emissions at Project site from the equipment operations summarized in Section 2.6, as well as on-site truck idling and truck travel emissions. No additional workers or deliveries are expected to be needed for the proposed Project operations compared to the 2013 baseline; thus, emissions from worker commuting trips or vendor deliveries during the operation phase were not calculated. In addition, most equipment will operate on fossil fuel and will not require significant electrical power or water demands (other than produced water obtained the Project process). Thus, indirect emissions from electricity and water usage are expected to be negligible.

The operational emissions are comprised of on-site and off-site emission sources. The on-site operational emissions result from operation of the proposed Project equipment and consist of:

- Combustion emissions from operation of up to four CEBs;
- CH_4 emissions from the oil/water/gas separation system, WEMCO separators, and tank farm at the new 400 Block Reinjection Facility;
- Combustion emissions from truck idling (5 min/truck) and travel; and
- Fugitive CH_4 emissions from loading of the trucks and from additional components required at the Consolidated Bulk Truck Loading System.

The off-site operational emissions result from worker commuting trips and additional truck trips to the Consolidated Bulk Truck Loading System. Up to 17 additional truck trips will occur each day. No additional workers will be required for the project operations.

Direct operational emissions of GHGs from the on-site equipment were calculated using emission data provided by the manufacturer, standard emission factors from AP-42, EMFAC or SCAQMD guidance, estimated tank turnovers, and other equipment specific assumptions. Emissions from off-site mobile sources (i.e. worker and truck trips) were based on anticipated vehicle type, expected number of trips, CalEEMod® default trip lengths, and default emission factors. Detailed emission estimation information is included in Appendix B.

Related Project Operations – Drilling

In addition, as discussed in Section 2.6.4.1, this EIR includes an analysis of the potential impacts of drilling one new well on any given day to represent worst case drilling operations. Drilling of one new well would be completed in no more than 20 days and involve a number of pieces of equipment.[23] Potential environmental impacts from any increased oil production resulting from one new well on a given day or any other oil field enhancements described above are considered as part of the analysis of the operations of the proposed 400 Block Reinjection Facility and other Project oil-related equipment modifications and thus, would not begin until completion of the 400 Block Reinjection Facility (i.e. in 2016). CalEEMod® was used for estimating GHG emissions from drilling. Emissions were estimated based on the schedule and equipment list discussed in Section 3.2.4.1 for air quality.

[23] No unconventional resources exist beneath the Santa Fe Springs Oil Field; therefore, no wells would be completed using hydraulic fracturing techniques.

The estimated maximum annual operational equipment and related drilling GHG emissions are shown in Table 3-15. For this analysis, and consistent with SCAQMD Guidance, total annual construction emissions were amortized over 30-years. A detailed equipment list, schedule and emission estimation results are included in Appendix B.

3.5.5 Significance Determination

Breitburn is required to offset all GHG emissions for operational equipment because the Facilities' annual GHG emissions already exceed the AB 32 25,000 MT/yr threshold. Therefore, any incremental increase in GHG emissions associated with the proposed Project operational equipment will also have to be offset as part of on-going compliance with AB 32. The remaining incremental increase in GHG emissions for the proposed Project are then only related to construction and drilling emissions as summarized in Table 3-16. The proposed Project is expected to result in less than significant impacts related to GHGs.

Table 3-15. Operational Equipment and Related Drilling GHG Emissions Compared to Baseline

Proposed Project Phases		CO_2e (MT/yr)		
		Baseline Emissions	**Project and Related Drilling Emissions**	**Incremental Emissions**
Main Facility	Truck Trips	113	742	629
	Truck Idling	0.6	4.2	3.5
	Truck Loading Operations	5.8	37.7	32.0
	Truck Loading Fugitives	0.00	1.4	1.4
400 Block Flares	Existing Flare (Baseline) / 4 CEBs (Project)	11,166	75,752	64,586
400 Block Reinjection Facility	O/W/G Separation System Fugitives	0.00	30.6	30.6
	WEMCOs	0.00	10.3	10.3
	Tank Farm	0.00	10.0	10.0
	Wet Solids Removal Truck Trips[1]	0.00	39.8	39.8
Total Equipment Operational Emissions		**11,285**	**76,627**	**65,342**
Maximum Day Incremental Drilling Emissions [2]		NA	581	581
Total Operational and Drilling Emissions		**11,285**	**77,209**	**65,923**

[1] Additional monthly truck trips needed for the 400 Block Reinjection Facility. The wet slurry removal truck trips for the Main Facility in the 700 Block will remain the same between the baseline and the Project scenarios and thus, has not included those emissions here.

[2] As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

Table 3-16. Proposed Project GHG Emissions After AB 32 Offsets

Proposed Project Phases		Incremental CO_2e Emissions (MT/yr)
Main Facility	Truck Trips[1]	629
	Truck Idling[1]	3.5
	Truck Loading Operations[1]	32.0
	Truck Loading Fugitives[1]	1.4
400 Block Flares	Existing Flare (Baseline) / 4 CEBs (Project)	64,586
400 Block Reinjection Facility	O/W/G Separation System Fugitives	30.6
	WEMCOs	10.3
	Tank Farm	10.0
	Wet Solids Removal Truck Trips [2]	39.8
	Maximum Day Incremental Drilling Emissions *	581
	Total Equipment Operational and Drilling Emissions	**65,923**
	AB 32 Offsets Required[3]	*65,185*
	Total Equipment Operational and Drilling Emissions After AB 32 Offset	***739***
	30-Year Amortized Construction Emissions	13.2
	Total Incremental GHG Emissions	**752**
	SCAQMD Significance Threshold (MT/yr)	10,000
	SCAQMD Significance Threshold Triggered?	**NO**

[1] Mobile source emissions are not subject to CARB's GHG Mandatory Reporting Requirement (MRR) per Title 17 of the California Code of Regulations (CCR) Section 95152, and are thus not required to be offset per CARB's Cap and Trade program per CCR Section 95852(h).

[2] Additional monthly truck trips needed for the 400 Block Reinjection Facility. The wet slurry removal truck trips for the Main Facility in the 700 Block will remain the same between the baseline and the Project scenarios and thus, has not included those emissions here.

[3] The amount of AB 32 offsets that are required is based on the categories for which a compliance obligation is required per CARB's Cap and Trade program. In addition to mobile source emissions, vented and fugitive emissions from storage tanks (2.4 MT/yr) used in petroleum and natural gas production and sources for which emissions are estimated using leak detection and leaker emission factors as required by Section 95153(q) of the MRR (30.6 MT/yr) are not counted towards a facility's compliance obligation per CARB's Cap and Trade program per 17 CCR Section 95852.2.

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

3.5.6 Mitigation Measures

The proposed Project is not expected to result in significant impacts or be cumulatively considerable related to GHGs and thus, no mitigation measures are required or recommended.

3.6 Hazards and Hazardous Materials

3.6.1 Environmental Setting

From the 1920's to the present, the Project site has been an oil-producing field.

Programs are in place at the Breitburn Santa Fe Springs Facilities that address hazardous materials storage locations, emergency response procedures, employee training requirements, and hazardous materials release containment and control procedures.

3.6.1.1 On-site Hazardous Materials (Hazardous Materials Generation, Storage, and Disposal)

No underground storage tanks are present within the Breitburn Santa Fe Springs Facilities. During routine operation no hazardous waste is generated or stored on-site. The only instances in which hazardous wastes would potentially be generated is during infrequent, non-routine work such as major tank cleanouts, or in the event of an oil spill (i.e. oil soaked debris generated during spill cleanup), at which time the waste would be tested to determine if it is hazardous per applicable regulations. If hazardous wastes are generated at any time in the future, they would be disposed of by an outside contractor at McKittrick Waste Landfill, the nearest facility that accepts hazardous waste, or another appropriately permitted hazardous facility off-site. Hazardous materials that are used during typical operations include standard oil-based and synthetic lubrication oils used in the compressors and microturbines, solvents, and water or oil treatment additives. Hazardous materials currently stored on-site, as reported to the Santa Fe Springs Fire Department CUPA through the California Environmental Reporting System (CERS) include corrosion inhibitors, water clarifiers, scale inhibitors, antifreeze and coolants, solvents, and various oils and lubricants. All hazardous material is stored in proper containers and handled in accordance with applicable regulations and safety requirements, including the California Fire Code National Fire Protection Association 704 "Standard System for the Identification of the Hazards of Materials for Emergency Response as adopted by the California Fire Code"; California Health and Safety Code; Title 22 California Code of Regulations; 49 CFR Parts 100-185, and Certified Unified Program Agency (CUPA).

Breitburn maintains a Spill Prevention, Control, and Countermeasure (SPCC) Plan for its Santa Fe Springs Facilities. The SPCC Plan was last certified in October 2011 and is reviewed and re-certified at least every five years, per EPA requirements and guidelines. The SPCC Plan provides measures including steps to minimize the potential for a release of oil-containing fluids, including crude oil, produced water or oil-containing hazardous materials, and requires adequate containment, thorough inspections and maintenance activities, cleanup and spill response procedures, training, and spill response supplies, such as booms, absorbent materials, portable pumps and grit/sandbags, to be kept at the Santa Fe Springs Facilities (Barkley Environmental Engineering Service 2011). An addendum, prepared pursuant to California DOGGR AB 1960 Spill Contingency Plan requirements, provides additional facility information, initial spill response procedures, and emergency shutdown and response procedures. The Spill Contingency

Plan addendum was last updated in July 2014 (Barkley Environmental Engineering Service 2014).

In the event of spill response and cleanup, Breitburn has contracted Patriot Environmental Services as the primary Oil Spill Response Organization (OSRO). Breitburn also has secondary response companies contracted in case Patriot cannot supply all necessary resources. All OSROs are licensed and prepared for such activity.

There are no known areas of contaminated soil on the site and no contaminated soils have been encountered. As such, the Breitburn facility is not listed in the State of California EnviroStor database. However, if activities in the field require excavation of soils that may contain VOC-containing materials, SCAQMD Rule 1166 *Volatile Organic Compound Emissions from Decontamination of Soil* would be followed and a Rule 1166 Plan would be developed and implemented as applicable if a sufficient acreage of soil, per Rule 1166, if affected. In addition, Breitburn developed, in consultation with the Santa Fe Springs Fire-Rescue Department, a "Generic Soil Mitigation Plan for Incidental Produced Liquid Spills or Pipeline Leaks," which sets forth the requirements for evaluating, responding to and cleaning up liquid produced fluid spills within the field (Waterstone 2012).

3.6.1.2 Sensitive Receptors

The nearest public receptors from the Santa Fe Springs Facilities are residents in a housing tract located immediately south of Telegraph Road and west of Bloomfield Ave. The nearest schools to the Project site are Richard Graves Middle School, located 0.7 mile east of the Project site, Lakeview Elementary School and Santa Fe High School, both located approximately 1.25 mile west of the Project site.

3.6.1.3 Regulatory Background

Federal Regulations

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 for liquids, 500 pounds for solids, 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. Breitburn's Business Plan, which presents hazardous materials currently stored on-site as well as an emergency response contingency plan and training plan, has been submitted to the

City of Santa Fe Springs Fire Department CUPA through the California Environmental Reporting System (CERS), as discussed in Section 3.6.1.1.

Occupational Health and Safety Administration

The Occupational Health and Safety Administration published Standard 1910 which addresses worker protection and includes provisions for worker safety with regard to hazardous materials and hazardous waste (29 C.F.R., §1910). The standard requires that employers evaluate the potential health hazard that hazardous materials pose in the workplace and communicate information concerning hazards and appropriate protective measures to employees. Under Standard 1910.120, a health hazard is defined to mean "a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity; or aspiration hazard". The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to29 C.F.R., §1910.1200. Breitburn maintains both a complete electronic database and a hard copy of every safety data sheet for hazardous materials utilized at the Santa Fe Springs Facilities. These material safety data sheets are available to all employees. In addition, Hazard Communication training is provided to all employees as required.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act of 1976 (RCRA) authorizes EPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. In 1984, RCRA was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by EPA, stricter 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 RCRA, with approval by EPA.

Spill Prevention, Control and Countermeasures 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 regulation which also includes the Facility Response Plan rule. Section 3.6.1.1 describes Breitburn's SPCC Plan program, as well as its Spill Contingency Plan prepared pursuant to California's AB 1960.

Process Safety Management (29 CFR 1910.119)

Under this section, facilities that use, store, manufacture, handle, process, or move hazardous materials above specified thresholds or quantities 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. The Breitburn Santa Fe Springs Facilities are not subject to OSHA's Process Safety Management regulations in 29 CFR Part 1910.119 (a)(2)(ii) because oil and gas drilling or servicing operations are exempt from this provision and none of Breitburn's operations involve chemicals use or storage above specified thresholds or storage quantities.

State Regulations

California Accidental Release Program (Title 19 CCR, Division 2, Chapter 4.5)

The California Accidental Release Program requires stationary sources with quantities of a regulated substance above a threshold specified in the regulation to develop and submit a Risk Management Plan. Methane is a regulated substance, with a specified threshold of 10,000 pounds. However per §2770.2(b)(2)(B), "naturally-occurring hydrocarbon mixtures need not be considered when determining whether more than a threshold quantity is present at a stationary source. Naturally-occurring hydrocarbon mixtures include any combination of the following: condensate, crude oil, field gas, and produced water, each as defined in Section 2735.3." Field gas is defined as "gas extracted from a production well before the gas enters a natural gas processing plant." The quantification of methane that is on the site as oil field gas is not counted toward the threshold quantity and Breitburn does not use or store any other regulated substances in quantities above a threshold specified in the regulation. Therefore a Risk Management Plan is not required at the Breitburn Santa Fe Springs Facilities.

California Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR)

The Public Resources Code, division 3, Chapters 1 through 4, governs the regulatory functions of DOGGR. The code charges DOGGR with the responsibility of supervising oil, gas, and geothermal well drilling, operation, maintenance, and abandonment operations to prevent damage to life, health, property, and natural resources. More specifically, DOGGR must:

- Prevent damage to underground oil, gas, and geothermal deposits;
- Prevent damage to underground and surface waters suitable for irrigation or domestic use;
- Prevent other surface environmental damage, including subsidence;
- Prevent conditions that may be hazardous to life or health; and
- Encourage the wise development of oil, gas, and geothermal resources through good conservation and engineering practices.

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 RCRA, 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 5191). 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.

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 Santa Fe Springs

The Santa Fe Springs General Plan, Conservation Element (City of Santa Fe Springs 1994b) includes a goal and specific policies related to contamination associated with hazardous materials, listed below:

> Goal 4: Protect, preserve, and improve the soil within the City.
>
> Policy 4.1: Continue to develop programs that minimize the contamination of soils.
>
> Policy 4.2: Encourage the development of new methods for the remediation of soils that are contaminated.
>
> Policy 4.3: Continue to work with the Department of Toxic Substance Control and other regulatory agencies to assure that contaminated sites are properly and completely remediated.
>
> Policy 4.4: Continue to enforce the guidelines as set forth in the City's Methane Ordinance.

In addition, the City and DOGGR have designated oil field areas as Methane Gas Zones. The City's Methane Ordinance identifies specific areas of concern and establishes guidelines for the mitigation of hazards associated with methane gas (City of Santa Fe Springs 2004; City of Santa Fe Springs)

3.6.2 Environmental Impacts and Mitigation

3.6.2.1 Significance Criteria

The impacts associated with hazards would be considered significant if:

- The project could create a significant hazard to the public or the environment 1) through routine transport, use, and disposal of hazardous materials or 2) through reasonably foreseeable upset and accident conditions involving the release of hazardous materials due to non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

The Project was determined to have no impact with regard to the following significance criteria in the IS; therefore, these criteria are not addressed further:

- Non-compliance with any applicable design code or regulation;
- Non-conformance to National Fire Protection Association standards; and
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline 2 levels.

3.6.2.2 Environmental Impacts

Would the project create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?

Less Than Significant Impact

The equipment used for Project construction would use a variety of hazardous materials, including lube oils, gasoline and/or diesel fuels, sealants, welding gases, and paints. Additional hazardous materials on site include oil produced and processed on site, lubrication oils used for the compressors, diesel and other fuels to operate equipment, and natural gas produced from the field. All of the hazardous materials being used at the site for the construction and operation of the proposed Project have been used on the site in the past. They are currently and would continue to be handled and stored in accordance with applicable regulations and safety requirements. The total amount of materials may increase as a result of the proposed Project; however, no new types of hazardous materials are being introduced.

Some of the new equipment included in the proposed Project would use produced field gas, consisting primarily of methane, for electricity or for disposal of the produced field gas through combustion. Methane is defined as a hazardous material by the USEPA (USEPA; 40 CFR 68.130). The produced gas may also contain trace amounts of other hazardous gases (e.g., propane, butane, or pentane). However, none of these compounds, including methane, are stored on the site.

While the Project may result in a slight increase in use, storage and transport of hazardous materials, these materials would be handled and stored in accordance with applicable regulations and would therefore result in a less that significant hazard to the public or the environment.

Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact

During construction of the proposed Project, potential hazards include accidental releases during vehicle and equipment maintenance as well as a potential increase in off-site hazards due to additional vehicle trips during project construction.

During operation of the proposed Project, potential hazards include accidental releases during vehicle and equipment maintenance, spills from new proposed oil tanks or oil/gas separators at the 400 Block, a pipeline breach, or spills during the loading of oil at the 700 Block for transport off-site during operation of the proposed Project. Operation of the proposed Project may also increase potential off-site hazards in the event of a traffic accident involving the proposed increase in the number of tanker truck trips taking oil from the site. Also, additional oil field gas would be combusted in either the 14 new microturbines or up to four new CEBs, which could result in an increased risk of a hazard during natural gas pipeline transport or combustion. Finally, during well drilling there is the potential for an accidental release of drilling fluids or a release from a drill rig; however, the potential impacts are not greater than continuing non-Project drilling and are less than significant with implementation of all the measures and regulatory requirements described below.

The storage requirements and spill prevention measures for applicable materials, including crude oil, produced water, and hazardous material, are addressed by the facility SPCC Plan that includes action measures to minimize the potential for accidental releases of these hazardous materials into the environment. The SPCC Plan provides measures including steps to minimize the potential for a release of petroleum-containing fluid and requires cleanup and response procedures and adequate secondary containment at the Santa Fe Springs Facilities. The SPCC Plan would be updated and re-certified to incorporate the new 400 Block Reinjection Facility prior to becoming operational.

All hazardous materials would be stored in proper containers and handled in accordance with applicable regulations and safety requirements, including California Fire Code National Fire Protection Association 704 "Standard System for the Identification of the Hazards of Materials for Emergency Response as adopted by the California Fire Code"; California Health and Safety Code (HSC); Title 22 California Code of Regulations (CCR); 49 CFR Parts 100-185, and Certified Unified Program Agency (CUPA).

Although no contaminated soils have been encountered at the site in the past and it is not anticipated that any such soils will be encountered as a result of the proposed Project, if activities in the Field require excavation of contaminated soils that may contain VOC-containing materials, SCAQMD Rule 1166 would be followed and a Rule 1166 Plan would be developed and implemented as applicable, and Breitburn's CUPA-approved Generic Soil Mitigation Plan would be implemented in response to an incidental produced liquid spills or pipeline leak.

Because all applicable regulations would be followed and there is operational, response, and emergency plans in place, the proposed Project would result in less than significant impacts with regard to potential hazards to the public and the environment in the event of an unexpected release of a hazardous material.

3.6.2.3 Significance Determination

The Project would result in less than significant impacts with regard to hazards and hazardous materials.

3.6.2.4 Mitigation Measures

The Project would not result in any significant impacts with regard to hazards and hazardous materials. No mitigation measures are required.

3.7 Hydrology and Water Quality

3.7.1 Environmental Setting

3.7.1.1 Groundwater Hydrology and Water Quality

Groundwater beneath the City of Santa Fe Springs is part of the Central Groundwater Basin within the larger Los Angeles Basin. The Central Basin is bounded on the northeast and east by the Elysian, Repetto, Merced and Puente Hills. The southeast boundary of the Central Basin is along Coyote Creek, which is used to separate the Central Basin from the Orange County Basin, although there is no physical barrier between the two basins. The southwest boundary is the Newport-Inglewood fault system.

The depth of the Central Basin ranges from 1,600 to more than 2,200 feet. The main source of potable groundwater in the Central Basin is from the deeper aquifers of the San Pedro Formation (including from top to bottom, the Lynwood, Silverado and Sunnyside aquifers), which generally correlate with the Main and Lower San Pedro aquifers of Orange County. The shallower aquifers of the Alluvium and the Lakewood Formation (including the Gaspur, Exposition, Gardena-Gage, Hollydale and Jefferson aquifers) locally produce smaller volumes of potable water (such as within the City of Santa Fe Springs, see Figure 3-2). Groundwater is generally reported to occur in Santa Fe Springs at a depth of approximately 50 feet below ground surface (City of Santa Fe Springs 1994c). In the northern portions of the Central Basin, referred to as the Forebay Area, many of the aquifers are merged and allow for direct recharge into the deeper aquifers. Historically, groundwater flow in the Central Basin has been from the recharge areas in the northeast toward the Pacific Ocean on the southwest. Pumping patterns have lowered the water level in large portions of the Central Basin (Metropolitan Water District 2007).

Drinking water in the City is supplied by the Santa Fe Springs Water Utility Authority from water purchased from the Metropolitan Water District and from a groundwater supply well in the City and eight groundwater wells located in the Whittier Narrows area in the City of Whittier. Review of water quality reports produced by the Santa Fe Springs Water Utility Authority indicate that groundwater pumped in the City is of generally good water quality with low levels of trichloroethylene (2.2 µg/L) and tetrachloroethylene (1.8 µg/L) detected (City of Santa Fe Springs Water Utility Authority 2013). These detection levels are well below the EPA Maximum Contaminant Level of 5 µg/L and indicative of releases from degreasing sites and other industrial areas. These contaminants are constituents of concern throughout the Central Basin.

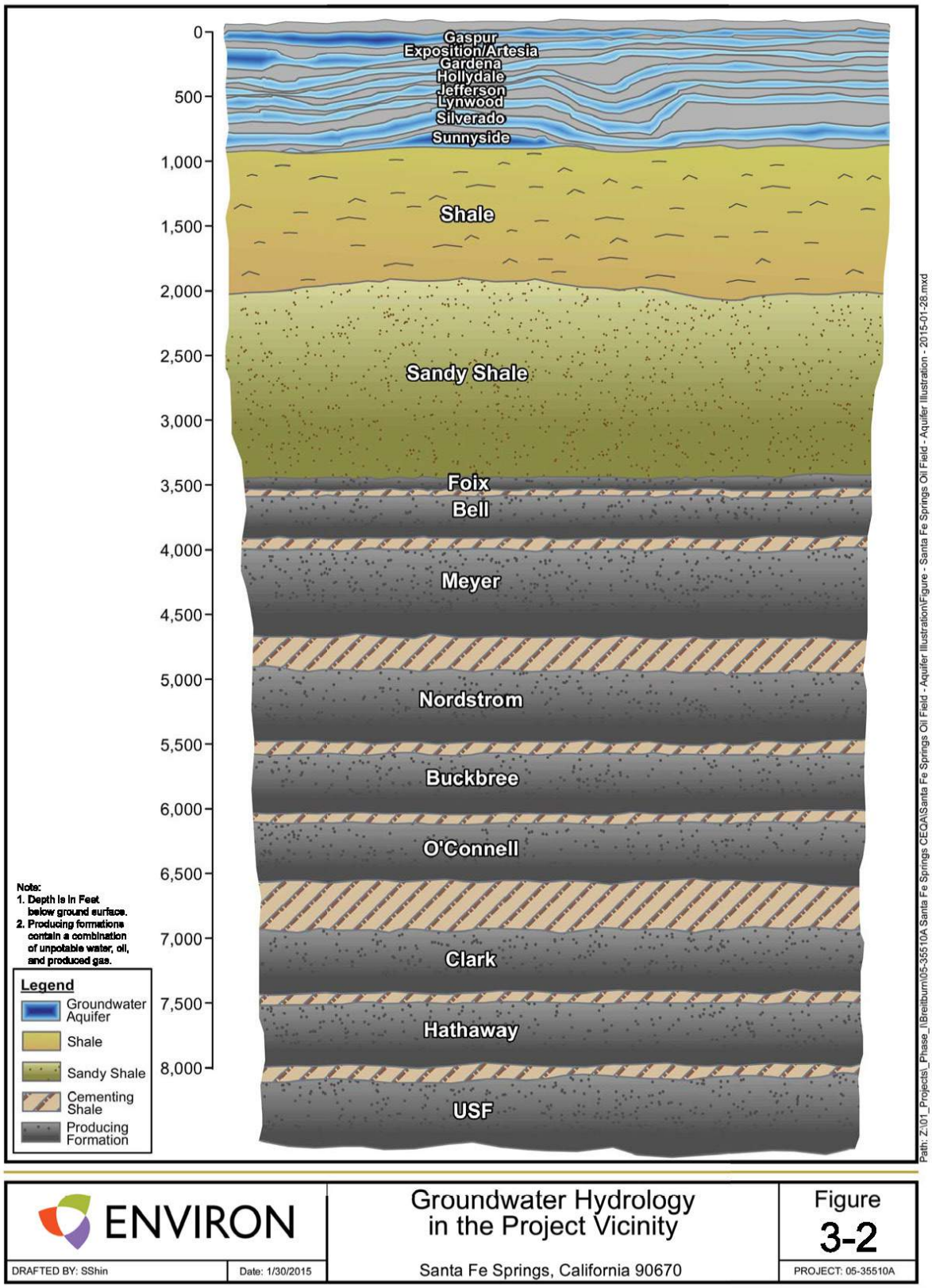

Figure 3-2. Groundwater Hydrology in the Project Vicinity.

3.7.1.2 Surface Water and Stormwater Management

The San Gabriel River runs north to south from the San Gabriel Mountains to the Pacific Ocean and runs parallel to the western border of Santa Fe Springs along Interstate-5. The river was once used for irrigation and is now primarily used as a flood control channel that is maintained by the Los Angeles County Flood Control District. It is also used as a spreading ground to replenish the Montebello Forebay. The Coyote Creek runs along the eastern border of the City and cuts through the northern and southern corners of the City. It is also mainly used for flood control and drainage. No surface water is present on the Breitburn Santa Fe Springs Facilities.

The topography of the Breitburn Santa Fe Springs Facilities is generally flat. Stormwater runoff at the Santa Fe Springs Oil Field is managed on the oil field using Best Management Practices and discharged to the City of Santa Fe Springs Stormwater Discharge System. Breitburn does not hold a stormwater discharge permit; under the Santa Fe Springs municipal code, oil and gas fields are not required to obtain a stormwater discharge permit unless they discharge contaminated stormwater at concentrations above reportable quantities.

Following construction of the 400 Block Reinjection Facility, additional foundation pads would reduce some of the permeable surface area and potentially increase stormwater volumes discharged from the site. However, as of July 1, 2015, stormwater runoff at the Santa Fe Springs Oil Field will be limited in its stormwater discharge under NPDES No. CAS000001 General Permit for Stormwater Discharges Associated with Industrial Activities (Industrial General Permit). A Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented in accordance with the general industrial statewide permit. As such, future stormwater discharges would be in accordance with permit conditions.

At the Field, the majority of produced water is reinjected back into the formation. The remaining portion is treated and sent to the sanitary sewer system. The produced water is reinjected into oil-bearing zones for enhanced oil recovery and to counter subsidence with the exception of up to 12,500 bpd that is discharged to the Los Angeles County Sanitation Districts' (LACSD) public sewer system. Beyond the recycling of produced water, the Field does not have any other demand for water. Nominal quantities of water are used at on-site administrative buildings (e.g. bathroom and kitchen use). However, the proposed Project would not result in substantial changes to employment and therefore would not affect water demand at these administrative buildings. Project construction workers would not utilize the administration buildings.

Breitburn has an Industrial Wastewater Discharge permit that allows for the discharge of treated produced water to the LACSD public sewer system. The permit, issued by LACSD, allows Breitburn to discharge up to 12,500 bpd (525,000 gpd) of water via a LACSD sewer connection, located in the southwest corner of the 800 Block. LACSD has established numerical limits for temperature, pH, flashpoint and maximum concentrations of heavy metals and other toxic materials permissible in an industrial discharge to the public sewer with which Breitburn must comply. Prior to discharge into the public sanitation system, the produced water is treated on-site in a wastewater treatment system consisting of an air stripper, which removes benzene and other organics. These vapors are combusted in the thermal oxidizer at the Main Facility. Prior to discharge the produce water undergoes minor treatment in which a light bleach compound is added to control bacteria growth and scumming that can cause problems with the flow meter. Before it is discharged into LACSD system the produced water must meet all water quality

requirements specified in the discharge permit; the water is analyzed at least quarterly to ensure that all constituents are below permitted levels. The water is transported by pipeline to the sewage connection. The discharges are monitored with an automatic full-time flow measurement system.

During the most recent reporting year (from July 1, 2013 to June 30, 2014), approximately 8,105 bwpd (340,431 gwpd) were discharged to the LACSD each day. Breitburn discharges to the system 24 hours a day almost every day (348 days during the last reporting year of 2013-2014). The total discharge to the LACSD sewer system through the sole Santa Fe Springs meter (located on Romandel Avenue) was 118.47 million gallons for the last reporting year of 2013-2014. The proposed Project would not result in a modification to the existing wastewater pipeline, since the majority of the additional wastewater would be reinjected.

3.7.1.3 Regulatory Background

Protection of water resources is regulated under a number of federal and state regulations including the Federal Clean Water Act, Federal Safe Drinking Water Act, California Porter-Cologne Water Quality Control Act, Basin Plans prepared by the Regional Water Quality Control Boards, and local master plans and ordinances. These regulations are designed to minimize impacts to surface and groundwater resources and set numerical water quality standards for such resources. No natural surface water resources are present on the Project Site. However, any discharge of stormwater or produced water would be subject to regulation under Section 402 of the Clean Water Act, Construction and operation permits for water discharges, and policies of the City of Santa Fe Springs Conservation Element. These are described below.

Clean Water Act:

Section 402 of the Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point sources. The State Water Resources Control Board and nine Regional Water Quality Control Boards administer and enforce the NPDES program in California. Section 402 addresses both construction and industrial activities. The Breitburn Santa Fe Springs Facilities are subject to the Industrial General Permit for stormwater discharges from the Field and any construction activity greater than one acre in size would be required to obtain coverage under the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). Coverage under the NPDES permits requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) and Notice of Intent. The SWPPP includes pollution prevention measures (erosion and sediment control measures, and measures to control non-stormwater discharges and hazardous spills, demonstration of compliance with all applicable local and regional erosion and sediment control measures, identification of responsible parties, a detailed construction timeline (for the Construction General Permit), and a Best Management Practices monitoring and maintenance schedule.

Construction Stormwater General Permit:

Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Permit for Discharges of Stormwater 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 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 Stormwater General Permit (Industrial General Permit) is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. The existing Industrial General Permit expires on June 30, 2015, while the newly adopted Industrial General Permit, which will apply to the Santa Fe Springs Facilities, takes effect on July 1, 2015. The permit requirement is implemented through the SWRCB. The Industrial General 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 Industrial General 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 Industrial General Permit requires that an annual report be submitted.

City of Santa Fe Springs General Plan Conservation Element

The City of Santa Fe Springs General Plan Conservation Element includes the following goal and associated policies related to water quality within the City (City of Santa Fe Spring 1994b):

> Goal 3: Protect and Preserve the City's water quality
>
> Policy 3.1 – Continue efforts with the Southeast Water Coalition to ensure that water quality supplies are properly planned, conserved, protected and managed.
>
> Policy 3.2 – Continue to coordinate water programs with other water agencies to ensure the preservation and improvement of water quality and the conservation of water.
>
> Policy 3.3 – Publicize and encourage water conservation programs and continue the enforcement of the Emergency Water Conservation Program, when necessary
>
> Policy 3.4 – Encourage local water agencies to enforce conservation measures to eliminate or penalize wasteful uses of water.
>
> Policy 3.5 – Continue the efforts, as defended in the Reclaimed Water Master Plan to make reclaimed water widely available.
>
> Policy 3.6 – Continue cooperative efforts to assure that contaminated soils are not a threat to groundwater.

Policy 3.7 – Strive to ensure that all publically owned or controlled open space is irrigated with reclaimed water.

3.7.2 Environmental Impact and Mitigation

3.7.2.1 Significance Criteria

The impacts to hydrology and water quality will be considered significant if any of the following criteria are met:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.

The Project was determined to have no impact with regard to the following significance criteria in the IS; therefore, these criteria are not addressed further:

Water Demand:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for water by more than five million gallons per day.

Water Quality:

- The project will cause the degradation of surface water substantially affecting current or future uses.
- The 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 project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

3.7.2.2 Environmental Impacts

Would the project substantially deplete groundwater or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less than Significant Impact

Construction and operation of the proposed Project would not utilize groundwater and therefore would not have any impact on groundwater quantity. With regard to interference with groundwater recharge, construction of the 400 Block Reinjection Facility would result in the

addition of approximately 15,000 square feet of impermeable surface area at the Project site. This facility would be surrounded by unpaved, permeable soil. The increase in impermeable surface area would be minor in comparison to the amount of unpaved area across the entire facility and would result in less than significant impacts to groundwater recharge and groundwater supply, such that the groundwater table would be reduced or not be able to support existing land uses. Moreover, future stormwater discharges would managed be in accordance with a SWPPP that will be prepared and implemented in accordance with the general industrial statewide permit conditions (effective July 2015) so any increases in stormwater volume would result in less than significant impacts to City stormwater systems.

Oil production and reinjection of produced water occurs within formations ranging between 3,450 and 8,000 feet below ground surface. For any particular activity, reinjection generally occurs within the same formation as production. The pressure of the water reinjected into a reinjection well can be used to guide oil towards a production well. Drilling activities currently and in the future would be conducted in accordance with all federal and state regulations for well drilling and standard protections. These protections include placement of cement casing around the well, placement of the well itself within the cement casing, and perforations well below (at least 3,000 feet) the groundwater aquifer. Further, given the distance (at a minimum, over 3,000 feet) between the drinking water aquifer (which ranges from 50 feet below ground surface to about 1,200 feet below ground surface) and production and injection activities, no impacts to groundwater hydrology or water quality occur. No groundwater extraction activities or groundwater dewatering occur on the Project site or are proposed as part of the project, therefore the Project would result in less than significant impacts with regard to groundwater.

3.7.2.3 Significance Determination

The Project would result in less than significant impacts with regard to hydrology and water quality.

3.7.2.4 Mitigation Measures

The Project would not result in any significant impacts with regard to hydrology and water quality. No mitigation measures are required.

3.8 Noise

This section describes the existing noise and vibration environment in the vicinity of the Santa Fe Springs Facilities, proposes limits for potential noise and vibration impacts associated with Project activities and guidelines for any proposed mitigation measures. The analysis is based on measurement and monitoring of noise and vibration levels in and around the Santa Fe Springs Facilities and a review of noise and vibration studies and applicable regulations.

3.8.1 Environmental Setting

3.8.1.1 The Characteristics of Noise

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. When sound becomes excessive or unwanted, it is referred to as noise. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness

in the setting, the time of day and the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound (noise) levels are measured and quantified with several metrics. All of them use the logarithmic decibel (dB) scale with 0 dB roughly equal to the threshold of human hearing. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a 50-dB sound is added to another 50-dB sound, the total is only a 3-dB increase (to 53 dB). Thus, every 3-dB change in sound levels represents a doubling or halving of sound energy. Related to this is the fact that a less-than-3-dB change in sound levels is imperceptible to the human ear.

The frequency of sound is a measure of the pressure fluctuations per second, measured in Hertz (Hz). Most sounds do not consist of a single frequency, but consist of a broad band of frequencies differing in level. The characterization of sound level magnitude with respect to frequency is the sound spectrum. Many rating methods exist to analyze sound of different spectra. One rating method is called A-weighting (there are also B- and C-weighting filters). The A-weighted scale (dBA) most closely approximates how the human ear responds to sound at various frequencies by progressively deemphasizing frequency components below 1,000 Hz and above 6,300 Hz and reflects the relative decreased sensitivity of humans to both low and extremely high frequencies (Federal Highway Administration [FHWA] 2006). Table 3-17 lists typical sound levels from representative sources.

Table 3-17. Typical Noise Levels
(measured at distance a person would typically be from the source)

Typical Noise Source	Sound Level (dBA)
Grand Canyon at Night (no roads, birds, wind)	10
Computer	37-45
Refrigerator	40-43
Typical Living Room	40
Forced Hot Air Heating System	42-52
Microwave	55-59
Normal Conversation	55-65
Clothes Dryer	56-58
Dishwasher	63-66
Clothes Washer	65-70
Phone	66-75
Push Reel Mower	68-72
Hairdryer	80-95

Table 3-17. Typical Noise Levels (measured at distance a person would typically be from the source)	
Typical Noise Source	**Sound Level (dBA)**
Vacuum Cleaner	84-89
Leaf Blower	95-105
Circular Saw	100-104
Maximum Output of a Stereo	100-110
Jet Fly-over at 1,000 Feet	110
Source: Noise Pollution Clearinghouse 2012.	

The duration of noise and the time period at which it occurs are important factors in determining the impact of noise on sensitive receptors. Several methods are used for describing variable sounds including the equivalent level (L_{eq}), the maximum level (L_{max}), and the percent-exceeded levels. These metrics are derived from a large number of moment-to-moment A-weighted sound level measurements. Some common metrics reported in community noise monitoring studies are described below:

- L_{eq}, the equivalent level, can describe any series of noise events of arbitrary duration, although the most common averaging period is hourly. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events and L_{eq} is the common energy-equivalent sound/noise descriptor.
- L_{max} is the maximum sound level during a given time. L_{max} is typically due to discrete, identifiable events such as an airplane overflight, car or truck passing by, or a dog barking.
- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when no obvious nearby intermittent noise sources occur.
- L_{50} is the median sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles.

In determining the daily measure of community noise, it is important to account for the difference in human response to daytime and nighttime noise. Noise is more disturbing at night than during the day, and noise indices have been developed to account for the varying duration

of noise events over time as well as community response to them. The Community Noise Equivalent Level (CNEL) is such an index. CNEL represents the 24-hour A-weighted equivalent sound level with a 5-dB penalty added to "evening" hourly noise levels between 6:00 p.m. and 10 p.m. and a 10-dB penalty added to the "nighttime" hourly noise levels between 10:00 pm and 7:00 am. Because of the time-of-day penalties associated with the CNEL index, the L_{eq} for a continuously operating sound source during a 24-hour period will be numerically less. The Day-Night Average Level (L_{dn}) is similar to CNEL in that it assigns a 10-dB penalty to "nighttime" hourly noise levels between the hours of 10:00 p.m. and 7:00 a.m. Noise is also more disturbing the closer a receptor is to the source; noise levels decrease by 6 dB as the distance from its source doubles (FHWA 2011).

3.8.1.2 The Characteristics of Vibration

Ground-borne vibration consists of waves transmitted through solid material. Several types of wave motions exist in solids, unlike air, including compressional, shear, torsional, and bending. The solid medium can be excited by forces, moments, or pressure fields. Ground-borne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hz. Most environmental vibrations consist of a composite, or "spectrum" of many frequencies, and are generally classified as broadband or random vibrations. The normal frequency range of most ground-borne vibration that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz.

Vibration may be defined in terms of the displacement, velocity or acceleration of the particles in the medium material. In environmental assessments, where human response is the primary concern, velocity is commonly used as the descriptor of vibration level, expressed in millimeters per second (mm/s). The amplitude of vibration can be expressed in terms of the wave peaks or as an average, called the root mean square (rms). The rms level is generally used to assess the effect of vibration on humans. Vibration levels for typical sources of ground-borne vibration are shown in Table 3-18 below.

Vibration can produce several types of wave motion in solids including, compression, shear and torsion, so the direction in which vibration is measured is significant and should generally be stated as vertical or horizontal. Human perception also depends to some extent on the direction of the vibration energy relative to the axes of the body. In whole-body vibration analysis, the direction parallel to the spine is usually denoted as the z-axis, while the axes perpendicular and parallel to the shoulders are denoted as the x- and y-axes respectively.

Table 3-18. Typical Levels of Ground-Borne Vibration		
Source	**Typical Velocity at 50-feet (mm/s, rms)**	**Human or Building Response**
Blasting from Construction Projects	2.54	Minor Cosmetic Damage to Fragile Buildings
Bulldozers and Other Heavy Tracked Construction Equipment	1.42	Workplace Annoyance; Difficulty with Vibration Sensitive Tasks
Commuter Rail, Upper Range	0.56	
Rapid Transit Rail, Typical Range	0.25	Distinctly Perceptible. Residential Annoyance for Infrequent Events
Commuter Rail, Typical Range	0.20	
Bus or Truck Over Bump	0.10	Barely Perceptible. Residential Annoyance for Frequent Events.
Rapid Transit Rail, Typical Range	0.08	
Bus or Truck Typical	0.05	Threshold of Perception
Background Vibration	0.01	None
Source: Adapted from Transit Noise and Vibration Assessment (Federal Transit Administration 2006).		

Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

3.8.1.3 Noise and Vibration Environment in the Project Area

The Breitburn Santa Fe Springs Facilities are bordered primarily by commercial, light industrial, and residential development. Various sources of noise and vibration are distributed throughout the oil field and surrounding areas. Within the Santa Fe Springs Facilities, there are fixed noise and vibration sources that operated either continuously or intermittently day and night; the primary noise and vibration sources include processing equipment (e.g. various valves, compressors, and pumps), reinjection pumps and oil well pumps, flares, microturbines, drilling equipment, and on-site traffic. The dominant noise source at the Heritage Village Housing Development is vehicular traffic traveling along Telegraph Road, Bloomfield Avenue, and Norwalk Boulevard roadways.

Sensitive Receptors

The nearest sensitive receptor is the new Heritage Village Housing Development located approximately 1,200 feet west of the Main Lease in the northern portion of the 300 Block, immediately south of the proposed 400 Block Reinjection Facility across Telegraph Road. The 500 Block is situated between the housing development and the Main Facility. The housing is separated from the 400 Block by Telegraph Road, and the Project would be located towards the middle of the 400 Block, approximately one quarter mile from the Heritage Village. In addition, neighboring commercial areas surround the Project site to the west, north and east within a one quarter mile radius. Other nearby sensitive receptors include the Richard Graves Middle School, located 0.7 mile east, as well as Lakeview Elementary School and Santa Fe High School, both located approximately 1.25 mile west.

Ambient Noise Levels

The existing noise environment in the areas in and around the Project site was determined from noise measurement and monitoring conducted on January 19, 2012. Breitburn has been operating in the same manner since 2012, and no major changes have occurred in the noise environment. Therefore, the noise levels measured in the 2012 survey are still representative of the ambient noise environment. A total of 29 noise measurements were conducted at four separate areas within the Santa Fe Springs Facility, including the 700 Block, an area within the 000 Block to the northwest of the intersection of Norwalk Blvd and Telegraph Road, an area to the east of the 000 Block and south of Telegraph Rd and the Gas Plant, located in the 400 Block. Note that the 000 Block is located to the east of the proposed Project boundary and is not located within the Project site boundary (See Figure 2-4). Noise measurement locations are depicted in Figure 3-3 (Breitburn Management Company, LLC 2012). However, monitoring sites 16-24, which are located within or east of the 000 Block are not included in this analysis because they are physically separate from the Project site. During the noise survey, each location was surveyed by a radius of 5 feet. The results of the noise survey are detailed in Table 3-19.

Table 3-19. Noise Survey Results

Facility Location	Monitoring Site Number	Monitoring Site Location	Measured Noise (dBA) distance <5 feet from source
700 Block (Baker Humble Lease)	1	Southwest of Produced Water Tank	61.6
700 Block (Main Tank Farm)	2	South of Thermal Oxidizer	85.2
	3	South of LACT 1 Tank	80.5
	4	Northeast of Air Stripper	86.7
	5	Between Four (4) Out-of-Service Divert Tanks	66.7
	6	South of Gas Compressor	89.2
	7	South of Gas Scrubber	73.5
	8	East of Cooler and West of Fin Fan	76.6
	9	North of High Pressure Pumps	85.4
	10	Northwest of Low Pressure Pump #3	89.3
	11	Northeast of Charge Pumps	87.5
	12	South of Charge Pumps	86.1
	13	Southwest of Cone Bottom Tank	77.3
	14	South of Turbine Area	90

Table 3-19. Noise Survey Results

Facility Location	Monitoring Site Number	Monitoring Site Location	Measured Noise (dBA) distance <5 feet from source
	15	Central of Turbine Area	90
400 Block (Reinjection Facility)	25	East of Transformers	71.1
	26	Northeast of Flare	66.6
	27	South of Compressor (not functioning)	55.5
	28	North of Compressor Pump (not functioning)	55.1
	29	North Corner of Gas Plant	53.1

Source: Breitburn Management Company, LLC 2012

The location of the noise measurement sites and noise levels are illustrated in Figure 3-3. The results of the 2012 noise survey indicate that nine locations at the main tank farm (700 Block) measured at a sound level above 85 dBA (at a distance less than five feet from equipment). However, according to the study, the noise levels measured at the property line ranged from 67 to 68 dBA (Breitburn Management Company, LLC 2012). The only new source of noise at the Project site since 2012 is the 14 additional microturbines that were installed in November 2014. Noise associated with the operation of these microturbines is 87 dBA which is consistent with ambient noise measurements taken at monitoring sites 14 and 15.

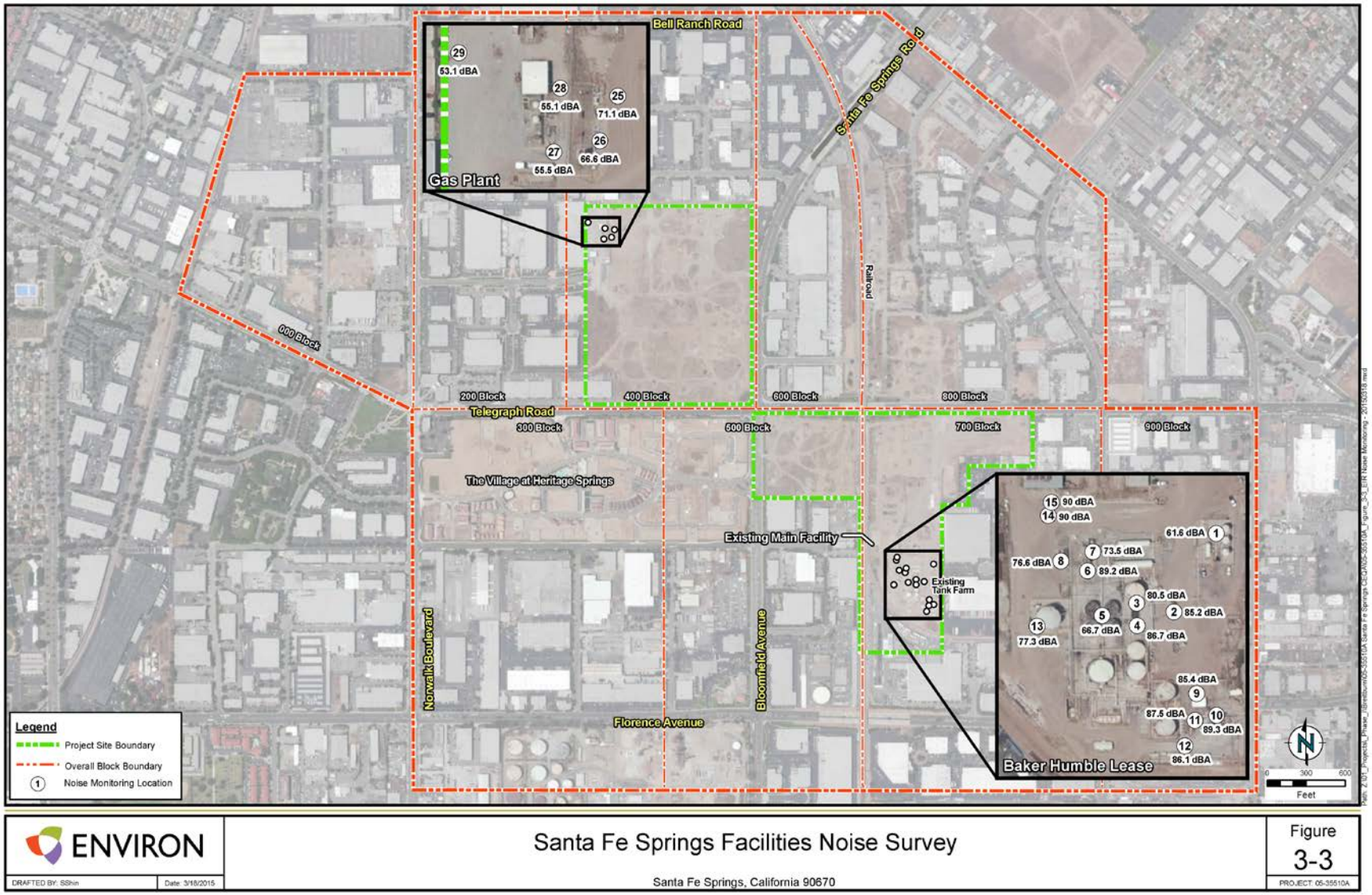

Figure 3-3. Santa Fe Springs Facilities Noise Survey

As discussed above, the road traffic is the dominant noise source at the Heritage Village Housing Development and contributes substantially to the ambient noise levels in the area of the Project site. The Project site is bisected by Telegraph Road, running east to west, and Bloomfield Avenue, Santa Fe Springs Road and the Atchison Topeka & Santa Fe Railroad running north to south. Other major roads immediately surrounding the Project site include Norwalk Boulevard to the west, Florence Avenue to the south, and Bell Ranch Road to the North. At the Heritage Village Housing Development, noise levels were modeled as part of the Environmental Impact Report for that project (Christopher A. Joseph and Associates 2005). The Heritage Village study calculated the average noise levels at locations around the housing development based on predicted traffic volumes and existing site environmental conditions. According to this study, the modeling results indicated that the existing noise levels measured at that time (measured approximately 50 feet from the center of roadways) were approximately 70.7 dBA along Telegraph Road, approximately 54.6 dBA along Clark Street, approximately 69 dBA along Norwalk Boulevard, and approximately 68.3 dBA along Bloomfield Avenue (Christopher A. Joseph and Associates 2005). The actual ambient noise levels surrounding the housing tract have likely increased since these measurements were recorded in 2005. The primary contributions to increased noise levels in this area since 2005 include an increase in road traffic associated with the increase in residential housing in the area and the installation of the 20 microturbines installed in 2011 at the Main Facility. The railroad was operating in 2005 and no studies or reports indicate any changes in railroad operations. As current existing noise data at the Heritage Village Housing Development was not available at the time of this analysis, the noise levels at the nearest residential unit taking into consideration the noise from the 20 microturbines was estimated for purposes of this analysis using the methods described in Section 3.8.3 Environmental Impacts and Mitigation below. Specifically, a linear calculation based on the ISO 9613-2:1996, Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation was used to estimate the noise contribution of the 20 microturbines at the nearest residential unit. The calculation propagates the noise of the 20 microturbines measured during the 2012 study (sites 14 and 15 with a noise level of 90 dBA) over the 1,200-foot distance to the residential tract. Assuming the current day noise levels at the nearest residential unit without the 20 microturbines has remained the same since 2005 (which is a conservative assumption since increases in residential housing and traffic have likely increased noise levels in this area since 2005) with a noise level of 68.3 dBA at Bloomfield Avenue, the 20 microturbines contribute an additional estimated 59.4 dBA at the nearest residential unit resulting in a total daytime noise level of roughly 68.8 dBA because noise is calculated on a logarithmic scale and sound pressure levels of two separate sounds are not directly additive. This noise level is considered a conservative estimate of the current ambient noise at the nearest residential receptor.

Ambient Vibration Levels

Similar to the environmental setting for noise, the vibration environment is dominated by traffic from nearby roadways. Heavy trucks can generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions. Existing ground-borne vibration in the Project vicinity is largely related to heavy truck traffic on the surrounding roadway network. Based on field observations, vibration levels from adjacent roadways are not perceptible at the Project site although vibrations from transit of heavy equipment through the Project area may be detected within close proximity to the source.

3.8.2 Regulatory Setting

3.8.2.1 Federal

Noise Control Act of 1972

The EPA, pursuant to the Noise Control Act of 1972, established guidelines for acceptable noise levels for sensitive receivers such as residential areas, schools, and hospitals. The levels set forth are 55-dBA Ldn for outdoor use areas and 45-dBA Ldn for indoor use areas, and a maximum level of 70-dBA Ldn is identified for all areas to prevent hearing loss (EPA 1974). These levels provide guidance for local jurisdictions, but do not have regulatory enforceability. In the absence of applicable noise limits, the EPA levels can be used to assess the acceptability of project-related noise.

U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) has also established guidelines for acceptable noise levels for sensitive receivers such as residential areas, schools, and hospitals (24 CFR 51). HUD's noise levels include a two-pronged guidance, one for the desirable noise level and the other for the maximum acceptable noise level. The desirable noise level established by HUD conforms to the EPA guidance of 55-dBA Ldn for outdoor use areas of residential land uses and 45-dBA Ldn for indoor areas of residential land uses. The secondary HUD standard establishes a maximum acceptable noise level of 65-dBA Ldn for outdoor use areas of residential areas.

3.8.2.2 State

The California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as shown in Table 3-20 below. The State has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of DNL (day-night average sound level) 45 dBA in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dBA.

Table 3-20. Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure L_{dn} or CNEL, dBA						
	55	60	65	70	75	80	
Residential: Low-density Single Family, Duplex, Mobile Homes							
Residential: Multiple Family							
Transient Lodging: Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

INTERPRETATION

	Normally Acceptable: specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction without any special noise insulation requirements.
	Conditionally Acceptable: New construction or development should only be undertaken after a detailed analysis of the noise reduction requirements is made and the needed insulation features included in the design.

Land Use Category	Community Noise Exposure L_{dn} or CNEL, dBA							
		55	60	65	70	75	80	
	Normally Unacceptable: New construction or development should generally be discouraged. If new development is to proceed, a detailed analysis of the noise reduction requirements is made and the needed insulation features included in the design.							
	Clearly Unacceptable: New development or construction should not be undertaken.							
Source: California Office of Planning and Research, 2003								

The extensive State regulations pertaining to worker noise exposure are applicable to the construction phase of the proposed Project (for example California Occupational Safety and Health Administration Occupational Noise Exposure Regulations [8 CCR General Industrial Safety Orders, Article 105, Control of Noise Exposure, Section 5095, et seq.]), or for workers in a "central plant" and/or maintenance facility, or involved in the use of maintenance equipment or heavy machinery.

3.8.2.3 Local

City of Santa Fe Springs General Plan Noise Element

The following are policies from the Noise Element of the City's General Plan that are applicable to the proposed project.

> Policy 2.3: Use noise/land use compatibility standards (refer to Table 1 in the Santa Fe Springs General Plan Noise Element) as a guide for future planning and development.

As referenced in Policy 2.3, the following is an excerpt of applicable noise thresholds from Table 1 of the Santa Fe Springs General Plan Noise Element Land Use Compatibility Matrix (City of Santa Fe Springs 1994).

Land Use Category	CNEL, dB						
	50-55	55-60	60-65	65-70	70-75	75-80	80 +
Residential: Single-Family, Multi-Family, Duplex	A	A	B	B	C	D	D
Industrial, Manufacturing, Utilities, Wholesale, Service Stations	A	A	A	A	B	B	B

Legend:

A – Normally Acceptable – Specified lank use is satisfactorily based on the assumption that any building involved are of normal conventional construction without any special noise insulation requirements

B – Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise requirements is made and needed noise insulation features included in the design.

C – Normally Unacceptable – New construction of development should generally be discouraged. If it does proceed a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design

D – Clearly Unacceptable – New construction or development should generally not be undertaken

Source: City of Santa Fe Springs General Plan, Noise Element, Adopted February 24, 1994.

Policy 2.4 Review proposed projects in terms of compatibility with nearby noise-sensitive land uses.

Policy 2.5 Continue to require new commercial and industrial operations located in proximity to existing or proposed noise sensitive areas to incorporate noise mitigation into the project design.

Policy 3.2 Continue to minimize the impacts of construction noise on adjacent land uses through limiting the permitted hours of activity.

City of Santa Fe Springs Code of Ordinances

Noise

The City's Noise Ordinance provides a basis for controlling excessive and annoying noise from stationary sources such as industrial plants, pumps, compressors, refrigeration units, etc. It provides specific noise standards to be applied for various land uses for both daytime and nighttime hours and describes the manner in which the noise standards are to be enforced.

Noise regulations are set forth in the City's Zoning Ordinance in Section 155. According to the City of Santa Fe Springs Noise Ordinance (§155.424 Permitted Noise Levels) the maximum allowable external noise level for the Santa Fe Springs Oil Field, based on its zoning as M-2 Industrial, is 90 dBA during both day and nighttime hours. In addition, the maximum cumulative minutes durations in any 1-hour period are (1) 70 dBA for 30 minutes, (2) 75 dBA for 15 minutes, (3) 80 dBA for five minutes and (4) 85 dBA for one minute.

Moreover, according to the Santa Fe Springs Noise Ordinance, the maximum allowable noise level allowed for the exterior of residential dwellings is 70 dBA from 7:00 a.m. through 10:00 p.m., and 65 dBA from 10:00 p.m. through 7:00 a.m. The maximum indoor noise level is 65 dBA for day and night (City of Santa Fe Springs, 2014).

Per the City of Santa Fe Springs Noise Ordinance (§155.427 Waivers from Noise Requirements), waivers from the noise control requirements may be authorized by a conditional use permit granted for a period not to exceed two years subject to reasonable terms, conditions, and requirements. A waiver may be granted only if the Planning Commission makes the findings that:

> 1. Additional time is necessary for the applicant to alter or modify his activity, operation or noise source to comply with this chapter; or
>
> 2. The activity, operation or noise source cannot feasibly be carried on in a manner that would comply with the provisions of this chapter and no other reasonable alternative is available to the applicant.

In granting a waiver, the Planning Commission may prescribe any conditions or requirements it deems necessary to minimize adverse effects upon the community or the surrounding neighborhood. In addition, in granting waivers, the Planning Commission will consider the magnitude of adverse effect caused by the offensive noise, the uses of property within the area affected by the noise, operations carried on under existing regulations and codes, the time factors related to study, design, financing and construction of remedial work, the economic factors related to age and useful life of the equipment, the general public interest, health and welfare, the feasibility of plans submitted for corrections, and the effect on the community if the waiver is denied.

Vibrations

Vibration regulations are set forth in the City's Zoning Ordinance in Section 155.428. According to the City of Santa Fe Springs Ordinance (§155.428 Vibrations):

"Every use shall be so operated that the ground vibration generated by said use is not harmful or injurious to the use or development of surrounding properties. No vibration shall be permitted which is perceptible without instruments at any use along the property line on which said use is located. For the purpose of this determination, the boundary of any lease agreement or operating unit or properties operating as a unit shall be considered the same as the property line."

3.8.3 Environmental Impacts and Mitigation

The methodology for evaluating potential noise impacts from construction and operation activities from the Project is based on the procedures of ISO 9613-2:1996, Acoustics - Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation. This international standard procedure is widely used for propagation and evaluation of environmental noise over distances and is the basis for calculation protocols in numerous computer models, including CadnaA and SoundPLAN. Such computer models require complex information on scheduling and daily duration of each noise-producing activity to be able to calculate and propagate noise levels. Since detailed information was not available, the

methodology involved spreadsheet calculations based on the ISO 9613-2:1996 standard. The procedure essentially involved determining the maximum noise levels during the various stages of project activities, based on noise data from equipment manufacturers, the Federal Highway Administration's database of construction equipment noise levels (FHWA 2006), and field measurements around the existing Project areas, and then propagating those maximum noise levels from the area of activity to the nearest residential dwellings. It is important to note that the propagation calculations do not take into account any barriers to noise (e.g. buildings, vegetation, and topography between the noise source and receptor) and, therefore, the analysis is conservative in that calculated noise at the nearest residential site is likely much greater than the actual noise that would be experienced at that location.

3.8.3.1 Project Design Features

Further, consistent with the City of Santa Fe Springs General Plan Noise Element Policy 2.5 and to ensure compliance with Santa Fe Springs noise ordinance (i.e., max noise level from 7AM to 10PM of 70 dBA and from 10PM to 7AM of 65 dBA), Breitburn has incorporated the following features into its project design:

- N-1 Noise produced by the 400 Block Reinjection Facility and CEB burners shall not exceed any of the five Noise Standards in section 155.424 of the City of Santa Fe Springs Municipal Code. Satisfying this limit on noise may require the use of noise barriers and/or acoustical enclosures.

  Steps that the oil field operator could take to meet these standards could include selection of low noise output equipment when installing new or replacing existing equipment. Noise barriers should be used to reduce the noise output of equipment installed within the 400 Block Reinjection Facility or CEB burners. In addition to purpose-built noise barriers, careful location of new equipment could also help reduce noise impact by utilizing the tanks or other noise barrier structures to shield the line of sight to the residential tract from additional noise sources.

- N-2 All future 400 Block Reinjection Facility equipment and CEB burners shall be regularly serviced and repaired to minimize increases in noise output with time and to ensure that tonal noise from worn bearings, metal-on-metal contact, valves etc. does not cause significant tonal noise at the oilfield perimeter.

- N-3 Hourly, A-weighted equivalent noise levels at the property line of a neighboring use shall not elevate existing baseline levels by more than 3 dBA. This limit on noise will require the use of noise barriers and/or acoustical enclosures for drilling operations less than 750 feet from the residential tract.

  Noise barrier blankets are available in 1" to 2" thickness, with densities ranging from 1 pounds per square foot (lb/ft^2) to 2.5 lb/ft^2. Noise levels measured at various drilling sites indicate a reduction of 15 dBA from 1" thick noise barriers (Arup 2004). Thicker, denser material can achieve a greater sound reduction. The difference between a sound barrier and a sound enclosure is that a sound barrier is a wall erected out of the sound barrier blanket material, whereas a sound enclosure encloses the entire piece of equipment effectively forming a room in which the equipment is placed. Enclosures that are offered by a variety of companies can reduce noise levels up to 23 dBA. If the enclosures are insulated with

additional foam, noise reduction could be 6-8 dBA higher (or up to 31-33 dBA). The exact types of sound barrier or enclosure required for each drilling operation will depend on the amount of noise reduction required.

In addition to noise barriers and enclosures there are a number of other possible techniques that could be used by the oilfield operator to reduce noise from the drilling rig. Several companies produce "critical" grade exhaust muffler systems used to reduce noise from heavy duty diesel engines; these systems could be used to reduce the noise from the crane and diesel generator. They have a range of noise reduction levels and they can attenuate noise by 23-35 dBA.

- N-4 All drilling equipment shall be regularly serviced, maintained and repaired to minimize increases in noise output with time and to ensure that tonal noise from worn bearings, metal-on-metal contact, valves etc. does not cause significant tonal noise at the oilfield perimeter.

3.8.3.2 Significance Criteria

The impacts to noise will be considered significant if any of the following criteria are met:

- Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project above levels existing without the project.

The CEQA Guidelines do not define what noise level increase would be considered substantial. However, the Project would be considered to have a significant impact on noise levels if:

- Construction noise levels exceed the local noise ordinance or, if the noise threshold is currently exceed, project noise sources increase ambient noise levels by more than 3 dBA. The City of Santa Fe Springs noise ordinance addresses operational noise; therefore, the following threshold used by the City of Los Angeles is used to evaluate construction noise: construction activities lasting more than 1 day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use; or if construction activities lasting more than 10 days in a 3-month period would exceed ambient exterior noise levels by 5 dBA or more at a noise-sensitive use.
- The proposed Project operational noise levels exceed any of the local noise ordinances at the site boundary, causing the ambient noise level measured at the property line of sensitive receptors to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category (refer to the applicable noise thresholds from Table 1 of the Santa Fe Springs General Plan Noise Element Land Use Compatibility Matrix presented in Section 3.8.2.3 above), or any 5 dBA or greater noise increase.

Specifically, existing sensitive receivers in the Project area that could potentially be affected by operational noise from the proposed Project include the Heritage Village Housing Development located approximately 1,200 feet west of the Main Facility. At this land use, a significant impact would occur if the proposed Project causes noise levels to increase by (1) 5 dBA or greater where the existing CNEL is less than 70 dBA; or (2) 3 dBA or greater where the existing CNEL exceeds 70 dBA.

There are no adopted State or local ground-borne vibration standards. For this purposes of this analysis vibration threshold level of 0.24 inches/second at the receptor and typical source vibration level of 0.644 inches/second at 25 feet per the Caltrans Transportation and Construction Induced Vibration Guidance Manual (Caltrans 2004) would be considered significant. This value would avoid damage to residential structures but may be of short-term annoyance to occupants of residences.

Issues not Analyzed Further

The project was determined to have no impact with regard to the following significance criteria in the IS; therefore, these criteria are not addressed further:

- Exposure of people residing or working in the project area to excessive noise levels if the project is located within an area covered by an airport land use plan, or where such plan has not been adopted, within two miles of a public airport or public use airport; or
- Exposure of people residing or working in the project area to excessive noise levels if the project is located in the vicinity of a private airstrip.

3.8.3.3 Impact Determination

Noise and vibrations would be generated by construction of the new facilities and would continue during operation. The proposed Project will replace the existing flare with newer, quieter CEB burners. The construction equipment associated with the proposed Project includes excavation and grading equipment, cranes, trucks, and various smaller power tools and generators. Future operations would include an increase in truck traffic to the Consolidated Bulk Truck Loading System, operation of four new CEB burners, and operation of the new 400 Block Reinjection Facility that could also increase noise and vibrations. Additional temporary noise impacts would occur if a new well is reworked or drilled in the Santa Fe Springs Oil Field in the future. These potential impacts are analyzed below.

Construction (Short-Term) Noise

Would construction activities lasting more than 10 days in a 3-month period occur which would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use?

Less than Significant Impact

Noise levels generated by construction equipment depend on factors such as the type of equipment, and the fraction of time that the equipment is operated over the time period of construction. The dominant source from most construction equipment is the engine.

Construction of 400 Block Reinjection Facility

Construction of the proposed 400 Block Reinjection Facility would be developed in two phases that would be spaced at least 12 months apart. The majority of the new equipment would be installed during Phase 1, including one free water knockout, the water tanks, the oil storage tank, the water surge tanks, one WEMCO flotation separator, oil transfer and skim pumps, water charge pumps, injection pumps and the vapor recovery system. During Phase 2, additional equipment would be installed including the second free water knockout tank and the second WEMCO; additional oil skim, water charge and injection pumps, and additional collection lines on the vapor recovery unit. The tank farm would be enclosed within a secondary containment system consisting of generally concrete block walls.

Construction of the tank farm enclosure and storage tanks, and installation of the pumps and compressors would require grading of approximately two acres during Phase 1. Installation of the new 400 Block Reinjection Facility would involve bringing new equipment on-site and installing the equipment, requiring a large crane for tank construction, installation of the WEMCOs and free water knockout. Construction would not require any demolition. Additional truck and commuter trips would be generated during the construction phase; however, this would be short-term lasting approximately 20 weeks.

Construction of Consolidated Bulk Truck Loading System

The proposed modification to the existing truck loading system would involve the installation of one new connection, two hoses and vapor recovery lines, as well as minimal modifications to other system components to adjust for the second connection. No demolition or ground-disturbing activities are required during modification of the bulk truck loading station. Construction of the modified bulk truck loading system would be limited to the equipment required to bring new Project components on-site and install them. Installation of new equipment or modification of existing equipment would require light duty trucks and welding equipment over the course of approximately two weeks.

Construction/Installation of 400 Block CEB Burners

The CEB burners would be located in the 400 Block to the west of the proposed 400 Block Reinjection Facility. The installation of the CEBs would require the removal and hauling off of the existing Bell flare. Minimal grading is anticipated for installation of the concrete foundations for the new CEBs because the new CEBs have a footprint of about 250 square feet per CEB. Welding equipment and a lightweight crane (20 ton) will be required to install the new CEBs. Additional traffic generated during the construction phase would be minimal consisting of truck trips for delivery of the two CEBs (two are already on-site), removal of the existing flare, and commuter trips for workers to install the four units.

The FHWA (2006) maintains the most comprehensive database of construction and heavy equipment source noise. The database was created in conjunction with the EPA and is widely used for highway and non-highway projects. Table 3-21 lists equipment noise source data and the quantity of equipment to be used for construction activities of the proposed Project.

Table 3-21. Construction Activities and Equipment				
Project Activity (Duration)	**Equipment**	**Quantity**	**Operating Hours per Day**	**Typical Equipment L_{max} (dBA) at 50 feet from Source[1]**
Construction of 400 Block Reinjection Facility				
Site Prep (2 weeks)	3/4 ton pickup trucks	4	8	75
	water truck	1	8	76
Grading (2 weeks)	3/4 ton pickup trucks	4	8	75
	Bulldozer	1	1	82
	Grader	1	7	85
	Roller	1	7	80
	front end loader	1	6	79
	Compactor	1	7	83
	water truck	1	8	76
Construction (20 weeks)	3/4 ton pickup trucks	4	8	75
	Welder	3	7	74
	Compactor	1	7	83
	Backhoe	2	7	78
	60 ton crane	2	4	84
	boom truck	1	8	75
	water truck	1	8	76
	air compressor	3	7	78
	Forklift	1	6	80
	Generator	1	7	81
Construction of Consolidated Bulk Truck Loading System				
Construction (2 weeks)	Welder	1	7	74
Construction/Installation of 4 CEB Burners				
Grading (Including Removal of Old Flare) (2 weeks)	A-frame truck crane	1	7	81
	Backhoe	1	6	78
Installation of 4 CEB Burners (6 weeks)	Welder	1	7	74
	A-frame truck crane	1	4	81

Table 3-21. Construction Activities and Equipment

Project Activity (Duration)	Equipment	Quantity	Operating Hours per Day	Typical Equipment L_{max} (dBA) at 50 feet from Source[1]
	20 ton crane	1	4	84
	3/4 ton pickup trucks*	3	8	75

Noise levels derived from the FHWA Construction Noise Handbook (FHWA 2006).

*The air analysis uses truck miles driven, not hours of operation. For the noise analysis, a conservative assumption of 8 hours of on-site operation is used.

Noise levels are determined based on the L_{eq}, which is calculated from the L_{max} and the acoustical usage factor (the percentage of time that the equipment is typically in use over a given period of time) using the following equation (FTA 2006):

$$L_{eq} = L_{max} + 10 \log_{(\text{usage factor})}$$

The cumulative noise for the equipment used in each construction phase is propagated to the nearest receptor to estimate the noise impact resulting from proposed Project as summarized in Table 3-21. These estimates assume a clear line of site to the receptor without any attenuation, although the actual environment includes several buildings, a perimeter wall around the housing tract, and other barriers to noise between the noise source and the nearest residential receptors. According to the Heritage Village Housing Development Environmental Impact Report (Christopher A. Joseph and Associates 2005), the perimeter wall surrounding the housing tract attenuates sound by approximately 10 dBA. Therefore, construction noise levels at the nearest residence are likely about 10 dBA less than the values presented in Table 3-22.

Table 3-22. Summary of Calculated Construction Noise Levels and Impact Determination at Nearest Residences

Project Activity	Calculated L_{eq} (dBA)	Total Noise (Calculated L_{eq} +Ambient) (dBA)	Increase in Noise Level (dBA)	Above Significance Threshold? (5dB increase at receptor site)
Construction of 400 Block Reinjection Facility				
Site Prep (2 weeks)	--	--	--	--
Grading (2 weeks)	58.5	69.2	0.4	No
Construction (20 weeks)	60.4	69.4	0.6	No
Construction of Consolidated Bulk Truck Loading System				
Construction (2 weeks)	43.3	68.8	0.0	No
Construction/Installation of 4 CEB Burners				
Grading (Including Removal of Old Flare) (2 weeks)	52.1	68.9	0.1	No
Installation of 4 CEB Burners (6 weeks)	55.1	69.0	0.2	No

The highest noise levels from construction activity would be associated with construction of the proposed 400 Block Reinjection Facility, producing a maximum hourly noise level of 61.2 dBA and resulting in an estimated maximum hourly noise level of 69.3 dBA at the nearest residential receptor approximately 1,200 feet away. The estimated noise levels during construction activities at the nearest residential unit are all below 70 dBA, with an increase in noise levels from ambient noise of 0.7 dBA or less (well below the significance threshold of 5 dBA). In addition, construction activities would not occur during noise sensitive hours (9:00 p.m. to 7:00 a.m.). The estimated noise levels during construction at the nearest residential unit are all below 70 dBA, with an increase in noise levels from ambient noise of 0.7 dBA or less (well below the significance threshold of 5 dBA).

During construction, it is assumed that at most 5 delivery/haul trucks and 30 construction worker vehicles would be traveling to and from the Project site daily (during the construction phase of the 400 Block Reinjection Facility). For an eight-hour construction workday, it is assumed that approximately 1 delivery/haul truck per hour would be traveling on the surrounding streets. It is assumed that construction worker vehicles would be traveling on the roadways during the AM and PM peak hours. The construction worker vehicles would be distributed throughout the roadways within the vicinity of the Project site. Generally, noise levels increase by 3 dBA when the number of similar noise sources double. When compared to the traffic volumes identified in the IS on surrounding roadways, the anticipated addition of 46 vehicle round-trips would not double the amount of traffic that currently exists in the surrounding area. As such, the increase in delivery/haul trucks and worker vehicles in the surrounding roadways is not anticipated to incrementally increase noise levels in the surrounding area by 3 dBA or more.

Accordingly, the estimated noise associated with construction activities of the proposed Project are well below the thresholds of significance and are considered less than significant.

Construction (Short-Term) Vibration

Would construction activities exceed the vibration threshold level of 0.24 inches/second at the receptor?

Less than Significant Impact

Typical vibration velocities for construction equipment (e.g. a large bulldozer or caisson drilling) have been estimated at approximately 0.352 inches/second at a distance of 10 feet (Federal Transit Authority, Transit Noise and Vibration Impact Assessment, April 1995). Loaded haul trucks generate vibration levels of 0.300 inches per second at the same distance. The nearest sensitive receptor is the Heritage Village Housing Development approximately 1,200 feet west of the Main Facility (700 Block) and approximately 1,200 feet from any vibration-inducing construction equipment associated with the construction activities in the 400 Block (across Telegraph Road). Haul trucks would access the Project site via Telegraph Road and Bloomfield Avenue which would result in pass-by of trucks approximately 60 feet from the nearest residential unit. Ground-borne vibration dissipates very rapidly with distance, reducing the vibrations associated with construction equipment such as a large bulldozer or caisson drilling to 0.27 inches/second at 55 feet from the source, and 0.023 for loaded haul trucks at the same distance. Therefore, vibrations associated with construction activities would be imperceptible at distances greater than 55 feet from the source – before reaching the nearest residence. Accordingly, impacts from ground-borne vibrations associated with Project construction activities are considered less than significant.

Operations (Long-Term) Noise

Would Project operations exceed existing ambient CNEL noise levels by 3 dBA or more at a noise-sensitive use?

Less Than Significant

Operations of the proposed Project that have the potential to alter the existing noise environment includes operation of the new oil/gas/water processing plant at the 400 Block, increased truck loading operations at the Consolidated Bulk Truck Loading system within the Main Facility (700 Block), and operation of the four new CEB flares. In addition, related activities that are not part of the proposed Project but that would have potential indirect impact on the noise environment include the drilling of a new well[24] and the operation of 14 new microturbines installed in 2014.

400 Block and 700 Block Operations

The operations associated with the proposed Project within the 400 Block include operation of the new 400 Block Reinjection Facility located approximately 1,500 feet from the nearest residential unit and up to four new CEB burners located approximately 1,750 feet from the

[24] As discussed in Section 2.6.4; only the increase in production and/or oil well drilling that can be attributable to the project would be analyzed for impacts.

nearest residential unit. The 400 Block Reinjection Facility would operate 24-hours per day. Potentially all four CEB burners could be in use simultaneously and would also operate 24-hours per day. The noise associated with each burner is 90 dBA at the source (equal to approximately 87 dBA at 50 feet from the source) as detailed in Table 3-23a. The maximum noise generated from the proposed 400 Block Reinjection Facility would occur after the second phase of construction that would increase the processing capacity from 2,000 to 4,000 barrels per day. At the 400 Block Reinjection Facility, the largest contributors to noise would be the two compressors associated with the vapor recovery system and the various electric pumps throughout the system. Typical noise associated with vapor recovery systems is approximately 100 dBA at the source (equal to approximately 97 dBA at 50 feet from the source) and noise associated with the electric pumps is estimated at approximately 81 dBA at 50 feet from the source as detailed in Table 3-23a. At the 700 Block, the noise impacts of the expanded truck loading system were analyzed.

Drilling of One New Well

It is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities. As such, oil well drilling is assessed as potentially attributable to the proposed 400 Block Reinjection Facility.[25]

If Breitburn were to drill new wells at the Field in the future, Breitburn would not drill more than one new well at any given time at the Project site. Drilling one new well would be completed in no more than 20 days and involve a number of pieces of equipment operating on a 24-hour schedule as detailed in Table 3-23b.

For purposes of this analysis, it is assumed that some of the new oil wells would consist of submersible pumping units, while the remainder would be horse-head type pumping units. All units would be powered with electric pumps. Such machines are relatively quiet, largely because they are driven by electric motors rather than internal combustion engines. Typical noise levels from oil pumping units that operate after drilling is completed and the well is operational are approximately 65 dBA at a distance of 10-feet. However, where pumps are clustered together, their individual noise outputs will combine, resulting in an increased potential for noise impact. The noise of the additional microturbines installed in 2014 (but separate from the Project) is also assessed.

[25] Breitburn reworks wells within the Block boundaries, industrial area, and within the residential area. Reworking rigs are significantly shorter than drilling rigs (40 feet versus 120 feet). Reworking is typically done during daytime hours and is completed in approximately 1 day. However, re-working potentially attributable to the Project is small compared to reworking that would be done for maintenance, pump replacement, removal of scale build-up, replacing worn tubes, etc. (See IS Section 1.5.4.1 for additional information about routine oil field operations). Noise levels from re-working a well are short-term (one day), and much lower than new well drilling. Thus, any noise impacts from well work-overs potentially attributable to the Project would be negligible.

Table 3-23a. Project Equipment

Project Activity	Equipment	Quantity	Operating Hours per Day	Typical Equipment L_{max} (dBA) at 50 feet from Source[1]
Operation of 400 Block Reinjection Facility				
400 Block Reinjection Facility	Compressors	2	24	97
	Pumps	Various	24	81
CEB Burners	CEB Burners	4	24	87
Operation of 700 Block Facilities				
Operation of Consolidated Bulk Truck Loading System (Noise Associated with 2 Trucks Per Hour)	Tank Trucks	2	12	80
Noise levels derived from the FHWA Construction Noise Handbook (FHWA 2006) and data provided by CEB Burner vendor.				

Table 3-23b. Related Equipment

Project Activity	Equipment	Quantity	Operating Hours per Day	Typical Equipment L_{max} (dBA) at 50 feet from Source[1]
Drilling a New Well				
(20 days per well)	Kenai Drilling Rig #15, Caterpillar C-15	1	24	82
	crane	1	4	81
	forklift	1	4	80
	generator set	1	24	81
	generator set	1	24	81
	air compressor	2	24	78
	concrete pump truck (65 cubic yards per hour)	1	8	81
	tractor/trailer (60 ton, 40 feet)	1	4	80
Microturbines				
Operation 14 Microturbines	Microturbines	14	24	87
Noise levels derived from the FHWA Construction Noise Handbook (FHWA 2006)				

The cumulative noise for the operations in each block is propagated to the nearest receptor to estimate the noise impact resulting from the proposed Project as summarized in Table 3-24. The calculations used to produce these estimates assume a clear line of site to the receptor, although the actual environment includes several buildings and other barriers to noise between the noise source and the nearest residential receptors. The ambient CNEL at the residential receptors assumes a daytime and evening ambient L_{eq} of 68.8 dBA with a nighttime L_{eq} of 58.8 dBA. Using these values, the calculated ambient CNEL at the residential tract is 69.9 dBA. The calculated CNEL associated with the operations of the proposed Project assumes 24-hour operation of the facilities. As shown in Table 3-24, the proposed Project with design features has less than significant noise impacts.

Table 3-24. Summary of Calculated Operation Noise Levels and Impact Determination at Nearest Residences with Project Design Features

Project Activity	Calculated L_{eq} with Project Design Features (dBA)[2]	Total Daytime Noise (Calculated L_{eq} +Ambient) (dBA L_{eq})[1]	Total Nighttime Noise (Calculated L_{eq} +Ambient) (dBA L_{eq})[1]	Increase in Noise Level (dBA CNEL)	Above Significance Threshold? (>3 dB increase at receptor site)
Operation of 400 Block Facilities	48.9-58.9	69.2	61.9	0.2-1.4	No
Operation of 700 Block Facilities	60.5	69.4	62.8	1.9	No
Drilling New Wells (400 feet or more from residential receptors)	38.9 – 53.9	68.6 - 69	58.9 - 60	0 – 0.1	No
Operation of New Wells (400 feet or more from residential receptors)	43.9	68.8	59.0	0.1	No

[1] Assume daytime ambient noise level of 68.8 dBA and nighttime ambient noise level of 58.8 dBA for an ambient CNEL of 68.4 dBA.

[2] Exact L_{eq} dependent on project design feature used.

Operations (Long-Term) Vibrations: Would operation activities exceed the vibration threshold level of 0.24 inches/second at the receptor?

Less than Significant Impact

The major source of vibration and low-frequency airborne noise at the 400 Block would be the CEB burners. Under normal operating conditions, produced gas is reused in the existing 20 third-party microturbines, as well as in the new 14 Breitburn-owned microturbines. The CEB burners would combust the produced gas at the Breitburn Santa Fe Springs Facilities only for gas above that which is used in the microturbines. Potentially, a large volume of gas could be routed through the flares which would produce vibration and low-frequency airborne noise that could

affect off-site areas. The nearest residential receptor to the CEB burners is approximately 1,750 feet to the south. Based on analyses conducted at other regional oil fields that flare field gas, vibration and low-frequency airborne noise associated with flaring large volumes of gas would not exceed the threshold of 0.24 inches/second at the residential tract. Therefore, impacts would result in less than significant impacts with respect to vibration (MRS 2008).

Drilling and reworking activities typically produce ground-borne vibrations of approximately 0.0062 inches/second at 50 feet from the source (FHWA 2006). This vibration level is substantially below the significance criterion even in very close range to the drill rig. Therefore the vibration impacts of drilling a new well would be considered less than significant.

Haul trucks would access the Project site via Telegraph Road and Bloomfield Avenue which would result in pass-by of trucks approximately 60 feet from the nearest residential unit. Loaded haul trucks generate vibration levels of 0.300 inches per second at a distance of 10 feet from the source (FHWA 2006). Ground-borne vibration dissipates very rapidly with distance, reducing the vibrations associated with loaded haul trucks to 0.23 inches per second at 55 feet from the source. Therefore vibrations associated with trucks accessing the Project facility would be imperceptible at distances greater than 55 feet from the source – before reaching the nearest residence. Accordingly, impacts from ground-borne vibrations associated with Project operations are considered less than significant.

Significance Determination

With incorporation of the project design features, the Project would result in less than significant impacts with regard to noise and vibration.

Mitigation Measures

The Project would not result in any significant impacts with regard to noise and vibration. No mitigation measures are required.

3.9 Solid and Hazardous Waste

3.9.1 Environmental Setting

3.9.1.1 Solid Waste Generation, Storage and Disposal

Wastes are currently stored on-site in Baker Tanks at the 700 Block (solid and wet/solid wastes) and in Baker Tanks at the 400 block (wet/solid wastes only). The site also generates office wastes. All wastes are sent to the following three locations:

- Anterra Treatment and Class II Disposal facility is located in Oxnard, CA (1933 East Wooley Road Oxnard, CA 93030) approximately 80 miles NW of the Project Site. The facility receives 100% non-hazardous oil field waste;
- Southern California Waste Water is located in Santa Paula, CA (815 Mission Rock Road, Santa Paula, CA) approximately 80 miles NW of the Project site. Southern California Waste Water accepts tank bottoms, drilling mud and cuttings, and production fluids; and
- Thermal Remediation Solutions is located in Azusa, CA (1211 West Gladstone Street, Azusa, CA 91702) approximately 20 miles north of the Project site and accepts non-hazardous soils and other solid wastes.

No waste from the Project site is disposed at local public landfills.

Breitburn currently uses the following private solid waste contractors at the oil field: TMG, Ocean Blue, John Guzman Services, and Patriot Environmental Services. No public waste disposal services are provided.

3.9.1.2 Hazardous Waste Generation, Storage and Disposal

The facility does not hold any RCRA permits, and has no hazardous waste manifests because no hazardous waste is generated. All private contractors listed above are also equipped to handle hazardous waste; however, the Santa Fe Springs Facilities do not generate wastes that are characterized or listed as "hazardous." If such hazardous wastes were generated, they would be disposed of at McKittrick Waste Landfill, the nearest facility that accepts hazardous waste. In addition, any such wastes would be stored and transported per all applicable hazardous waste regulations.

3.9.1.3 Regulatory Background

Resource Conservation and Recovery Act (RCRA) 42 U.S.C. § 6901 et seq.

RCRA establishes a regulatory structure for the management of solid and hazardous wastes. RCRA gives the U.S. Environmental Protection Agency (USEPA) the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for the management of non-hazardous waste.

The 1986 amendments to RCRA found in Subtitle I (40 CFR Part 280 et seq), enable EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses on active and future facilities; however, once a hazardous material is released to the environment, it is deemed a waste as soon as the material impacted is disturbed or moved. Therefore, contaminated soil can be regulated under RCRA. The California Department of Toxic Substance Control implements RCRA in California and regulations regarding hazardous waste are contained in Title 26 of the California Code of Regulations.

Department of Toxic Substance Control (DTSC)

The objective of the DTSC is to protect human health and the environment from exposure to hazardous material and waste. The DTSC has the authority to respond and enforce the cleanup of hazardous substance releases pursuant to the Hazardous Substance Account Act, chapter 6.8, division 20 of the Health and Safety Code, and the cleanup of hazardous waste under the Hazardous Waste Control Law, chapter 6.5, division 20 of the Health and Safety Code (commencing with section 25100).

The Hazardous Substance Account Act contains a petroleum exclusion by which the term "hazardous substance" cannot apply to "petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance." (Health and Safety Code, §25317). As a result, the DTSC can enforce the cleanup if the presence of hazardous substance results from: (1) the addition of hazardous substances to crude oil and the addition is not part of regular crude oil processing; or (2) use of crude oil. (40 C.F.R. §261.3).

Waste streams at oil production sites are generally considered waste, not substances, and are thus regulated by the DTSC when hazardous. Certain waste streams can be considered as recyclable material, not waste, provided that their ultimate disposal to land does not release contaminants to the environment (Health and Safety Code, §25143). Most waste streams from oil and gas sites qualify for the Resource Conservation and Recovery Act "petroleum exclusion," described in title 40, section 261.4 of the C.F.R. Thus, most petroleum soil contamination resulting from typical "exploration, development, or production of crude oil, natural gas or geothermal energy" is excluded from Resource Conservation and Recovery Act classification (40 C.F.R. §261.4(b)(5).). A clarification of the Resource Conservation and Recovery Act petroleum exclusion is provided in the March 22, 1993 issue of the Federal Register (58 Fed. Reg. 15284). Drilling waste is classified under California Code of Regulations, title 22, section 66261.120 as "special waste" and does not necessarily need to be disposed at hazardous waste treatment/storage/disposal facilities even if it exhibits hazardous characteristics.

Under Government Code section 65962.5, subdivision (a), the DTSC is required to compile and update as appropriate, but at least annually, and submit to the Secretary for Environmental Protection, a list including the following:

> 1. All hazardous waste facilities subject to corrective action pursuant to Health and Safety Code section 25187.5; and
>
> 2. All land designated as hazardous waste property or border zone property pursuant to Health and Safety Code, division 20, chapter 6.5, article 11 (section 25220 et seq.).

3.9.2 Environmental Impacts and Mitigation

3.9.2.1 Significance Criteria

The impacts associated with hazards would be considered significant if:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

3.9.2.2 Environmental Impacts

Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

There will be no demolition of any structures as a result of construction or operation of the proposed Project. The disposal of construction-related waste could contribute to the diminishing available landfill capacity. However, sufficient landfill capacity currently exists to handle the one-time disposal of the minimal amount of this material. In addition, the existing flare would be removed from the site and its metal would possibly be recycled. In the event that the flare is sent to a landfill, it would contribute less than 1% of the landfill capacity and would have no impact. During operation, the proposed Project is expected to generate only small volumes of solid waste, primarily from administrative or office activities, e.g., waste paper, and maintenance activities, e.g., filters. Additional waste would be generated as a result of well drilling, when that activity occurs. Mud and cutting removed from a well during drilling are dewatered and solidified. The resulting solid is hauled off-site, tested for chemical composition, and sent to a

landfill that is authorized to accept non-hazardous drilling waste. Typically, the landfill recycles the solid material as landfill cover. Therefore, the net amount of solid waste would result in less than significant impacts.

3.9.2.3 Significance Determination

The project would result in less than significant impacts with regard to solid and hazardous waste.

3.9.2.4 Mitigation Measures

The project would not result in any significant impacts. No mitigation measures are recommended.

3.10 Growth Inducing Impacts

The CEQA Guidelines define growth-inducing change as the 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" (§15126.2(d)). The Project would not result in the creation of any new jobs or foster regional economic growth that would result in population changes or the construction of additional housing. In addition, the up to 4,000 additional barrels of oil per day the Project could produce is negligible compared to the greater than 1,000,000 bbls/day of oil processed at local refineries[26]; and greater than the 550,000 bbls/day of oil produced in California per day.[27] Therefore, no growth-inducing impacts are expected from the proposed Project.

3.11 Significant and Unavoidable Adverse Impacts

The CEQA Guidelines require that an EIR analyze any "significant irreversible environmental changes which would be caused by the proposed project should it be implemented", such as the use of nonrenewable resources, primary and secondary impacts, and irreversible damage that could result from environmental accidents associated with the project [§15126.2(c)]. Furthermore, it defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (§15355).

The project would result in significant and unavoidable adverse air quality impacts, solely due to the potential impacts of additional oil well drilling.

No other significant and unavoidable impacts would result from the proposed Project.

[26] http://www.energy.ca.gov/2006publications/CEC-600-2006-006/CEC-600-2006-006.pdf
[27] http://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm

3.12 Environmental Effects Found Not to be Significant

The IS for the proposed Project found no impacts or less than significant impacts would result with regard to the following environmental areas:

- Aesthetics
- Agricultural and Forestry Resources
- Biological Resources
- Cultural Resources
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Transportation

An evaluation of the potential impacts under each of the resource areas in comparison to the CEQA IS Checklist is provided in the IS published November 22, 2014, which is included as Appendix B to this EIR. No further analysis is provided in this EIR. Two public comments were received on the IS, related to Cultural Resources and Hazards/Hazardous Materials.

Cultural Resources

As noted in the IS, no culturally or archeologically significant resources have been identified, including any Native American culturally significant resources, at the sites for almost 100 years of oil field operations and no impacts on archeological or cultural resources are expected due to the Project. During the public comment period a comment letter was received from the Native American Heritage Commission identifying standard procedures and practices to address potential impacts to historical and cultural resources. Although it is not anticipated, as discussed in the NOP/IS, if culturally or archaeologically sensitive resources are encountered, Breitburn would follow applicable regulations and consult with tribes and interested Native American consulting parties as required.

Hazards and Hazardous Materials

DOGGR commented on the IS with regard to DOGGR regulations that address the location of proposed structures in relation to abandoned wells.

DOGGR states that should any proposed structures be located over or in close proximity to a previously plugged and abandoned well, as the well may need to be plugged to current division specifications if construction of a structure could result in a Hazard. (Section 3208.1 of the Public resources Code authorizes DOGGR to order such reabandonment). Furthermore, if any plugged, abandoned or unrecorded wells are damaged or uncovered during grading, remedial plugging operations may be required. If such damage or discover occurs, DOGGR must be contacted to obtain information on the requirements and approval to perform remedial operations. In addition, DOGGR has established a Construction Site Plan Review Program. DOGGR considers 10 feet to be the minimum distance needed to maintain access to a well for potential future remedial work. Before any construction can begin, wells within 10 feet of the

proposed construction must be plugged and abandoned to current standards and tested for gas or fluid leakage. Wells 10 feet or more from a proposed structure do not need to be plugged and abandoned to current standards unless future well access will be limited by topography, loss of entry or workspace, or grading alteration. Wells in this category must also be tested for gas or fluid leakage. Wells beneath a proposed structure must be plugged and abandoned to current standards and tested for gas or fluid leakage. For wells never found even after intensive surveying and excavation efforts by DOGGR and developers, DOGGR typically recommends surface control for gas that may leak into proposed structures near a well's historic location. Such controls may include the installation of gas leak detection sensors located in basements or low-lying areas where gas may accumulate. These measures help to ensure the continued protection of health and safety for urban development in proximity to oil fields. All such provisions will be enacted, if necessary, during the development of the proposed Project (DOGGR 2007).

CHAPTER 4

4 PROJECT ALTERNATIVES

4.1 Introduction

As required by the CEQA Guidelines, this chapter identifies and compares the relative merits of alternatives to the proposed Project. This includes a range of reasonable alternatives to the proposed Project that feasibly attain most of the project objectives and provide a means for evaluating the comparative merits of each alternative. A 'No Project' alternative must also be evaluated. The range of alternatives must be sufficient to permit a reasoned choice, but need not include every conceivable project alternative. CEQA Guidelines §15126.6(c) specifically notes that the range of alternatives required in a CEQA document is governed by a 'rule of reason' and only necessitates that the CEQA document set forth those alternatives necessary to permit a reasoned choice. The key consideration is whether the selection and discussion of alternatives fosters informed decision making and meaningful public participation. A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. SCAQMD Rule 110 (the rule which implements the SCAQMD's certified regulatory program) does not impose any greater requirements for a discussion of project alternatives in an environmental assessment than is required for an EIR under CEQA.

4.2 Project Objectives

As discussed in Section 2.5, Breitburn developed the proposed Project in response to its current fluids handling systems operating near or at maximum capacity, limiting its ability to produce oil from existing wells (some of which are now shut in), as well as from future wells. Also, Breitburn proposes to replace the existing flare with a new CEB burner and add up to three additional CEB burners. In addition, although almost all of the oil from the Breitburn facility is transported by the Crimson Pipeline, a portion of the oil is trucked off-site, primarily when there are pressure balance issues with the Crimson Pipeline and/or when warranted by market conditions. The existing system allows approximately 476 barrels per day of oil to be trucked off-site, which is much lower than the current oil production capacity of about 4,000 barrels per day. The addition of one additional truck loading connection to the existing connection, and modifications to improve control of the loading vapors, would allow two trucks to be loaded simultaneously, and up to approximately 3,100 barrels per day of oil to be trucked off-site (which is still within current production levels).

The Project objectives are as follows:

1. Increase the ability to process produced water, oil and gas separation capacity to produce oil from currently shut-in wells and eventually future wells, when economics (consumer demand and world supply) are favorable;

2. Replace the older existing flare with a BACT burner to reduce emissions, and to add additional burners to the extent they are needed for safety and redundancy;

3. Increase produced oil truck loading capacity for use when warranted by market conditions and/or there are pressure balance issues or other issues rendering the Crimson Pipeline unavailable; and

4. Maintain operational efficiency, safety, flexibility, and economic viability of the Breitburn Facility and continue oil production operations from the mature Santa Fe Springs Oil Field.

4.3 Alternatives Summary

Five alternatives to the proposed Project are summarized in the following sections: Alternative 1 (No Project), Alternative 2 (Gas Reinjection), Alternative 3 (Additional Microturbines), Alternative 4 (Gas Sales), and Alternative 5 (Electrification of Oil/Injection Well Drilling). Alternatives that are analyzed in further detail in this EIR are described in Section 4.3.1; alternatives to the proposed Project that are rejected as infeasible are discussed in Section 4.3.2. Aside from the alternatives described in Section 4.3, no other project alternatives were identified that met the basic objectives of the proposed Project while substantially reducing significant adverse environmental impacts. A summary of the features of the five alternatives is presented in in Table 4-1.

Table 4-1. Summary Comparison of Project and Alternatives Features

Project Component	Proposed Project	Alternative 1 No Project	Alternative 2 Gas Reinjection	Alternative 3 Additional Microturbines	Alternative 4 Gas Sales	Alternative 5 Electrification of Oil/Injection Well Drilling
400 Block Reinjection Facility						
New Crude Oil/Water/Gas Separation System	Additional 4,000 bpd of oil, 196,000 bpd of produced water, and 2 MMscfd of produced gas	New crude oil/water/gas separation system would not be installed; no additional processing of oil, water or gas beyond the current facility limitations.	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project
Consolidated Bulk Truck Loading System						
Modification of Truck Loading System and Thermal Oxidizer	Addition of new crude oil truck loading connection; Modification to existing thermal oxidizer; Modification of existing truck loading connection	No addition of crude oil truck loading connection or modification of thermal oxidizer.	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project

Table 4-1. Summary Comparison of Project and Alternatives Features

Project Component	Proposed Project	Alternative 1 No Project	Alternative 2 Gas Reinjection	Alternative 3 Additional Microturbines	Alternative 4 Gas Sales	Alternative 5 Electrification of Oil/Injection Well Drilling
Flaring System						
Replacement of Flare	Remove existing John Zink Bell Flare and replace with one CEB-800-CA; Add up to 3 additional CEB-800-CA flares for redundancy	No installation of any CEB-800-CA. The John Zink Bell Flare would remain in place to process field gas.	1 CEB in ready-standby (pilot light combustion only) and 3 CEBs not operating except for gas reinjection system maintenance and/or breakdown	CEBs will not operate except for additional microturbines maintenance and/or breakdown	CEBs in ready-standby (pilot light combustion only) except for gas sales system maintenance and/or breakdown	Same as Proposed Project
Other						
Additional Component Required for Specific Alternative	NA	NA	Convert existing well to gas re-injection well and install four-stage electric compressor, inter-stage coolers and scrubbers to allow for gas reinjection. Minor re-piping of existing flow lines required.	Install up to 175 additional microturbines	Install Gas Plant (compressor, scrubbers, dehydration unit, amine unit, and flares and/or permitted microturbines). Install gas metering and odorizing equipment	NA

Table 4-1. Summary Comparison of Project and Alternatives Features

Project Component	Proposed Project	Alternative 1 No Project	Alternative 2 Gas Reinjection	Alternative 3 Additional Microturbines	Alternative 4 Gas Sales	Alternative 5 Electrification of Oil/Injection Well Drilling
Related Oil Field Activities						
Oil Field Production Related Drilling Operations and 14 on-site microturbines	Drilling of up to one new well/day plus continued operation of existing 14 on-site microturbines	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Same as Proposed Project	Utilize electric drill rigs rather than diesel-powered drill rigs to drill new wells and rework existing wells.

4.3.1 Description of the Project Alternatives Evaluated

Two alternatives in addition to the No Project Alternative were identified for further analysis in this chapter. These two project alternatives were developed by modifying one or more components of the proposed Project. Unless otherwise stated, all other components of each project alternative are identical to the proposed Project. Potential impacts associated with these alternatives are compared in Section 4.4 with potential impacts from the proposed Project.

4.3.1.1 Alternative 1 – No Project Alternative

CEQA Guidelines §15126.6 requires evaluation of a no project alternative to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The No Project Alternative assumes that the proposed Project would not be adopted.

Under the No Project Alternative the Santa Fe Springs Facility would continue to operate with the existing equipment. The proposed 400 Block Reinjection Facility would not be constructed, produced water would continue to be processed at the existing 700 Block Facility, and the additional truck loading connection would not be installed. As such, oil that is not shipped via the Crimson Pipeline would continue to be trucked off-site using only the existing connection, with the existing limit of 476 barrels of oil in any one day. Under this alternative, the lower-emission enclosed burners (Flare Industries' CEBs) would not be installed to process field gas and the existing John Zink Flare would remain in place.

4.3.1.2 Alternative 2 – Gas Reinjection

Under this alternative, field gas would be re-injected into an existing oil producing formation within the Santa Fe Springs Oil Field rather than being flared on-site. This alternative would utilize a previously drilled well for re-injection of excess oil field gas. Conversion of the existing well for gas re-injection purposes would require a workover rig, a small crane, and several truck trips. The gas re-injection system would involve the use of a four stage electric compressor, inter-stage coolers and scrubbers, and would require minor re-piping of existing flow lines and the use of temporary well servicing equipment to prepare the existing well for this use. The compressor would be installed as part of the gas management system and would reduce combustion emissions over the long-term. DOGGR is the agency with regulatory authority to approve gas re-injection operations[28]. All other components of the Project would proceed in this Alternative as described under the Project.[29]

4.3.1.3 Alternative 3 – Additional Microturbines

In November 2014, Breitburn installed 14 CARB-certified microturbines to increase on-site electricity by burning field gas. Under this alternative, the maximum capacity of all gas handling through the CEBs in the proposed Project are instead processed through an additional

[28] The Project has an application on file with DOGGR seeking approval of the use of a pre-existing well as a potential gas re-injection well. DOGGR has yet to approve this application for a gas injection project.

[29] Note that, although up to four new CEBs would be installed, only one CEB would operate primarily in ready-standby mode. The four CEBs would only operate above this level during breakdown or maintenance of the gas reinjection equipment but not during typical operations.

175 microturbines that would further increase electricity generation and reduce the amount of gas non-beneficially flared on-site and the amount of electricity imported. All other components of the Project would proceed in this Alternative as described under the Project.[30] Under this alternative, the facility may be subject to additional programs due to increased emissions (i.e. emission offsets, Title V, etc.) if additional microturbines are added.

Specifically, the impacts to air quality from Alternative 3 are expected to be greater than those of the proposed Project (see Appendix B and Table 4-2 below for details). The impacts from Alternative 3 would be greater and more significant than those from the proposed Project because the electricity-producing microturbines produce more emissions than the CEBs (per unit gas combusted). Alternative 3 would also require extensive additional construction activities over a greater on-site space (for up to an additional 175 microturbines for the same gas handling capability). Overall, the incremental air quality impacts associated with Alternative 3 equipment alone (i.e., without drilling activity) exceed the SCAQMD's mass emissions significance thresholds for VOCs, NO_x and CO (Table 4-2); in contrast, the Project equipment alone does not (see Table 3-8).

Table 4-2. Comparison of Alternative 3 Emissions Without Drilling to Baseline Emissions (Up to 175 Additional Microturbines Operating, Peak-Day)

Project Phase	Alternative 3 Emissions (lb/day)				
	VOC	**NO_x**	**SO_x**	**CO**	**PM**
Total Baseline Emissions	3.95	44.57	0.20	11.81	2.50
Alternative 3 Operational Equipment Components					
CEBs not operating (i.e. no gas flow)	0.00	0.00	0.00	0.00	0.00
Consolidated Bulk Truck Loading System	11.49	15.01	0.04	3.51	0.55
400 Block Reinjection Facility	14.04	0.00	0.00	0.00	0.00
Up to 175 Microturbines	273.00	136.50	19.00	1,638.00	18.93
Total Operational Equipment Emissions	**298.53**	**151.51**	**19.04**	**1,641.51**	**19.48**
Incremental Emissions Increase - Operational Equipment Only	294.58	106.94	18.84	1,629.69	16.97
SCAQMD Significance Threshold (lb/day)	*55*	*55*	*150*	*550*	*55*
SCAQMD Significance Threshold Exceeded?	***YES***	***YES***	*NO*	***YES***	*NO*

Alternative 3 exacerbates significant air quality impacts on days with potentially-related drilling activities and, unlike the Project, would cause significant air quality impacts from the operational equipment on most days in the year. In addition, construction air quality impacts from the installation of 175 microturbines would likely be significant, because the grading and foundation requirements for that many microturbines would be much greater than for the Project's four CEBs. It would be difficult to reduce these impacts to less than significance without an inefficient installation schedule of a few microturbines per day.

[30] Full CEB operation would only occur if the 175 additional microturbines were not operating (e.g. maintenance).

In addition, the addition of up to 175 microturbines would result in a significant increase in noise compared to the proposed Project. Table 4-3 below provides a detailed assessment of the increase in noise that would result from use of up to 175 microturbines at the Project site.

Table 4-3. Summary of Calculated Operation Noise Levels and Impact Determination at the Nearest Residence

Project Activity	Calculated L_{eq} (dBA)	Total Daytime Noise (Calculated L_{eq} +Ambient) (dBA L_{eq})[1]	Total Nighttime Noise (Calculated L_{eq} +Ambient) (dBA L_{eq})[1]	Increase in Noise Level (dBA CNEL)	Above Significance Threshold? (>3 dB increase at receptor site)
Operation of 700 Block Facilities	65.9	70.6	66.7	1.8-7.8	**Yes**

1. Assume daytime ambient noise level of 68.8 dBA and nighttime ambient noise level of 58.8 dBA for an ambient CNEL of 68.4 dBA.

Block 700, the site of the existing microturbines (14 Breitburn microturbines and 20 small third-party microturbines) and related electrical infrastructure, also contains the existing oil/gas/water separation equipment, main tank farm, existing (and proposed modified) truck-loading station, and more than 20 production and injection well locations (see Section 2.4 and Figures 2-4 and 2-9). The suitability for siting an additional 175 microturbines in the 700 Block is greatly constrained by the presence of this existing equipment and the space it occupies on the site. Productive use of the much larger amounts of energy generated by the additional microturbines around the clock would also depend on SCE infrastructure and requirements/regulations for distributed generation. Alternative 3 would impair Objective 4 – operational efficiency, safety, flexibility and economic viability, in part because of the issues of site suitability and infrastructure availability. In addition, the capital cost of the microturbines alone (separate from installation and operation) is over fifteen times the capital cost of four CEBs to handle equivalent amounts of process gas and CEBs would also have to be installed for safety and environmental reasons as emergency back-ups for the microturbines.

CEQA Guidelines §15126.6(c)(3) states that inability to avoid significant environmental factors, such as noise above the applicable significance threshold when the Project has no significant noise impacts, may be a factor used to eliminate an alternative from detailed consideration in an EIR. Additionally, CEQA Guidelines §§15126.6(f)(1) and (3) state that site suitability and availability of infrastructure, respectively, are factors that may be taken into account when addressing the feasibility of an alternative. As described above, the addition of an additional 175 microturbines would be greatly constrained by existing equipment and well operations, and that the existing infrastructure was designed for a much lower level of distributed generation. Lastly, Guidelines §15126.6(c)(1) states that failure to meet a basic project objective, such as the Project's Objective 4 – impairing operational efficiency, safety, flexibility and economic viability, may also be a factor in determining whether to eliminate an alternative from detailed consideration in an EIR. Based on all these factors that may be considered under the CEQA Guidelines, Alternative 3 is eliminated from further consideration and analysis in the EIR.

4.3.2 Alternatives Rejected as Infeasible

A CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and explain the reasons underlying the lead agency's determination (CEQA Guidelines §15126.6(c)). While the scope and goals of proposed projects may be relatively specific, a variety of options can be considered as alternatives to the proposed project. CEQA Guidelines §15126.6(c) states that 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.

Additionally, CEQA Guidelines §15126.6(f)(1) also lists the following factors that may be taken into account when addressing the feasibility of alternatives:

1. Site suitability;
2. Economic viability; and
3. Availability of infrastructure.

Finally, CEQA Guidelines §15364 defines feasible as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors."

The discussion in the following sections describes the alternatives that were rejected and the basis for rejection.

4.3.2.1 Alternative 4 – Gas Sales

Under this alternative the majority of the field gas would be sold to the Southern California Gas Company (SoCalGas) or another local natural gas provider rather than being flared on-site. In addition, a gas processing plant (Gas Plant) would be required to meet SoCalGas specifications. The Gas Plant may be comprised of initial compression of field gas (i.e. compressor, scrubbers), dehydration (i.e. separators, scrubbers, condensers, stabilization units, heat exchangers, chillers, glycol separators and filters, glycol pumps, glycol regenerator/reboiler, compressors, other refrigeration equipment items, natural gas liquid (NGL) vessel/tanks), potential CO_2 removal in an amine unit (gas and liquid separators, amine contactor, amine filter, amine vessel/tank, heat exchanger and reboiler, cooler, pumps, etc.), and flares and/or permitted microturbines to combust tail gas from the gas sales equipment. In addition to the Gas Plant, gas metering and odorizing equipment required by SoCalGas and the US DOT would also need to be constructed and installed. All other project components would proceed as described under the proposed action, including removal of the existing John Zink flare and installation of up to four CEBs to provide redundancy.

The gas quality of the process gas and volume of gas throughput levels must be consistent and meet certain standards before SoCalGas will approve metering and odorizing equipment necessary to sell the gas. Currently, field gas production levels do not meet the minimum gas

volume of roughly 1 million scf/day (consistent production) required by SoCalGas for gas sales (Note, consistent production for Breitburn is typically only about 700,000 scf/day, typical gas levels for one CEB; the maximum daily gas production assessed in this EIR is not expected to be achieved consistently and historically, Breitburn has not produced enough gas to sell). In order for SoCalGas to agree to lay pipe to tie into a Gas Plant, Breitburn would have to produce sufficient volume of gas to be economically favorable to SoCalGas, which is estimated not to be possible based on historical data and current forecasts. In addition, the costs of a Gas Plant have been found by Breitburn to be infeasible for continuing with this option. Alternative 4 (Gas Sales) is rejected as infeasible, per CEQA Guidelines §15126.6(c), §15126.6(f)(1), and §15364, based on technical restrictions and economic viability for constructing necessary infrastructure (i.e. there are no suitable gas pipelines available at the facility, which would be required for gas sales) and a gas plant. Thus, this alternative is eliminated from further consideration.

4.3.2.2 Alternative 5 – Electrification of Oil/Injection Well Drilling

Under this alternative, the potential related drilling of one new well at a time and reworking of existing wells would utilize electric rather than diesel-powered drill rigs. All other project components would proceed as described under the proposed action, including removal of the existing John Zink flare and installation of up to four CEBs to provide redundancy.

In general, a well is created by drilling a hole 12 cm to 1 meter (5 in to 40 in) in diameter into the earth with a drilling rig that rotates a drill string with a bit attached. After the hole is drilled, sections of steel pipe (casing), slightly smaller in diameter than the borehole, are placed in the hole. Cement may be placed between the outside of the casing and the borehole. The casing provides structural integrity to the newly drilled wellbore, in addition to isolating potentially dangerous high pressure zones from each other and from the surface. Wells at the Breitburn Santa Fe Springs Facilities are drilled by contracted stand-alone well-drilling systems because there is no set program of drilling as is common at a newly established oil field, and thus, a contractor brings the drilling rig and related equipment to the site when needed. Almost all well drilling rigs (and all available for rental[31]) are diesel-powered for both the drawworks and to run the electrical generator. For example, the specifications (Kenai Drilling 2015) on two Kenai well drilling rigs used in California for drilling between depths of 5,000 to 9,000 feet (a range similar to that at the Breitburn Santa Fe Springs Facilities in the 2013 and 2014 time frame) are as follows:

- Kenai – Rig 4: Drilling Range 6,500 ft to 8,000 ft.
  - Drawworks: Challenger 361, 540 H.P., Driven by (2)-Detroit B-60 Diesel Engines with a V-80 Parmac Hydromatic Brake and (2)-Allison CLT-750 Transmissions.
  - Generators: (2)-Perkins 1106D Diesel Engines Driving (1)-Stamford 165 KW Generators and (1) Marathon 125 KW.
- Kenai – Rig 5: Drilling Range 8,500 ft to 10,000 ft.

[31] Well Drilling activity at Breitburn is sporadic and is done exclusively by rental equipment from contractors. Specifically purchased and permanently stationed drill rigs would not be used at this or any other facility with limited drilling.

- Drawworks: Skytop Brewster TR750, Driven by (2)-Caterpillar C-9 Diesel Engines with a V-80 Parmac Hydromatic Brake and Allison 5860 Transmission.
- Generators: (1)-Perkins 1106D Diesel Engine Driving, (1)-Stamford 165 KW Generator and (1)-Perkins 1106D Diesel Engine Driving (1)-Marathon 150 KW Generator.

In order to use electric drill rigs, Breitburn would need to have custom rigs built and new infrastructure constructed to accommodate drilling around the entire site. Because electric drill rigs are not commercially available for rental, pure electric drill rigs are specially manufactured on a by-request basis, dramatically increasing the cost (particularly, as in the case of Breitburn's Santa Fe Springs operations, because it is not used for drilling multiple wells but rather one well at a time, as needed). In addition, the potential well locations (e.g. see current active well locations in Figure 2-9) are dispersed around the site. An electric drilling rig used – temporarily during drilling operations – would need access to appropriate electrical transmission lines at each well location within the site. As noted in Section 3.3.1, the Breitburn Santa Fe Springs Facilities are 'energy-confined' and SCE only supplies 15-16 MW distributed around the site on a 12 kV distribution system. There are no existing electrical power lines at the site which are adequately sized to power an electric drilling rig which would be positioned at any one of the multiple locations throughout the Field. Not only would an electrical line capable of servicing all well locations be needed but a drilling rig would also require nearly ten times the power typically supplied at a wellhead to run the submersible pump. A new distribution infrastructure, including substation, transformer, and high voltage lines, would be necessary to use electric drill rigs. This is unlike new oil fields with centralized on-going drilling operations constructed next to appropriate electrical infrastructure. Such infrastructure upgrades would be prohibitively expensive for short-term, temporary drilling sites for the limited well drilling potentially associated with the Project. This is consistent with the fact that development on existing oil fields do not use electric drill rigs; electric drill rigs have only been used for new oil field development with available electric power infrastructure.

Reworking occurs not only at wells throughout the Breitburn facility, but also at existing wells off-site (see Figure 2-9 for existing well locations). Thus, in addition to the issues described above with regard to drilling new wells, these locations could not be serviced by a centralized electrical infrastructure as has been done on some new oil fields.

This alternative would not meet all the goals of the project, specifically it would not allow for economic viability or flexibility for continued operational production. In addition, this alternative may result in greater energy impacts. Alternative 5 (Electrification of Oil/Injection Well Drilling) is therefore rejected as infeasible, per CEQA Guidelines §15126.6(c), §15126.6(f)(1), and §15364, based on technical / economic viability and energy infrastructure availability. Thus, this alternative is eliminated from further consideration.

4.4 Comparison of Impacts: Alternatives to the Proposed Project

The Environmental Checklist (see Chapter 2 of the IS in Appendix B) identified only air quality during operations as the environmental area that could be significantly adversely affected by the proposed Project. The following section describes the potential adverse environmental impacts that may be generated by each project alternative compared to the proposed Project. Analysis of other environmental areas that were further studied in the IS demonstrated that no other

environmental topics other than operational air quality were determined to be potentially significant for the proposed Project; a comparison of the proposed Project's less than significant impacts in these environmental areas and the potential impacts of the alternatives is also provided in this section.

4.4.1 Air Quality

A comprehensive analysis of the Project's potential air quality impacts is included in Chapter 3 of this document. That analysis concluded that only air quality impacts have the potential to be significant. This chapter provides a comparison of the potential air quality impacts from each of the project alternatives relative to the proposed Project, which are summarized in Table 4-4. Aside from air quality, no other significant adverse impacts were identified for the proposed Project or any of the project alternatives. As indicated in the following discussions, the proposed Project is considered to provide the best balance between meeting the objectives of the project while minimizing potentially significant adverse environmental impacts.

Table 4-4. Comparison of Adverse Environmental Impacts of the Alternatives

Category	Air Quality Impacts	Significant?
Proposed Project	Project equipment would result in less than significant ambient air quality impacts during Project construction and operation. With the potential related drilling of one new well at a time, the Project has significant 24-hour average PM_{10} and $PM_{2.5}$ impacts. Project equipment would result in less than significant operational and construction emissions. With the potential related drilling of one new well at a time, the Project would result in significant regional NO_x and VOC emission impacts. The proposed Project (either with or without potential related oil well drilling) would result in less than significant health risk impacts.	Yes, for regional NO_x and VOC emissions and 24-hour average PM_{10} and $PM_{2.5}$ impacts for operations once related drilling impacts are included. Project operations alone (without potential drilling) have impacts less than SCAQMD significance threshold levels.
Alternative 1: No Project	Emissions would be the same as the baseline scenario and thus, no incremental impact to air quality is expected.	No
Alternative 2: Gas Reinjection[32]	During typical operating scenarios (i.e. when all gas reinjection equipment is operating), Alternative 2 would have much lower impacts as only small amounts of gas would be combusted in the CEB to maintain the ready-standby pilot.	Yes, however, typical operating scenarios result in much lower emissions and impacts compared to the proposed Project. Less than significant impacts for new gas reinjection and project equipment.

[32] This comparison addresses air quality impacts associated with standard operation of the Project and each alternative. The impacts vary with regard to air emissions, but are the same for all other impact areas. The impact analysis was conducted assuming normal operation of the above alternatives. Impacts during non-operation of the gas reinjection system are presented in Appendix B.

4.4.1.1 Alternative 1 – No Project

The No Project alternative is the same as the baseline (See Table 3-2) and thus no incremental impacts to air quality are expected (See Appendix B). No construction would occur; the existing John Zink flare would remain on-site. On-going drilling would continue to occur as allowed under DOGGR regulations but there would be no drilling associated with operation of the 400 Block Reinjection Facility. All emissions would be less than those of the proposed Project. However, the No Project alternative does not meet the goals and objectives of the proposed Project.

4.4.1.2 Alternative 2 – Gas Reinjection

The impacts to air quality under Alternative 2 are expected to be lower than those of the proposed Project (see Tables 3-8 through 3-12 and Appendix B) during normal operation of the gas reinjection equipment. The major difference between the proposed Project and Alternative 2 is that field gas would be re-injected into the ground under Alternative 2 operations instead of flared on-site in the CEBs. The remainder of the operations including drilling, which drives the air quality impacts, would be the same as in the proposed Project. The existing John Zink flare would be removed and up to four CEBs would be installed and in ready-standby mode.[33] The Consolidated Bulk Truck Loading System and the 400 Block Reinjection Facility would still be constructed. There would be additional emissions from use of a workover rig, small crane and several truck trips for conversion of the existing well for gas re-injection. In addition, minor increases in construction impacts would occur from minor re-piping of existing flow lines; construction impacts would not be substantially different from the proposed Project. Only during breakdown or maintenance of the gas reinjection equipment, the emissions from Alternative 2 would be the same as the proposed Project due to the emissions from the four CEBs (Appendix B).

Table 4-5 summarizes operational emissions associated with normal operation of gas reinjection equipment in Alternative 2. Only NO_x emissions would exceed the SCAQMD's significance threshold. Alternative 2 meets the goals and objectives of the proposed Projects and although it does exceed the NO_x significance threshold, its environmental impact should be smaller than the Project, but its feasibility is dependent on the independent actions of DOGGR in approving processed gas reinjection.

[33] During normal operation, one CEB would be in ready-standby mode and thus, there would be some emissions associated with maintaining the pilot light.

Table 4-5. Comparison of Alternative 2 Emissions and Drilling to Baseline Emissions (Gas Reinjection Operating, Peak Day)

Project Phase	Alternative 2 Emissions (lb/day)				
	VOC	**NO_x**	**SO_x**	**CO**	**PM**
Total Baseline Emissions	3.95	44.57	0.20	11.81	2.50
Alternative 2 Operational Equipment Components					
Up to 4 CEBs (ready-standby mode)[1]	0.20	0.85	0.24	0.35	0.09
Consolidated Bulk Truck Loading System	11.49	15.01	0.04	3.51	0.55
400 Block Reinjection Facility	14.04	0.00	0.00	0.00	0.00
Total Operational Equipment Emissions	**25.73**	**15.86**	**0.28**	**3.86**	**0.64**
Incremental Emissions Increase - Operational Equipment Only	21.78	-28.71	0.08	-7.96	-1.87
SCAQMD Significance Threshold (lb/day)	*55*	*55*	*150*	*550*	*55*
SCAQMD Significance Threshold Exceeded?	*NO*	*NO*	*NO*	*NO*	*NO*
Worst-Day Incremental Drilling Emissions [2]	31.51	378.67	0.68	151.29	11.89
Total Operational and Drilling Emissions	**57.24**	**394.53**	**0.96**	**155.15**	**12.52**
Incremental Emissions Increase With Drilling	**53.29**	**349.97**	**0.76**	**143.33**	**10.02**
SCAQMD Significance Threshold (lb/day)	55	55	150	550	55
SCAQMD Significance Threshold Triggered?	NO	YES	NO	NO	NO

[1] During normal operation, one CEB would be in ready-standby mode and thus, there would be some emissions associated with maintaining the pilot light.

[2] As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, this EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations.

4.4.2 Other Environmental Areas

As discussed in Chapter 3, the proposed Project would result in less than significant impacts from all other environmental areas analyzed in this EIR. This section compares these less than significant impacts with those of the Project alternatives.

4.4.2.1 Energy

Under the No Project Alternative, the Breitburn Santa Fe Springs Facilities would continue to operate using the microturbines on-site and electrical power from SCE. The minor increases in energy demand that would result under the proposed Project would not occur.

Under Alternative 2, gas reinjection would require the use of additional electricity to reinject gas back into the formation. All other elements would be constructed as described for the proposed Project. Use of the four-stage electric compressor (e.g. 250 horsepower) would result in minor increases in energy demand (e.g. 0.19 MW) in comparison to the proposed Project; however, similar to the proposed Project, it is anticipated that the 28 MW available from SCE sources, in addition to the energy provided by the on-site microturbines and third-party microturbines, would be sufficient to meet the Facility's needs, including use of the electric compressor for gas reinjection. With the existing dedicated substation, as well as energy supplied from on-site microturbines, implementation of Alternative 2 would not require new or substantially altered

power or other natural gas utility systems. Therefore, the increased energy demand under Alternative 2 would be less than significant.

4.4.2.2 Geology and Soils

Under the No Project Alternative, no grading or soil disturbance would occur with the exception of continued drilling of new wells as part of baseline oil field operations. Under Alternatives 2 and 3, land disturbance would be the same as described for the proposed Project. Under all alternatives impacts with regard to seismic hazards and subsidence would be the same as described for the proposed Project since the oil field would continue to operate in a seismically active region of California and involve continued reinjection of produced water.

4.4.2.3 Greenhouse Gases

4.4.2.4 Alternative 1 – No Project

The No Project alternative is the same as the baseline (See Table 3-13) and thus no incremental impacts to GHGs are expected. No construction would occur; the existing John Zink flare would remain on-site. On-going drilling would continue to occur as allowed under DOGGR regulations but there would be no drilling associated with operation of the 400 Block Reinjection Facility. Emissions would be less than those of the proposed Project. However, the No Project alternative does not meet the goals and objectives of the proposed Project.

4.4.2.5 Alternative 2 – Gas Reinjection

The impacts associated with GHG emissions from Alternative 2 (standard operation of gas reinjection equipment) are expected to be much less to those of the proposed Project. Impacts related to GHGs are assessed on an annual basis because of the global influence compared to the peak-day assessment for air quality impacts. Under Alternative 2, the annual GHG emissions would be less than those from the proposed Project because field gas would typically be re-injected into the ground instead of being combusted in the CEBs.[34] Regardless of the actual amount of GHG emissions from Alternative 2, impacts associated with GHGs impact would still be less than significant after accounting for offsets required by the AB 32 program.

Table 4-6 compares the GHG impacts of the two alternatives to the Project.

[34] During non-operation of the gas reinjection system, process gas would be combusted in the CEBs, as in the Project. During normal operation, one CEB would be in ready-standby mode and thus, there would be some emissions associated with maintaining the pilot light.

Table 4-6. GHG Emissions for Project Alternatives				
Alternatives Phases		**Proposed Project Incremental CO_2e Emissions**	**Alternative 1 Incremental CO_2e Emissions**	**Alternative 2 Incremental CO_2e Emissions**
		(MT/yr)	**(MT/yr)**	**(MT/yr)**
Main Facility	Truck Trips	629	0	629
	Truck Idling	3.5	0.0	3.5
	Truck Loading Operations	32.0	0.0	32.0
	Truck Loading System Fugitives	1.4	--	1.4
400 Block Flares	Existing Flare / CEBs[1]	64,586	0	-10,219
400 Block Reinjection Facility	O/W/G Separation System Fugitives	30.6	--	30.6
	WEMCOs	10.3	--	10.3
	Tank Farm	10.0	--	10.0
	Wet Solids Removal Truck Trips	39.8	--	39.8
Maximum Incremental Drilling Emissions[2]		581	--	581
Total Operational and Drilling Emissions[3]		**65,923**	**0**	**-8,881**
Additional AB 32 Offsets Required		*65,185*	*0*	*none*
Total Equipment Operational and Drilling Emissions After AB 32 Offsets		**739**	**0**	**-8,881**
30-Year Amortized Construction Emissions		13.2	--	13.2
Total Incremental GHG Emissions		**752**	**0**	**-8,868**
SCAQMD Significance Threshold (MT/yr)		10,000	10,000	10,000
SCAQMD Significance Threshold Triggered?		**NO**	**NO**	**NO**

[1] Under Alternative 2, emissions are based on one CEB being in ready-standby mode (i.e. pilot light operational).
[2] As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, this EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).
[3] Note this is the incremental GHG value for this project analysis compared to the baseline. AB 32 applies to, and is reported for, all of Breitburn's facilities within this geologic basin together. Thus, negative incremental emissions do not imply negative GHG emissions in the AB 32 report for Breitburn's facilities.

4.4.2.6 Hazards and Hazardous Materials

Under all alternatives the Breitburn Santa Fe Springs Facilities would continue to operate as an active oil field and involve the minor storage and use of hazardous materials as described in Section 3.6. Alternative 2, Gas Reinjection may involve additional volumes of hazardous materials to be handled and stored, however these would be maintained in accordance with all state and federal regulations and facility plans, such as the Spill, Prevention, Containment and Countermeasures Plan. Therefore, impacts would be the same as described for the proposed Project.

4.4.2.7 Hydrology and Water Quality

Under all alternatives the Breitburn Santa Fe Springs Facilities would continue to operate as an active oil field and would continue reinjection of produced water into the producing formations. Under the No Project alternative, the 400 Block facilities would not be constructed, therefore there would be no increases in impermeable surface area and no impacts with regard to stormwater drainage or groundwater recharge. Under Alternative 2, all components of the proposed Project would be implemented in addition to the gas reinjection facilities. These additional facilities would slightly increase impermeable surface area at the Breitburn Santa Fe Springs Facilities in comparison to the proposed Project; however, in both cases increases would be less than significant.

4.4.2.8 Noise

Under the No Project Alternative, the new facilities would not be installed and the Breitburn Santa Fe Springs Facilities would continue to operate as it does now. Therefore, there would be no change to ambient noise levels. Under Alternative 2, Gas Reinjection, an existing well would be converted to gas re-injection and additional compressors and coolers would be installed. This would result in an increase in temporary construction related noise, greater than described for the proposed Project. Upon operation, the additional equipment would contribute to long-term operational increases in ambient noise levels. However, similar to the proposed Project, with the implementation of project design features, noise impacts would be less than significant.

4.4.2.9 Solid and Hazardous Waste

Under all alternatives the Breitburn Santa Fe Springs Facilities would continue to operate as an active oil field and oil field wastes would be disposed as described in Section 3.9. Under the No Project Alternative there would be no temporary increase in solid waste generated since none of the proposed facilities would be constructed or installed. Under Alternative 2, there would be a slight increase in generation of solid waste while the gas reinjection facilities are installed; however, these would be temporary and less than significant. Further, all solid waste generated at the Breitburn Santa Fe Springs Facilities is disposed as private landfill facilities and would have no impact on the capacity of any public landfills.

4.5 Conclusion

Table 4-7 provides a qualitative comparison of the potential environmental impacts of the alternatives relative to the proposed Project. Based on the preceding analyses, only the potential impacts for the No Project alternative (Alternative 1) are below the significance criteria for all environmental resources areas and thus, the No Project alternative is considered the "Environmentally Superior Alternative" per CEQA Guidelines §15126.6(e)(2). Under this section, CEQA Guidelines require another alternative to be selected as environmentally superior from those analyzed if the No Project alternative is the environmentally superior alternative. Alternative 2 would thus be the environmentally superior alternative compared to the proposed Project because although significant, the air quality impacts from Alternative 2 are less than those for the proposed Project. The proposed Project, however, meets more of the Project objectives than Alternative 2, in part because DOGGR has not approved a gas re-injection well permit. Therefore, a Statement of Overriding Consideration will be required.

Table 4-7. Comparison of Impacts Across Alternatives			
	Project	**Alt 1**	**Alt 2**
Air Quality	S	NS (-)	S (-)
Energy	NS	NS (=)	NS (+)
Geology and Soils	NS	NS (=)	NS (=)
Greenhouse Gases	NS	NS (-)	NS (=)
Hazards	NS	NS (-)	NS (-)
Hydrology and Water Quality	NS	NS (=)	NS (=)
Noise	NS	NS (-)	NS (+)
Solid Waste	NS	NS (=)	NS (=)

S: Exceeds significance criteria

NS: Does not exceed significance criteria

(+): Potential impacts are greater than the proposed Project.

(-): Potential impacts are less than the proposed Project.

(=): Potential impacts are comparable to the proposed Project.

CHAPTER 5

5 OTHER CEQA CONSIDERATIONS

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 environmental 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 environmental 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 environmental areas affected by the proposed Project and the related projects could occur during the construction phase, e.g., solid and hazardous waste 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 in order to provide a conservative analysis. Other potential cumulative impacts could occur primarily during the operational phase, e.g., energy. Other potential cumulative impacts could occur during both phases, e.g., air quality and noise.

5.1.1 Requirements for a 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 environmental issue 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 projects that would be constructed in the cumulative geographic scope, as defined for each technical area. The list of projects utilized in this analysis is provided in Table 5-1.

5.1.2 Projects Considered in this Cumulative Impact Analysis

The geographic scope for the cumulative analysis is discussed under each resource category. Coordination with the City of Santa Fe Springs Community Development Department identified 11 projects within the vicinity of the proposed Project, which could contribute to cumulative impacts when considered in combination with potential impacts of the proposed Project (the cumulative projects). Table 5-1 lists the identified proposed cumulative projects and the corresponding locations are shown in Figure 5-1. In addition, Breitburn installed 14 microturbines in 2014, which have been assessed in this EIR on a cumulative impact basis.

Table 5-1. Cumulative Projects in Project Vicinity

Project Name	Location	Land Use	Size	Status
Ryder Trucks	13630 Firestone Boulevard	Industrial	19,000 square feet	Approved, construction recently completed
Rose Paving	10200 Matern Place	Industrial	3,985 square feet	Approved, construction recently completed
McMaster Car Expansion	9630 Norwalk Blvd	Industrial	41,000 square feet	Approved, Under Construction
Keana Development	9830 Jersey Avenue, 9841 Alburtis Avenue and 9851 Alburtis Avenue	Residential / Multi-family	50-units	Approved Construction pending
Durable Properties	9951 Greenleaf Avenue	Industrial	Approximately 38,000 square feet	Approved Construction pending
ProLogis	8201 Sorensen Avenue	Industrial	223,091 square feet	Approved Construction pending
Goodman Birtcher	12345 Lakeland Rd (3 buildings at same address)	Industrial	BLDG 1: 403,635 square feet BLDG 2: 506,465 square feet BLDG 3: 300,700 square feet	Formal application submitted, not yet approved
Burke Real Estate Group	11756-11770 Burke Street	Industrial	79,252 square feet	Formal application submitted, not yet approved

Table 5-1. Cumulative Projects in Project Vicinity

Project Name	Location	Land Use	Size	Status
Cambridge Springs, LLC	13341 Cambridge Street	Industrial	185,060 square feet	Formal application submitted, not yet approved
Chalmers Corp	12130 Altamar Place	Industrial	63,000 square feet	Formal application submitted, not yet approved
Xebec Reality Partners	11904 Washington Boulevard	Industrial	Unknown	Formal application submitted, not yet approved.

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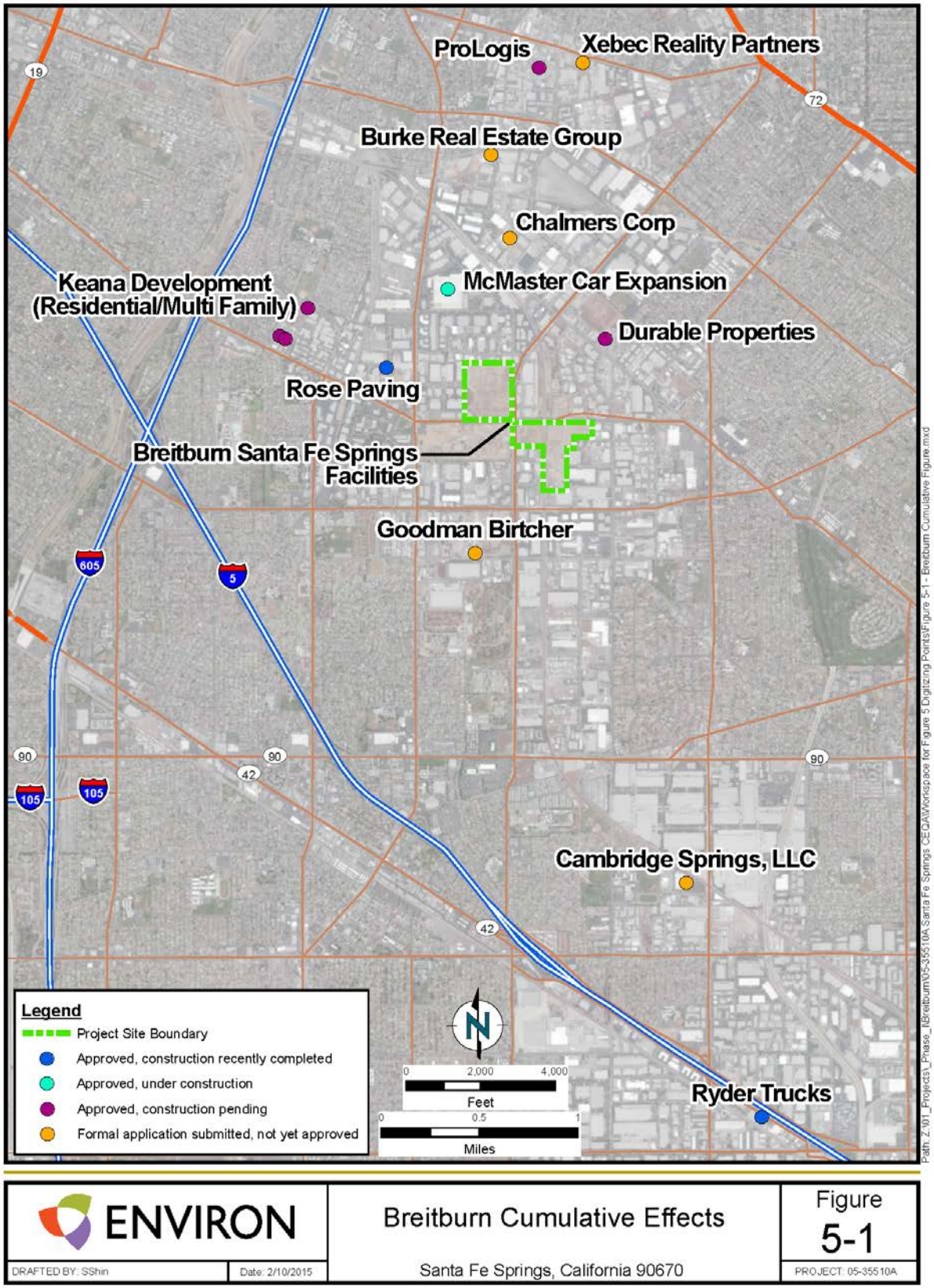

Figure 5-1. Cumulative Projects.

5.2 Cumulative Impacts Analysis

5.2.1 Air Quality

As summarized in Table 5-2, the addition of 14 microturbines in combination with the incremental effects of the proposed Project would result in potentially significant impacts to air quality (i.e., VOC, NO_x). Detailed emission calculations are included in Appendix B. Cumulative health risk impacts are expected to be less than significant. In addition, based on the type of operations that will occur at each location, the impacts of the projects identified in Table 5-1 are not expected to combine with the incremental effects of the proposed Project and result in cumulative impacts. However, as shown in Table 5-2, the proposed Project will result in cumulative impacts related to air quality on a mass basis for VOC and NO_x emissions. In addition, the ambient air quality impacts relative to PM_{10} and $PM_{2.5}$ are also expected to result in cumulative impacts due to the related drilling operations summarized in Chapter 3.

Table 5-2. Comparison of Cumulative Impacts for Proposed Project Operational Emissions and Drilling to Baseline Emissions

Project Phase	Peak Day Emissions (lb/day)				
	VOC	**NO_x**	**SO_x**	**CO**	**PM**
Total Baseline Emissions	3.95	44.57	0.20	11.81	2.50
Total Proposed Project Operational Equipment Emissions	41.44	83.20	18.96	31.54	7.54
Maximum Day Incremental Drilling Emissions *	31.51	378.67	0.68	151.29	11.89
Total Operational Equipment and Drilling Emissions	**72.96**	**461.87**	**19.63**	**182.83**	**19.43**
14 Microturbine Operational Emissions	21.84	10.92	1.52	131.04	1.51
Total Cumulative Emissions	**94.80**	**472.79**	**21.15**	**313.87**	**20.94**
Incremental Cumulative Emissions Increase With Drilling and 14 Microturbines	**90.84**	**428.22**	**20.96**	**302.06**	**18.44**
SCAQMD Significance Threshold (lb/day)	*55*	*55*	*150*	*550*	*55*
SCAQMD Significance Threshold Triggered?	Yes	Yes	No	No	No

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

5.2.2 Energy

Each of the projects included in the cumulative effects analysis would require additional energy for operation of the proposed facilities or residential units. Review and approval of development projects in the City of Santa Fe Springs would include review by City engineers and determination by local utilities (such as SCE) to ensure that local and regional energy supplies

have capacity to accommodate the new structures prior to permit approval. As described in Chapter 3, construction of the proposed Project would not result in any energy-related impacts because equipment is powered by diesel fuel. Operation of the proposed Project facilities would require additional energy from SCE (10-20 MW); however, as discussed in Chapter 3, the Project's potential energy impacts would be less than significant. Therefore, although operation of the proposed Project in combination with the other projects considered in this analysis would result in a cumulative increase in energy demand in the City of Santa Fe Springs, the incremental increase in energy consumption associated with the proposed Project would not be cumulatively considerable, and cumulative effects would be less than significant.

5.2.3 Geology and Soils

The City of Santa Fe Springs is located in a seismically active region of Southern California. All of the projects considered in the cumulative effects analysis are proposed new industrial or residential structures (or modifications to existing structures). All of these projects are required to go through design review with the City engineers and planners and would be required to follow California Buildings Codes which account for seismic hazards. Therefore, while any new development within this region would potentially expose additional people to hazards associated with seismicity, all projects would be designed to minimize hazards to public safety to the extent possible. The proposed Project's potential impacts with regard to geology and soils are less than significant, and would not be cumulatively considerable. As such, cumulative effects with regard to seismicity would be less than significant. With regard to subsidence, as described in Section 3, construction and operation of the proposed Project would result in no impacts. Therefore, the Project would not contribute to cumulative effects with regard to subsidence.

5.2.4 Greenhouse Gas Emissions

The addition of 14 microturbines will increase the amount of GHG emissions (see Appendix B). However, after accounting for offsets required under the AB 32 program, the GHG impacts will be less than significant. In addition, the impacts from the projects identified in Table 5-1 are not expected to result in significant GHG emissions. As discussed in Chapter 3, the proposed Project's impacts with regards to GHG emissions are less than significant, and thus, the incremental increase in GHG emissions associated with the proposed Project would not be cumulatively considerable. Therefore, the proposed Project would not contribute to cumulative impacts with regard to GHG emissions.

5.2.5 Hazards and Hazardous Materials

Cumulative impacts from the release of hazardous material during transport of construction equipment and supplies may occur if construction of the proposed Projects occurs concurrently with the projects included in this cumulative effects analysis. However, as discussed in Chapter 3, only small quantities of hazardous materials would be transported for construction purposes of the proposed Project, and all materials would be transported in accordance with DOT regulations. Potential project impacts would be less than significant and would not be cumulatively considerable. Further, all construction projects greater than 1 acre in size would be required to obtain coverage under the General Construction NPDES permit which requires development and implementation of a Construction SWPPP. This would minimize potential impacts in the event of a release of hazardous materials during construction of any of the projects considered in this analysis.

With regard to operation, the potential impacts from an accidental release of hazardous materials from the Breitburn Santa Fe Springs Facilities would be limited to the release area of the specific material and less than significant. Therefore, the proposed Project would not contribute cumulatively to the impacts caused by other hazardous materials managing facilities at other locations in the City. An accidental release of hazardous materials has the potential to damage infrastructure and harm individuals nearby and is dependent on the substance and quantity. There is no relationship between the potential accidental release of hazardous materials at a nearby project and an accidental release of hazardous materials at the proposed Project site. All existing and new facilities that handle hazardous materials are required to comply with federal, state, and local laws limiting the quantities of hazardous materials available along with their transportation, handling, storage, and emergency response in the event of an accidental release to limit the impact to nearby receptors.

5.2.6 Hydrology and Water Quality

Potential cumulative impacts to groundwater could occur if multiple projects required the extraction of groundwater resources or reduced aquifer infiltration such that local or regional water supply is adversely affected. All of the projects considered in this cumulative effects analysis are short-term construction projects for industrial or new residential facilities within the City of Santa Fe Springs. As such, construction of the facilities as well as the proposed Project would result in a cumulative increase in impermeable surface area within the City. However, permitting of the considered projects through the City includes analysis of potential impacts to water supply and groundwater quality. Further, the projects considered in this analysis would be constructed in areas zoned for development versus major groundwater recharge areas (e.g. Rio Hondo). New foundations required for the proposed Project are minimal in comparison to the size of the other projects considered in this analysis; therefore, the proposed Project contribution to any cumulative effects would be negligible.

Further, as described in Section 3, the proposed Project would have no impact on groundwater resources. No groundwater would be used during the construction or operation of the proposed project; all water use associated with the proposed Project is produced water that is extracted and reinjected in the producing formation, at least 2,700 below the deepest groundwater aquifer. Therefore, the Project would not contribute to any other potential cumulative effects to groundwater.

5.2.7 Noise

Cumulative noise effects could be potentially significant if construction of the proposed Project occurred concurrent to other potential construction projects in the vicinity. The only projects considered in this cumulative effects analysis with the potential to overlap with the proposed Project construction schedule are: Keanna Development, Durable, and ProLogis. The Keanna development project is located 1 mile northwest from the Project site. Durable is located 0.5 miles northeast from the Project site and the ProLogis site is located 1.5 miles north of the Project site. Given the distance of each of these projects from the Breitburn Santa Fe Springs Facilities and the attenuation rate of noise, the cumulative increase in ambient noise level would be less than significant. Further, each project would be required to include measures to reduce construction noise level as necessary based on project review at the City of Santa Fe Springs. Therefore, cumulative noise impacts during construction would be less than significant and the

incremental increase in noise associated with the Project would not be cumulatively considerable. Following construction, operation of all the proposed industrial facilities would also require noise reduction measures, as necessary, to meet City of Santa Fe Springs noise ordinance. With the inclusion of these measures and distance between the Breitburn Santa Fe Springs Facilities and the projects in this analysis, cumulative noise effects would be less than significant.

5.2.8 Solid and Hazardous Wastes

As described in Chapter 3, the Breitburn Santa Fe Springs Facilities contract all solid waste disposal with private contractors which dispose of the waste in private landfills. No solid waste is disposed in any public landfills which would be used by the projects included in this cumulative effects analysis. Therefore, the Project would not contribute to any cumulative effects with regard to landfill capacity. The Breitburn Santa Fe Springs Facilities do not generate any hazardous waste and therefore would not contribute to any cumulative effects regarding hazardous waste.

5.3 Potential Environmental Impacts Found Not to be Significant

While all the environmental topics required to be analyzed under CEQA were reviewed in the NOP/IS (see Appendix A) to determine if the proposed Project could create significant impacts, the screening analysis concluded that the following environmental areas would not be significantly adversely affected by the proposed Project: aesthetics, agriculture and forestry resources, biological resources, cultural resources, energy, geology and soils, greenhouse gases, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, and transportation/traffic. Even though the following resource areas were found not to have potential to significantly adversely affect the environment, based on the conclusions presented in the NOP/IS, energy, geology and soils, greenhouse gases, hazardous and hazardous materials, hydrology and water quality, and noise were evaluated in greater detail in this EIR. Please refer to the NOP/IS in Appendix A for the detailed analysis and conclusions for the environmental topic impacts found to be not significant and not analyzed further in the EIR.

5.4 Significant Irreversible Environmental Changes

CEQA Guidelines §15126 (c) requires an environmental analysis to consider "any significant irreversible environmental changes which would be involved if the proposed action should be implemented." This EIR identified the topic of air quality during operation as the only environmental area potentially adversely affected by the proposed Project.

5.5 Potential Growth-Inducing Impacts

CEQA Guidelines §15126(d) requires an environmental analysis to consider the "growth inducing impact of the proposed action." Implementing the proposed Project would not, by itself, have any direct or indirect growth-inducing impacts on businesses in the SCAQMD's jurisdiction because it is not expected to foster economic or population growth or the construction of additional housing and only affects continued operations of an existing oil and gas field.

CHAPTER 6

6 ACRONYMS AND ABBREVIATIONS

6.1 Acronyms and Abbreviations List

AQMP	Air Quality Management Plan
ASME	American Society of Mechanical Engineers
BACT	Best Available Control Technology
BMPs	Best Management Practices
CadnaA	Computer Aided Noise Abatement
CalEPA	California Environmental Protection Agency
CalOSHA	State of California Division of Occupational Safety and Health Administration
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CEB	Certified Ultra-Low Emissions Burner
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERS	California Environmental Reporting System
CFR	Code of Federal Regulations
CGS	California Geologic Survey
CH_4	Methane
CMP	Congestion Management Plan
CNEL	Community Noise Equivalent Level
CO	Carbon monoxide
CO_2	Carbon dioxide
CUPA	Certified Unified Program Agency
dBA	A-weighted decibels
DG	Distributed Generation
DNL	Day-Night Sound Level
DOGGR	Department of Oil, Gas, and Geothermal Resources
DOT	Department of Transportation

DTSC	Department of Toxic Substance Control
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-To-Know Act
ERPG	Emergency Response Planning Guidelines
FEIR	Final Environmental Impact Report
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FWKO	free water knock-out
g/L	grams per liter
GEM	GEM Mobile Treatment Services
GHG	greenhouse gases
GMC	Growth Management Chapter
GPD	gallons per day
GW-h	gigawatt hours
HSC	Health and Safety Code
HUD	Department of Housing and Urban Development
I-605	Interstate 605
IS	Initial Study
ISO	International Organization for Standardization
KW	kilowatt
L10	sound level in dBA exceeded only 10 percent of the time
L50	sound level in dBA exceeded 50 percent of the time
L90	sound level in dBA exceeded 90 percent of the time
Leq	sound equivalent level
Lmax	maximum sound level
LACSD	Los Angeles County Sanitation District
LACT	Lease Automatic Custody Transfer

lb/ft^2	pounds per square foot
LLC	Limited Liability Company
LP	Limited partnership
LS	Less than Significant
M-2	Heavy Manufacturing zoning code
MMbbl	million barrels
MMRP	Mitigation Monitoring Reporting Plan
MMscfd	million standard cubic feet per day
MW	megawatt
N_2O	Nitrous oxide
NA	not applicable
NGL	natural gas liquids
NOC	Notice of Completion
NOP	Notice of Preparation
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NS	Not Significant
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
OSRO	Oil Spill Response Organization
Pb	Lead
PM	Particulate matter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PM_{10}	Particulate matter less than 10 microns in diameter
RCPG	Regional Comprehensive Plan Guide
RCRA	Resource Conservation and Recovery Act
RMP	Regional Mobility Element
S	Significant

S_2	disulfur
SCAG	Southern California Association of Government
SCAQMD	Southern California Air Quality Management District
SCE	Southern California Edison
SoCal	Southern California
SO_2	Sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TSS	total suspended solids
US	United States
USEPA	United States Environmental Protection Agency
VOC(s)	Volatile organic compound(s)

CHAPTER 7

7 REFERENCES

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