

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Addendum to the Final Environmental Impact Report for the BP Carson Refinery Safety, Compliance and Optimization Project

SCH. No. 2005111057

[Final EIR Certified September 15, 2006]

January 2008

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1.0 INTRODUCTION

The BP Carson Refinery Safety, Compliance and Optimization Project involves physical changes and additions to multiple process units and operations as well as operational and functional improvements within the confines of the existing BP Carson Refinery. The portion of the proposed project related to enhancing safety includes modifications to the Coker Gas Debutanizer pressure relief valve, as well as adding equipment to the Fluid Catalytic Cracking Unit (FCCU), Fluid Feed Hydrodesulfurization (FFHDS), vapor recovery system, and flare system. The portion of the proposed project related to compliance involves physical modifications to existing refinery units including the FCCU, FFHDS, vapor recovery system, and flare system to comply with multiple South Coast Air Quality Management District (SCAQMD) rules (e.g., Rule 1105.1 – PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, Rule 1118 – Control of Emissions From Refinery Flares, and Rule 1173 – Control of VOC Leaks and Releases from Components at Petroleum Facilities and Chemical Plants) and to implement the terms of a settlement agreement between the SCAQMD and BP. Other refinery modifications optimize operations relating to various existing refinery units including the FFHDS, the FCCU, the Alky Merox Unit, the Alkylation Unit, the Hydrocracker Unit, and the Sulfur Plant at the Refinery.

As lead agency, the SCAQMD, prepared the Final Environmental Impact Report for the BP Carson Refinery Safety, Compliance and Optimization Project [SCAQMD, SCH No. 2005111057] (September 2006 Final EIR), which was certified in September 2006, to evaluate the potential environmental impacts associated with the proposed modifications to the BP Carson Refinery.

The BP Carson Refinery has commenced the construction of the Safety, Compliance and Optimization Crude Project as described in the certified September 2006 Final EIR. BP operators are now proposing modifications related to changing a mitigation measure specified in the September 2006 Final EIR. Specifically, BP operators have determined that it will not be feasible to continue to implement Mitigation Measure AQ-8, which requires the use of emulsified diesel fuel or other alternative fuel in construction equipment during construction of the BP Carson Refinery Safety, Compliance and Optimization Project, after December 2006. The only commercially available emulsified diesel fuel was PuriNOx. Lubrizol, the producer of PuriNOx, quit producing PuriNOx after December 2006. Further, BP operators could not acquire and store PuriNOx before the end of 2006 for use during the entire construction period, which is anticipated to end in early 2009, because PuriNOx degrades with time and cannot be used after approximately one month of storage and the additives used to make PuriNOx degrade after about three months. Therefore, BP operators cannot acquire the additives and blend them with water and diesel fuel for use during the remainder of the construction period.

In order to compensate for the emission reductions that will not be achieved when PuriNOx can no longer be obtained, BP operators are proposing changes to the proposed

project that would reduce emissions during peak construction activities. BP operators are proposing to eliminate the modifications associated with the Alkylation and Alky Merox Units, which will eliminate the construction emissions associated with this activity and the construction emissions for the proposed project have been revised to account for recent revisions to the construction emission factors.

The details of the proposed project changes are explained in Section 5.2 of this Addendum.

The SCAQMD has evaluated the changes to the proposed project (as detailed in Section 5.2 of this Addendum) and determined that the proposed modifications do not create any new significant adverse environmental impacts or make substantially worse any existing significant adverse environmental impacts, and only minor additions or changes are necessary to make the previous September 2006 Final EIR adequate for the revised project. Therefore, when considering the effects of the current proposed project modification, the SCAQMD has concluded that an Addendum is the appropriate document to be prepared in accordance with the California Environmental Quality Act (CEQA) in order to evaluate potential environmental impacts associated with the current proposed project modification.

2.0 BASIS FOR DECISION TO PREPARE AN ADDENDUM

The SCAQMD was the lead agency responsible for preparing the September 2006 Final EIR and is the public agency that has the primary responsibility for approving the current proposed project modification. Therefore, the SCAQMD is the appropriate lead agency to evaluate the potential environmental effects of the current proposed project modification that is the subject of this Addendum.

Based on the analysis of the current proposed project modification that follows in Sections 6.0 and 7.0, the SCAQMD has concluded that the only environmental area affected by the current proposed project modifications is air quality during construction. The September 2006 Final EIR identified significant adverse air quality impacts during project construction. The current proposed project modifications do not change this conclusion: significant adverse air quality impacts of the Safety, Compliance and Optimization Project would still occur during construction under the proposed changes to the project. However, as shown in Subsection 6.2.1 of this Addendum, the current proposed project modifications will not result in new significant adverse air quality impacts or increase the severity of significant adverse air quality impacts previously identified in the September 2006 Final EIR.

The construction impacts were analyzed for each month during the construction period, because construction activities and the resulting emissions vary from one month to another. The months with the peak emissions were included in the September 2006 Final EIR. The month with the highest emissions was identified to determine the anticipated peak daily emissions during construction, which were anticipated to occur during November 2007. The analysis in the September 2006 Final EIR indicated that

unmitigated peak daily emissions of carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x) and particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM10) were anticipated to exceed the respective SCAQMD CEQA significance thresholds for construction. Therefore, feasible mitigation measures were identified. The analysis of monthly construction emissions was then repeated with the effects of the mitigation measures on emissions included. This analysis of mitigated construction emissions indicated that peak daily CO, VOC and NO_x emissions, which were still anticipated to occur during November 2007, would continue to exceed the respective CEQA significance thresholds, but peak daily mitigated PM10 emissions would be reduced to less than the applicable CEQA significance threshold.

The construction air quality impacts analysis for the current proposed modification includes discontinuing the use of PuriNOx emulsified diesel fuel after December 2006, removing portions of the proposed project that will no longer be constructed, and using more recent construction emission factors. The results indicate that peak daily mitigated CO, VOC, NO_x, SO_x, and PM10 construction emissions associated with the current proposed revisions are less than the peak daily construction emissions for the project shown in the September 2006 Final EIR (see Section 6.0, Tables 6-3 and 6-4). Thus, no new significant adverse impacts from construction activities are expected from the current proposed project modification, and existing significant adverse impacts previously identified in the September 2006 Final EIR will not be made substantially worse. Therefore, it can be concluded that the current proposed project modification does not create new significant adverse impacts or increase the severity of significant impacts previously identified in the September 2006 Final EIR. As a result, pursuant to CEQA Guidelines §15164(a), this document constitutes an Addendum to the September 2006 Final EIR for the BP Carson Refinery – Safety, Compliance and Optimization Project. Section 6.0 of this Addendum further explains the basis for the determination to prepare an Addendum.

CEQA Guidelines §15164(a) allows a lead agency to prepare an Addendum to a Final EIR if all of the following conditions are met.

- Substantial changes with respect to the circumstances under which the project is undertaken do not require major revisions to the previous Final EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
- No new information becomes available which shows new significant effects or significant effects substantially more severe than previously discussed.
- The project proponent agrees to adopt mitigation measures which are different from those analyzed in the previous EIR that would substantially reduce one or more significant effects on the environment.
- Only minor technical changes or additions are necessary to make the Final EIR under consideration adequate under CEQA.

- The changes to the Final EIR made by the Addendum do not raise important new issues about the significant effects on the environment.

The current proposed project modifications will result in no new significant adverse effects or substantially increased severity of significant effects previously identified. Further, the current proposed project modifications consist of only minor changes to the September 2006 Final EIR that do not raise important new issues about the previously analyzed significant environmental effects. Thus, the current proposed project modifications meet all of the conditions in the CEQA Guidelines for the preparation of an Addendum. Because the current proposed modifications meet all of the conditions for preparing an Addendum, a subsequent EIR pursuant to CEQA Guidelines §15162 is not required. This conclusion is supported by substantial evidence as explained in Sections 6.0 and 7.0.

3.0 BACKGROUND CEQA DOCUMENTS

The activities associated with the BP Carson Refinery – Safety, Compliance and Optimization Project were evaluated sequentially in the following CEQA documents. Summaries of each of these CEQA documents are provided below. The September 2006 Final EIR can be obtained by contacting the SCAQMD's Public Information Center at (909) 396-2039 or it can be downloaded from the SCAQMD's CEQA Webpages at the following Internet address:

http://www.aqmd.gov/ceqa/documents/2006/nonaqmd/BP_safety/FEIR/BP_feir.html

Notice of Preparation and Initial Study for the Draft Environmental Impact Report For Proposed BP Carson Refinery – Safety, Compliance and Optimization Project (SCAQMD, November 2005): A Notice of Preparation (NOP) and Initial Study for the BP Carson Refinery – Safety, Compliance and Optimization Project were released for a 30-day public review and comment period on November 10, 2005. The Initial Study included a project description, project location, an environmental checklist, and a discussion of potential adverse environmental impacts. The NOP solicited input from public agencies and other interested parties on the scope and content of the environmental information to be evaluated in the Draft EIR.

Draft Environmental Impact Report for BP Carson Refinery – Safety, Compliance and Optimization Project (SCAQMD, April 2006): The Draft EIR was released for a 45-day public review and comment period on June 20, 2006. The Draft EIR included a comprehensive project description, a description of the existing environmental setting that could be adversely affected by the proposed project, analysis of potential adverse environmental impacts (including cumulative impacts), mitigation measures, project alternatives, and all other relevant topics required by CEQA. The Draft EIR also included a copy of the NOP and Initial Study, copies of comment letters received on the NOP and Initial Study, and responses to all comment letters received on the NOP and Initial Study. The Draft EIR concluded that the BP Carson Refinery – Safety,

Compliance and Optimization Project may generate significant adverse impacts, following mitigation, in two environmental areas: air quality impacts during construction activities and hazards.

Final Environmental Impact Report for BP Carson Refinery – Safety, Compliance and Optimization Project (SCAQMD, September 2006): The Final EIR was prepared by revising the Draft EIR to incorporate applicable updated information and to respond to comments received on the Draft EIR. The Final EIR contained comment letters and responses to comments received on the Draft EIR. The changes included in the Final EIR did not constitute significant new information relating to the environmental analysis or mitigation measures. The Final EIR was certified on September 15, 2006.

4.0 PROJECT LOCATION

The proposed project will occur at the BP Carson Refinery, which is located at 1801 East Sepulveda Boulevard in the City of Carson, California. The Refinery is bounded by Wilmington Avenue to the west, 223rd Avenue to the north, Alameda Street to the east, and Sepulveda Boulevard to the south. The Dominguez Channel flows through the Refinery, dividing the property into two sections: Northeastern and Southern. Land to the north of the Refinery between Wilmington Avenue and Alameda Street is occupied by heavy industrial uses and vacant land formerly occupied by heavy industry. Land north of 223rd Street to I-405 is occupied by commercial uses, such as automobile dealerships and automobile repair services.

The Alameda Corridor, a major port access arterial, and other industrial facilities, including the BP Coke Barn, the Air Products Hydrogen Plant, the Shell Sulfur Plant, wrecking yards, and an intermodal container transfer facility (ICTF) are located to the east of the Refinery. Land to the east of the ICTF is in the City of Long Beach and includes a residential neighborhood and light manufacturing facilities. South of the BP Carson Refinery is Sepulveda Boulevard and the ConocoPhillips Carson Plant and a cold storage warehouse facility. This area is dominated by storage tanks, refinery equipment and a large warehouse.

To the west of the BP Refinery is Wilmington Avenue. The land adjacent to Wilmington Avenue on the west is occupied by the Watson Industrial Park, a development of manufacturing and warehouse-type structures. The land to the west of Wilmington Avenue and south of Sepulveda Boulevard, immediately west of BP's southwest tank farm, is a residential neighborhood and represents the closest residences (about 300 feet from the BP tank farm boundary).

The proposed modifications will occur entirely within the confines of the existing Refinery boundaries.

5.0 PROJECT DESCRIPTION

This section presents a description of the BP Carson Refinery Safety, Compliance, and Optimization Project as evaluated in the September 2006 Final EIR, as well as a description of the current proposed project modification. Although the current proposed project modification only affects the construction phase, a full description of the entire project analyzed in the September 2006 Final EIR is provided to present a clear understanding of the previously proposed project as compared with the current proposed modification to the project.

5.1 Project as Analyzed in September 2006 Final EIR

Modify Existing Fluid Catalytic Cracking Unit

The FCCU processes heavier feedstocks, known as gas oils, which are then upgraded into lighter components used for gasoline blending. The proposed project will involve several changes to the FCCU and related systems, such as required modifications to comply with Rule 1105.1 and other proposed changes that will improve the operational efficiency of the FCCU. To comply with the PM10 and ammonia emissions standards in Rule 1105.1, BP operators are proposing to replace their existing flue gas air pollution control system for the FCCU, which consists of two dry electrostatic precipitators (ESPs), with one new dual chamber ESP.

In addition, other proposed modifications to the FCCU will involve changes in piping, heat exchangers, pumps, as well as modifications to the internal configuration of the FCCU vessels. The overall effect of these modifications will not increase the capacity of the FCCU. Modifications to three systems of the FCCU are proposed including the Gas Plant, the Preheat, and the Disengager Reactor. The Gas Plant modifications will mainly involve improvements to heat exchangers, pumps, and piping. Modifications proposed to the Absorber Overhead Cooler, Absorber Bottoms Reboiler, Rerun Overhead Condensers, Rerun Overhead Product Coolers, and replacement of the Rerun Overhead Pumps would allow recovery of more FCC gasoline. The Feed Preheat modifications mainly involve improvements to heat exchangers and piping to improve heat recovery and increase feed preheat temperature. The Disengager Reactor modifications would upgrade the Rough Cut Cyclone gas outlet tubes to reduce internal reactor erosion.

Install New Fluid Feed Hydrodesulfurization Reactor

BP currently has one FFHDS reactor that removes sulfur compounds from the feed to the FCCU to produce lower sulfur end products as well as lower stack emissions. BP operators are proposing to install a second FFHDS reactor to run in parallel with the existing FFHDS reactor so that the FFHDS can run for longer periods of time between turnarounds. The proposed project will also allow the FFHDS to remove more sulfur from the feed, resulting in a lower sulfur product that is fed to the FCCU.

Modify Existing Alky Merox Unit

The purpose of the Alky Merox unit is to remove sulfur-containing compounds from the olefin feed streams to the Iso-Octene and Alkylation Units and, therefore, produce lower sulfur gasoline blending component products from the Iso-Octene and Alkylation Units. Currently, the Alky Merox unit does not have the capability of processing all of the olefin streams produced at the Refinery. Producing lower sulfur gasoline is desirable because low sulfur gasoline results in fewer sulfur oxide emissions from mobile sources that use the fuel, plus it complies with local, state and federal sulfur content limitations for gasoline.

The current capacity of the Alky Merox unit is limited to processing approximately 600 barrels per hour. Olefins are fed through the Extractor to the Water Wash Tower. Sour olefins are fed to the extractor to reduce the concentration of sulfur containing compounds. The capacity of the Extractor is also currently limited to processing 600 barrels per hour. The proposed modifications to the Alky Merox unit will increase the Extractor capacity to 1,000 barrels per hour, which will be large enough to process all of the olefins at the Refinery. The proposed modifications will also include installing new vessels, piping, and other ancillary equipment.

Modify Existing Alkylation Unit

The main function of the Alkylation Unit is to convert olefins into alkylate. BP operators plan to purchase additional olefin feed as part of the proposed project. Also, as a result of the proposed modifications to the FCCU, more olefin is expected to be produced. BP expects that the existing Iso-Octene unit will be capable of processing a portion of the additional olefin and the Alkylation Unit will process the balance. To handle the processing of additional olefin, BP operators propose to increase the olefin feed throughput to the Alkylation Unit by approximately 15 percent. The proposed modifications to the Alkylation unit will primarily affect piping, pumps, heat exchangers, and other ancillary equipment. Additionally, modifications are proposed to the Deisobutanizer, Debutanizer, and Depropanizer towers to improve capacity, efficiency, and product quality.

Modify Existing Hydrocracker Unit

The Hydrocracker Unit processes high sulfur diesel feeds into both ultra-low sulfur diesel and gasoline blending components. The throughput of the Hydrocracker Unit is currently limited by the availability of the fractionation gas plant, the capacity of the distillation tower, and by other product cooling constraints. Hydraulic constraints in the reaction section of the Hydrocracker Unit also limit the feed rate. An increased fractionation gas plant capacity will be achieved by converting the lean oil absorber tower to a low pressure diethanolamine (DEA) scrubber tower so that the fractionator overhead compressor's feed gas can be processed into fuel gas. BP operators propose to replace the liquid/gas distributor trays in the reaction section with new, state of the art trays. This

proposed change will result in more efficient use of the catalyst and allow higher feed rates. BP operators propose to increase the feed throughput to the Hydrocracker unit by approximately 10 percent by addressing these limitations. The proposed project also includes modifying piping, controls, and ancillary equipment.

Modify Existing Coker Gas Debutanizer Pressure Relief Valve

To comply with Rule 1173, BP is proposing to replace the pressure relief valve on the Debutanizer Tower and route the future emergency gas releases to an existing flare.

Modify Existing Sulfur Plant

BP's existing Sulfur Plant currently converts hydrogen sulfide and ammonia-rich acid gases into elemental sulfur, water, and nitrogen. The current capacity of the Sulfur Plant is permitted to produce 449.33 long tons per day (LT/D) of elemental sulfur from the four Claus Units (A, B, C and D). The proposed modifications will help the sulfur plant to consistently operate at higher production rates closer to, without exceeding, the permitted capacity.

BP operators propose to increase the production rates without exceeding the permitted capacity of the Sulfur Unit with the following modifications:

- Change the solvent in the main amine system from DEA to methyl diethanolamine (MDEA) to allow more amine circulation since MDEA is effective at higher concentrations.
- Change the "C" Claus Unit to allow oxygen enrichment up to 28 percent.
- Add oxygen injection to "D" Claus Unit.

Modify Existing Vapor Recovery System

BP's existing vapor recovery system collects vent gases from process units and tanks, which are then treated to remove sulfur before being routed to various flares throughout the Refinery. The vapor recovery system is comprised of multiple compressors and has a combined maximum compression capacity of 355,000 standard cubic feet per hour (SCFH). BP is currently operating below this level because one vapor recovery compressor (the No. 7 unit) permitted at 95,000 SCFH is not functional.

As part of the March 2005 settlement agreement between the SCAQMD and the operators of BP Carson Refinery, BP operators agreed to implement a Supplemental Environmental Project (SEP) that would increase the capabilities of the existing vapor recovery system to collect and treat vent gases that would otherwise vent to the refinery flares. The SEP requires BP to increase the total vapor compression capacity by a minimum of 195,000 SCFH. BP operators propose to accomplish part of this obligation

by replacing the No. 7 vapor recovery compressor with a new 95,000 to 140,000 SCFH vapor recovery compressor, intercooler, and knockout drum. This will restore the compression capacity in the Vapor Recovery Unit to 355,000 SCFH.

The SEP also requires BP operators to invest at least \$20 million to achieve the remaining 100,000 SCFH of vapor compression capacity. BP operators intend to apply the \$20 million by proposing the following improvements: (1) install 150,000 SCFH of reciprocating compressor capacity for flare gas recovery with exchangers, knockout drums, and a new electrical power supply; (2) install a new water seal on the Coker Flare to allow recovery of flare gas; (3) install a flow meter on the Coker Flare to measure the net flow of gas to the flare; (4) install a tie-in from the compressor discharge to the Coker Gas Plant Amine Treating Unit to remove hydrogen sulfide from the recovered gas; (5) upgrade the existing vapor recovery caustic gas treating system to improve its ability to handle peak loads; (6) add interstage cooling and knock out drums to the existing No. 5 and No. 6 Vapor Recovery Compressor systems to increase the availability of the systems; and (7) add pressure, oxygen, and flow measurement instruments to monitor the operation and performance of the vapor recovery system.

This SEP will reduce emissions from the Refinery by increasing the capability of the Refinery's existing vapor recovery system to collect and treat vent gases and will add the capability to collect and treat gases that previously would vent to the Refinery's flares.

Install New North Area Flare Gas Recovery System

BP operators are proposing modifications to the existing North Area Flares to comply with Rule 1118 - Control of Emissions from Refinery Flares. The proposed modifications will recover flare gas from the flares located in the north area of the Refinery (e.g., FCCU, Hydrocracker Unit, FFHDS, and No. 5 flares). To reduce the overall sulfur emissions from the Refinery, BP operators propose to install the following: (1) two compressors with a compression capacity between 70,000 and 150,000 SCFH each and the associated coolers and knock out drums; (2) new piping connections from the FCCU, Hydrocracker Unit, FFHDS, and No. 5 flares; (3) water seals for the FCCU and Hydrocracker Unit flares to enable flare gas recovery; (4) a tie-in to the existing amine regeneration system for the removal of hydrogen sulfide; and (5) electrical, controls, and utilities required to operate the system.

Modify Pressure Relief Devices

BP operators have been reviewing the compliance of certain pressure relief devices (PRDs) with the SCAQMD permit conditions. The SCAQMD has indicated for some PRDs that currently vent to the atmosphere, BP operators will need to connect these PRDs to a closed system for vapor recovery. Currently, BP will be required to connect a total of 13 PRDs to a closed system in the FCCU, Reformer, Crude, Alkylation, Alky Merox, Supercritical Fractionation and Isomerization Area (SFIA), 52 Vacuum Unit, and Coker Unit. In all cases, the modifications will involve the installation of piping so that

in the event of an overpressure situation, the emissions from the PRD will be controlled instead of venting to the atmosphere. The environmental impacts of this portion of the proposed project are expected to result in emission decreases by controlling a currently uncontrolled source of emissions.

5.2 Current Proposed Project Modifications

The current proposed modifications eliminate two components of the proposed project and make changes to the implementation of one air quality construction mitigation measure in the September 2006 Final EIR.

The BP Carson Refinery has recently commenced the construction of the Safety, Compliance and Optimization Project as described in the certified September 2006 Final EIR. BP operators have determined that the modifications to the Alkylation and Alky Merox Units are no longer required. Therefore, the modifications associated with the Alkylation and Alky Merox Units (described in the Section 5.1) are proposed to be removed from the BP Carson Refinery Safety, Compliance and Optimization Project.

In addition, BP operators have determined that it is not feasible to continue to implement Mitigation Measure AQ-8 after December 2006. AQ-8 requires the use of PuriNOx water-emulsified diesel fuel or other alternative fuel in construction equipment, if commercially available, during construction of the BP Carson Refinery Safety, Compliance and Optimization Project. Lubrizol was the only alternative fuel that was commercially available. Lubrizol, the producer of PuriNOx, stopped producing PuriNOx after December 2006. BP operators could not acquire and store PuriNOx before the end of 2006 for use during the entire construction period, which is anticipated to end in early 2009, because PuriNOx degrades with time and cannot be used after approximately one month of storage. Additionally, the additives blended with diesel fuel and water to produce PuriNOx degrade after approximately three months of storage. Therefore, BP operators cannot acquire the additives and blend them with water and diesel fuel for use during the remainder of the construction period.

The use of PuriNOx was estimated to reduce emissions of NOx and PM10 from construction equipment exhaust by 14 percent and 62.9 percent, respectively. The use of PuriNOx is no longer feasible so the emission reductions associated with its use will no longer be achieved. However, changes to the project are proposed such that the overall construction emissions will be reduced. Specifically, BP operators have eliminated the modifications to the Alkylation Unit and the Alky Merox Unit so that peak construction emissions will be reduced. In addition, since the on-road mobile source construction emissions have been updated using the EMFAC2007 model emission factors and the off-road mobile sources have been updated using CARB's Off-Road Model, the previous construction emissions estimates, will be adjusted to reflect the updated emission factors, which will be more representative of the actual construction emissions.

No changes to Mitigation Measure AQ-8 are required, as Mitigation Measure AQ-8 states that the use of emulsified diesel or other alternative fuel is required, if commercially

available. However, only one of these four alternative diesel fuels, O₂ Diesel Fuel developed by O2 Diesel, Inc., has been commercially available after December 2006. O₂ Diesel Fuel has been verified to reduce NO_x emissions by 1.6 percent (ARB, 2003), which is substantially less than the 14 percent reduction achieved by the use of PuriNO_x, and PM₁₀ emissions by 20 percent (ARB, 2003), which is also substantially less than the 62.9 percent reduction achieved by the use of PuriNO_x. Because the emission reductions that would be achieved by the use of O₂ Diesel Fuel in construction equipment would be less than would have been achieved by the use of PuriNO_x if it were still available, BP operators have not proposed to use O₂ Diesel Fuel after December 2006. Instead BP operators have eliminated the portions of the previously proposed project associated with modifications to the Alkylation Unit, the Alky Merox Unit, and the related construction emissions.

As shown in the following discussion, the SCAQMD has evaluated the proposed project changes to the air quality construction impacts and determined that the current proposed project modifications do not create any new significant adverse environmental impacts or make substantially worse any existing significant adverse environmental impacts that were previously identified in the September 2006 Final EIR.

6.0 IMPACT ANALYSIS

The following sections present a description of the impact analysis contained in the September 2006 Final EIR, as well as the analysis of the impacts of the current proposed project modification. Although the current proposed modifications affect only two portions of the overall project evaluated in the September 2006 Final EIR, a full description of the impacts evaluated in the September 2006 Final EIR is presented to provide a clear understanding of the previously proposed project as well as the current proposed project.

This section sequentially presents the initial project evaluated in the September 2006 Final EIR and the current proposed project to show the chronology of the impact analysis, and to show the comparison of the current proposed modifications with the September 2006 Final EIR project.

6.1 Summary of Impacts in September 2006 Final EIR

The NOP/IS for the September 2006 Final EIR project evaluated all 17 of the environmental topics in accordance with CEQA and determined that 13 of the 17 environmental topics would not be significantly adversely affected by the proposed project. These topics were aesthetics, agricultural resources, biological resources, cultural resources, energy, geology and soils, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, and solid and hazardous waste. Two comment letters were received on the NOP/IS. However, none of the comments received expressed concerns about the 13 topics that the

NOP/IS determined would not be significantly affected by the proposed project. Thus, these topics were not addressed further in the Draft EIR or the Final EIR.

Four of the 17 environmental topics: air quality; hazards and hazardous materials; noise; and transportation and traffic, required further evaluation in the EIR. The September 2006 Final EIR concluded that two of the four environmental topics evaluated in the EIR would not be significantly adversely affected by the proposed project or could be mitigated to a level of insignificance including noise and transportation/traffic. Section 7.0 of this Addendum discusses the effects of the current proposed project modifications on the environmental topics not found to be significant and the environmental topics mitigated to a level of insignificance as concluded in the September 2006 Final EIR. The analysis shows that these environmental areas would not be substantially affected by the currently proposed project modifications. Therefore, the conclusions for these environmental topic areas from the September 2006 Final EIR do not change as a result of implementing the currently proposed project modifications.

As discussed in the following paragraphs, the September 2006 Final EIR identified potentially significant adverse impacts after the implementation of available mitigation measures for two environmental topic areas: 1) air quality (construction emissions), and 2) hazards (from the operation of the Hydrocracker, FCCU, Alkylation Unit, and Alkyl Merox Unit).

The September 2006 Final EIR indicated that the BP Carson Refinery Safety, Compliance, and Optimization Project would result in the following significant unavoidable adverse impacts:

- Emissions of CO, VOC, and NO_x will exceed mass daily significance thresholds during construction; therefore, construction air quality impacts were considered to be significant.
- The hazard analysis showed that the proposed modifications to the Hydrocracker, FCCU, Alkylation Unit, and Alkyl Merox Unit have the ability to create a hazard that could extend off-site under “worst-case” assumptions. The proposed modifications to the Hydrocracker Unit would increase the distance for exposure to hydrogen sulfide that could occur offsite. The proposed modifications to the FCCU would also increase the distance that a pool or torch fire could extend offsite. The proposed modifications to the Alkylation Unit and Alkyl Merox Unit would also increase the distance that a flash fire could extend offsite. Therefore, the potential hazard impacts associated with the proposed project are considered to be significant because there is the potential for additional individuals to be exposed to potential hazards that would exceed the significance thresholds.

The analysis in the September 2006 Final EIR also indicated that the proposed project would result in the following potentially significant but mitigable impacts:

- PM10 emissions during construction could potentially exceed the mass daily emissions threshold; mitigation measures were identified that would reduce the impacts to less-than-significant levels.
- Construction traffic associated with the proposed project could have potentially significant adverse impacts at several local intersections. Mitigation measures (avoiding starting or ending work shifts during peak traffic hours) were identified that would reduce the impacts to less-than-significant levels.

6.2 Analysis of Impacts from the Current Proposed Project Modification

This Addendum evaluated all 17 of the environmental topics as required by CEQA and concluded that two environmental topic areas would be affected by the current proposed project modifications - air quality during construction and hazards. The following subsection presents the results of the evaluation of the air quality and hazard impacts associated with the current proposed project modification. Section 7.2 presents the analysis of the remaining 15 environmental topic areas where the impacts of the current proposed project modifications were evaluated in the Addendum and found not to be potentially significant.

6.2.1 Air Quality

Both construction and operational air quality impacts were evaluated in the September 2006 Final EIR. Air quality impacts that equal or exceed the significance thresholds identified in Table 6-1 are considered to be significant adverse air quality impacts.

Construction Emissions

September 2006 Final EIR

The construction impacts were analyzed for each month during the construction period, because construction activities and the resulting emissions vary from one month to another. The months with the peak emissions were included in the September 2006 Final EIR. The month with the highest emissions was identified to determine the anticipated peak daily emissions during construction, which were anticipated to occur during November 2007. The September 2006 Final EIR concluded that peak daily unmitigated emissions of CO, VOC, NO_x and PM10 would exceed the CEQA significance thresholds for construction. The peak daily construction emissions were anticipated to occur in November 2007 because the construction schedules associated with several different modifications would overlap in that timeframe. Feasible mitigation measures to reduce emissions during construction were identified. Peak daily mitigated construction emissions from the September 2006 Final EIR, which were also anticipated to occur in November 2007, are summarized in Table 6-2. Table 6-2 shows that mitigated peak daily CO, VOC and NO_x emissions would continue to exceed the CEQA significance

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thresholds for construction, but mitigated peak daily PM10 emissions would be below the significance threshold.

**Table 6-1
SCAQMD Air Quality Significance Thresholds**

Mass Daily Thresholds		
Pollutant	Construction	Operation
NO _x	100 lb/day	55 lb/day
VOC	75 lb/day	55 lb/day
PM10	150 lb/day	150 lb/day
PM2.5	55 lb/day	55 lb/day
SO _x	150 lb/day	150 lb/day
CO	550 lb/day	550 lb/day
Lead	3 lb/day	3 lb/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk \geq 1 in 1 million Hazard Index \geq 1.0 (project increment) Hazard Index \geq 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants ^a		
NO ₂ 1-hour average annual average	District is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour average annual geometric average annual arithmetic mean	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^b 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$ 20 $\mu\text{g}/\text{m}^3$	
PM2.5 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^b & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
Sulfate 24-hour average	1 $\mu\text{g}/\text{m}^3$	
CO 1-hour average 8-hour average	Although not designated attainment, the District meets the definition of attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	
^a Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated. ^b Ambient air quality threshold based on SCAQMD Rule 403.		
KEY lbs/day = pounds per day ppm = parts per million $\mu\text{g}/\text{m}^3$ = microgram per cubic meter \geq greater than or equal to		

TABLE 6-2

**Peak Daily Construction Emissions Following Mitigation from the September 2006
Final EIR (lbs/day)**

ACTIVITY	CO	VOC	NO_x	SO_x	PM10
Unmitigated Emissions ⁽¹⁾	1,036	250	1,633	117	208
SCAQMD Threshold Level	550	75	100	150	150
SIGNIFICANT?	YES	YES	YES	NO	YES
Amount Needed to Reduce Emissions Below Significance Level	486	175	1,533	--	58
MITIGATION MEASURES⁽²⁾					
Use of Alternative Diesel Fuel ⁽³⁾	--	--	-214	--	-54
Use Electric Welders	-89	-16	-146	-16	-8
Use of Electricity Instead of Generators	-56	-15	-220	<-1	-8
Total Emission Reductions	-145	-31	-580	-16	-70
Total Emissions After Mitigation	891	219	1,053	101	138
SIGNIFICANT AFTER MITIGATION?	YES	YES	YES	NO	NO

(1) See Table 4-3 of the September 2006 Final EIR; (2) Emission reductions were estimated from the SCAQMD (1993) CEQA Handbook. (3) Reduction of 14% for NO_x and 62.9% for PM10 emissions from construction equipment, based on January 31, 2001, verification letter from Dean Simeroth, CARB, to Thomas J. Sheahan, Lubizol Corp.

Current Proposed Modifications

Construction emissions have been revised in this Addendum to reflect the elimination of the modifications associated with the Alkylation and Alky Merox Units, to use the more current emission factors from the EMFAC2007 model for on-road mobile sources, to use the more current emission factors from CARB's Off-Road model, and to remove the emission reductions associated with the use of alternative diesel fuel (PuriNO_x). The revised construction emissions that would result from using updated emission factors to on-road and off-road mobile sources and, from eliminating PuriNO_x, are analyzed in this Addendum and are summarized in Table 6-3.

The construction emissions from the BP Carson Refinery Safety, Compliance, and Optimization Project have also been revised to reflect the elimination of the modifications associated with the Alkylation and Alky Merox Units. BP operators have determined that the modifications to the Alkylation and Alky Merox Units are no longer required and, therefore, have removed the Alkylation Unit and Alky Merox Unit modifications from the project (see Table 6-3). The construction emissions associated with the Alkylation Unit and Alky Merox Unit modifications will not occur and the

emissions have been removed from the construction emission estimates (see Table 6-3). (See Appendix B for more detailed information which includes a summary of the emissions from the September 2006 Final EIR, minus the construction emissions for the Alkylation and Alky Merox Units, which were not adjusted for updated emissions factors).

TABLE 6-3

**BP Carson Refinery
Current Proposed Project Peak Construction Emissions⁽¹⁾
(lbs/day)**

ACTIVITY	CO	VOC	NOx	SOx	PM10
Construction Equipment	290.87	106.38	683.15	2.28	35.64
Vehicle Emissions (includes road dust)	336.49	36.21	87.22	0.33	59.84
Fugitive Dust from Construction ⁽²⁾	--	--	--	--	49.18
Architectural Coatings	--	10.02	--	--	--
Total Construction Emissions ⁽³⁾	627.36	152.61	770.37	2.61	144.66
SCAQMD Threshold Level	550	75	100	150	150
Significant?	YES	YES	YES	NO	NO

- (1) Revised project construction emissions that include the elimination of the construction equipment associated with the Alkyl Merox and Alkylation unit modifications, and using the most recent construction emission factors to update the construction emission calculations. Peak emissions for all pollutants predicted to occur during November 2007, except for SOx which occurred in December 2006.
- (2) Assumes application of water three times per day, which means that a 66 percent reduction in emissions has been applied.
- (3) The emissions in the table may differ slightly from those in Appendix B due to rounding.

The construction emissions for the entire BP Carson Refinery Safety, Compliance and Optimization Project have been updated to use the most recent emission factors. The emission calculations in the September 2006 Final EIR, for on-road mobile sources used during the construction phase (including worker vehicles and delivery trucks), were based on the EMFAC 2002 model. Since the completion of the September 2006 Final EIR, the SCAQMD has derived mobile source emission factors using CARB's EMFAC 2007 (v2.3) BURDEN model. The emission factors are derived by dividing the total daily district-wide emissions by total daily vehicle miles traveled to obtain emission factors in pounds per mile traveled. The emission factors have been derived by taking the weighted average of vehicle types and simplifying them into two categories – passenger/light-duty and medium-/heavy-duty vehicles (e.g., delivery trucks). These are considered to be the most recent on-road emission factors, are considered to be the most representative (accurate) of current emissions from mobile sources, and were appropriate for use in updating the construction emissions for the BP Carson Refinery Safety, Compliance and Optimization Project.

In addition, new emission factors have been developed for off-road mobile source emissions using CARB's Off-Road Model. The composite off-road emission factors were

derived based on the equipment category (tractor, dozer, scraper, etc.), average fleet make-up for each year through 2020, vehicle population (number) in each equipment category by horsepower rating and load factor. Two types of composite emission factors have been developed - composite and horsepower-based composite factors. Composite emission factors have horsepower rating and load factors already built into the emission factors, so it is not necessary to know these two parameters when calculating off-road mobile source emissions. Horsepower-based composite factors have load factor ratings built into the emission factors and are expected to be more representative of actual emissions from construction equipment. Daily emissions are calculated as follows.

$$E = n \times H \times EF$$

where:

E = emission in pounds per day

n = number of pieces of equipment in a specified equipment category

H = hours per day of equipment operation

EF = the off-road mobile source emission factor by equipment category or horsepower-based equipment category in pounds per hour

In addition, the allowable VOC content limits for architectural coatings have been revised to be consistent with current Rule 1113 requirements limiting VOC content to 100 grams per liter. The construction emissions associated with the above project revisions are summarized in Table 6-3. Detailed construction emission calculations are provided in Appendix B.

The emission reductions associated with the mitigation measures were applied to the unmitigated construction emission estimates in Table 6-3 to calculate daily mitigated emissions during the peak construction month. The detailed calculations can be found in Appendix B to this Addendum. The resulting revised peak daily mitigated emissions are listed in Table 6-4. The peak construction month is expected to remain November 2007 for all pollutants but SO_x, as reported in the September 2006 Final EIR. The peak emissions of SO_x were predicted to occur in December 2006. As can be seen in Table 6-4, the total estimated construction emissions for the currently proposed project emissions are less than the construction emissions considered in the September 2006 Final EIR. Table 6-4 also demonstrates mitigated construction emissions from the current proposed project modification do not substantially worsen significant adverse impacts, because peak daily mitigated emissions of CO, VOC, NO_x, SO_x, and PM₁₀ for the current proposed modification are less than the peak daily mitigated emissions in the September 2006 Final EIR. Therefore, the currently proposed project emissions will not result in a significant increase in emissions or make a significant adverse impact worse.

Construction Emissions - Localized Impacts

The SCAQMD has developed Localized Significant Threshold (LST) Methodology to evaluate the potential localized impacts of criteria pollutants from construction activities

(SCAQMD, 2003c). The LST Methodology requires that the emissions of criteria pollutants be evaluated for impacts on ambient air quality standards, including carbon monoxide (CO), nitrogen dioxide (NO₂), and particulate matter less than 10 microns in diameter (PM10) associated with the project.

TABLE 6-4

**Currently Proposed Project Modifications
Peak Daily Construction Emissions Following Mitigation (lbs/day)**

ACTIVITY	CO	VOC	NO_x	SO_x	PM10
Currently Proposed Project Unmitigated Emissions ⁽¹⁾	627	153	770	3	145
SCAQMD Threshold Level	550	75	100	150	150
SIGNIFICANT?	YES	YES	YES	NO	NO
Amount Needed to Reduce Emissions Below Significance Level	77	78	670	--	--
MITIGATION MEASURES⁽²⁾					
Use Electric Welders	-91	-40	-81	<1	-9
Use of Electricity Instead of Generators	-33	-11	-134	<1	-4
Total Emission Reductions	-124	-51	-215	<1	-13
Currently Proposed Project Total Emissions After Mitigation	503	102	555	3	132
Mitigated Construction Emissions from the September 2006 Final EIR	891	219	1,053	101	138

(1) See Table 6-3.

In order to determine the ground level concentrations, the U.S. EPA ISCST3 (Version 02035) air dispersion model was used in the September 2006 Final EIR to model the peak day on-site construction emissions and calculate the annual average and maximum 1-hour, 8-hour, and 24-hour concentrations. The project construction maximum ground level concentrations were compared to the significance thresholds established in SCAQMD Rule 1303, Appendix A, Table A-2 for CO and NO₂ to demonstrate that construction emissions will not cause a violation of any state or national ambient air quality standard. PM10 was compared to 10.4 micrograms per cubic meter (µg/m³), which is comparable to the requirement in Rule 403. PM10 is evaluated differently than CO and NO₂ because PM10 in nearly the entire district exceeds the state or federal PM10 standards. The CO 1-hour, CO 8-hour, NO₂ 1-hour, and NO₂ annual average ground

level concentrations from the proposed project are combined with the maximum ambient concentrations and compared to the Most Stringent Air Quality Standard. The results are presented in Table 6-5.

**TABLE 6-5
Localized Significance Threshold Evaluation**

Criteria Pollutant	Averaging Period	Ambient Background Conc. (ug/m ³)	Calculated Conc. (ug/m ³)	Total Conc. (ug/m ³)	Most Stringent Air Quality Standard (ug/m ³)	Significant Change in Air Quality Conc. (ug/m ³)	Below Threshold?
CO	1-hr	6896.4	97.9	6994.3	23000	--	Yes
	8-hr	5402.2	58.6	5460.8	10000	--	Yes
NO ₂	1-hr	264.3	52.1	316.4	500	--	Yes
	Annual	54.4	2.8	57.2	100	--	Yes
PM10	Annual	--	4.6	--	--	10.4	Yes

The localized significance threshold analysis indicated that no significant change in local ambient air quality for CO, NO₂ or PM10 was expected from construction activities associated with the proposed project. The currently proposed project modifications are expected to result in reduced construction emissions for all pollutants, including CO, NO₂ and PM10 (see Table 6-4). Therefore, the localized construction impacts are also less than that the project evaluated in the September 2006 Final EIR and less than significant.

Operational Impacts

The September 2006 Final EIR concluded that operation of the proposed project will not cause significant adverse air quality impacts and that mitigation measures for air quality impacts during operation of the proposed project are not required. The current proposed project modification only involves revision to construction related air quality impacts and does not affect operation of the proposed project. It should be noted that the modifications associated with the Alkylation and Alky Merox Units are no longer proposed so an estimated operational emission increase from the Alkylation and Alky Merox Units (a maximum of about 10 pounds per day of VOC emissions) also will not occur. Therefore, emissions of both criteria pollutants and toxic air contaminants during operation of the current proposed project will be the same as during operation of the project (or slightly less for VOC) as analyzed in the September 2006 Final EIR, and will not cause significant adverse impacts. This analysis of operation-related air quality impacts associated with the current proposed project modification supports the conclusion that an addendum is the appropriate CEQA document for the current proposed project modification.

Greenhouse Gas Emissions

Global warming is the observed increase in average temperature of the earth's surface and atmosphere. The primary cause of global warming is an increase of greenhouse gas (GHG) emissions in the atmosphere. The six major types of GHG emissions are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), haloalkanes (HFCs), and perfluorocarbons (PFCs). The GHG emissions absorb longwave radiant energy emitted by the earth, which warms the atmosphere. The GHGs also emit longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation emitted by the atmosphere is known as the "greenhouse effect."

The current scientific consensus is that the majority of the observed warming over the last 50 years can be attributable to increased concentration of GHG emissions in the atmosphere due to human activities. Events and activities, such as the industrial revolution and the increased consumption of fossil fuels (e.g., combustion of gasoline, diesel, coal, etc.), have heavily contributed to the increase in atmospheric levels of GHG emissions. As reported by the California Energy Commission (CEC), California contributes 1.4 percent of the global and 6.2 percent of the national GHG emissions (CEC, 2004). Further, approximately 80 percent of GHG emissions in California are from fossil fuel combustion (e.g., gasoline, diesel, coal, etc.).

Operational and construction emissions for the existing project were evaluated in the September 2006 Final EIR. At the time, the SCAQMD had not established any policies or methodologies for analyzing GHG emissions. The currently proposed project modifications are not expected to generate additional GHG emissions as explained in the following paragraphs.

Construction emissions associated with the currently proposed project include emissions associated with various construction equipment. The project-related construction emissions include emissions from backhoes, compressors, forklifts, welding machines, cranes, and dump/concrete trucks. The construction emissions associated with the currently proposed project as modified are less than the construction emissions evaluated in the September 2006 Final EIR because the construction of the Alkylation and Alky Merox Units have been removed and more accurate construction emission factors have been used (see Tables 6-3 and 6-4). Therefore, the construction equipment and related emissions associated with the currently proposed project as modified are less than the scope of the analysis in the September 2006 Final EIR.

The operation of the currently proposed project modifications is not a source of GHG emissions. In fact, the Rule 1118 compliance portion of the proposed project is expected to reduce combustion emissions. The currently proposed project modifications will eliminate the modifications to the Alkylation Unit and the Alky Merox Unit proposed in the September 2006 Final EIR. The emissions associated with the modifications to these two units only included fugitive VOC emissions, which are not considered to be

greenhouse gases, no combustion sources are included as part of the modifications to these units, so no GHG emissions are expected. Further, no new combustion sources are included in the proposed project as modified so no increases in GHG emissions are expected.

6.2.2 Hazards

The impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards
- Non-conformance to regulations or generally accepted industry practices related to operating policies and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Planning Guideline (EPRG) 2 levels.
- Exposure to radiant heat in excess of $1,600 \text{ Btu}/(\text{hr}\cdot\text{ft})^2$ (the level that creates second degree burns on unprotected skin).
- Overpressure exposure that exceeds one pound per square inch (gauge) (psig) (the level that would result in partial demolition of houses)
- Flash fire hazard zones that exceed the lower flammable limit (LFL) (the level that would result in a flash fire in the event a flammable vapor cloud was ignited.).

These are the same hazards significance criteria used in the September 2006 Final EIR.

The September 2006 Final EIR included an evaluation of potential hazards and risk of upset scenarios, and the potential impacts on the community and environment if an upset were to occur. No significant hazard impacts were identified during construction. During operation, several upset scenarios were evaluated based on “worst-case” conditions, and feasible mitigation measures were included. The September 2006 Final EIR concluded that four of the modified units associated with the proposed project have the ability to create a hazard that could extend further off-site than the existing unmodified equipment (see Table 6-6). These modified equipment include the following: the Hydrocracker Unit, FCCU, Alkylation Unit and Alky Merox Unit. Modifications to the Hydrocracker Unit would result in an increase in the distance that exposure to hydrogen sulfide could extend offsite. Modifications to the FCCU would result in an increase distance that a pool/torch fire could extend offsite. The largest hazard zone

TABLE 6-6
Maximum Hazard Distances For Maximum Credible Event In Each Process Unit/Area

Process Unit/Release	Status of Potential Hazard	Maximum Distance (feet) from Center of Unit to					SO ₂ Concentration (3 ppm for 60 min)
		Flash Fire (LFL)	Explosion Overpressure (1.0 psig)	Pool/Torch Fire Thermal Radiation [1,600 Btu/(hr-ft ²)]	H ₂ S Gas Concentration (30 ppm for 60 min)		
ALKY	Existing	780	295	290	--	--	--
	Modified	795*	295	295**	--	--	--
	Existing	610	245	350	--	--	--
	Modified	670**	265**	360**	--	--	--
FFHDS	Existing	170	60	190	2,850	--	--
	Modified	170	60	190	2,750	--	--
	New	30	15	50	755	--	--
HCU	Existing	90	35	100	1,790	--	--
	Modified	190**	75**	90	1,860*	--	--
	Existing	890	335	670	--	--	--
	Modified	770	305	540	--	--	--
SULFUR	Existing	--	--	--	1,275	3,510	
	Modified	--	--	--	1,240	3,490	
FCCU	Existing	890	305	530	--	--	--
	Modified	890	320**	620*	--	--	--
MEROX	Existing	1,085	405	565	--	--	--
	Modified	1,370*	510**	415	--	--	--

* Considered to be a potentially significant adverse impact

** Increase does not extend offsite

increase was for a flash fire due to the modification to the Alky Merox Unit. A flash fire from the Alkylation Unit will be slightly larger (795 versus 780 feet) but the release will impact essentially the same area, which is the BP Refinery and adjacent transportation corridor. Therefore, the potential hazard impacts associated with the proposed project evaluated in the September 2006 Final EIR were considered to be significant because there is the potential for some individuals to be exposed to the potential hazards that exceed the significance thresholds.

The current proposed project modification primarily involves revisions to the air quality construction impacts. However, the proposed project modification would eliminate the modifications to the Alkylation and Alky Merox Unit and the associated significant flash fire and explosion overpressure hazards. Therefore, the current proposed project modification reduces the potential hazards that were analyzed in the September 2006 Final EIR, but does not change the conclusions from those analyses regarding potential adverse hazard impacts because the modifications to the Hydrocracker and FCCU will still occur.

7.0 TOPIC AREAS FOUND NOT TO BE POTENTIALLY SIGNIFICANT

Section 7.0 discusses the remaining environmental topic areas found not to be potentially significant in both the November 2005 Initial Study (see Appendix A of the September 2006 Final EIR) and the September 2006 Final EIR for the BP Carson Refinery Safety, Compliance and Optimization Project and the effect of the currently proposed project modifications on the conclusions of each environmental topic discussed in those documents.

7.1 Aesthetics

September 2006 Final EIR: There are no scenic views or scenic highways in the vicinity of the Refinery. The proposed project will take place within the boundaries of the existing refinery, and the new refinery equipment to be installed as part of the proposed project will be similar in size, appearance, and profile to the existing facilities and equipment at the refinery. The primary change with a potential for visual resources impacts included:

- A new gas treating column, as part of the vapor recovery system modification, is estimated to be five feet in diameter and 80 feet high.
- Part of the Hydrocracker modifications will include the replacement of the existing air cooler. A new air cooler will be the same height as the existing air cooler (about 50 feet high) and two new scrubber towers will replace two existing scrubber towers at the same height as the existing towers (56 and 60 feet high).
- As part of the FFHDS modification, a new reactor will be added that will be about 105 feet high.
- As part of modifications to the FCC unit, a new, larger ESP will replace the existing ESP which will share a common stack that is expected to be a maximum of 250 feet high.

Of the new structures, only the gas treating column, the new reactor in the Fluid Feed HDS unit, and the stack for the new ESP are expected to be visible to the areas outside of the Refinery. The gas treating column will be located within the Refinery, where there are a number of existing stacks, vessels, and structures in the range of 70 to 130 feet in height. The new reactor in the FFHDS unit will be located within about 25 feet and will be the same height as the existing reactor in the FFHDS unit. The new reactor will be surrounded by other existing stacks and vessels that range between about 53 and 125 feet in height. The overall appearance and size of the new reactors for the FFHDS unit is not expected to differ significantly from the existing FFHDS unit or from other existing Refinery units.

The common stack for the new ESP in the FCC unit will be a maximum of 250 feet in height. Other tall stacks and vessels are located near the FCC unit, including the SCR stack (135 feet tall) and two other stacks (both 130 feet tall). A number of large existing vessels are associated with the FCC unit, including the disengager (150 feet tall) and the Regenerator (110 feet tall). A number of other existing Refinery structures are in the same height range as the new ESP stack including the crude heater stack (230 feet tall), the hydrogen plant heater stack (250 feet tall), the Sulfur Recovery Unit heater stack (200 feet tall), the hydrogen plant heater SCR unit stack (250 feet tall), the coker flare (203 feet tall), the FFHDS flare (215 feet tall), the naphtha HDS flare (265 feet tall), and the sulfur recovery plant incinerator flare (200 feet tall). The new ESP stack will be surrounded by a number of existing stacks and vessels and located within the Refinery, which is an industrial area so that no significant adverse impacts to aesthetics are expected. Since residential areas are located about one-half mile away from the proposed project locations within the Refinery, additional stacks and vessels located within the existing operating portions of the Refinery are not expected to be noticeable to these residential areas.

Additional permanent light sources will be installed on the new equipment, such as the FFHDS reactor and the gas treating column, to provide illumination for operations personnel at night, in accordance with applicable safety standards. These additional light sources are not expected to create an impact because each component of the proposed project will be located within an existing industrial facility, which is already lighted at night for nighttime operations.

In summary, no significant adverse impacts on aesthetics or impacts from light and glare are expected.

2007 Addendum: The revised project would not result in any changes in aesthetic impacts that were evaluated in the September 2006 Final EIR. The proposed modifications to the Alkylation and Alky Merox Units will no longer be constructed; however, the Alkylation Unit and Alky Merox modifications that included piping, pumps, heat exchanges, coalescers, and other ancillary equipment (including modifications to the trays in the Deisobutanizer, Debutanizer and Depropanizer) were not expected to be visible to the surrounding community. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse aesthetic impacts.

7.2 Agricultural Resources

September 2006 Final EIR: - There are no agricultural resources, i.e., food crops grown for commercial purposes, located in or near the vicinity of the Refinery. The proposed project will not involve construction outside of the existing boundaries of the Refinery and no agricultural resources are located within the Refinery. The zoning of the Refinery will remain heavy industrial and Refinery uses are allowed within this zone. No existing agricultural land will be converted to non-agricultural land uses. Further, the project will not conflict with a Williamson Act contract. Therefore, the proposed project will have no impacts on agricultural resources.

Potential adverse impacts of the proposed project on agricultural resources are expected to be less than significant.

2007 Addendum: The revised project would not result in any changes in agricultural impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery and no agricultural resources are located within the Refinery. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to agricultural resources.

7.3 Biological Resources

September 2006 Final EIR: The proposed project will be located in a heavy industrial area. The Refinery has been fully developed and is essentially void of vegetation with the exception of some landscape vegetation. The Refinery controls the growth of vegetation at the site for fire prevention purposes. All native habitats have long since been removed from the site. The proposed project does not include the acquisition of additional land for use by The Refinery or expansion outside of the Refinery's current boundaries, which further eliminates the potential for biological resource impacts. The project will not have an adverse effect, either directly or indirectly or through habitat modifications, on any sensitive biological species, riparian habitat, or other sensitive natural habitat. There are no significant plant or animal resources, locally designated species, natural communities, wetland habitats, or animal migration corridors that would be impacted by the proposed project. There are no rare, endangered, or threatened species at the Refinery site. The burrowing owl which is listed as a federal and state species of special concern was reported in 1985 in the southwest area of the Refinery (east of the Dominguez Channel) in an inactive tank farm located across Sepulveda Boulevard. However, proposed project construction and operational activities will not occur in this area of the Refinery property and a more recent review of the California Natural Diversity Data Base did not reveal records of special status species at or within one mile of the Refinery. The project would not impact any local policies or ordinances that protect biological resources or conflict with the provisions of a Habitat Conservation Plan or other similar plan.

Potential adverse impacts of the proposed project on biological resources are expected to be less than significant.

2007 Addendum: The revised project would not result in any changes in biological impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, which is void of sensitive biological resources. The construction activities associated with the revised project will not require removing or affecting biological resources in any way. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to biological resources.

7.4 Cultural Resources

September 2006 Final EIR: Portions of the BP Carson Refinery are located in an area of archaeological sensitivity. The Tongva/Gabrielino village site known as Suangna is located at and near a portion of the Refinery and a large cemetery (CA-LAN-262) was exposed at the property in 1998 (east of the Dominguez Channel). Earth disturbance associated with the construction of the proposed project will not impact the known limits of either of these sites. Further, no human remains have been identified in previous projects in the active portion of the Refinery west of the Dominguez Channel and since the proposed project is located west of the Dominguez Channel, the proposed project is not expected to disturb any human remains.

The entire active portion of the Refinery site has been previously graded and developed. Proposed project activities will occur in areas of the Refinery where the ground surface has already been disturbed, and this past disturbance reduces the likelihood that previously unknown cultural resources will be encountered. Further, the Refinery site does not contain known paleontological resources and thus the proposed project also is not expected to impact any sites of paleontological value.

Based upon the preceding discussion, no significant adverse impacts on cultural resources could occur during the construction of the proposed project. Therefore, impacts of the proposed project on cultural resources are less than significant.

2007 Addendum: The revised project would not result in any changes in impacts to cultural resources that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, and no archaeological, historical, or paleontological resources have been found in the portions of the Refinery where construction activities are proposed. Further, the modifications associated with the revised project would result in less construction activities, since the Alkylation Unit and Alky Merox Unit modifications would be eliminated. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to cultural resources.

7.5 Energy

September 2006 Final EIR: It is not expected that natural gas-fired or electrically powered construction equipment or vehicles will be used and; thus, there will be no need for new or substantially altered power or natural gas utility systems during construction of the proposed project.

The Watson Cogeneration facility has a generation capacity of over 320 megawatts (MW) and supplies the Refinery with approximately 727,000 MW-hours per year. Even though BP also purchases approximately 257 MW-hours per year from Southern California Edison, the anticipated electrical demand for the proposed project is expected to be about 2200 kilowatts (kw) or about 2.2 MW which will be wholly supplied from the Watson Cogeneration Plant. Therefore, no significant adverse impacts on electricity consumption are expected.

Operation of the proposed project is not expected to increase the amount of natural gas consumption. Therefore, the proposed project will not result in the need for new or substantially altered power or natural gas utility systems, because the power and natural gas needed to operate the new and modified equipment are available from the existing Refinery utility system. Therefore, no significant impacts on energy are expected due to the construction and operation of the proposed project.

2007 Addendum: The revised project would not result in any changes in energy impacts to those that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are not expected to require additional electricity or natural gas since the Alkylation Unit modifications would not be built. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to energy resources.

7.6 Geology and Soils

September 2006 Final EIR: The BP Carson Refinery is located within the seismically active region of Los Angeles. The most significant potential geologic hazard at the Refinery is seismic shaking from future earthquakes generated by active or potentially active faults in the region. No faults or fault-related features are known to exist at the project site. The site is not located in any Alquist-Priolo Earthquake fault zone and is not expected to be subject to significant surface fault displacement.

Based on the historical record, it is highly probable that earthquakes will affect the Los Angeles region in the future. Research shows that damaging earthquakes will occur on or near recognized faults which show evidence of recent geologic activity. The proximity of major faults to the Refinery increases the probability that an earthquake may adversely affect the Refinery

New structures must be designed to comply with the Uniform Building Code Zone 4 requirements since the proposed project is located in a seismically active area. The City of Carson is responsible for assuring that the proposed project complies with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that

providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

The Refinery will be required to obtain building permits, as applicable, for all new structures at the site. The Refinery shall submit building plans to the City of Carson for review. The Refinery must receive approval of all building plans and building permits to assure compliance with the latest Building Code adopted by the City prior to commencing construction activities. The issuance of building permits from the local agency will assure compliance with the Uniform Building Code requirements which include requirements for building within seismic hazard zones. No significant impacts from seismic hazards are expected since the project will be required to comply with the Uniform Building Codes.

During construction of the proposed project, the possibility exists for temporary erosion resulting from excavation and grading activities. These activities are expected to be minor since the proposed project will occur within already developed facilities in areas with generally flat topography. The proposed project involves the addition of new equipment to existing facilities so major grading/trenching is not expected to be required and is expected to be limited to minor foundation work and minor trenching for piping. Therefore, no significant impacts related to soil erosion are expected. No significant change in topography is expected because little grading/trenching is required that could substantially increase wind erosion or runoff from affected sites. Relative to operation, no change in surface runoff is expected because surface conditions will remain relatively unchanged. Further, surface runoff is minimized because surface runoff at all facilities is typically captured, treated, and released to the public sewerage system or storm drain system. The proposed project site is not subject to landslide or mudflow since the site is flat. No other unique geological resources have been identified at the Refinery.

Potential adverse impacts of the proposed project on geological resources are expected to be less than significant.

2007 Addendum: The revised project would not result in any changes to geology and soils impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, and will require building permits from the City of Carson. There are no new structures associated with the revised project modifications as fewer refinery modifications would occur, i.e., the modifications to the Alkylolation Unit and Alky Merox Unit would no longer be required. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to geology and soils.

7.7 Hydrology and Water Quality

September 2006 Final EIR: The Refinery maintains onsite wastewater treatment equipment. Wastewater from the Refinery is treated and sampled in compliance with the County Sanitation Districts of Los Angeles County Industrial Wastewater Discharge Permit. The County Sanitation Districts of Los Angeles County places limitations on wastewater parameters including oil and

grease, pH, temperature, heavy metals, organic compounds and so forth. Wastewater that complies with the County Sanitation Districts of Los Angeles County permit requirements is discharged to the sewer. Wastewater that does not comply is returned to the source for further treatment.

The Refinery currently discharges an average of 4.7 million gallons per day of wastewater to the sewer system. The Refinery's current Industrial Wastewater Discharge Permit allows discharge of up to 6.0 million gallons per day. The proposed project is expected to increase the wastewater discharge by an estimated 50 gallons per day due to an increase in caustic wastewater generated by the Alky Merox unit. No other proposed project modifications are expected to result in an increase in wastewater. Once the proposed project becomes fully operational, the total discharge of wastewater is projected to be 4.70005 million gallons per day, which will be well within the existing permit limit such that no permit modifications will be necessary.

Wastewater will continue to be discharged in compliance with the LACSD Industrial Wastewater Discharge permit so no significant impacts on wastewater are expected from the proposed project. Storm water will also continue to be discharged in compliance with the Storm Water Pollution Prevision Plan so no significant impacts on storm water discharge are expected from the proposed project.

The proposed project is not expected to increase wastewater generated over historic volumes by the Refinery. Further the proposed project is not expected to require any modifications to the Refinery's industrial wastewater discharge permit. Wastewater will continue to be discharged in compliance with the County Sanitation Districts of Los Angeles County Industrial Wastewater Discharge permit and no significant impacts on wastewater are expected from the proposed project.

The proposed project is not expected to result in an increase in water use at the site over peak historical uses so that no significant impacts on water demand are expected. No increase in the amount of ground water supplies used at the Refinery is expected and the proposed project would not substantially deplete ground water supplies or interfere with ground water recharge.

No significant changes to surface water runoff are expected due to the proposed project. The project will be constructed within currently developed sites. Runoff from the facilities will be handled in the existing surface water treatment systems. Runoff will be collected, treated (if applicable), and discharged under the requirements of the existing storm water permit, NPDES permit or the Industrial Wastewater Discharge Permit. Because the topography of the site will remain unchanged during operation, the proposed project is not expected to increase the surface water runoff at any location. Therefore, no significant impacts are expected to result from water runoff associated with the proposed project.

The proposed project is located at an existing Refinery, which is not located within a 100-year flood hazard area. Consequently, the proposed project would not expose people or property to any known water-related hazards or impede or redirect flood flows. The proposed project would not result in the construction of any new housing. Therefore, no significant impact on flooding is expected from the proposed project.

Potential adverse impacts of the proposed project on hydrology and water quality are expected to be less than significant.

2007 Addendum: The revised project would not result in any changes to hydrology and water quality impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project do not require the use of any additional water, nor will they generate additional wastewater. The construction activities associated with the Alkylation Unit and Alky Merox Unit will no longer occur. The Alkylation Unit and Alky Merox Unit modifications were not expected to result in an increase in water demand or wastewater discharge. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to hydrology and water quality.

7.8 Land Use and Planning

September 2006 Final EIR: Prior to the incorporation of Carson as a city, the County of Los Angeles issued Special Permit (No. 621) to the Refinery operators. This land use permit allows BP to establish, operate, and maintain a Refinery in accordance with land use and zoning requirements of the City of Carson. Development consistent with the use of the site as a Refinery is in compliance with this permit and no additional, separate land use permits from the City of Carson are necessary. Since the proposed project is consistent with existing zoning and land use requirements and with Special Permit No. 621, it is not expected to conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, the proposed project is not expected to create significant adverse impacts on land use.

Potential adverse impacts of the proposed project on land use are expected to be less than significant.

2007 Addendum: The revised project would not result in any changes in land use impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, which is zoned for heavy industrial use and currently used as a refinery. The construction activities associated with the revised project will be limited to the existing Refinery. The revised project would eliminate the construction of the Alkylation Unit and Alky Merox Unit modifications, which were located within the confines of the existing Refinery. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse land use impacts.

7.9 Mineral Resources

September 2006 Final EIR: There are no known mineral resources located in the City of Carson. There are no mineral resources such as aggregate, coal, clay, shale, etc., located within the vicinity of the Refinery. The proposed project will not involve construction outside of the existing boundaries of the existing Refinery. Therefore, the proposed project will have no impacts on mineral resources.

Potential adverse impacts of the proposed project on mineral resources are expected to be less than significant.

2007 Addendum: The revised project would not result in any changes in impacts to mineral resources that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, which is void of mineral resources. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse impacts to mineral resources.

7.10 Noise

September 2006 Final EIR: The September 2006 Final EIR included an evaluation of potential noise impacts during construction and operation of the proposed project. It was concluded, generally because of the industrial nature of the area, that noise impacts during both operation and construction would be less than significant. During construction activities, the noise level at the closest residential area is expected to be 64 decibels, which is within the normally acceptable noise range. During operation, the maximum noise levels of installed new equipment or modified existing equipment is expected to be 60 decibels or less at about 1,000 feet from the noise sources. Noise generated by equipment affected by the proposed projects is not expected to increase the overall noise levels at the Refinery. Potential adverse impacts of the proposed project on noise are expected to be less than significant.

2007 Addendum: The currently proposed project modifications are not expected to result in any increases in noise sources. Construction activities and associated noise would be reduced because the Alkylation Unit and Alky Merox Unit modifications would not occur. The currently proposed project modifications would not increase any new permanent noise sources at the Refinery. Therefore, since the current proposed project modification does not change the conclusions from the September 2006 Final EIR, the noise impacts would remain less than significant.

7.11 Population and Housing

September 2006 Final EIR: Construction activities at the Refinery will not involve the relocation of individuals, impact housing or commercial facilities, or change the distribution of the population because the proposed project will occur completely within the boundaries of an existing industrial site. The construction work force, which is temporary, is expected to come from the existing labor pool in the southern California area. Additionally, once the proposed project is complete, operation activities are not expected to require new permanent employees at the Refinery. Since all potential impacts will occur at an existing industrial facility, displacement of housing of any type is not anticipated from the proposed project. Therefore, implementation of the proposed project is not expected to have a significant adverse impact on population, population distribution, or housing.

2007 Addendum: The revised project would not result in any changes in impacts to population and housing that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, which is zoned for heavy industrial use and currently used as a refinery. The revised project will not

displace any housing. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse use impacts to population and housing.

7.12 Public Services

September 2006 Final EIR: Compliance with state and local fire codes is expected to eliminate the need for additional fire protection services. The Refinery is served by its own emergency response team along with local fire department and other emergency services. The proposed project will include requirements for fire protection services that are available from existing services. Fire-fighting and emergency response personnel and equipment will continue to be maintained and operated at the Refinery. Close coordination with local fire departments and emergency services will also continue.

The Los Angeles County Sheriff's Department is the responding agency for law enforcement needs in the vicinity of the existing Refinery. Because sheriff units are in the field, response times vary depending on the location of the nearest unit. The Refinery has an existing security department that provides 24-hour protective services for people and property within the fenced boundaries of the site. As part of their regular duties, the security department will monitor construction activities associated with the proposed project since they will occur within the confines of the Refinery. Along with the existing work force, entry and exit of the construction work force will be similarly monitored. Once implemented, the proposed project is not expected to change Refinery staffing or substantially expand existing facilities. Thus, no additional or altered police protection will be required for the proposed project.

Since the proposed project is not expected to require additional staffing during operations, an increase in the local population is not expected. Therefore, no impacts are expected to schools, parks, or other public facilities as a result of implementing the proposed project.

2007 Addendum: The revised project would not result in any changes in impacts to public services that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, which maintains 24-hour security and maintains personnel and equipment on-site for fire suppression efforts. The revised project modifications will not require any additional public services. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse use impacts to public services.

7.13 Recreation

September 2006 Final EIR: Implementation of the proposed project is not expected to increase the local population. Therefore, implementation of the proposed project is not expected to increase the demand for neighborhood or regional parks, or other recreational facilities and it will not adversely affect existing recreational opportunities. Due to the heavy industrialization of the area, there are no recreational opportunities at or in the immediate vicinity of the Refinery. Therefore, no impacts are expected to recreational facilities.

2007 Addendum: The revised project would not result in any changes in recreation impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project are still located within the existing boundaries of the Refinery, which is zoned for heavy industrial use and currently used as a refinery. The construction activities associated with the revised project will be limited to the Refinery and will not impact recreational areas. Further, no additional refinery workers will be required so no additional recreational facilities will be required. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse recreation impacts.

7.14 Solid and Hazardous Waste

September 2006 Final EIR: Construction activities associated with the proposed project will increase the amount of solid waste generated and disposed. For example, demolition activities are expected to generate wastes from the following tasks: 1) removal of concrete; 2) removal of asphalt; 3) removal of steel; and 4) removal of soil. The BP Carson Refinery currently has an alliance arrangement with Waste Management, Inc., to handle most types of waste generated at the Refinery. Also, the Refinery has a well-developed waste handling system to maximize recycling. The proposed project will also generate typical construction-related debris such as wood, cardboard, paper, plastic, et cetera. Wastes generated at the Refinery are taken to two facilities for disposal, the Waste Management Palmdale or Azusa landfill facilities. Sufficient remaining capacity is expected to be available at the same waste disposal facilities that currently receive waste from the Carson Refinery. Thus, the quantities of non-recyclable solid wastes that are expected to be generated from constructing the proposed project are not expected to exceed the individual capacity of each disposal facility.

Construction of the proposed project is expected to generate small amounts of hazardous wastes, including materials such as empty aerosol cans, paint cans, oil rags, and used motor oil. The relatively small amounts of hazardous wastes expected to be generated will have a minimal impact on the capacity of any disposal facility qualified to receive this type of waste. Further, if contaminated soils are encountered during the excavation phase of the proposed project, the soils will be removed for proper decontamination and disposal in accordance with SCAQMD's Rule 1166 – Volatile Organic Compound Emissions From Decontamination of Soil and BP's Soils Handling Plan. Contaminated soil would be stored at a temporary holding location within the Refinery. It would be hauled from this temporary holding location for off-site disposal on weekends, when other construction activities for the proposed project are not occurring. It is anticipated that it would be hauled to the Azusa Land Reclamation Co. Landfill.

As with the current operations at the Refinery, wastes generated by the operation of the proposed project will also be managed and/or disposed of in compliance with applicable federal, state, and local statutes and regulations. The proposed project is expected to generate increased amounts of sulfuric acid (due to the Alkylation Modifications) and increased catalyst waste (e.g., associated with the proposed modifications to the FFHDS reactor and the FCC unit). BP plans to regenerate the sulfuric acid instead of disposal, so no substantial increase in waste is expected due to the proposed modifications to the Alkylation Unit. In addition, as with the current procedures at the Refinery, the additional amounts of recovered catalyst will be transported for recycling offsite, so no increase in waste disposal of catalyst is expected.

In summary, the relatively small increases in the amounts of solid and hazardous wastes that are expected to be generated during the construction and operation for the proposed project are not expected to exceed the available capacity of solid or hazardous waste disposal facilities. Further, implementation of the proposed project will neither require additional waste disposal capacity nor will it interfere with the ability of BP operators to comply with applicable local, state, or federal waste disposal regulations. Thus, the proposed project is not expected to result in adversely significant solid waste or hazardous waste impacts.

2007 Addendum: The revised project would not result in any changes in solid/hazardous waste impacts that were evaluated in the September 2006 Final EIR. The modifications associated with the revised project will eliminate the modifications to the Alkylation Unit and Alky Merox Unit so no increase in the generation of solid or hazardous waste is associated with the proposed modifications. Elimination of the Alkylation Unit modifications would eliminate the projected increase in the generation of spent sulfuric acid associated with the project. Therefore, since the proposed modifications will not alter the conclusions from the September 2006 Final EIR, the proposed project will not cause significant adverse solid or hazardous waste impacts.

7.15 Transportation and Traffic

September 2006 Final EIR: The September 2006 Final EIR included an evaluation of potential traffic impacts during construction and operation of the proposed project. It was concluded that the proposed project could potentially result in significant traffic impacts during the construction phase since about 850 construction workers would be expected during the peak construction period. Mitigation measures were imposed that required construction work shifts to avoid starting or ending the shift during the peak traffic hours of 7:00 AM to 8:00 AM and 4:30 PM and 5:30 PM. This will avoid workers traveling during peak traffic hours and eliminate potentially significant traffic impacts during the construction phase.

The operation of the proposed project will result in a maximum increase in truck traffic of about eight additional truck trips per day traveling to/from the Refinery. Since these would mainly consist of material deliveries, they would be spread throughout the workday with few deliveries occurring during the peak hour. Therefore, their contribution to overall traffic impacts would be negligible. Therefore, no significant impacts to traffic during operation of the proposed project are expected.

2007 Addendum: The currently proposed project modifications would not require any additional construction workers or generate any additional vehicle or truck trips during project operation. The currently proposed project modifications would eliminate the construction associated with the Alkylation and Alky Merox Unit modifications, reducing the number of construction workers that would travel to the BP Refinery during peak traffic hours. Therefore, since the current proposed project modification does not change the conclusions from the September 2006 Final EIR, the transportation/traffic impacts would remain less than significant.

8.0 CONCLUSIONS

In January 2007, BP operators were no longer able to purchase emulsified diesel fuel as the manufacturer, Lubrizol, stopped selling PuriNOx. BP operators proposed revisions to the project and revised construction air emission calculations. As shown in Sections 6.0 and 7.0, the analysis of the current proposed project modifications indicated that no new significant adverse impacts would be created for any environmental areas analyzed in the September 2006 Final EIR or made substantially worse any existing significant adverse impacts. Based on the environmental analysis prepared for the current proposed project modifications, the SCAQMD has quantitatively and qualitatively demonstrated that the proposed project modification qualifies for an Addendum to the previously certified September 2006 Final EIR.

9.0 REFERENCES

- California Energy Commission (CEC), 2004. California Greenhouse Gas Emission Trends and Selected Policy Options, Climate Change Advisory Committee, October 7, 2004.
- South Coast Air Quality Management District, 2003. Final Localized Significance Threshold Methodology. June 2003 Available for download at <http://www.aqmd.gov/ceqa/handbook/LST/LST.html>.
- South Coast Air Quality Management District. 2005. Initial Study for the Draft Environmental Impact Report for Proposed BP Carson Refinery – Safety, Compliance and Optimization Project, November 2005.
- South Coast Air Quality Management District. 2006a. Draft Environmental Impact Report for BP Carson Refinery – Safety, Compliance and Optimization Project, April 2006.
- South Coast Air Quality Management District. 2006b. Final Environmental Impact Report for BP Carson Refinery – Safety, Compliance and Optimization Project, September 2006.

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APPENDIX A

SEPTEMBER 2006 FINAL EIR - CHAPTER 1 - INTRODUCTION AND EXECUTIVE SUMMARY

CHAPTER 1

INTRODUCTION AND EXECUTIVE SUMMARY

Introduction

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 INTRODUCTION

BP is proposing a safety, compliance and optimization project at its existing Carson Refinery (Refinery). The proposed project will involve physical changes and additions to multiple process units and operations as well as operational and functional improvements within the confines of the existing Refinery. The portion of the proposed project related to enhancing safety will focus on modifications to the Coker Gas Debutanizer pressure relief valve, as well as adding equipment to the Fluid Catalytic Cracking Unit (FCCU), Fluid Feed Hydrodesulfurization (FFHDS), vapor recovery system, and flare system. The portion of the proposed project related to compliance will involve physical modifications to existing refinery units including the FCCU, FFHDS, vapor recovery system, and flare system so as to comply with multiple South Coast Air Quality Management District (SCAQMD) rules (e.g., Rule 1105.1 – PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, Rule 1118 – Control of Emissions From Refinery Flares, and Rule 1173 – Control of VOC Leaks and Releases from Components at Petroleum Facilities and Chemical Plants) and to implement the terms of a settlement agreement between the SCAQMD and BP. Other modifications are proposed that will optimize operations relating to various existing refinery units including the FFHDS, the FCCU, the Alky Mercox Unit, the Alkylation Unit, the Hydrocracker Unit, and the Sulfur Plant at the Refinery.

1.2 PURPOSE/LEGAL REQUIREMENTS

In accordance with §15121(a) of the California Environmental Quality Act (CEQA) Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an EIR is to serve as an informational document that: “will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project”. The proposed project requires discretionary approval from the SCAQMD and, therefore, it is subject to the requirements of CEQA (Public Resources Code, §21000 et seq.).

CEQA Public Resources Code §21000 et seq., requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment (Public Resources Code §21067). The proposed project requires discretionary approval from the SCAQMD for air quality permits for modifications to existing stationary source equipment and installation of new stationary source equipment. Therefore, the SCAQMD has the primary responsibility for supervising or approving the entire project as a whole and is the most appropriate public agency to act as lead agency (CEQA Guidelines §15051(b)).

To fulfill the purpose and intent of CEQA, the SCAQMD, as the lead agency for this project, prepared and released for a 30-day public review and comment period a Notice of Preparation and Initial Study (NOP/IS) to address the potential environmental impacts associated with the BP Carson Refinery Safety, Compliance, and Optimization Project (see Appendix A). ~~No~~ *Two* comments were received on the NOP/IS. *The comment letters and responses to the comments are provided in Appendix A.*

On November 7, 2003, the South Coast Air Quality Management District (SCAQMD) adopted Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, and certified the Final Environmental Assessment for Proposed Rule 1105.1 (2003 Final EA, SCAQMD No. 012403BAR). The staff report for Rule 1105.1 and the 2003 Final EA identified six refineries that operate fluid catalytic cracking units (FCCUs) that would be subject to the requirements of Rule 1105.1 and one of these six was identified as already operating in compliance with the rule. One of the five refineries that will need to comply with Rule 1105.1, is operated by BP and modifications to comply with Rule 1105.1 are included as part of the proposed Safety, Compliance and Optimization Project. The 2003 Final EA assumed that the five refineries that would require modifications to comply with Rule 1105.1 would do so by installing new or modified electrostatic precipitators (ESPs). BP is proposing to comply with Rule 1105.1 by replacing two existing dry ESPs with one new (more efficient) ESP. Therefore, the assumptions for the Rule 1105.1 compliance portion of the proposed BP project is consistent with the assumptions used in the 2003 Final EA. However, the scope of the BP Safety, Compliance and Optimization Project includes modifications to a number of other refinery units and is much broader than the 2003 Final EA. Therefore, a separate CEQA document has been prepared for the proposed BP Safety, Compliance and Optimization Project.

1.3 SCOPE AND CONTENT

The NOP/IS was circulated for a 30-day comment period beginning on November 10, 2005. The NOP/IS was circulated to neighboring jurisdictions, responsible agencies, other public agencies, and interested individuals in order to solicit input on the scope of the EIR. ~~No comments~~ *Two comments* were received on the NOP/IS during the public comment period. *Responses to those comments are provided in Appendix A.* The NOP/IS formed the basis for and focus of the technical analyses in this ~~Draft~~ *Final* EIR. The following environmental issues were identified in the NOP/IS as potentially significant and are further addressed in this document:

- Air Quality,
- Hazards and Hazardous Materials,
- Noise,
- Transportation/Traffic.

The NOP/IS concluded that the proposed project would not create significant adverse environmental impacts to the following areas: aesthetics, agricultural resources,

biological resources, cultural resources, energy, geology and soils, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, and solid and hazardous waste.

A discussion of potential cumulative impacts is also provided. The alternatives section of this ~~Draft~~ *Final* EIR is prepared in accordance with §15126.6 of the CEQA Guidelines. This section describes a range of reasonable alternatives that could feasibly attain the basic objectives of the proposed project or are capable of eliminating or reducing some of the significant adverse environmental effects associated with the proposed project.

1.4 RESPONSIBLE AGENCIES

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

The following agencies may have ministerial permitting authority for aspects of modifications at the Refinery, and have been given an opportunity to review and comment on the NOP/IS and EIR; however, no new discretionary permits or permit modifications are expected to be required from these agencies for the proposed project:

- State Water Resources Control Board (SWRCB),
- Los Angeles Regional Water Quality Control Board (RWQCB), and
- City of Carson.

For convenience, all the above agencies will be referred to generally as Responsible Agencies in this EIR.

1.5 INTENDED USES OF THE EIR

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

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

To the extent that local public agencies, such as cities, county planning commissions, etc., are responsible for making land use and planning decisions related to the proposed

project, they could possibly rely on this EIR during their decision-making process. See the preceding section for a list of public agencies' whose approval may be required and who may also be expected to use this EIR in their decision-making process.

1.6 AREAS OF CONTROVERSY

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in the CEQA document. After public notification and review of the NOP/IS, the SCAQMD received ~~no comments from the public~~ *two comments*. *The issues raised in the comments were addressed in the EIR and responses to those comments are provided in Appendix A.* Consequently, there are no areas of controversy known to the lead agency.

1.7 EXECUTIVE SUMMARY – CHAPTER 2: PROJECT DESCRIPTION

1.7.1 PROJECT LOCATION

The proposed project will occur at the BP Carson Refinery, which is located at 1801 East Sepulveda Boulevard in the City of Carson, California. The proposed modifications will occur entirely within the confines of the existing Refinery boundaries.

1.7.2 LAND USE AND ZONING

The Refinery is bounded by Wilmington Avenue on the west, 223rd Street on the north, Alameda Street on the east, and Sepulveda Boulevard on the south. The Dominguez Channel flows through the Refinery, dividing the property into two sections: Northeastern and Southern. Industrial and commercial facilities and transportation corridors (e.g., 405 freeway and Alameda Corridor) surround the Refinery.

To the east of the BP Refinery is the Alameda Corridor and other industrial facilities including the BP Coke Barn, the Air Products Hydrogen Plant, and the Shell Sulfur Plant. Commercial and residential areas lay to the west. The ConocoPhillips Refinery, a cold storage warehouse facility and tank farms occupy the area south of the Refinery. The Refinery and all adjacent properties are zoned manufacturing heavy (MH). The closest residential area to the Refinery is approximately 300 feet from the property line across Wilmington Avenue to the southwest of the Refinery. The closest residential area to the units associated with the proposed project is approximately 3,000 feet away (also southwest of the Refinery).

1.7.3 EXISTING REFINERY CONFIGURATION AND OPERATION

Crude oil used to produce gasoline and other petroleum products at the Refinery is delivered by ship to the marine terminal located in the Port of Long Beach and pumped to the Refinery by existing pipelines. The crude oil is then processed in the crude units,

heated, and distilled into multiple feedstock components that are later processed elsewhere in the Refinery. The feedstocks are refined into the major Refinery products such as unleaded gasoline, diesel, jet fuel, petroleum gases, petroleum coke, and sulfur. During the refining process, elemental sulfur and petroleum coke are produced as by-products. The major categories of processing units at the Refinery include the following units: 1) crude and vacuum distillation; 2) coking; 3) catalytic reforming; 4) hydrocracking; 5) hydrotreating; 6) fluid catalytic cracking; 7) alkylation; 8) sulfur recovery; and, 9) other auxiliary systems. Auxiliary systems include a hydrogen plant (to produce hydrogen needed for certain refinery reactions), boilers to produce steam, cogeneration plant to produce electricity, and wastewater treatment. Finished products are transported by pipeline to BP distribution terminals located throughout California and adjacent states.

1.7.4 PROPOSED PROJECT MODIFICATIONS TO THE REFINERY

The proposed project modifications are outlined in this section. All components of the proposed project focus on enhancing safety, achieving compliance, and optimizing the operations of the existing Refinery. Many components of the proposed project are primarily related to modifications of the FCCU and other related units. Additional modifications are related to reducing refinery flaring.

1.7.4.1 Modify Existing Fluid Catalytic Cracking Unit

The FCCU processes heavier feedstocks, known as gas oils, which are then upgraded into lighter components used for gasoline blending. The proposed project will involve several changes to the FCCU and related systems, such as required modifications to comply with Rule 1105.1 and other proposed changes that will improve the operational efficiency of the FCCU. To comply with the PM10 and ammonia emissions standards in Rule 1105.1, BP is proposing to replace their existing flue gas air pollution control system for the FCCU, which consists of two dry electrostatic precipitators (ESPs), with one new dual chamber ESP.

In addition, other proposed modifications to the FCCU will involve changes in piping, heat exchangers, pumps, as well as modifications to the internal configuration of the FCCU vessels. The overall effect of these modifications will not increase the capacity of the FCCU. Modifications to three systems of the FCCU are proposed including the Gas Plant, the Preheat, and the Disengager Reactor Modifications. The Gas Plant modifications will mainly involve improvements to heat exchangers, pumps, and piping. Modifications proposed to the Absorber Overhead Cooler, Absorber Bottoms Reboiler, Rerun Overhead Condensers, Rerun Overhead Product Coolers, and replacement of the Rerun Overhead Pumps would allow recovery of more FCC gasoline. The Feed Preheat Modifications mainly involve improvements to heat exchangers and piping to improve heat recovery and increase feed preheat temperature. The Disengager Reactor modifications would upgrade the Rough Cut Cyclone gas outlet tubes to reduce internal reactor erosion.

1.7.4.2 Install New Fluid Feed Hydrodesulfurization Reactor

BP currently has one FFHDS reactor that removes sulfur compounds from the feed to the FCCU to produce lower sulfur end products as well as lower stack emissions. BP is proposing to install a second FFHDS reactor to run in parallel with the existing FFHDS reactor so that the FFHDS can run for longer periods of time between turnarounds. The proposed project will also allow the FFHDS to remove more sulfur from the feed, resulting in a lower sulfur product that is fed to the FCCU.

1.7.4.3 Modify Existing Alky Merox Unit

The purpose of the Alky Merox unit is to remove sulfur-containing compounds from the olefin feed streams to the Iso-Octene and Alkylation units, and therefore, produce lower sulfur gasoline blending component products from the Iso-Octene and Alkylation Units. Currently, the Alky Merox unit does not have the capability of processing all of the olefin streams produced at the Refinery. Producing lower sulfur gasoline is desirable because low sulfur gasoline results in fewer sulfur oxide emissions from mobile sources that use the fuel, plus it complies with local, state and federal sulfur content limitations for gasoline.

The current capacity of the Alky Merox unit is limited to processing approximately 600 barrels per hour. Olefins are fed through the Extractor to the Water Wash Tower. Sour olefins are fed to the extractor to reduce the concentration of sulfur containing compounds. The capacity of the Extractor is also currently limited to processing 600 barrels per hour. The proposed modifications to the Alky Merox unit will increase the Extractor capacity to 1,000 barrels per hour, which will be large enough to process all of the olefins at the Refinery. The proposed modifications will also include installing new vessels, piping, and other ancillary equipment.

1.7.4.4 Modify Existing Alkylation Unit

The main function of the Alkylation Unit is to convert olefins into alkylate. BP plans to purchase additional olefin feed as part of the proposed project. Also, as a result of the proposed modifications to the FCCU, more olefin is expected to be produced. BP expects that the existing Iso-Octene unit will be capable of processing a portion of the additional olefin, and the Alkylation Unit will process the balance. To handle the processing of additional olefin, BP proposes to increase the olefin feed throughput to the Alkylation Unit by approximately 15 percent. The proposed modifications to the Alkylation unit will primarily affect piping, pumps, heat exchangers, and other ancillary equipment. Additionally, modifications are proposed to the Deisobutanizer, Debutanizer, and Depropanizer towers to improve capacity, efficiency, and product quality.

1.7.4.5 Modify Existing Hydrocracker Unit

The Hydrocracker Unit processes high sulfur diesel feeds into both ultra-low sulfur diesel and gasoline blending components. The throughput of the Hydrocracker Unit is currently

limited by the availability of the fractionation gas plant, the capacity of the distillation tower, and by other product cooling constraints. Hydraulic constraints in the reaction section of the Hydrocracker Unit also limit the feed rate. An increased fractionation gas plant capacity will be achieved by converting the lean oil absorber tower to a low pressure diethanolamine (DEA) scrubber tower so that the fractionator overhead compressor's feed gas can be processed into fuel gas. BP proposes to replace the liquid/gas distributor trays in the reaction section with new, state of the art trays. This proposed change will result in more efficient use of the catalyst and allow higher feed rates. BP proposes to increase the feed throughput to the Hydrocracker unit by approximately 10 percent by addressing these limitations. The proposed project also includes modifying piping, controls, and ancillary equipment.

1.7.4.6 Modify Existing Coker Gas Debutanizer Pressure Relief Valve

To comply with Rule 1173, BP is proposing to replace the pressure relief valve on the Debutanizer Tower and route the future emergency gas releases to an existing flare.

1.7.4.7 Modify Existing Sulfur Plant

BP's existing Sulfur Plant currently converts hydrogen sulfide and ammonia-rich acid gases into elemental sulfur, water, and nitrogen. The current capacity of the Sulfur Plant is permitted to produce 449.33 long tons per day (LT/D) of elemental sulfur from the four Claus Units (A, B, C and D). The proposed modifications will help the sulfur plant to consistently operate at higher production rates closer to, without exceeding, the permitted capacity.

BP proposes to increase the production rates without exceeding the permitted capacity of the Sulfur Unit with the following modifications:

- Change the solvent in the main amine system from DEA to methyl diethanolamine (MDEA) to allow more amine circulation since MDEA is effective at higher concentrations.
- Change the "C" Claus Unit to allow oxygen enrichment up to 28 percent.
- Add oxygen injection to "D" Claus Unit.

1.7.4.8 Modify Existing Vapor Recovery System

BP's existing vapor recovery system collects vent gases from process units and tanks, which are then treated to remove sulfur before being routed to various flares throughout the Refinery. The vapor recovery system is comprised of multiple compressors and has a combined maximum compression capacity of 355,000 standard cubic feet per hour (SCFH). BP is currently operating below this level because one vapor recovery compressor (the No. 7 unit) permitted at 95,000 SCFH is not functional.

As part of the March 2005 settlement agreement between the SCAQMD and the operators of BP Carson Refinery, BP agreed to implement a Supplemental Environmental Project (SEP) that would increase the capabilities of the existing vapor recovery system to collect and treat vent gases that would otherwise vent to the refinery flares. The SEP requires BP to increase the total vapor compression capacity by a minimum of 195,000 SCFH. BP proposes to accomplish part of this obligation by replacing the No. 7 vapor recovery compressor with a new 95,000 SCFH vapor recovery compressor, intercooler, and knockout drum. This will restore the compression capacity in the Vapor Recovery Unit to 355,000 SCFH.

As part of the March 2005 settlement agreement between the SCAQMD and the BP Carson Refinery, BP agreed to implement a Supplemental Environmental Project (SEP) that would increase the capabilities of the existing vapor recovery system to collect and treat vent gases that would otherwise vent to atmosphere or the flares, with a priority placed on maximizing collection of vent gas streams with high sulfur content. The gases that vent to the Coker Flare were selected for control due to their higher sulfur content, which will maximize the reduction of sulfur emissions. The SEP requires BP to increase the total vapor compression capacity by a minimum of 195,000 SCFH. BP proposes to accomplish part of this obligation by replacing the No. 7 vapor recovery compressor with a new 95,000 to 140,000 SCFH vapor recovery compressor, intercooler, and knockout drum. This proposed modification will restore the compression capacity in the Vapor Recovery Unit to *at least* 355,000 SCFH.

In addition, the SEP requires BP to invest at least \$20 million to achieve the remaining 100,000 SCFH of vapor compression capacity. BP intends to apply the \$20 million by proposing the following improvements: (1) install ~~150,000~~ 100,000 SCFH of reciprocating compressor capacity for flare gas recovery with exchangers, knockout drums, and a new electrical power supply; (2) install a new water seal on the Coker Flare to allow recovery of flare gas; (3) install a flow meter on the Coker Flare to measure the net flow of gas to the flare; (4) install a tie-in from the compressor discharge to the Coker Gas Plant Amine Treating Unit to remove hydrogen sulfide from the recovered gas; (5) upgrade the existing vapor recovery caustic gas treating system to improve its ability to handle peak loads; (6) add interstage cooling and knock out drums to the existing No. 5 and No. 6 Vapor Recovery Compressor systems to increase the availability of the systems; and (7) add pressure, oxygen, and flow measurement instruments to monitor the operation and performance of the vapor recovery system.

This SEP will reduce emissions from the Refinery by increasing the capability of the Refinery's existing vapor recovery system to collect and treat vent gases and will add the capability to collect and treat gases that previously would vent to the Refinery's flares.

1.7.4.9 Install New North Area Flare Gas Recovery System

BP is proposing modifications to the existing North Area Flares to comply with Rule 1118 - Control of Emissions from Refinery Flares. The proposed modifications will

recover flare gas from the flares located in the north area of the Refinery (e.g., FCCU, Hydrocracker Unit, FFHDS, and No. 5 flares). To reduce the overall sulfur emissions from the Refinery, BP proposes to install the following: (1) two compressors with a compression capacity between 70,000 and ~~100,000~~ 150,000 SCFH each and the associated coolers and knock out drums; (2) new piping connections from the FCCU, Hydrocracker Unit, FFHDS, and No. 5 flares; (3) water seals for the FCCU and Hydrocracker Unit flares to enable flare gas recovery; (4) a tie-in to the existing amine regeneration system for the removal of hydrogen sulfide; and (5) electrical, controls, and utilities required to operate the system.

1.7.4.10 Modify Pressure Relief Devices

BP has been reviewing the compliance of certain pressure relief devices (PRDs) with the SCAQMD permit conditions. The SCAQMD has indicated for some PRDs that currently vent to atmosphere, BP will need to connect these PRDs to a closed system for vapor recovery. Currently, BP will be required to connect a total of 13 PRDs to a closed system in the FCCU, Reformer, Crude, Alkylation, Alky Merox, Supercritical Fractionation and Isomerization Area (SFIA), 52 Vacuum Unit, and Coker Unit. In all cases, the modifications will involve the installation of piping so that in the event of an overpressure situation, the emissions from the PRD will be controlled instead of venting to the atmosphere. BP is currently in negotiations with the SCAQMD on the extent of these requirements so detailed engineering has not been completed on these projects. The environmental impacts of this portion of the proposed project are expected to result in emission decreases by controlling a currently uncontrolled source of emissions.

1.7.4.11 Environmental Benefits of the Proposed Project

The environmental benefits of the proposed project include the following:

- The proposed project will increase the production of low sulfur gasoline by about 20,000 gallons per day without increasing the crude throughput.
- The proposed project will increase the production of ultra-low sulfur diesel and jet fuel (less than 15 ppm sulfur) by about 29,000 gallons per day and 121,800 gallons per day respectively, without increasing the crude throughput.
- The proposed project is expected to reduce PM10 emissions from the FCCU due to the replacement of existing air pollution control equipment with new ESPs.
- The proposed project is expected to reduce emissions from flaring by capturing gas flows to the flare in the flare gas recovery system. This will reduce the combustion of gases from the flare.
- The proposed project is expected to reduce gas flows to the flares, as well as combustion emissions from flaring activities by capturing released gas in the flare gas

recovery system prior to incineration in the FCCU, Hydrocracker, FFHDS and No.5 flares.

- Two pressure relief devices in the Coker Gas Debutanizer Unit will be tied into the flare system improving the safety of the system and reducing potential VOC emissions.

1.7.4.12 Construction of the Proposed Project

Construction activities for most aspects of the proposed project are expected to begin during the fourth quarter of 2006, and be completed by the second quarter of 2008. The construction activities for the proposed modifications to the Vapor Recovery System and Flare Gas Recovery Projects are expected to begin during the second quarter of 2007 and be completed in the second quarter of 2009.

1.7.4.13 Operation of the Proposed Project

The permanent work force at the Refinery is expected to increase by about four additional workers as a result of the proposed project. The proposed project is expected to incrementally increase traffic by about eight trucks per day associated with the delivery or transport of additional materials including sulfur, oxygen, and particulate matter from the FCCU (Rule 1105.1 compliance). In addition, about one additional railcar per year will be required to transport catalyst to the FCCU.

1.7.4.14 Permits and Approvals

The Refinery has numerous environmental permits from a variety of federal, state, and local agencies. The proposed project may require new permits or modifications to existing permits (e.g., air permits and building permits).

1.8 EXECUTIVE SUMMARY – CHAPTER 3: EXISTING ENVIRONMENTAL SETTING

This chapter presents the existing environmental setting for the proposed project and compares it to the potential impacts of the proposed project that have been previously evaluated. This EIR is focused only on the environmental topics identified in the NOP/IS (see Appendix A) that could be significantly adversely affected by the proposed project. The reader is referred to the NOP/IS for discussion of environmental topics not considered in this EIR, and the rationale for inclusion or exclusion of each environmental topic. The environmental topics identified in Chapter 3 include both a regional and local setting.

1.8.1 AIR QUALITY

Over the last decade and a half, air quality has substantially improved within the SCAQMD's jurisdiction. Nevertheless, several air quality standards continue to be frequently exceeded by a wide margin. For example, of the National Ambient Air Quality Standards (NAAQS) established for six criteria pollutants [ozone, lead, sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM₁₀)], the area within the SCAQMD's jurisdiction is only in attainment with the state standard and the NAAQS for SO₂, NO₂, and lead. Chapter 3 provides a brief description of the existing air quality setting for each criteria pollutant as well as for toxic air contaminants.

1.8.2 HAZARDS AND HAZARDOUS MATERIALS

The Refinery handles hazardous materials with the potential to cause harm to people, property, or the environment. An accidental release of hazardous materials at a facility can occur due to natural events, such as earthquakes, and non-natural events, such as mechanical failure or human error. Potential existing hazards from the Refinery are those associated with accidental releases of toxic/flammable gas, toxic/flammable liquefied gas, and flammable liquids. Typical hazards at a refinery include toxic gas clouds, fires, vapor cloud explosions, thermal radiation, and overpressure. State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.

1.8.3 NOISE

The vicinity of the Refinery is an urban environment characterized by extensive industrial, commercial, transportation-related and some residential land uses. The ambient noise environment in the vicinity of the Refinery is comprised of contributions from equipment and operations within multiple commercial and industrial areas, from rail road activities, from traffic on the major transportation routes (Interstate 405, 223rd Street, Wilmington Avenue, Sepulveda Boulevard, and Alameda Street), and from other individual activities in the area.

Traffic, both vehicular and railroad, is a major source of noise in the area. The 405 Freeway is a major noise source at the Refinery since it is elevated above most buildings; therefore, the noise is not attenuated as quickly as noise generated at ground level. Railroad tracks associated with the Alameda Corridor are located along the eastern boundary of the Refinery such that railroad activities are a source of noise in the area. Although there are numerous sources of noise in the area, there are few sensitive receptors (i.e., residential areas, hospitals, rest homes, and schools) in the Carson/Wilmington area near the Refinery. There are no residential areas, hospitals, rest homes or schools within one-quarter mile of the operating portions of the Refinery.

The nearest commercial receptor is located northwest of the Refinery, just west of Wilmington Avenue and south of 223rd Street. The nearest industrial receptor is located just west of the Refinery and Wilmington Avenue and south of 230th Street.

The community noise exposure level (CNEL) (74 and 75) in commercial areas are in the high range for “conditionally acceptable” land use compatibility guidelines. The existing CNEL in the vicinity of the closest residences is 63 to 71 dBA (residences southwest of the Refinery and northwest of the Refinery, respectively) and are in the “normally unacceptable” range for their land use category. Traffic along 223rd Street is the major contributor to noise levels.

1.8.4 TRANSPORTATION AND TRAFFIC

There are four major freeways which bound the Refinery. Additionally, there are four major surface streets which provide arterial access to the Refinery. Alameda Street has been, and continues to be upgraded, expanded and modified to provide a dedicated roadway system for trucks and railcars leaving the Ports of Los Angeles/Long Beach to provide more efficient movements of goods and materials in to and out of the port areas.

The operating characteristics of an intersection are defined in terms of the level of service (LOS), which describes the quality of traffic flow based on variations in traffic volume and other variables such as the number of signal phases. LOS A to C operate well. Level C normally is taken as the design level in urban areas outside a regional core. Level D typically is the level for which a metropolitan area street system is designed. Level E represents volumes at or near the capacity of the highway which will result in possible stoppages of momentary duration and fairly unstable traffic flow. Level F occurs when a facility is overloaded and is characterized by stop-and-go (forced flow) traffic with stoppages of long duration.

Peak hour LOS analyses were developed for intersections in the vicinity of the Refinery. The LOS analysis indicates typical urban traffic conditions in the area surrounding the Refinery, with all intersections operating at Levels A to D during morning and evening peak hours. Four intersections are estimated to operate at LOS D or E in 2008 (without the proposed project) including Wilmington Avenue and 223rd Street, Wilmington Avenue and Sepulveda Boulevard, Alameda Street and Sepulveda Boulevard, and 223rd Street and Alameda Street (at Wardlow access). All other intersections operate at LOS A, B or C.

In addition to the freeway system, railroad facilities service the Refinery providing an alternative mode of transportation for the distribution of goods and materials. The area is served by the Southern Pacific (SP), Union Pacific, and Santa Fe, Pacific Electric and Harbor Belt Line railroads, with several main lines occurring near the Refinery. The Refinery is located near the Ports of Long Beach and Los Angeles, which provide a mode for transportation of goods and materials via marine vessels.

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

Chapter 4 assesses the potential environmental impacts of the construction and operation of the BP Safety, Compliance, and Optimization Project. Chapter 4 evaluates those impacts that are considered potentially significant under the requirements of CEQA, as determined by the NOP/IS (see Appendix A). Specifically, an impact is considered significant under CEQA if it leads to a “substantial, or potentially substantial, adverse change in the environment.”

1.9.1 AIR QUALITY

1.9.1.1 Environmental Impacts

The SCAQMD makes significance determinations based on the maximum daily emissions during the construction period, which provides a “worst-case” analysis of the construction emissions. Similarly, significant determinations for operational emissions are based on the maximum daily emissions during the operational phase.

Construction Emissions: Construction emissions for the proposed project are summarized in Table 4-3, together with the SCAQMD’s daily construction threshold levels. The construction phase of the proposed project at the BP Carson Refinery will exceed the significance thresholds for CO, VOC, NO_x, and PM₁₀. Therefore, the air quality impacts associated with construction activities are considered significant.

Operational Emissions: Total operational emissions from the proposed project are summarized in Table 4-4, together with the SCAQMD’s daily operational threshold levels. Operational activities associated with the proposed project is not expected to exceed the SCAQMD significance thresholds for any pollutant. The proposed project is also expected to provide emission reduction benefits associated with the increased availability of low sulfur gasoline and diesel fuel for sale and use in Southern California, the reduction in PM₁₀ emissions from the FCCU, the reduction of combustion of gases from the flare, and the reduction of VOC emissions from the Coker Gas Debutanizer Unit. Following completion of the construction phase, the proposed project is expected to have an overall beneficial impact on air quality. Therefore, the air quality impacts associated with operational emissions from the proposed project are less than significant.

Toxic Air Contaminants: A health risk assessment (HRA) was performed to determine if emissions of toxic air contaminants (TAC) generated by the proposed project would exceed the SCAQMD thresholds of significance for cancer risk and is included as Volume II to this EIR. The results of the HRA were used to evaluate the impacts of toxic air contaminants from the proposed project. It is worth noting that the proposed project will phase out the use of DEA (a TAC) in the Sulfur Recovery Plant and replace it with MDEA, which is not a toxic air contaminant, reducing the potential TAC emissions from

the Refinery. Therefore, implementation of the proposed project is not expected to result in significant cancer risks from toxic air contaminants.

1.9.1.4 Mitigation Measures

A number of feasible mitigation measures have been imposed on the proposed project to mitigate the potentially significant adverse impacts associated with construction emissions. The mitigation measures include the development of a Construction Emission Management Plan, limiting truck idling to five minutes, using electricity wherever possible, maintaining construction equipment, using an emulsified diesel fuel or equivalent alternative diesel fuel throughout the construction phase, if commercially available, suspending construction activities during first stage smog alerts, developing and implementing a fugitive dust emission control plan, and using lower VOC content coatings.

1.9.1.5 Level of Significance after Mitigation

Construction emissions of CO, VOC, and NO_x for the proposed project are expected to remain significant following mitigation (see Table 4-7). The construction emissions associated with SO_x and PM₁₀ are expected to be less than significant. However, construction emissions are expected to be short-term as they will be eliminated following completion of the construction phase of the proposed project.

1.9.2 HAZARDS AND HAZARDOUS MATERIALS

1.9.2.1 Environmental Impacts

At the Refinery, four existing units, the Hydrocracker, FCCU, Alkylation Unit and Alky Merox Unit, have the ability to create a hazard that could extend off-site. The proposed modifications to the Hydrocracker Unit would increase the distance for exposure to hydrogen sulfide to occur offsite. The proposed modifications to the FCCU would also increase the distance that a pool or torch fire could extend offsite. The proposed modifications to the Alkylation Unit and Alky Merox Unit would also increase the distance that a flash fire could extend offsite. Therefore, the potential hazard impacts associated with the proposed project are considered to be significant because there is the potential for some individuals to be exposed to potential hazards that would exceed the significance thresholds.

Most of the hazard impacts are confined to heavy industrial or commercial areas surrounding the facility. Releases from new or modified equipment that result in an increase in the potential off-site exposure (based on the consequence modeling and the given hazard endpoints), do so only under “worst-case” conditions. For the “worst-case” scenarios evaluated to occur, the following conditions must be met: 1) a full rupture of a pipeline within the unit occurs; 2) the release does not ignite within minutes of the rupture; 3) the wind speed is low (less than three miles per hour); and, 4) the atmosphere is calm. The occurrence of this sequence of events is highly unlikely and would only

result in an off-site hazard (toxic or flammable vapor dispersion) for a limited number of potential releases.

1.9.2.2 Mitigation Measures

An Risk Management Program (RMP) has been prepared for the Refinery for several chemicals including but not limited to hydrogen sulfide, ammonia and chlorine. Of these chemicals, the proposed project is only expected to result in increased hazards associated with hydrogen sulfide at the Refinery. The RMP consists of four main parts: 1) hazard assessment that includes an off-site consequence analysis; 2) five-year accident history; 3) prevention program; and, 4) emergency response program. The Refinery's existing RMP will need to be reviewed and revised to include the new and modified refinery units and to ensure that no unexpected or adverse interactions with existing systems occur. Such reviews are required as part of the RMP, California Accidental Release Prevention Program (CalARP), and Process Safety Management (PSM) programs for covered processes. It is expected that such reviews will take place if the threshold quantities of regulated substances are exceeded for any component of the proposed project. No additional feasible mitigation measures have been identified for the proposed project, over and above the extensive safety regulations that currently apply to the Refinery.

1.9.2.3 Level of Significance Following Mitigation

Compliance with existing regulations and implementation of the recommended safety measures would further minimize the potential impacts associated with an accidental release, but are not expected to eliminate the potential hazard impacts. No additional feasible mitigation measures were identified to further reduce significant adverse hazard impacts. Therefore, hazards and hazardous material impacts generated by the proposed project are expected to remain significant.

1.9.3 NOISE

1.9.3.1 Environmental Impacts

Construction Noise Levels: The noise levels from the construction equipment that will be operated at the Refinery during implementation of the proposed project are expected to be within the allowable noise levels established by the City of Carson noise ordinance. The proposed project is not expected to increase the noise levels at residential areas. The noise level at the closest residential area is expected to be 64 dBA which is within the normally acceptable noise range. The noise levels at the other noise monitoring locations are within industrial areas and no significant (audible) increase in noise levels is expected. No significant noise impacts related to construction activities associated with the proposed project are expected. Therefore, the noise impacts during the construction phase of the proposed project are expected to be less than significant.

Operational Noise Levels: Refinery operations are continuous over a 24-hour period. The maximum noise level of installed new equipment or modified existing equipment at

the Refinery is expected to be limited to 85-90 dBA at three feet in order to comply with OSHA and the City of Carson noise standards. These noise specifications will be enforced and included as part of the equipment purchase agreement for all new and modified equipment. Given the 85 dBA criteria for refinery equipment, it is expected that the maximum noise level from several pieces of equipment operating concurrently would be about 90 dBA. Assuming an operational “worst-case” noise level of 90 dBA, and six dBA noise attenuation for every doubling distance, noise levels would drop to 60 dBA or less at about 1,000 feet from the noise sources. Noise generated by equipment affected by the proposed project is not expected to increase the overall noise levels at the Refinery (when compared to baseline conditions). Therefore, no significant noise impacts related to operation activities associated with the proposed project are expected. The noise levels in the area of the Refinery following completion of construction of the proposed project are expected to be about the same as the current levels.

1.9.3.2 Mitigation Measures

No significant impacts associated with noise are expected from the proposed project during construction or operational phases, so no mitigation measures are required.

1.9.3.3 Level of Significance Following Mitigation

The proposed project is expected to comply with local noise ordinance, so no significant impacts on noise are expected.

1.9.4 TRAFFIC AND TRANSPORTATION

1.9.4.1 Environmental Impacts

Construction Traffic Levels: The construction activities associated with the proposed project will create additional traffic from travel by construction workers to and from the Refinery, as well as from the transportation of materials and equipment to the Refinery. Two intersections are expected to show a change in the LOS due to the construction phase of the proposed project, if the work shift ends during peak traffic conditions. The intersection of 223rd Street/Alameda Street/Wardlow Access is expected to change from LOS D to LOS E and the Gate 60 and 223rd Street intersection will change from LOS B to LOS D. The traffic change at both of these intersections is considered to be a significant adverse impact. The LOS at the other local intersections is expected to remain unchanged. However, the proposed project will increase the volume-to-capacity ratio by more than two percent at two other intersections that are currently operating at LOS D, if the work shift ends during peak traffic conditions. The intersections of Wilmington Avenue/223rd Street, and Alameda Street/Sepulveda Boulevard are currently operating at LOS D. The proposed project would increase the volume-to-capacity at these two intersections by more than two percent (i.e., 4.7 and 21.6 percent, respectively), resulting in potentially significant increases in traffic. Therefore, impacts of the proposed project on traffic during the construction phase would be considered significant.

Operational Traffic Levels: Once constructed, implementation of the proposed project will increase the permanent number of workers at the Refinery by four additional workers. The increase in the number of workers is relatively minor as the local streets typically handle vehicle trips in the magnitude of 25,000 or more vehicles per day.

The proposed project will result in a maximum increase of eight additional truck trips per day traveling to and from the Refinery. Since these trips would mainly consist of material deliveries, they would be spread throughout the workday with few deliveries occurring during the peak hour. Therefore, their contribution to overall traffic impacts would be negligible. No significant adverse traffic impacts during operation of the proposed project are expected.

1.9.4.2 Mitigation Measures

Construction traffic associated with implementing the proposed project is expected to result in a significant adverse impact at the intersections of Wilmington Street/223rd Street, and Alameda Street/Sepulveda Boulevard, 223rd Street/Alameda Street (at Wardlow access), and the BP Refinery Gate//223rd Street, if the work shift ends during the evening peak hours. The following mitigation measure would reduce traffic impacts to less than significant.

T-1 The hours for the construction work shifts shall avoid starting or ending the shift during the peak traffic hours of 7:00 AM to 8:00 AM and 4:30 PM to 5:30 PM. This will avoid workers traveling during the peak traffic hours and eliminate potentially significant traffic impacts.

The potentially significant adverse transportation and traffic impacts during construction of the proposed project are expected to be mitigated to less than significant.

1.10 EXECUTIVE SUMMARY – CHAPTER 5: SUMMARY OF CUMULATIVE IMPACTS

CEQA Guidelines §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065(a)(3). There are a number of projects proposed for development in the vicinity of the Refinery, which may contribute cumulative impacts as compared to the impacts expected to be generated by the proposed BP Carson Refinery Safety, Compliance and Optimization Project. These include other refinery and industrial projects such as the Alameda Corridor Transportation Authority projects, as well as other projects planned in the City of Carson.

1.10.1 AIR QUALITY

1.10.1.1 Environmental Impacts

Construction Impacts: Air quality impacts due to construction of the proposed project along with the other cumulative projects in the area are expected to be significant since the SCAQMD thresholds will be exceeded. Table 5-2 summarizes the available construction emissions data for the related projects. On a cumulative basis, construction emissions would exceed the thresholds established by the SCAQMD assuming they occur at the same time. Therefore, the cumulative air quality construction impacts are considered significant. Mitigation measures to reduce air emissions associated with construction activities are necessary primarily to control emissions from heavy construction equipment and worker travel.

Operational Impacts: The operation of the BP Safety, Compliance, and Optimization Project will not exceed the SCAQMD thresholds, so no significant air quality impacts are expected from the proposed project.

Air quality impacts associated with cumulative projects are also expected to be less than the SCAQMD mass emissions thresholds for CO, NO_x, SO_x and PM₁₀. On a cumulative basis, only the emissions of VOCs are expected to exceed the SCAQMD mass emission thresholds. Therefore, the cumulative air quality impacts for CO, NO_x, SO_x, and PM₁₀ are expected to be less than significant. The cumulative air quality impacts of VOCs are expected to be significant.

Toxic Air Contaminant Impacts: Impacts of the proposed project on health effects associated with exposure to toxic air contaminants is expected to be below the CEQA significance thresholds and, therefore, less than significant. Impacts of the proposed project are not expected to contribute to cumulative impacts and are not considered to be cumulatively considerable. Cumulative impacts of toxic air contaminants on health are expected to be less than significant.

1.10.1.2 Mitigation Measures

For the construction period, the mitigation measures developed as part of the proposed project should be imposed on other related projects, since cumulative emissions are significant.

Mitigation measures for other projects will be required on a case-by-case basis. A BACT review will be completed during the SCAQMD permit approval process for all new/modified sources.

1.10.1.3 Level of Significance Following Mitigation

The cumulative adverse air quality impacts due to construction activities are expected to exceed the SCAQMD significance thresholds and are considered to be cumulatively

considerable. The cumulative air quality impacts due to operational activities are expected to exceed the SCAQMD significance thresholds for VOC emissions only and are considered to be cumulatively considerable. The cumulative air quality impacts due to operational activities are expected to be less than significant for CO, NOx, SOx, and PM10. The project-specific toxic air contaminant health impacts would not be significant, and are not considered to be cumulatively considerable.

1.10.2 HAZARDS AND HAZARDOUS MATERIALS

1.10.2.1 Environmental Impacts

Although other refineries and industrial facilities exist in the general vicinity of the Refinery, the cumulative impacts from and between the onsite operational activities associated with the other industrial projects are not expected to be significant because it is extremely unlikely that upset conditions would occur at more than one facility at a time due to the distance between facilities. It is extremely unlikely that an upset condition at one facility would create an upset at another nearby refinery because of the distance between facilities. The closest refinery to BP is the ConcoPhillips Carson Plant which is located south of Sepulveda Boulevard. The new project-related explosion or fire hazard impacts associated with the proposed project are expected to travel less than 1,000 feet, or stay within the confines of the existing Refinery. Therefore, explosion or fire hazards are not expected to reach the other local refineries or industrial projects, so hazard impacts are not expected to be cumulatively considerable.

1.10.2.2 Mitigation Measures

Impacts of the proposed project on hazards are considered to be significant. A number of existing rules and regulations apply to the Refinery and other industrial facilities that handle, transport or store hazardous materials. Compliance with these rules and regulations is expected to minimize industry-related hazards. Compliance with these rules and regulations should also minimize the hazards at other refineries and industrial facilities located in the area of the BP Carson Refinery. Site-specific mitigation measures for hazards may be required for other projects.

1.10.2.3 Level of Significance After Mitigation

The impacts of the proposed project combined with other projects in the area of the Refinery on hazards are not expected to be cumulatively considerable as hazards at or within one project area and are not expected to impact or lead to hazards at other facility locations.

1.10.3 NOISE

1.10.3.1 Environmental Impacts

Construction Impacts: The cumulative noise impacts associated with the construction of the proposed project along with the related refinery projects and industrial projects are not expected to be significant or exceed noise ordinances. The BP Refinery and other industrial projects are at a sufficient distance apart that the noise levels are not expected to overlap. Residential areas are located adjacent to the southwest corner of the BP Refinery property at a sufficient distance from the BP Refinery and other construction projects in the area so that cumulative noise impacts would not be expected at the closest residential areas to the Refinery.

Operational Impacts: The noise impacts associated with operational activities of the proposed project along with the related refinery and industrial projects in the area are not expected to be significant. Most of the Carson/Wilmington area is industrialized and the cumulative increase in noise is not expected to adversely impact residential areas since they are near the southwestern boundary of the BP Refinery, about one-half mile away from the operating portions of the Refinery. Also, about one mile separates the BP Refinery from other refinery and industrial properties in the area; thus, it is unlikely that noise impacts will overlap. The new BP administration building or storage tanks are not expected to be a noise source, once construction is complete, because it will replace an existing administration building and no new traffic is expected to be created.

Existing noise levels from traffic in the vicinity are already considered unacceptable for certain residential areas. Operation of the Alameda Corridor concentrates train and truck noise along the corridor while reducing overall noise on other highways and railways. Therefore, the cumulative traffic noise impacts from ACTA projects, that include modifications to State Route 47 (SR-47) may be significant.

The noise impacts from the proposed project are not expected to be cumulatively considerable because other projects are located sufficient distance (about 0.5 mile) from the BP Refinery so that noise impacts do not overlap and residential areas are located about one-half mile from the operating portions of the Refinery. The SR-47 project is located several miles from the BP Carson Refinery, so there is sufficient distance to reduce the potential for cumulative noise impacts.

1.10.3.2 Mitigation Measures

Since noise impacts from implementing the proposed project are not considered to be cumulatively considerable, they do not contribute to significant adverse cumulative impacts. As a result, no mitigation measures are required. Mitigation measures will be expected to be required for the SR-47 ACTA project since portions of SR-47 runs adjacent to residential areas.

1.10.3.3 Level of Significance After Mitigation

The noise impacts during both construction and operation activities remain significant for the construction of the ACTA project modifications (i.e., SR-47 modifications) because SR-47 runs adjacent to residential areas. The noise impacts associated with the other refinery and industrial projects in the area are not expected to be significant or contribute to significant adverse cumulative noise impacts during construction or operation of the proposed project.

1.10.4 TRANSPORTATION AND TRAFFIC

1.10.4.1 Environmental Impacts

Construction Impacts: Traffic impacts associated with the construction of the proposed project is expected to be mitigated to less than significant by altering the work schedules of construction workers to avoid peak hour traffic. Therefore, it is not expected that the proposed project will have cumulative traffic impacts with other projects in the area. However, there could be cumulative construction traffic impacts associated with other industrial construction projects in the area that do not avoid peak traffic hours.

Construction of the ACTA projects would require improvements to SR - 47 which could result in disruption to the local traffic circulatory system, creating detours and affecting accessibility to businesses. Construction impacts on traffic associated with modifications to SR - 47 are considered significant.

Operational Impacts: The cumulative traffic impacts were calculated assuming an ambient traffic growth rate of 0.25 percent per year from year 2005 to year 2020 with no changes in existing intersection geometrics. Cumulative impacts were expected to be significant at four intersections including Wilmington Avenue/223rd Street, Wilmington Avenue/Sepulveda Boulevard, Alameda Street/Sepulveda Boulevard, and 223rd Street/Alameda Street.

1.10.4.2 Mitigation Measures

Construction traffic associated with the proposed project is expected to be mitigated to less than significant by altering the construction work schedules to avoid peak hour traffic. Implementation of this mitigation measure will deter workers from traveling during the peak traffic hours and will eliminate potentially significant traffic impacts. Implementation of the proposed project during the operational phase will have less than significant impacts on traffic. On a cumulative basis, general growth in the area may result in significant adverse traffic impacts. Though this projected increase in traffic is unrelated to the proposed project, it is related to the general population growth in the area such that mitigation measures will need to be developed as new traffic generating projects are proposed in the City of Carson's General Plan.

1.10.4.3 Level of Significance After Mitigation

The proposed project is not expected to result in significant traffic impacts. The cumulative adverse impacts of population growth on traffic are expected to be significant at four intersections.

1.11 EXECUTIVE SUMMARY – CHAPTER 6: SUMMARY OF ALTERNATIVES

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

Alternatives to the proposed project included the Alternative 1 - No Project Alternative; Alternative 2 – Compliance Only Projects; and Alternative 3 – Alternative Control Strategies SCAQMD Rule 1105.1 Compliance. Based on the analyses herein, no feasible alternatives were identified that would reduce or eliminate the potentially significant air quality or hazard impacts related to the proposed project and achieve the objectives of the proposed project.

The No Project Alternative (Alternative 1) would: 1) prevent BP from complying with SCAQMD Rule 1105.1, 1118 or 1173; 2) prevent BP from complying with the settlement agreement; 3) prevent BP from improving safety at the Refinery; and, 4) prevent BP from producing additional quantities of low sulfur gasoline, and ultra-low sulfur diesel and jet fuel without increasing the crude throughput capacity of the BP Carson Refinery. However, the No Project Alternative would eliminate the potentially significant adverse impacts related to air quality during construction activities and hazards/hazardous materials impacts during operation.

Alternative 2 would result in significant impacts to air quality during construction activities but would eliminate the potentially significant impacts associated with the hazards due to the modifications to the FCCU, Hydrocracker Unit, Alkylation Unit, and Alky Merox Unit. Therefore, Alternative 2 would be considered the environmentally superior alternative as it would eliminate one of the potentially significant impacts (hazards). However, Alternative 2 would not allow the Refinery to meet the project objective of producing additional quantities of low sulfur gasoline, and ultra low sulfur diesel and jet fuel without increasing the crude throughput capacity of the Refinery. Therefore, the proposed project is preferred because it would attain all project objectives.

Alternative 3 would have similar impacts as the proposed project for hazards/hazardous materials, noise and traffic. Alternative 3 could have potentially greater impacts than the proposed project on aesthetics, air quality, water demand/water quality, and energy. Therefore, the proposed project is preferred because it would attain all project objectives, with potentially fewer environmental impacts.

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

Information on references cited (including organizations and persons consulted) and the acronyms and glossary are presented in Chapters 7 and 8, respectively.

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APPENDIX B

REVISED CONSTRUCTION EMISSIONS

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SAFETY, COMPLIANCE, AND OPTIMIZATION PROJECT

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PEAK EMISSION CALCULATIONS

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Table B-2

BP - Carson Refinery
 Safety, Compliance, and Optimization Project
 Construction Equipment Emission Rates

Equipment Type	Fuel	Hp	2006 Emission Factors lb/hr ⁽¹⁾				2007 Emission Factors lb/hr ⁽¹⁾					
			CO	NOx	PM10	SOx	VOC	CO	NOx	PM10	SOx	VOC
Backhoe Case 580	Diesel	75	0.3793	0.7269	0.0693	0.0053	0.1270	0.3748	0.6979	0.0635	0.0006	0.1179
Bobcat Mod. 873	Diesel	75	0.3793	0.7269	0.0693	0.0053	0.1270	0.3748	0.6979	0.0635	0.0006	0.1179
Compressor	Diesel	49	0.2966	0.2496	0.0305	0.0025	0.1346	0.2933	0.2468	0.0290	0.0003	0.1306
Concrete Saw	Gasoline	13	0.0705	0.1468	0.0094	0.0018	0.0228	0.0689	0.1402	0.0089	0.0002	0.0215
Crane 15 Ton	Diesel	210	0.4383	1.5501	0.0633	0.0109	0.1573	0.4119	1.4665	0.0571	0.0013	0.1478
Crane 240 Ton	Diesel	360	0.9365	2.292	0.0903	0.0153	0.2243	0.8483	2.1049	0.0819	0.0018	0.2121
Crane 450 Ton	Diesel	408	0.9365	2.292	0.0903	0.0153	0.2243	0.8483	2.1049	0.0819	0.0018	0.2121
Crane 65 Ton	Diesel	250	0.4383	1.5501	0.0633	0.0109	0.1573	0.4119	1.4665	0.0571	0.0013	0.1478
Drill Rig Large	Diesel	300	0.5746	2.4807	0.0702	0.0265	0.1710	0.5678	2.2334	0.0659	0.0031	0.1628
Excavator	Diesel	250	0.4944	1.9931	0.0716	0.0155	0.1849	0.4642	1.8559	0.0641	0.0018	0.1726
Forklift 6 ton	Diesel	79	0.2367	0.4556	0.0465	0.0032	0.0840	0.2337	0.4359	0.0428	0.0004	0.0786
Front End Loader	Diesel	210	0.5018	2.0776	0.0717	0.0167	0.1848	0.4716	1.9310	0.0643	0.0019	0.1714
Generator 205 kw	Diesel	250	0.6336	2.4964	0.0809	0.0207	0.2117	0.5974	2.3843	0.0737	0.0024	0.1982
Manlift 60 ft	Diesel	65	0.2586	0.5254	0.0423	0.0039	0.0856	0.2563	0.5110	0.0398	0.0004	0.0819
Temp Light Plants	Diesel	13	0.0377	0.0470	0.0035	0.0008	0.0074	0.0377	0.0453	0.0033	0.0001	0.0072
Tractor/40' Float	Diesel	185	0.5018	2.0776	0.0717	0.0167	0.1848	0.4716	1.9310	0.0643	0.0019	0.1714
Welding Machine 300 Amp	Diesel	49	0.3213	0.2859	0.0334	0.0029	0.1440	0.3169	0.2825	0.0317	0.0003	0.1392

Equipment Type	Fuel	Hp	2008 Emission Factors lb/hr ⁽¹⁾				2009 Emission Factors lb/hr ⁽¹⁾					
			CO	NOx	PM10	SOx	VOC	CO	NOx	PM10	SOx	VOC
Backhoe Case 580	Diesel	75	0.3703	0.6510	0.0595	0.0006	0.1083	0.3661	0.6071	0.0554	0.0006	0.0993
Bobcat Mod. 873	Diesel	75	0.3703	0.6510	0.0595	0.0006	0.1083	0.3661	0.6071	0.0554	0.0006	0.0993
Compressor	Diesel	49	0.2903	0.2442	0.0283	0.0003	0.1265	0.2867	0.2416	0.0275	0.0003	0.1220
Concrete Saw	Gasoline	13	0.0681	0.1344	0.0079	0.0002	0.0206	0.0678	0.1295	0.0071	0.0002	0.0202
Crane 15 Ton	Diesel	210	0.3881	1.3867	0.0535	0.0013	0.1392	0.3664	1.3105	0.0501	0.0013	0.1314
Crane 240 Ton	Diesel	360	0.7762	1.9878	0.0771	0.0018	0.2012	0.7157	1.8770	0.0726	0.0018	0.1913
Crane 450 Ton	Diesel	408	0.7762	1.9878	0.0771	0.0018	0.2012	0.7157	1.8770	0.0726	0.0018	0.1913
Crane 65 Ton	Diesel	250	0.3881	1.3867	0.0535	0.0013	0.1392	0.3664	1.3105	0.0501	0.0013	0.1314
Drill Rig Large	Diesel	300	0.5631	2.0226	0.0640	0.0031	0.1566	0.5595	1.8467	0.0625	0.0031	0.1529
Excavator	Diesel	250	0.4374	1.7260	0.0596	0.0018	0.1620	0.4138	1.6049	0.0555	0.0018	0.1629
Forklift 6 ton	Diesel	79	0.2304	0.4055	0.0402	0.0004	0.0724	0.2272	0.3757	0.0373	0.0004	0.0662
Front End Loader	Diesel	210	0.4453	1.7937	0.0598	0.0019	0.1598	0.4228	1.6664	0.0558	0.0019	0.1500
Generator 205 kw	Diesel	250	0.5644	2.2800	0.0697	0.0024	0.1859	0.5333	2.1787	0.0658	0.0024	0.1741
Manlift 60 ft	Diesel	65	0.2542	0.4910	0.0386	0.0004	0.0781	0.2523	0.4715	0.0375	0.0004	0.0743
Temp Light Plants	Diesel	13	0.0377	0.0450	0.0025	0.0001	0.0072	0.0377	0.0450	0.0018	0.0001	0.0072
Tractor/40' Float	Diesel	185	0.4453	1.7937	0.0598	0.0019	0.1598	0.4228	1.6664	0.0558	0.0019	0.1500
Welding Machine 300 Amp	Diesel	49	0.3128	0.2792	0.0308	0.0003	0.1344	0.3084	0.2760	0.0299	0.0003	0.1292

(1) SCAQMD, 2007 : http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF_0725.xls

Table B-5

**BP - Carson Refinery
Safety, Compliance, and Optimization Project
Fugitive Emission Factors - Equipment and Max Land Disturbance**

Operation Construction Activities ⁽¹⁾	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	SCAQMD Emission Factor, Source Table A9-9-F
Construction Activities ⁽¹⁾	1		8	5.837	0.5	0.00	23.35	0	46.698	Table A9-9-F

TRENCHING OPERATIONS (Backhoe)	Controlled Emissions				Uncontrolled Emissions				
	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	SCAQMD Emission Factor, Source Table A9-9-G
TEMPORARY STOCKPILES	0	0	0	0	0	0.22925	0	0.4585	Table A9-9-G
Construction Activities ⁽¹⁾									
Assumptions: 1 cubic yard trench spoils = 1 ton									

WIND EROSION Disturbed Area and Temporary Stockpiles	Controlled Emissions				Uncontrolled Emissions				
	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	SCAQMD Emission Factor, Source Table A9-9-E
Construction Activities ⁽²⁾	22	0	0.032	19.800	0.000	0.634	0.000	0.007	Table A9-9-E
Assumptions: 1 cubic yard trench spoils = 1 ton									

TRUCK FILLING/DUMPING	Controlled Emissions				Uncontrolled Emissions				
	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	SCAQMD Emission Factor, Source Table A9-9
Truck Filling ⁽³⁾	0	0	0.02205	0.5	0	1.444275	0	2.88855	Table A9-9
Truck Dumping	0	0	0.009075	0.5	0	0.5944125	0	1.188825	Table A9-9
Assumptions: 1 cubic yard trench spoils = 1 ton									

TOTAL PM10 Pounds/day		
Equipment	Average	Peak
(Controlled Emissions)	0.0000	23.349
(Uncontrolled Emissions)	0.000	46.698
Mitigated Emissions (assumes water 3 times/day ⁽⁴⁾)	0.000	15.877
Construction		
(Controlled Emissions)	0.0000	2.902
(Uncontrolled Emissions)	0.000	4.543
Mitigated Emissions (assumes water 3 times/day ⁽⁴⁾)	0.000	1.545

(1) Emissions (lbs/hr) = $0.75 \times (G^{1.5})(H^{1.4}) \times J$; where G = silt content (7.5%), H = moisture content (2.0%), and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).
 (2) Emissions (lbs/day/acre) = $0.00112 \times [(G/5)^{1.3} / (H/2)^{1.4}] \times I/J$; where G=mean wind speed (12 mph), H=moisture content of surface material (2%); I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton
 (3) Emissions (lbs/day/acre) = $1.7 \times [(G/1.5)/(365-H/235)] \times I/15 \times J$; where G = silt content (7.5%), H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)
 (4) Used SCAQMD Table 9-9 Default emission factors.
 (5) Mitigated Emissions assume that watering 3 times per day controls emissions by 66 percent (Uncontrolled Emissions x 0.34)

ADDENDUM TO THE FINAL EIR FOR THE BP CARSON REFINERY SAFETY, COMPLIANCE AND OPTIMIZATION PROJECT

Table B-6

BP Carson Refinery
Safety, Compliance, and Optimization Project
Fugitive Construction Dust Emissions

Operation	2006												2007												2008												2009		
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar										
Stockpile Activities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y										
Excavation Activities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y										
Grading Equipment	2	2	2	0	0	1	1	1	1	1	1	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54										
Land Disturbance PM (lb/day)	31.75	31.75	31.75	0.00	0.00	15.88	15.88	15.88	15.88	15.88	15.88	31.75	47.63	15.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00										
Equipment PM (lb/day)	33.30	33.30	33.30	1.54	1.54	17.42	17.42	17.42	17.42	17.42	33.30	33.30	49.18	17.42	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54										
Total PM (lb/day)	65.05	65.05	65.05	1.54	1.54	33.30	33.30	33.30	33.30	33.30	65.05	65.05	66.81	33.30	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54										

ADDENDUM TO THE FINAL EIR FOR THE BP CARSON REFINERY SAFETY, COMPLIANCE AND OPTIMIZATION PROJECT

Table B-7

BP - Carson Refinery
Safety, Compliance, and Optimization Project
Paint and Solvent Emissions

Equipment	2005			2007												2008					2009										
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
Total Used (Gallons)	0	0	0	10	10	10	15	2	25	25	25	45	45	25	0	0	10	15	10	0	0	20	20	20	40	40	40	20	20	20	
Max Daily (Gallons)	0	0	0	1	1	3	0.25	0.25	3	3	3	12	12	7	0	0	2	3	3	0	0	5	5	5	10	10	10	5	5	5	
Max Daily VOC (lb) ⁽¹⁾	0	0	0	0.835	0.835	2.505	0.20875	0.20875	2.505	2.505	2.505	10.02	10.02	5.845	0	0	1.67	2.505	2.505	0	0	4.175	4.175	4.175	8.35	8.35	8.35	4.175	4.175	4.175	
(1) Emission Calculations from SCQM/D Rule 1173 Limit: 0.635 lb/gal of VOC.																															

TABLE B-8

Summary of Unmitigated Construction Emissions
 from the September 2006 Final EIR with the Construction Emissions
 Associated with the Alkylation Unit and Alky Merox Unit Removed ⁽¹⁾

Construction Period	Estimated Emissions - 12/06 ⁽²⁾				
	CO	VOC	NOx	SOx	PM10
Construction Equipment	254.83	63.16	519.55	45.34	29.92
Vehicle Emissions	79.06	9.29	35.39	0.31	0.86
Fugitive Construction	0.00	0.00	0.00	0.00	96.40
Fugitive Road Dust	0.00	0.00	0.00	0.00	23.78
Architectural Coatings	0.00	0.00	0.00	0.00	0.00
TOTAL EMISSIONS	333.89	72.45	554.94	45.65	150.96
SCAQMD Thresholds	550	75	100	150	150
Significant	No	No	Yes	No	Yes

Construction Period	Estimated Emissions - 11/07 ⁽²⁾				
	CO	VOC	NOx	SOx	PM10
Construction Equipment	489.18	122.88	1122.14	87.36	64.70
Vehicle Emissions	318.55	36.22	93.06	0.28	2.84
Fugitive Construction	0.00	0.00	0.00	0.00	48.05
Fugitive Road Dust	0.00	0.00	0.00	0.00	60.34
Architectural Coatings	0.00	31.59	0.00	0.00	0.00
TOTAL EMISSIONS	807.73	190.69	1215.21	87.64	175.93
PREVIOUS EMISSIONS	1035.82	250.37	1632.94	116.57	207.69
NET CHANGE	-228.09	-59.68	-417.73	-28.93	-31.76
SCAQMD Thresholds	550	75	100	150	150
Significant	Yes	Yes	Yes	No	Yes

(1) The construction emissions associated with the Alkyl Merox and Alkylation Unit have been removed. The emission in this table are based on the 2006 emission factors and have not been updated to more current (2007) emission factors.

(2) Emission calculations are limited to these two months as they represent the peak months of construction activity.

Peak Value