

CHAPTER 6

PROJECT ALTERNATIVES

Introduction
Alternatives Rejected as Infeasible
Description of Project Alternatives
Environmental Impacts from the Project Alternatives
Conclusion

[This page intentionally left blank.]

6.0 PROJECT ALTERNATIVES

6.1 INTRODUCTION

Chapter 6 of this EIR provides a discussion of alternatives to the proposed project as required by CEQA. CEQA requires that an EIR describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives (CEQA Guidelines §15126.6(a)). In addition, though the range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (CEQA Guidelines §15126.6(f)), they need not include every conceivable project alternative (CEQA Guidelines, §15126.6(a)). A CEQA document need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative (CEQA Guidelines §15126.6(f)(3)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

Alternatives presented in this chapter were developed by identifying alternatives that may achieve most or some of the objectives of the proposed project. The alternatives were limited to the area of the existing Refinery, as the objectives of the proposed project are to further develop and integrate the Tesoro Wilmington and Carson Operations. The alternatives to the proposed project were developed by modifying specific components of the proposed project taking into consideration the project’s limitations as to space, permitting requirements, and engineering constraints. The rationale for selecting specific components of the proposed project to generate feasible alternatives is based on CEQA’s requirements to present “realistic” alternatives, that is, alternatives that can actually be implemented. Consequently, unless otherwise stated, each project alternative described below contains some of the same components as the proposed project.

One of the key elements of identifying alternatives to a proposed project is whether or not they can feasibly accomplish most of the basic objectives of the proposed project. There are multiple objectives for the proposed project that include modifications to further integrate the Tesoro Carson and Wilmington Operations so that consolidated operations can be optimized for improved operation, reduction of GHG and criteria pollutant emissions, improved energy efficiency, and environmental compliance requirements. The objectives of the proposed project include the following:

- Improving process efficiency through integration while maintaining the overall production capability of transportation fuels. Making process modifications that improve efficiency and enable shutdown of the Wilmington Operations FCCU prior to the next scheduled FCCU turnaround, currently anticipated to occur in 2017, providing substantial emission reductions and reducing carbon intensity.

- Recovering and upgrading distillate range material from FCCU feeds. Tesoro proposes to achieve this objective by modifying 51 Vacuum Unit, and the HCU at Carson Operations, and the HTU-4 and HCU modifications at Wilmington Operations. Recovering distillate from FCCU feed enables shut down of the Wilmington Operations FCCU since the Carson Operations FCCU has sufficient capacity to process the FCCU feed that remains after distillate recovery.
- Complying with federal, state, and local rules and regulations. Tesoro proposes to achieve this objective by: (1) meeting the U.S. EPA Tier 3 gasoline specifications; and (2) reducing Refinery NOx, SOx, and GHG emissions through proposed process modifications that improve efficiency, enable shutdown of the Wilmington Operations FCCU, and lower carbon intensity.
- Improving financial viability for the newly integrated Tesoro Los Angeles Refinery and the local community. Tesoro proposes to achieve this objective by: (1) reducing future operating, capital, turnaround, and environmental compliance costs, primarily by shutting down the Wilmington Operations FCCU; (2) improving electrical supply reliability; (3) improving integrated Refinery transportation fuel production flexibility between gasoline and distillate products to respond to changes in market demand, including the capability to produce 100 percent of the refinery gasoline production as CARB compliant gasoline; and (4) providing sustainable local jobs and tax revenue for the community.
- Integrating Carson and Wilmington Operations. Tesoro proposes to achieve this objective by installing the Interconnecting Pipelines to allow efficient transfer of hydrocarbons between the facilities to allow gasoline blending optimization, process unit feedstock optimization, and increased diesel production.
- Increasing overall Refinery processing efficiency. Tesoro proposes to achieve this objective by: (1) adding a SARP at the Wilmington Operations to regenerate sulfuric acid on-site; (2) adding a Wet Jet Treater to improve jet fuel quality; (3) upgrading and adding facilities to recover and treat propane for commercial sales; and (4) upgrading existing LPG rail facilities to enable fast unloading of railcars.
- Improving efficiency of water-borne crude oil receipt and marine vessel unloading. Unloading crude oil from marine vessels without delay will reduce vessel emissions at the Port of Long Beach. Tesoro proposes to achieve this objective by constructing six new 500,000 barrel tanks at the Carson Crude Terminal and replacing two existing 80,000 barrel crude oil tanks at the Wilmington Operations with two 300,000 barrel tanks. Piping within the Carson Crude Terminal will be installed to connect the six new 500,000 barrel tanks to existing pipelines to the Carson Operations and Marine Terminal 1. The two new 300,000 barrel tanks will be connected to existing pipelines from the Wilmington Long Beach Terminal. Within the confines of the Wilmington Operations, the existing 12-inch diameter piping will be replaced with 24-inch diameter piping to connect the replacement tanks to the Wilmington Operations.

Aside from the alternatives described in Section 6.3 below, no other project alternatives were identified that met most of the objectives of the proposed project, while substantially reducing significant adverse environmental impacts.

6.2 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reason underlying the lead agency's determination. Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; or (3) inability to avoid significant environmental impacts. Furthermore, CEQA Guidelines §15126.6(f)(2)(B) indicates that if the lead agency concludes that no feasible alternative locations for the project exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR. See Section 6.2.1 for why an alternative site is not a feasible alternative. The specialized nature of the proposed project does not provide a wide selection of feasible project design alternatives since crude oil refining requires certain specialized equipment and most of the primary specialized equipment are already operating at the Tesoro Refinery.

6.2.1 ALTERNATIVE SITES

An alternative location to the Tesoro Refinery site is not feasible as the proposed project consists of modifications to an existing Refinery that contains necessary processing units; natural gas, water, and electric transmission infrastructures; crude oil and petroleum product transportation infrastructure; and the appropriate land use designation necessary to support the proposed project. In addition, the Carson and Wilmington Operations are industrial facilities at fixed locations in the City of Carson and the Wilmington area in the City of Los Angeles. Operational equipment and infrastructure located at the proposed project site are also fixed and, generally, cannot be moved. Advantages of the existing Refinery site would be lost if another location were proposed, e.g., shut down of the Wilmington Operations FCCU. The development of a new refinery in an alternative location would require substantially more equipment, construction, and potentially generate more or substantially greater impacts in more environmental categories (e.g., air quality, energy, hazards/hazardous materials, hydrology/water quality, land use, noise, and traffic) than would occur under the proposed project. Therefore, an alternative refinery site for the proposed project is not feasible.

6.3 DESCRIPTION OF PROJECT ALTERNATIVES

6.3.1 ALTERNATIVE 1 - NO PROJECT ALTERNATIVE

CEQA Guidelines §15126.6(e) requires evaluation of a “No Project Alternative.” Under the No Project Alternative, the proposed project would not occur and the Wilmington and Carson Operations would remain as they exist today. Tesoro would not make the modifications necessary to meet regulatory mandates. The Refinery would continue to operate with a minimal amount of integration. Modifications to the Wilmington Operations would not move forward so that the proposed modifications to the HCU, CRU-3, HTU-1, HTU-2, and HTU-4 would not occur. The new PSTU and SARP also would not be constructed. The change to the DCU Heater H-100 would also not occur. Crude tank modifications at the Wilmington Operations would not occur and the crude unloading rate from the marine terminal would remain unchanged at 5,000 bbl/hr. Finally, the Wilmington Operations FCCU would not be shut down because none of the refinery modifications needed for that to occur would be made.

Under Alternative 1, modifications to the Carson Operations would not occur including modifications to No. 51 Vacuum Unit, HCU, LHU, NHDS Unit, Naphtha Isomerization Unit, Alkylation Unit, and Mid-Barrel Distillate Treater. The new Wet Jet Treater at the Carson Operations would not be installed and the six new crude tanks would also not be installed.

Other refinery integration activities would also not occur. Pipelines would not be built to transport material between the Wilmington and Carson Operations and the electrical connection from the Carson Operations to the Wilmington Operations would not be completed. Finally, no modifications would be made to the LPG Rail Car Unloading facilities.

The proposed project includes some components to comply with federal Tier 3 gasoline specification requirements. As such, the No Project Alternative would not include the federal Tier 3 requirements, which means the Refinery could be in violation of these requirements in the future. For this reason, a No Project Alternative could be considered infeasible. In spite of this, the No Project Alternative is included herein, and the relative merits of this alternative are evaluated and compared to the proposed project as required by CEQA.

6.3.2 ALTERNATIVE 2 – NEW FFHDS FRACTIONATOR AT CARSON OPERATIONS AND A NEW DIESEL HYDROTREATER AT WILMINGTON OPERATIONS

Alternative 2 includes installing one new Fractionator at the tail end of the Carson Operations Fluid Feed Hydrodesulfurization (FFHDS) Unit and one new Diesel Hydrotreater at Wilmington Operations to achieve the project objective of recovering and upgrading distillate range material from FCCU feed.

An FFHDS Unit is a hydrotreating unit for FCCU feed. The FFHDS is a process unit that typically uses a heavy metal-based catalyst and hydrogen to reduce aromatic compounds and impurities such as sulfur in the FCCU feed. Removing sulfur from the FCCU feed and diesel

streams will reduce the sulfur in the products, thus, helping to comply with U.S. EPA sulfur limitations on fuels. At Carson Operations, a new FFHDS fractionator could recover approximately 8,000 to 10,000 bbl/day of jet fuel and approximately 15,000 to 20,000 bbl/day of diesel from the gas oil feed to the Carson FCCU. The FFHDS Fractionator would include one 200 mmBtu/hr natural gas fired heater with economizer and steam generator, one fractionator, one jet stripper, one overhead receiver, as many as 14 associated electrically driven pumps, 14 heat exchangers, one jet coalescer, one jet salt dryer and associated piping and instrumentation. Additionally, the FFHDS could hydrotreat up to an additional 15,000 bbl/day of jet fuel, some of which would need to be removed in the new fractionator. A new feed line would be routed from the existing FFHDS stripper to the new fractionator. Gas oil and diesel product lines would be routed from the new Carson Operations FFHDS fractionator to the Carson Operations FCCU and the Hydrocrackers at both the Wilmington and Carson Operations, respectively. Jet fuel would be routed to storage tanks for blending.

A Diesel Hydrotreater is a process unit that typically uses a heavy metal-based catalyst and hydrogen to reduce aromatic compounds and impurities such as sulfur from diesel. Alternative 2 would include one new 30,000 bbl/day Diesel Hydrotreater at the Wilmington Operations to remove sulfur from the recovered diesel streams. The Diesel Hydrotreater would include one 39 mmBtu/hr BACT compliant fuel gas fired charge heater, one 39 mmBtu/hr BACT compliant fuel gas fired stripper reboiler, one feed drum, one reactor, one fractionator tower, three product separators, one electrically driven recycle compressor and as many as six associated electrically driven pumps, six heat exchangers and associated piping and instrumentation. Diesel recovered by the proposed project would be routed to the new Diesel Hydrotreater. Sour water would be routed to existing wastewater treating facilities. Treated diesel would be routed to existing product storage tanks.

The new FFHDS Fractionator and Diesel Hydrotreater would be constructed instead of making modifications to some of the existing Refinery units. For example, under Alternative 2, the new fractionator would be built instead of making modifications to the Wilmington Operations HCU and HTU-4, and No. 51 Vacuum Unit and HCU at the Carson Operations.

Under Alternative 2, the remainder of the proposed project components would remain unchanged. Alternative 2 would include the following project components from the Wilmington Operations: DCU H-100 modifications; CRU-3 modifications; new PSTU; HTU-1 and HTU-2 modifications; new SARP; and modifications to existing storage tanks. Under Alternative 2, the FCCU at the Wilmington Operations would be shutdown. Alternative 2 would also include the following project components at the Carson Operations: New Wet Jet Treater; LHU modifications; NHDS Unit modifications; Naphtha Isomerization Unit modifications; Alkylation Unit modifications; Mid-Barrel Distillate Treater; Steam System modifications; and installation of new crude storage tanks. In addition, Alternative 2 would also include the proposed Interconnecting Pipelines, the electrical intertie and the LPG Unloading rack modifications.

6.3.3 ALTERNATIVE 3 – NEW GASOLINE HYDROTREATER AT CARSON OPERATIONS

Alternative 3 would include the installation of one new Gasoline Hydrotreater at Carson Operations as an option to achieve the project objective of meeting U.S. EPA Tier 3 gasoline specifications of 10 ppm average sulfur content.

A new 50,000 bbl/day Gasoline Hydrotreater with one new Selective Hydrotreating Unit (SHU) would be installed to enable compliance with the federally mandated Tier 3 gasoline specification of 10 ppm sulfur content. A Gasoline Hydrotreater is a process unit that removes impurities such as sulfur from FCCU gasoline. The new Gasoline Hydrotreater would include one 55 mmBtu/hr BACT compliant fuel gas fired charge heater; one 65 mmBtu/Hr BACT compliant fuel gas fired stripper reboiler; one feed drum; one SHU reactor; one HDS reactor; one stripper; one stripper steam reboiler; one product separator; one electrically driven recycle compressor; one overhead receiver; and as many as six associated electrically driven pumps, six heat exchangers, two air coolers, and associated piping and instrumentation. FCCU gasoline would be routed to the new Gasoline Hydrotreater. Sour water would be routed to existing wastewater treating facilities.

Under Alternative 3, the new Gasoline Hydrotreater/SHU would be built instead of making modifications to HTU-1 and HTU-2 at the Wilmington Operations and LHU, NHDS Unit, and the Mid-Barrel Treater at the Carson Operations.

The remainder of the project components would remain unchanged. Alternative 3 would include the following project components from the Wilmington Operations: DCU H-100 modifications; CRU-3 modifications; new PSTU; HTU-4 modifications; new SARP; and modifications to existing storage tanks. Under Alternative 3, the FCCU at the Wilmington Operations would also be shutdown. Alternative 3 would also include the following project components at the Carson Operations: No. 51 Vacuum Unit modifications; New Wet Jet Treater; HCU modifications; Naphtha Isomerization Unit modifications; Steam System modifications; and new crude storage tanks. In addition, Alternative 3 would also include the proposed Interconnecting Pipelines, the electrical intertie and the LPG Unloading rack modifications.

6.3.4 ALTERNATIVE 4 - INTERCONNECTING PIPELINE AND NEW GASOLINE HYDROTREATER AT CARSON OPERATIONS

Alternative 4 would eliminate all of the proposed project components, except the Interconnecting Pipeline. In addition, Alternative 4 would include the installation of one new Gasoline Hydrotreater/SHU at Carson Operations as an option to achieve the project objective of meeting U.S. EPA Tier 3 gasoline specifications of 10 ppm average sulfur content. A new 50,000 bbl/day Gasoline Hydrotreater with a new SHU would be installed to enable compliance with the federally mandated Tier 3 gasoline specification of 10 ppm sulfur content. The new Gasoline Hydrotreater would include one 55 mmBtu/hr BACT compliant fuel gas-fired charge heater; one 65 mmBtu/Hr BACT compliant fuel gas-fired stripper reboiler; one feed drum; one SHU reactor; one HDS reactor; one stripper; one stripper steam reboiler; one product separator; one electrically driven recycle compressor; one overhead receiver; and as many as six associated

electrically driven pumps, six heat exchangers, two air coolers, and associated piping and instrumentation. FCCU gasoline would be routed to the new Gasoline Hydrotreater/SHU. Sour water would be routed to existing wastewater treating facilities. Under Alternative 4, the Wilmington Operations FCCU would not be shut down because none of the refinery modifications needed for that to occur would be made. Therefore, the Wilmington Operations FCCU would remain operational.

6.3.5 ALTERNATIVE 5 – ALTERNATIVE CONSTRUCTION SCHEDULE

Construction emissions for the proposed project are significant for VOC, CO, and NOx. Alternative 5 would provide an alternative construction schedule to reduce construction emission impacts. The most likely method of reducing daily construction emissions would be to remove or reduce the construction overlap between the various project components.

The proposed project construction schedule is driven by the turnaround schedule for the Wilmington Operations FCCU. It is Tesoro's goal to shut down the Wilmington Operations FCCU prior to the next turnaround, which is scheduled in 2017. Operating the unit until the next scheduled turnaround allows for the most effective use of the unit until routine maintenance is needed. It also meet the objective of timely achieving emissions reductions. Turnarounds are scheduled to optimize the operation of the equipment. In order for the Wilmington Operations FCCU shutdown to happen, the portions of the proposed project modifications that include recovering and upgrading distillate range material from FCCU feeds, the Carson Operations Alkylation Unit, supporting unit upgrades (NHDS, LPG Unloading and utilities) and the Interconnecting Pipelines must be in place. Scheduling refinery turnarounds is an involved process with many considerations and restrictions that make rescheduling a unit turnaround, as would be necessary under this alternative, difficult. Typically, inspection and maintenance activities are extensive and are conducted 24 hours per day in order to minimize refinery unit downtime. Under Alternative 5, the Wilmington Operations FCCU would conduct a turnaround in 2017 and then continue operating through the next operating cycle, until 2021.

As shown in Figure 2-18, the proposed project schedule includes the project components expected to be under construction during 2016 through 2021. Construction activities associated with the proposed project are scheduled so that most of the construction would be completed prior to the 2017 turnaround, when final construction/connections will be completed while the affected units are down. The majority of the proposed project construction activities would be occurring on units that are scheduled for turnarounds. The majority of the project elements must be complete prior to mid-2017 to enable the Wilmington Operations FCCU shutdown in 2017.

Alternative 5 includes a modified construction schedule (compare Figure 6.3-1 with Figure 2-18) so that construction of the proposed project components does not overlap as much as they do under the proposed project. Construction of a number of units would be delayed to later in the proposed project schedule. These units include the LPG Rail Unloading facilities, Naphtha HDS Unit, Mid-Barrel Treater, and HTU-1 and HTU-2 modifications.

However, under Alternative 5, sufficient construction activities would not be completed by early 2017 so that the Wilmington Operations FCCU would continue to operate until the next turnaround period, estimated to occur in approximately 2021.

Note: Wilmington DCU H100 and Carson FCCU Modifications are operational changes only and have no construction schedule. Transitional Period is the 90-day period prior to the shutdown of the Wilmington Operations FCCU will occur in 2021.

FIGURE 6.3-1
Alternative 5 – Alternative Construction Schedule

6.4 ENVIRONMENTAL IMPACTS OF PROJECT ALTERNATIVES

6.4.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

Air Quality: Air quality impacts associated with construction of the proposed project (see Table 4.2-2) would be eliminated under Alternative 1 because no construction activities would be required (see Table 6.4-1). Construction emissions associated with the proposed project were concluded to be significant for VOC, and NO_x, as well as the LST for NO₂ emissions. Under Alternative 1, air quality impacts from construction would be eliminated; therefore, air quality impacts would be less than significant for all pollutants and less than the proposed project.

TABLE 6.4-1
Construction Criteria Pollutant Air Emissions Under Alternative 1

Sources	Emissions (lbs/day)					
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5} ^(a)
Total Proposed Project Emissions ^(a)	106.65	515.54	575.73	1.41	68.55	38.67
Significance Threshold	75	550	100	150	150	55
Significant?	Yes	No	Yes	No	No	No
Alternative Construction Emissions ^(b)	0.00	0.00	0.00	0.00	0.00	0.00

Note: Negative numbers represent emission reductions.

(a) See Table 4.2-2 for further details.

(b) No construction would occur under Alternative 1.

The operational emissions increases associated with the new and modified units would also be eliminated under Alternative 1. Under Alternative 1, there would be no emission increases associated with DCU Heater H-100, HCU heaters H-300/301, the SARP, new storage tanks, or fugitive emissions increases at the Wilmington Operations (CRU-3, HCU, HTU-1, HTU-2, or HTU-4) or Carson Operations (No. 51 Vacuum Unit, Alkylation Unit, HCU, LHU, LPG Railcar Unloading facilities, Mid Barrel Distillate Treater, Naphtha Isomerization Unit, NHDS Unit, and Wet Jet Treater). Mobile source emission increases associated with the proposed project would also be eliminated under Alternative 1.

Under Alternative 1, the net operational emission reduction benefits of the proposed project would not occur. For example, the Wilmington Operations FCCU would not be shut down because none of the Refinery modifications needed for that to occur would be made. As a result, the local emission reductions associated with shutting down the FCCU would not occur. The operational emissions from the proposed project were considered to be less than significant, primarily due to the shutdown of the Wilmington Operations FCCU. Similarly, the crude tank modifications at Wilmington Operations would not occur and the crude unloading rate from the marine terminal would remain unchanged at 5,000 bbl/hr. Therefore, the beneficial aspects of the proposed project associated with reduced annual ship emissions due to the increased crude offloading rate (see Table 4.2-9) would also be eliminated under Alternative 1.

Under Alternative 1, operational emissions from the Carson and Wilmington Operations would be unchanged. Consequently, Alternative 1 would not produce any operational emission increases from new or modified equipment nor would it achieve the emissions benefits (see Table 6.4-2) associated with the proposed project. Although the beneficial local emission reductions associated with the proposed project would not occur, no operational emission increases over the existing baseline would occur under Alternative 1, so that operational emissions would be less than significant. However, operational emissions under Alternative 1 would be greater than the proposed project for all pollutants except CO (see Table 4.2-4).

TABLE 6.4-2
Operational Criteria Pollutant Air Emissions Under Alternative 1

Sources	Emissions (lbs/day)					
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5} ^(a)
Total Proposed Project Emissions ^(a)	49.09	-589.28	38.18	<0.01	1.16	0.89
Significance Threshold	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Alternative 1 Operational Emissions ^(b)	318.96	959.79	572.59	416.38	171.35	171.35

Note: Negative numbers represent emission reductions.

(a) See Table 4.2-4 for further details.

(b) The Wilmington Operations FCCU would not be shut down so the daily emissions associated with the FCCU operation would remain. These results reflect baseline emissions at the Refinery and do not represent emission increases.

The cancer health risks from the proposed project were calculated to be less than the cancer risk significance threshold of 10 in one million (ranging from 2.1 in one million at Bethune Mary School to 9.2 in one million at the maximum exposed individual worker). Similarly, non-cancer health risks from the proposed project were calculated to be substantially less than the acute and chronic hazard index significance thresholds of 1.0 (0.052 for the maximum acute hazard index, 0.127 for the maximum chronic hazard index, and 0.108 for the maximum 8-hr chronic hazard index). Therefore, cancer and non-cancer health risks from the proposed project are considered to be less than significant (see Table 4.2-13). Alternative 1 would eliminate the increased TAC emissions and the associated health risks from the proposed project increases. The benefits of the reductions in TAC emissions associated with the shutdown of the Wilmington Operations FCCU and the reduced annual ship emissions due to the increased crude offloading rate were not analyzed in the EIR; however, under Alternative 1 these TAC emission reductions would not occur and cancer and non-cancer risks from these sources would remain unchanged. However, overall TAC emission impacts under Alternative 1 would be less than significant, but greater than the proposed project, as no emission reductions from the Wilmington Operations FCCU or from ship emissions would occur.

Hazards: The construction phase of the proposed project will require construction workers to excavate soil across the Wilmington Operations, the southeastern portion of the Carson Operations, and the Carson Crude Terminal, where construction of the new crude storage tanks will occur. Therefore, under the proposed project construction workers could encounter contaminated soils and groundwater during site excavation. The impacts of encountering contaminated soils or groundwater were concluded to be less than significant. However, none of

the proposed project modifications would be constructed under Alternative 1, so no construction activities would occur. Therefore, no significant adverse hazard impacts from encountering contaminated soil or groundwater would occur under Alternative 1 and this impact would be less than significant and less than the potential contaminated soil or groundwater impacts from the proposed project.

Under Alternative 1 none of the proposed project modifications or new units would be constructed. The hazard impacts associated with operation of the proposed project are considered to be significant. The hazards associated with the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP were considered to be significant as the hazard impacts could extend off-site. Therefore, since Alternative 1 would eliminate all proposed project modifications, potentially significant adverse hazard impacts during operation would also be eliminated, so hazard impacts during operation from Alternative 1 would be less than the hazard impacts during operation from the proposed project and less than significant.

The proposed project would require increased transportation of fresh and spent caustic and LPG, which was determined to be less than significant. Alternative 1 would not result in an increase in the transport of spent caustic or LPG; however transportation of these materials from existing sources would continue to occur under the existing Refinery operations. Due to the construction of the SARP, the proposed project would reduce the sulfuric acid transport by over 6,000 truck miles per year. Under Alternative 1, the SARP would not be constructed and the truck miles traveled to transport sulfuric acid would not be reduced. Under Alternative 1, less than significant transportation hazard impacts of the proposed project would not occur, existing transportation hazard impacts would continue, and, therefore, would be less than significant and overall less than the proposed project.

Hydrology/Water Quality: Alternative 1 would eliminate all construction activities associated with the proposed project, including the potable water demand associated with dust suppression, 10,000 gpd, and hydrostatic testing, 30,000 gpd. The total potable water demand from the proposed project during construction, 40,000 gpd, was determined to be less than significant. Under Alternative 1, this demand for potable water would not occur, would be less than significant and less than the proposed project.

Under the proposed project, water used for the hydrostatic testing new tanks and associated pipelines would be Refinery wastewater that is diverted for testing prior to discharge to the industrial sewer system. Demand for water to perform hydrostatic testing of new tanks and pipelines at both the Carson and Wilmington Operations can be supplied entirely using current wastewater streams at each operation. Using diverted wastewater will eliminate the need for using additional potable water supplies and will not increase the amount of wastewater generated by the Refinery, but will vary the discharge rate during construction. Under Alternative 1, no new tanks or pipelines would be constructed, so no wastewater would need to be diverted from existing wastewater streams, so this impact would be less than significant and less than the proposed project.

Once hydrostatic testing of new tanks and pipelines is completed under the proposed project, diverted wastewater would be returned to existing wastewater streams, treated as necessary, and

then released to the LACSD sanitary sewer system. Wastewater associated with construction of the proposed project is expected to be discharged in compliance with existing IWDPs. Proposed project impacts on wastewater during construction activities were determined to be less than significant. Alternative 1 would eliminate the need for hydrostatic testing since no new tanks or pipelines would be constructed. As a result, wastewater from existing wastewater streams would not need to be diverted for any reason, so wastewater treatment and discharge would be unchanged from baseline conditions, would be less than significant for Alternative 1 and less than the proposed project.

Alternative 1 would also eliminate the increase in water use associated with the operation of the proposed project. The proposed project is expected to result in an increase in water demand of about 191,275 gpd associated with modifications to the NHDS, No. 51 Vacuum, Alkylation, and Wet Jet Treater Units, as well as indirect water demand increases associated with cooling water. The proposed project also includes shutting down the FCCU at the Wilmington Operations, which would reduce existing wash water demand by an estimated 99 gpm (about 142,560 gpd) and cooling water by an estimated 415.50 gpm (about 598,320 gpd). Therefore, the proposed project will increase the net direct water demand at the Refinery by about 76.5 gpm or about 110,160 gpd, which is less than the applicable potable water demand significance threshold of 262,820 gpd. Further, as discussed in Sections 3.4.1 and 4.4.2.1.2, the Refinery owns and operates private water wells to produce process water and purchases additional potable and reclaimed water to supplement the water drawn from the wells. As discussed in Section 4.4.2.1.2, the incremental increase in water demand of 191,275 gpd (approximately 69.8 million gallons per year) from the proposed project is expected to be produced by the privately-owned wells (i.e., from the available 1.2 billion gallons per year of adjudicated water rights). The existing water supply can meet the water demand of the proposed project. Under Alternative 1 the increased water demand of 110,160 gpd would be eliminated and would be unchanged from baseline conditions. Therefore, water demand impacts from Alternative 1 would be less than significant and less than water demand impacts from the proposed project.

The proposed project was expected to reduce the overall amount of wastewater generated during operations at the Refinery by about 79,344 gpd, largely due to the shutdown of the Wilmington Operations FCCU. Under Alternative 1, the Wilmington Operations FCCU will continue to operate so there would be no decrease in wastewater generation. Wastewater generation would be unchanged and, therefore, less than significant under Alternative 1, but greater than wastewater generation impacts from the proposed project.

Noise: Alternative 1 would eliminate the increase in noise during the construction phase of the proposed project. Under the proposed project, construction noise levels were estimated based on the types of equipment proposed to be used on-site to complete the various construction activities. Using the SoundPLAN model, the noise levels at the closest residential noise receptors are expected to increase from 0.1 to 0.9 dBA depending on the location and the time of day. Therefore, noise impacts from the proposed project were considered less than significant during the construction phase of the proposed project as no noticeable noise increase is expected. Implementation of the Alternative 1 would eliminate all construction activities, thus, potential noise increases during construction would also be eliminated, remain at current levels, would be less than significant, and less than noise impacts from the proposed project.

Alternative 1 would eliminate the increase in vibration impacts during the construction phase of the proposed project. Under the proposed project, construction of the proposed project would involve equipment and activities that may have the potential to temporarily generate groundborne vibration. Based on the activities and equipment which would be used during the proposed project construction phases, the construction equipment source levels are estimated to range between 58 VdB and 100 VdB at a distance of 25 feet. The vibration from construction activities was concluded to be less than the applicable vibration significance threshold so no significant adverse vibration impacts from the proposed project are expected during the construction period. Implementing Alternative 1 would eliminate all construction activities and eliminate the potential vibration impacts during construction; therefore, groundborne vibration would be less than significant and less than groundborne vibration impacts from the proposed project.

Alternative 1 would eliminate the increase in noise during the operational phase of the proposed project. Additional noise sources associated with the proposed project generally include process equipment components such as valves, flanges, vents, pumps, and compressors. The SoundPLAN model projected that the noise levels at three of the four noise receptor locations would be unchanged and at one location the noise level was projected to increase slightly (0.1 dBA). Based on SoundPLAN model results, increased noise levels associated with the proposed project were considered less than significant during the operational phase. Implementation of Alternative 1 would eliminate the potential noise increase at noise receptor 2, noise impacts would remain at current levels, would be less than significant, and less than operational noise impacts from the proposed project.

Alternative 1 would eliminate the increase in groundborne vibration during the operational phase of the proposed project. Equipment associated with the operation of the proposed project is not expected to generate detectable groundborne vibration during normal operation because new or modified equipment is not expected to have oscillating parts that have the potential to generate groundborne vibration. Therefore, vibration from operation of the proposed project is expected to be less than significant. Since Alternative 1 does not include installing new, or modifying existing equipment, no groundborne vibration impacts would occur, so vibration impacts would be less than significant and less than operational vibration impacts from the proposed project.

Solid/Hazardous Waste: Alternative 1 would eliminate the potential solid waste generation impacts during the construction phase of the proposed project. Construction activities associated with the proposed project involve some grading and excavating activities that could generate solid waste. Demolition activities could generate demolition waste. Solid waste from constructing the proposed project were concluded to be less than significant because steel from demolition of tanks and piping is a commodity and would be recycled, while concrete foundations would be transported off-site for crushing and recycling or disposal at inert or municipal landfills. The proposed project impacts on the generation of solid wastes during construction were considered to be less than significant. Alternative 1 would eliminate the generation of solid wastes during construction since the proposed project would not be built and no demolition activities would occur. Therefore, solid waste impacts under Alternative 1 from construction activities would be less than significant and less than solid waste impacts under the proposed project.

Alternative 1 would eliminate the potential increase in hazardous waste impacts during the construction phase of the proposed project. Site preparation, grading, and construction activities for the proposed project have the potential to encounter contaminated soils, which would require treatment or removal and disposal. The amount of contaminated soil that may be encountered during construction of the proposed project was concluded to be well below the disposal capacity of the available hazardous waste landfills. As a result, no significant adverse hazardous waste impacts will occur from the proposed project and, therefore, this impact was concluded to be less than significant. Since implementing Alternative 1 means construction of the proposed project would not occur, contaminated soil or groundwater would not be encountered; instead any contaminated soil on-site would remain in place. Any groundwater contamination would continue to be subject to existing groundwater remediation activities required by the RWQCB. Since no contaminated soil would be uncovered under Alternative 1, hazardous waste impacts during construction would be less than significant and less than hazardous waste impacts from the proposed project.

Alternative 1 would eliminate the potential increase in solid waste impacts during the operational phase of the proposed project. Once the proposed project becomes operational, the average annual amounts of solid waste are not expected to change from baseline conditions because there would be no increase in employees and refinery units do not typically produce solid waste. Because the proposed project would not be implemented under Alternative 1 no change in solid waste generation from baseline levels would occur. Therefore, solid waste impacts during operation from Alternative 1 would be less than significant and equivalent to the proposed project.

Once the proposed project becomes operational, it has the potential to generate hazardous wastes such as spent catalysts, both sulfuric acid and caustic, and storage tank sludge, which would be reused on-site or recycled. As a result, the proposed project impacts on the generation of hazardous wastes during operation were considered to be less than significant. Alternative 1 would eliminate the generation of hazardous wastes during operation, since the proposed project would not be built, so sulfuric acid would continue to be sent to the ECO Services Dominguez Carson for recycling via pipeline from the Carson Operations and via truck from the Wilmington Operations. Therefore, hazardous waste impacts under Alternative 1 would be less than significant and less than hazardous waste impacts from the proposed project.

Traffic/Transportation: Construction traffic conditions under the proposed project were analyzed for the construction phase having the maximum number of construction trips (peak construction period) over the entire construction period. The analysis indicated that construction worker traffic associated with the proposed project would be less than significant at all affected intersections except one, the Wilmington Ave./Interstate 405 Southbound Ramps during the morning peak hour. The construction traffic impacts associated with the proposed project are considered to be less than significant, after mitigation. Alternative 1 would eliminate the traffic impacts during construction since the proposed project would not be built. As a result, no construction traffic impacts would occur under Alternative 1, therefore, this impact would be less than significant and less than construction traffic impacts from the proposed project.

6.4.2 ALTERNATIVE 2 – NEW FFHDS FRACTIONATOR AT CARSON OPERATIONS AND A NEW DIESEL HYDROTREATER AT WILMINGTON OPERATIONS

Air Quality: Construction emissions associated with the proposed project were considered significant for VOC and NO_x, as well as the LST for NO₂ emissions (see Table 4.2-2). Under Alternative 2, the modifications to the Wilmington Operations HCU and HTU-4, as well as the modifications to the No. 51 Vacuum Unit and HCU at the Carson Operations would not occur. Instead, a new FFHDS Fractionator and new Diesel Hydrotreater would be constructed. Construction activities under Alternative 2 are expected to be similar to the proposed project as one Refinery unit would be modified (FFHDS) and one new Diesel Hydrotreater would be constructed. Under the proposed project, the capacity of the Wilmington Operations HCU and HTU-4, and the Carson Operations No. 51 Vacuum Unit and HCU would be increased by up to 15 percent. The construction activities to modify the existing equipment are expected to be equivalent to the modifications to the FFHDS and Diesel Hydrotreater that include a substantial amount of associated new equipment. For example, modifications to the FFHDS are expected to include a new 200 mmBtu/hr heater, fractionator, jet stripper overhead receiver, 14 pumps, 14 heat exchangers, jet coalescer, jet salt dryer as well as piping and instrumentation. A new Diesel Hydrotreater would require two new heaters, feed drum reactor, fractionator tower, three product strippers, compressor, six pumps, six heat exchangers, and piping and instrumentation. The modifications to the two HCU units, HTU4, and No. 51 Vacuum would require modifications to existing equipment, no construction of brand new units, and no new heaters would be required. Therefore, air quality impacts associated with construction activities under Alternative 2 are concluded to be significant because construction emissions would exceed the mass daily significance thresholds for VOC, and NO_x and the LSTs for NO₂ emissions. As a result, the same mitigation measures identified for the proposed project would be required under Alternative 2. In spite of implementing these mitigation measures, construction air quality impacts would remain significant. Therefore, construction air quality impacts from Alternative 2 are significant and equivalent to construction air quality impacts from the proposed project.

Under Alternative 2, because no modifications would be made to the Wilmington Operations HCU and HTU-4, and the No. 51 Vacuum Unit and HCU at the Carson Operations, emissions from these pieces of equipment would be unchanged so they would not contribute to the operational emission increases. However, the remainder of the proposed project components would be built and operational and the Wilmington Operations FCCU would be shutdown. The indirect project emissions and mobile source emission increases would also be expected to occur (see Table 4.2-4). In addition, Alternative 2 would include the operation of a new FFHDS Fractionator and new Diesel Hydrotreater, both of which would include new heaters and new fugitive components (valves, pumps and flanges).

The operational emissions from the proposed project were considered to be less than significant, primarily due to the shutdown of the Wilmington Operations FCCU. Under Alternative 2, there are expected to be emission increases associated with the new FFHDS Fractionator and Diesel Hydrotreater and the three new heaters that would be required for their operations (e.g., a 200 mm Btu/hr heater in the FFHDS Fractionator and two 39 mmBtu/hr heaters in the Diesel Hydrotreater for a total increase in heat duty of 278 mmBtu/hr), so that operational emissions are

expected to be higher than operational emissions from the proposed project (the increase in total heat duty associated with the existing heaters at the Wilmington Operations HCU would be 25 mm Btu/hr and the No. 51 Vacuum Unit would be 60 mmBtu/hr for a total of 85 mmBtu/hr; there are no increased combustion emissions associated with the HTU-4 or the Carson Operations HCU). The total combustion emissions under Alternative 2 would be greater than the proposed project (278 mmBtu/hr vs 85 mmBtu/hr). In addition, the new units would require pumps, feed drum, reactors, fractionators, towers, strippers and compressors so that the fugitive components are expected to be greater than the modifications to existing units. Therefore, fugitive VOC emissions are also expected to be higher under Alternative 2 than for the proposed project. However, the Wilmington Operations FCCU would still be shut down under Alternative 2 and all stationary source emission increases would be required to comply with SCAQMD regulations. Therefore, while operational emissions under Alternative 2 are expected to be higher than emissions from the proposed project, overall operational Refinery emissions would be reduced, so operational emission impacts are expected to be less than significant, but greater than operational emission impacts from the proposed project.

The cancer health risks from the proposed project were calculated to be less than the cancer risk significance threshold of ten in one million (ranging from 2.1 in one million at Bethune Mary School to 9.2 in one million at the maximum exposed individual worker). Similarly, non-cancer health risks from the proposed project were calculated to be substantially less than the acute and chronic hazard index significance thresholds of 1.0 (0.052 for the maximum acute hazard index, 0.127 for the maximum chronic hazard index, and 0.108 for the maximum 8-hr chronic hazard index). Therefore, cancer and non-cancer health risks from the proposed project are considered to be less than significant (see Table 4.2-13). Under Alternative 2, TAC emissions increases associated with modifications to the Wilmington Operations HCU and HTU-4, and the No. 51 Vacuum Unit and HCU at the Carson Operations would be eliminated. It is expected that TAC emissions increases from the FFHDS Fractionator and Diesel Hydrotreater would be incrementally higher than emission increases from other new equipment to be installed at the Refinery because of increased combustion emissions. Like the equipment that would no longer be modified under Alternative 2, the FFHDS Fractionator and Diesel Hydrotreater would also be subject to SCAQMD BACT and BACT for toxics requirements. Although TAC emissions from the Wilmington Operations HCU and HTU-4 and the No. 51 Vacuum Unit and HCU at the Carson Operations would be eliminated, it is assumed that TAC emission increases associated with the new FFHDS Fractionator and Diesel Hydrotreater under Alternative 2 would be incrementally higher than TAC emissions from the proposed project, but not substantially so. The contribution to the MEIW for the proposed project is primarily driven by the increase in rail activity with process changes (i.e., fired heater changes) contributing less than one percent to the cancer risk. The contribution to the MEIR for the proposed project is primarily driven by the new crude storage tanks at the Carson Operations. Therefore, TAC emission increases and the resulting cancer and non-cancer health risks under Alternative 2 are also expected to be less than significant, but slightly greater than the proposed project.

Hazards: The construction phase of the proposed project will require construction workers to excavate soil across the Wilmington Operations, the southeastern portion of the Carson Operations, and the Carson Crude Terminal, where construction of the new crude storage tanks will occur. Therefore, under the proposed project construction workers could encounter

contaminated soils and groundwater during site excavation. Soil monitoring showed that the potential to generate hydrocarbon emissions from soil excavation limited to the area along the pipeline route in the central portion of the Wilmington Operations could exceed 50 ppm, which exceeds the SCAQMD Rule 1166 50 ppm limit that requires special handling procedures. However, because on-site workers safety training and equipment procedures would be in effect and the Refinery would be required to comply with numerous worker safety regulations, it was concluded that significant adverse health impacts to construction workers would not occur if contaminated soil or groundwater is encountered. Because construction activities and the locations of new equipment under Alternative 2 would be similar to those for the proposed project, it is assumed that construction worker health impacts from encountering contaminated soil or groundwater would be equivalent to the proposed project and also less than significant.

The hazard impacts associated with the proposed project are considered to be significant. Under the proposed project, hazards impacts associated with the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP were considered to be significant as the hazard impacts could extend off-site. Under the proposed project, hazard impacts associated with modifications to the Wilmington Operations HCU and HTU-4 and the No. 51 Vacuum Unit and HCU at the Carson Operations would be slightly less or equivalent to hazards from the unmodified equipment and, therefore, were concluded to be less than significant. Since this equipment would no longer be modified under Alternative 2, associated risks would be unchanged from baseline conditions. The Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP would continue to be built under Alternative 2, thus, generating the same significant hazard impacts as would occur under the proposed project. However, Alternative 2 would include a new FFHDS Fractionator and Diesel Hydrotreater, which would add two new sources of potential hazard impacts, which may or may not generate additional significant adverse off-site hazards depending on the location of the new units. Note that sufficient design details are not available to determine the magnitude of hazards, but the conservative assumption is that hazard impacts would occur off-site. As a result the same hazard mitigation measure identified for the proposed project would be required under Alternative 2. In spite of implementing this mitigation measure hazard impacts would remain significant. Because two new units with new sources of potential off-site hazard impacts would be constructed under Alternative 2, hazard impacts during operation are considered to be greater than the proposed project as Alternative 2 would still include the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP which were considered to be significant as the hazard impacts could extend off-site. Therefore, hazard impacts during operation under Alternative 2 would be significant and greater than the proposed project.

The proposed project would require increased transportation of fresh and spent caustic and LPG, which was determined to be less than significant. Spent sulfuric acid from the Wilmington Alkylation Unit is currently transported via six trucks per day to ECO Services Dominguez Carson for recycling, a distance of approximately 5.55 miles. Following completion of the SARP, spent sulfuric acid from Wilmington Operations would be treated on-site and reused so that the transportation of spent sulfuric acid from Wilmington Operations would be eliminated, thus, reducing the sulfuric acid transport by over 6,000 truck miles per year. Under Alternative 2, the SARP would still be constructed and the transportation of hazardous materials is expected to be similar to the proposed project. Therefore, under Alternative 2, transportation hazard

impacts during operation are expected to be less than significant and equivalent to the proposed project.

Hydrology/Water Quality: Under Alternative 2, the modifications to the Wilmington Operations HCU and HTU-4, as well as the modifications to the No. 51 Vacuum Unit and HCU at the Carson Operations would not occur. Instead, a new FFHDS Fractionator and new Diesel Hydrotreater would be constructed. The total daily potable water demand during construction of the proposed project is expected to be a maximum of 40,000 gpd (10,000 gpd associated with dust suppression activities at the Wilmington Operations and up to 30,000 gpd for hydrostatic testing of the new tanks and pipelines), which is less than the significance threshold of 262,820 gpd. The locations of construction and types of activities under Alternative 2 are expected to be similar to the proposed project. Therefore, water demand during construction activities under Alternative 2 are expected to be similar to the proposed project as water demand for dust suppression and for the pipelines and storage tanks that require hydrostatic testing are also included under Alternative 2. Water demand associated with the proposed project construction activities was determined to be less than significant and water demand impacts associated with construction under Alternative 2 are also expected to be less than significant and equivalent to the proposed project.

Under the proposed project, water used for the hydrostatic testing new tanks and associated pipelines would be Refinery wastewater that is diverted for testing prior to discharge to the industrial sewer system. Demand for water to perform hydrostatic testing of new tanks and pipelines at both the Carson and Wilmington Operations can be supplied entirely using current wastewater streams at each operation. Using diverted wastewater will eliminate the need for using additional potable water supplies and will not increase the amount of wastewater generated by the Refinery, but will temporarily vary the discharge rate during construction. Wastewater associated with construction of the proposed project is expected to be discharged in compliance with existing IWDPs. Wastewater impacts from the proposed project during construction activities were determined to be less than significant. Wastewater generation during construction under Alternative 2 is expected to generate the same wastewater impacts as the proposed project, which would primarily be wastewater associated with hydrostatic testing of the new pipelines and tanks. Wastewater impacts during construction activities are expected to be less than significant under Alternative 2 as well, and equivalent to wastewater impacts for the proposed project.

Operation of the proposed project is expected to result in an increase in water demand of about 191,275 gpd associated with modifications to the NHDS, No. 51 Vacuum, Alkylolation, and Wet Jet Treater Units, as well as indirect water demand increases associated with cooling water, which was determined to be less than significant. Alternative 2 would eliminate the modifications to the No. 51 Vacuum Unit and HCU, but would result in an increase in water demand associated with the new FFHDS Fractionator and Diesel Hydrotreater. The proposed project also includes shutting down the FCCU at the Wilmington Operations, which would reduce existing wash water demand by an estimated 99 gpm (about 142,560 gpd) and cooling water by an estimated 415.50 gpm (about 598,320 gpd). Therefore, the proposed project will increase the net direct potable water demand at the Refinery by about 76.5 gpm or about 110,160 gpd, which is less than the applicable potable water demand significance threshold of 262,820

gpd. Further, as discussed in Sections 3.4.1 and 4.4.2.1.2, the Refinery owns and operates private water wells to produce process water and purchases additional potable and reclaimed water to supplement the water drawn from the wells. As discussed in Section 4.4.2.1.2, the incremental increase in water demand of 191,275 gpd (approximately 69.8 million gallons per year) from the proposed project is expected to be produced by the privately-owned wells (i.e., from the available 1.2 billion gallons per year of adjudicated water rights). The existing water supply can meet the water demand of the proposed project. The water demand associated with Alternative 2 is expected to be similar to the proposed project and the daily water demand associated with the Alternative 2 would also be met from privately-owned wells. Therefore, Alternative 2 water demand impacts are expected to be less than significant and equivalent to the proposed project.

The proposed project was expected to reduce the overall wastewater generated during operations at the Refinery by about 79,344 gpd, largely due to the shutdown of the Wilmington Operations FCCU. Under Alternative 2, the Wilmington Operations FCCU would also be shutdown, reducing wastewater generation from the Refinery. Alternative 2 would be expected to result in additional wastewater generated from the Diesel Hydrotreater. However, a net reduction in wastewater generation is still expected under Alternative 2 as the Wilmington Operations FCCU would be shutdown under this alternative. Therefore, wastewater impacts are expected to remain less than significant for Alternative 2, but greater than wastewater impacts from the proposed project.

Noise: The proposed project is expected to increase the noise levels at the Refinery during construction due to the types and numbers of construction equipment to be used on-site. Using the SoundPLAN model, the noise levels at the closest residential noise receptors are expected to increase from 0.1 to 0.9 dBA depending on the location and the time of day. The increased noise levels associated with the proposed project were considered less than significant during the construction phase of the proposed project as noise levels at off-site residential noise receptors were concluded to be less than the applicable noise significance thresholds. Implementation of Alternative 2 would eliminate construction activities associated with modifications to the Wilmington Operations HCU and HTU-4 and No. 51 Vacuum Unit and HCU at the Carson Operations. However, Alternative 2 would require new construction activities associated with the FFHDS Fractionator and the Diesel Hydrotreater. It is expected that similar types and numbers of construction equipment during peak construction activities would be used to modify the Wilmington Operations HCU and HTU-4 and No. 51 Vacuum Unit and HCU at the Carson Operations under the proposed project, as would be used to construct the new FFHDS Fractionator and the Diesel Hydrotreater under Alternative 2. Also, the distances to the sensitive noise receptors is expected to be similar under Alternative 2 as the proposed project and would result in similar construction noise impacts as the proposed project. Therefore, construction noise impacts under Alternative 2 are also expected to be less than significant and equivalent to the proposed project.

Under the proposed project, construction would involve equipment and activities that may have the potential to temporarily generate groundborne vibration. Based on the activities and equipment which would be used during the proposed project construction phases, the construction equipment source levels are estimated to range between 58 VdB and 100 VdB at a

distance of 25 feet. The vibration from construction activities was concluded to be less than the applicable vibration significance threshold. As indicated above, construction equipment and activities under the proposed project during peak construction activities are expected to be similar to those under Alternative 2. Therefore, construction vibration impacts under Alternative 2 are also expected to be less than significant and equivalent to the proposed project.

Additional noise sources associated with the proposed project generally include process equipment components such as valves, flanges, vents, pumps, and compressors. The SoundPLAN model projected that the noise levels at three of the four noise receptor locations would be unchanged and at one location the noise level was projected to increase slightly. Based on SoundPLAN model results, increased noise levels associated with the proposed project were considered less than significant during the operational phase. Alternative 2 would eliminate the modifications to the Wilmington Operations HCU and HTU-4 and No. 51 Vacuum Unit and HCU at the Carson Operations, but would add equipment associated with the FFHDS Fractionator and Diesel Hydrotreater. The noise impacts associated with the operation of the proposed project were not expected to change ambient noise levels at three noise receptors, but were estimated to increase by about 0.1 dBA at one noise receptor which is well below the 3.0 dBA significance threshold (see Table 4.5-3). Because noise generated by the FFHDS Fractionator and Diesel Hydrotreater is expected to be similar to noise generated by other new units, noise impacts associated with the Refinery operations under Alternative 2 are expected to be similar to the noise impacts generated by the proposed project. Therefore, operational noise impacts under Alternative 2 are also expected to be less than significant and equivalent to noise impacts generated by the proposed project.

Equipment associated with the operation of the proposed project is not expected to generate detectable groundborne vibration during normal operation because new equipment is not expected to have oscillating parts which have the potential to generate groundborne vibration. Therefore, vibration impacts from operation of the proposed project are expected to be less than significant and no significant vibration impacts are expected during operation. Similarly, the new FFHDS Fractionator and Diesel Hydrotreater installed under Alternative 2 are not expected to have oscillating parts, so no significant adverse vibration impacts are expected during operation. Therefore, groundborne impacts during operation of Alternative 2 would be less than significant and equivalent to groundborne impacts during operation of the proposed project.

Solid/Hazardous Waste: Construction activities associated with the proposed project involve grading and excavation activities that could generate solid waste. Demolition activities could generate demolition waste. Solid waste from constructing the proposed project were concluded to be less than significant because steel from demolition of tanks and piping is a commodity and would be recycled, while concrete foundations would be transported off-site for crushing and recycling or disposal at inert or municipal landfills that have the capacity to accept the material. The proposed project impacts on the generation of solid wastes were considered to be less than significant during construction. The magnitude of construction activities under Alternative 2 is expected to be the same as the proposed project because the same equipment would be demolished and the same foundations would be removed and crushed for recycling or disposal. Therefore, solid waste impacts during construction would be less than significant under Alternative 2 and equivalent to solid waste impacts from the proposed project.

Site preparation, grading, and construction activities for the proposed project have the potential to encounter contaminated soils or groundwater, which would require treatment or removal and disposal. The amount of contaminated soil that may be encountered during construction of the proposed project was concluded to be well below the daily disposal capacity of the available hazardous waste landfills, so no significant adverse hazardous waste impacts from construction will occur from the proposed project. Therefore, hazardous waste impacts from construction activities were concluded to be less than significant. Because construction equipment and activities under the proposed project are expected to be similar to those under Alternative 2, it is expected that the same amounts of contaminated soil would be encountered during construction. As for the proposed project, because the volumes of hazardous soils encountered during construction of Alternative 2 would be well below the disposal capacity of the available hazardous waste landfills, no significant adverse hazardous waste impacts from construction will occur. Therefore, hazardous waste impacts under Alternative 2 are also expected to be less than significant and equivalent to the proposed project.

Once the proposed project becomes operational, the average annual amounts of solid waste are not expected to change as there would be no increase in workers at the Refinery and refinery units do not tend to generate solid waste. For these reasons, sources and amounts of solid waste generated by Alternative 2 are expected to be less than significant and equivalent to the proposed project.

The proposed project components that would generate hazardous waste would still be included in the project under Alternative 2. The proposed project is expected to increase the amount of spent sulfuric acid (used as a catalyst), primarily from the Carson Operations Alkylation Unit. Following completion of the SARP, eight trucks per day would transport spent sulfuric acid from the Carson Operations to the SARP at the Wilmington Operations. All of the spent sulfuric acid from Wilmington Operations would then be treated on-site and reused, so spent sulfuric acid will not create an additional hazardous waste stream from the Refinery requiring disposal. Because Alternative 2 includes the same equipment, no significant adverse hazardous waste impacts from spent sulfuric acid would be generated, the same as would be the case under the proposed project.

Under the proposed project, the Wet Jet Treater and SARP are expected to use caustic and generate spent caustic. As with the current procedures at the Refinery, additional amounts of spent caustic would be generated and all spent caustic generated would be transported for recycling off-site. Under Alternative 2, all spent caustic would also be transported off-site for recycling, so no spent caustic would need to be disposed of in a hazardous waste landfill. The new storage tanks could require sludge removal approximately once every 20 years. The daily volume of waste generated during the periodic cleaning of the new storage tanks is expected to be about the same as current operations because no change in the method for tank cleaning is proposed and no more than one storage tank would be cleaned at any time. The sludge is expected to remain on-site and will be used as feedstock to the DCU (i.e., recycled on-site); therefore, no increase in hazardous waste disposal would be expected from operation of the new and modified storage tanks. Because hazardous waste streams under the proposed project are expected to be reused or recycled (see Section 4.6.3), impacts were concluded to be less than

significant. Alternative 2 would generate additional catalysts associated with the FFHDS Fractionator and Diesel Hydrotreater which are expected to be heavy metal-based catalyst. These catalysts are usually recycled for their heavy metal content. Therefore, Alternative 2 is not expected to require additional waste disposal capacity and will not interfere with the Tesoro Refinery's ability to comply with existing federal, state, and local regulations for solid and hazardous waste handling and disposal. Therefore, significant hazardous waste impacts are not expected from operation of Alternative 2, but are considered to be greater than hazardous waste impacts from the proposed project.

Traffic/Transportation: Construction traffic conditions under the proposed project were analyzed for the construction phase having the maximum number of construction trips (peak construction period) over the entire construction period. The analysis indicated that construction worker traffic associated with the proposed project would be less than significant at all affected intersections except one, the Wilmington Ave./Interstate 405 Southbound Ramps during the morning peak hour. Construction activities under Alternative 2 are expected to be similar to construction activities required for the proposed project. The proposed project is expected to require about 696 construction workers. Alternative 2 is expected to require about the same magnitude of construction activities and approximately the same number of construction workers as the proposed project during the peak construction period because similar types of new or modified equipment would be constructed and the peak construction period would also occur during a Refinery turnaround. The construction traffic impacts associated with the proposed project during peak construction are considered to be less than significant after mitigation. Because construction traffic impacts during peak construction under Alternative 2 are similar to construction traffic impacts from the proposed project, construction traffic impacts would be significant and require implementing the same construction traffic mitigation measure as the proposed project. Therefore, construction traffic impacts under Alternative 2 would also be expected to be less than significant after mitigation and would be equivalent to the proposed project.

6.4.3 ALTERNATIVE 3 - NEW GASOLINE HYDROTREATER AT CARSON OPERATIONS

Air Quality: Construction emissions associated with the proposed project were considered significant for VOC and NO_x, as well as the LSTs for NO₂ emissions (see Table 4.2-2). Under Alternative 3, the modifications to the Wilmington Operations HTU-1 and HTU-2, as well as the modifications to the LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations would be eliminated. Instead, a new Gasoline Hydrotreater/SHU would be constructed at the Carson Operations. Construction activities under Alternative 3 are expected to be less than the proposed project as one new refinery unit would be constructed at the Carson Operations, rather than modifying two existing units at the Wilmington Operations and three existing units at the Carson Operations. Nonetheless, the construction activities are still expected to require the same types of construction equipment as the proposed project and peak construction activities would occur during a Refinery turnaround. Therefore, air quality impacts associated with construction activities under Alternative 3 are also expected to exceed the significance thresholds for VOC NO_x and the LSTs for NO₂ emissions. As a result, the same construction air quality mitigation measures identified for the proposed project would be required under Alternative 3. In spite of

implementing these mitigation measures, construction air quality impacts would remain significant. These significant adverse construction air quality impacts are expected to be equivalent to construction air quality impacts from the proposed project and would remain significant.

Under Alternative 3, there would be no modifications to the Wilmington Operations HTU-1 and HTU-2, nor would there be modifications to the LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations. As a result, operational emissions associated with these units would not increase, as would be the case with the proposed project, but would be unchanged from baseline conditions, so they would not contribute to operational emission increases. However, the remainder of the proposed project components would be built and operational and the Wilmington Operations FCCU would be shutdown. The indirect project emissions and mobile source emission increases would also be expected to occur (see Table 4.2-4). In addition, Alternative 3 would include the operation of a new Gasoline Hydrotreater which would include a heater, reboilers, feed drum, SHU reactor, an HDS reactor, stripper, product separator, compressor, pumps, air coolers, and associated piping and instrumentation.

The operational emissions from the proposed project were considered to be less than significant, primarily due to the shutdown of the Wilmington Operations FCCU. Under Alternative 3, there are expected to be emission increases associated with the new Gasoline Hydrotreater/SHU as two new heaters would be required (combined heater duty of 120 mmBtu/hr), that were not included with the proposed project. Therefore, overall operational emissions under Alternative 3 are expected to be greater than the proposed project, including criteria pollutants, GHG, and TAC emissions. The Wilmington Operations FCCU would still be shut down under Alternative 3 and all stationary source emission increases would be required to be offset per SCAQMD regulations. Therefore, overall operational emission increases under Alternative 3 are expected to be higher than emissions from the proposed project, but operational Refinery emissions would be reduced from baseline conditions, so operational emission impacts are expected to be less than significant, but greater than operational emission impacts from the proposed project.

The cancer health risks from the proposed project were calculated to be less than the cancer risk significance threshold of ten in one million (ranging from 2.1 in one million at Bethune Mary School to 9.2 in one million at the maximum exposed individual worker). Similarly, non-cancer health risks from the proposed project were calculated to be substantially less than the acute and chronic hazard index significance thresholds of 1.0 (0.052 for the maximum acute hazard index, 0.127 for the maximum chronic hazard index, and 0.108 for the maximum 8-hr chronic hazard index). Therefore, cancer and non-cancer health risks from the proposed project are considered to be less than significant (see Table 4.2-13). Under Alternative 3, TAC emission increases associated with modifications to the Wilmington Operations HTU-1 and HTU-2 and the LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations would be eliminated and remain unchanged from baseline levels. It is expected that TAC emission increases from the Gasoline Hydrotreater/SHU would be greater due to the new heaters so that overall TAC emissions would be higher under Alternative 3 than the proposed project. As would be required for the proposed project, TAC emissions from equipment under Alternative 3 would be limited because they would also be subject to SCAQMD BACT and BACT for toxics requirements. Although TAC emissions from the Wilmington Operations HTU-1 and HTU-2 and the LHU, NHDS Unit, and

Mid-Barrel Treater at the Carson Operations would be eliminated, it is assumed that TAC emission increases associated with the new Gasoline Hydrotreater/SHU would result in TAC emission increases that would be greater than the proposed project due to combustion emissions from the new heater. The contribution to the MEIW for the proposed project is primarily driven by the increase in rail activity with process changes (i.e., fired heater changes) contributing less than one percent to the cancer risk. The contribution to the MEIR for the proposed project is primarily driven by the new crude storage tanks at the Carson Operations. Therefore, TAC emission increases and associated cancer and non-cancer health risks under Alternative 3 are expected to be greater than the proposed project but would still be less than significant as the new equipment would be subject to BACT for TACs.

Hazards: The construction phase of the proposed project will require construction workers to excavate soil across the Wilmington Operations, the southeastern portion of the Carson Operations, and the Carson Crude Terminal, where construction of the new crude storage tanks will occur. Therefore, under the proposed project construction workers could encounter contaminated soils and groundwater during site excavation. Soil monitoring showed that the potential to generate hydrocarbon emissions from soil excavation along the pipeline route in the central portion of the Wilmington Operations could exceed 50 ppm, which exceeds the SCAQMD Rule 1166 50 ppm limit that requires special handling procedures. However, because on-site worker safety equipment and training procedures would be in effect and the Refinery would be required to comply with numerous worker safety regulations, it was concluded that significant adverse health impacts to construction workers would not occur if contaminated soil or groundwater is encountered. Because construction activities and the location of the new unit under Alternative 3 would be similar to those for the proposed project, it is assumed that construction worker hazard impacts from encountering contaminated soil or groundwater would be equivalent to the proposed project and also less than significant. Therefore, hazard impacts from encountering hazardous soils or groundwater under Alternative 3 would be less than significant and equivalent to hazard impacts during construction from the proposed project.

The hazard impacts associated with the proposed project are considered to be significant for the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP, as the hazard impacts could extend off-site. The Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP were considered to be significant because the hazard impacts could extend off-site. These significant adverse hazard impacts would continue to occur under Alternative 3. Under the proposed project, hazard impacts associated with modifications to the HTU-1 and HTU-2 at the Wilmington Operations and LHU, NHDS Unit, and the Mid-Barrel Treater at the Carson Operations would be slightly less or equivalent to hazards from the unmodified equipment and, therefore, were concluded to be less than significant. The hazard effects for the HTU-1, HTU-2, LHU, NHDS Unit, and Mid-Barrel Treater would be eliminated under Alternative 3, so hazard impacts from this equipment would be unchanged from baseline under Alternative 3. In addition, Alternative 3 would include a new Gasoline Hydrotreater/SHU, which would generate new hazard impacts that may or may not extend off-site. Note that sufficient design details are not available to determine the potential magnitude of hazards associated with the Gasoline Hydrotreat or SHU. The conservative approach would be to assume impacts would occur off-site as the operational hazards under Alternative 3 would remain significant because the Naphtha Isomerization Unit, new crude tanks, Interconnecting

Pipelines, and SARP are still included as part of Alternative 3. As a result, the same hazard mitigation measure identified for the proposed project would be required under Alternative 3. In spite of implementing this mitigation measure, hazard impacts would remain significant. Therefore, hazard impacts during operation associated with Alternative 3 are expected to be significant and greater than the proposed project.

The proposed project would require increased transportation of fresh and spent caustic and LPG, which was determined to be less than significant. Spent sulfuric acid from the Wilmington Alkylation Unit is currently transported via six trucks per day to the ECO Services Dominguez Carson for recycling, a distance of approximately 5.55 miles. Following completion of the SARP, spent sulfuric acid from Wilmington Operations would be treated on-site and reused so that the transportation of spent sulfuric acid from Wilmington Operations would be eliminated, thus, reducing the sulfuric acid transport by over 6,000 truck miles per year. Under Alternative 3, the SARP would be constructed and the transportation of hazardous materials is expected to be similar to the proposed project. Therefore, under Alternative 3, transportation hazard impacts during operation are expected to be less than significant and equivalent to transportation hazard impacts from the proposed project.

Hydrology/Water Quality: Under Alternative 3, Wilmington Operations HTU-1 and HTU-2, as well as the modifications to the LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations would not be constructed. Instead, a new Gasoline Hydrotreater/SHU would be installed. Construction activities under Alternative 3 are expected to be similar to the proposed project as one new refinery unit would be constructed under Alternative 3, instead of the proposed modifications identified above. The total daily potable water demand during construction of the proposed project is expected to be a maximum of 40,000 gpd (10,000 gpd associated with dust suppression activities at the Wilmington Operations and up to 30,000 gpd for hydrostatic testing of new tanks and pipelines), which is less than the significance threshold of 262,820 gpd. Water demand during construction activities under Alternative 3 are expected to be similar to the proposed project as the pipelines and storage tanks that require hydrostatic testing are also included under Alternative 3. Water demand associated with the proposed project construction activities was determined to be less than significant. Water demand impacts associated with construction under Alternative 3 are also expected to be less than significant and equivalent to the proposed project.

Under the proposed project, water used for the hydrostatic testing new tanks and associated pipelines would be Refinery wastewater that is diverted for testing prior to discharge to the industrial sewer system. Demand for water to perform hydrostatic testing of new tanks and pipelines at both the Carson and Wilmington Operations can be supplied entirely using current wastewater streams at each operation. Using diverted wastewater will eliminate the need for using additional potable water supplies and will not increase the amount of wastewater generated by the Refinery, but will temporarily vary the discharge rate during construction. Wastewater associated with construction of the proposed project is expected to be discharged in compliance with existing IWDPs. Wastewater impacts from the proposed project during construction activities were determined to be less than significant. Wastewater generation during construction under Alternative 3 is expected to generate the same wastewater impacts as the proposed project, which would include wastewater associated with hydrostatic testing of the new pipelines and

tanks (which are also included in Alternative 3). Wastewater impacts during construction activities are expected to be less than significant under Alternative 3 as well, and equivalent to wastewater impacts for the proposed project.

Operation of the proposed project is expected to result in an increase in water demand of about 191,275 gpd associated with modifications to the NHDS, No. 51 Vacuum, Alkylation, and Wet Jet Treater Units, as well as indirect water demand increases associated with cooling water, which was determined to be less than significant. Alternative 3 would eliminate the modifications to the NHDS, but would result in an approximately equivalent increase in water demand associated with the new Gasoline Hydrotreater/SHU. The proposed project also includes shutting down the FCCU at the Wilmington Operations, which would reduce existing wash water demand by an estimated 99 gpm (about 142,560 gpd) and cooling water by an estimated 415.50 gpm (about 598,320 gpd). Therefore, the proposed project will increase the net direct potable water demand at the Refinery by about 76.5 gpm or about 110,160 gpd, which is less than the applicable potable water demand significance threshold of 262,820 gpd. Further, as discussed in Sections 3.4.1 and 4.4.2.1.2, the Refinery owns and operates private water wells to produce process water and purchases additional potable and reclaimed water to supplement the water drawn from the wells. As discussed in Section 4.4.2.1.2, the incremental increase in water demand of 191,275 gpd (approximately 69.8 million gallons per year) from the proposed project is expected to be produced by the privately-owned wells (i.e., from the available 1.2 billion gallons per year of adjudicated water rights). The existing water supply can meet the water demand of the proposed project. The water demand associated with Alternative 3 is expected to be similar to the proposed project and the daily water demand associated with the Alternative 3 would also be met from privately-owned wells. Therefore, Alternative 3 water supply impacts are expected to be less than significant and equivalent to the proposed project.

The proposed project was expected to reduce the overall wastewater generated during operations at the Refinery by about 79,344 gpd, largely due to the shutdown of the Wilmington Operations FCCU. Under Alternative 3, the Wilmington Operations FCCU would also be shutdown, reducing wastewater generation from the Refinery. Alternative 3 would be expected to result in additional wastewater generated from the Gasoline Hydrotreater/SHU. However, a net reduction in wastewater generation is still expected under Alternative 3 as the Wilmington Operations FCCU would be shut down under this alternative. Therefore, wastewater impacts are expected to remain less than significant, but, due to wastewater generated by the Gasoline Hydrotreater/SHU, greater than wastewater impacts from the proposed project.

Noise: The proposed project is expected to increase the noise levels at the Refinery during construction due to the types and numbers of construction equipment to be used on-site. Using the SoundPLAN model, the noise levels at the closest residential noise receptors are expected to increase from 0.1 to 0.9 dBA depending on the location and the time of day. The increased noise levels associated with the proposed project were considered less than significant during the construction phase of the proposed project as noise levels at off-site residential noise receptors were concluded to be less than the applicable noise significance thresholds. Alternative 3 would eliminate construction activities associated with modifications to the Wilmington Operations HTU-1 and HTU-2, as well as the modifications to the LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations. However, Alternative 3 would require additional construction

activities associated with the Gasoline Hydrotreater/SHU. Because similar types and numbers of construction equipment would be used during peak construction activities under the proposed project (to modify the Wilmington Operations HTU-1 and HTU-4, and LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations) as would be used to construct the new Gasoline Hydrotreater/SHU and distances to noise receptors would be similar under the two scenarios, it is expected that Alternative 3 would result in similar construction activities and noise impacts as the proposed project. Therefore, noise impacts during construction of Alternative 3 are expected to be less than significant and equivalent to construction noise impacts from the proposed project.

Under the proposed project, construction would involve equipment and activities that may have the potential to temporarily generate groundborne vibration. Based on the activities and equipment which would be used during the proposed project construction phases, the construction equipment source levels are estimated to range between 58 VdB and 100 VdB at a distance of 25 feet. The vibration from construction activities was concluded to be less than the applicable vibration significance threshold. As indicated above, construction equipment and activities under the proposed project during peak construction activities are expected to be similar to those under Alternative 3. Therefore, construction vibration impacts under Alternative 3 are also expected to be less than significant and equivalent to the proposed project.

Additional noise sources associated with the proposed project generally include process equipment components such as valves, flanges, vents, pumps, and compressors. The SoundPLAN model projected that the noise levels at three of the four noise receptor locations would be unchanged under the proposed project and at one location the noise level was projected to increase by 0.1 dBA which is well below the 3.0 dBA significance threshold (see Table 4.5-3). Based on SoundPLAN model results, increased noise levels associated with the proposed project were considered less than significant during the operational phase. Alternative 3 would eliminate the modifications to the Wilmington Operations HTU-1 and HTU-2, as well as the modifications to the LHU, NHDS Unit, and Mid-Barrel Treater at the Carson Operations so any noise from this equipment would be unchanged from baseline conditions. However, Alternative 3 includes adding equipment associated with the new Gasoline Hydrotreater/SHU. Because noise generated by the Gasoline Hydrotreater/SHU is expected to be similar to noise generated by other new and modified units, noise impacts associated with the Refinery operations under Alternative 3 are expected to be similar to the noise impacts generated by the proposed project. Therefore, operational noise impacts under Alternative 3 are also expected to be less than significant and equivalent to noise impacts generated by the proposed project.

Equipment associated with the operation of the proposed project is not expected to generate detectable groundborne vibration during normal operation because new equipment is not expected to have oscillating parts which have the potential to generate groundborne vibration. Therefore, vibration impacts from operation of the proposed project are expected to be less than significant. Similarly, the new Gasoline Hydrotreater/SHU installed under Alternative 3 is not expected to have oscillating parts, so no significant adverse vibration impacts are expected during operation. Therefore, groundborne vibration impacts during operation of Alternative 3 would be less than significant and equivalent to groundborne vibration impacts from the proposed project.

Solid/Hazardous Waste: Construction activities associated with the proposed project involve grading and excavation activities that could generate solid waste. Demolition activities could generate demolition waste. Solid waste from constructing the proposed project were concluded to be less than significant because steel from demolition of tanks and piping is a commodity and would be recycled, while concrete foundations would be transported off-site for crushing and recycling or disposal at inert or municipal landfills, which have available capacity. The proposed project impacts on the generation of solid wastes were considered to be less than significant during construction. The magnitude of construction activities under Alternative 3 is expected to be the same as the proposed project because the same equipment would be demolished and the same foundations would be removed and crushed for recycling or disposal. Therefore, solid waste impacts during construction would be less than significant under Alternative 3 and equivalent to solid waste impacts from the proposed project.

Site preparation, grading, and construction activities for the proposed project have the potential to encounter contaminated soil or groundwater, which would require treatment or removal and disposal. The amount of contaminated soil that may be encountered during construction of the proposed project was concluded to be well below the daily disposal capacity of the available hazardous waste landfills, so no significant adverse impacts would occur from the proposed project. Therefore, hazardous waste impacts during construction were concluded to be less than significant. Because the areas disturbed and construction equipment and activities under the proposed project are expected to be similar to those under Alternative 3, it is expected that the same amounts of contaminated soil would be encountered during construction. Similar to the proposed project, because the volumes of hazardous soils encountered during construction of Alternative 3 would be well below the disposal capacity of the available hazardous waste landfills, no significant adverse hazardous waste impacts during construction will occur. Therefore, hazardous waste impacts during construction under Alternative 3 are also expected to be less than significant and equivalent to the proposed project.

Once the proposed project becomes operational, the average annual amounts of solid waste are not expected to change as there would be no increase in workers at the Refinery and refinery units do not tend to generate solid waste. For these reasons, sources and amounts of solid waste generated by Alternative 3 are expected to be less than significant and equivalent to the proposed project.

The project components associated with the proposed project that would generate hazardous waste would still be included in the project under Alternative 3. The proposed project is expected to increase the amount of spent sulfuric acid (used as a catalyst), primarily from the Carson Operations Alkylation Unit. Following completion of the SARP, eight trucks per day would transport spent sulfuric acid from the Carson Operations to the SARP at the Wilmington Operations. All of the spent sulfuric acid from Wilmington Operations would then be treated on-site and reused, so increased production of spent sulfuric acid will not create an additional hazardous waste stream from the Refinery requiring disposal. Because Alternative 3 includes this same equipment, hazardous waste impacts from increased amounts of spent sulfuric acid would be less than significant and equivalent to the proposed project.

Under the proposed project, the Wet Jet Treater, and SARP are expected to use caustic and generate spent caustic. As with the current procedures at the Refinery, additional amounts of spent caustic would be generated and all spent caustic generated would be transported for recycling off-site. Under Alternative 3, all spent caustic would also be transported off-site for recycling, so no spent caustic would need to be disposed of in a hazardous waste landfill. The new storage tanks could require sludge removal approximately once every 20 years. The daily volume of waste generated during the periodic cleaning of the new storage tanks is expected to be about the same as current operations because no change in the method for tank cleaning is proposed and no more than one storage tank would be cleaned at any time. The sludge is expected to remain on-site and will be used as feedstock to the DCU (i.e., recycled on-site); therefore, no increase in waste disposal would be expected from operation of the new and modified storage tanks. Because hazardous waste streams under the proposed project are expected to be reused or recycled (see Section 4.6.3), impacts were concluded to be less than significant. Because Alternative 3 includes installing the same number and size of storage tanks as the proposed project, the same amounts of sludge would be generated at the same rate, which would remain on-site and be used as a feedstock for the DCU. Hydrotreaters typically use a heavy metal-based catalyst to reduce aromatic compounds and impurities such as sulfur from fuels. Alternative 3 would result in an increase in the use of catalyst. The volume of catalyst that would be used in the Gasoline Hydrotreater is currently unknown, but additional spent catalyst is expected to be generated. The additional spent catalyst would be recycled for the metal content so that no additional waste stream that requires disposal would be produced under Alternative 3.

In addition, Alternative 3 is not expected to require additional waste disposal capacity and will not interfere with the Tesoro Refinery's ability to comply with existing federal, state, and local regulations for solid and hazardous waste handling and disposal. Consequently, hazardous waste impacts would be less than significant, but because more spent heavy metal catalysts would be generated, hazardous waste impacts would be greater than those from the proposed project.

Traffic/Transportation: Construction traffic conditions under the proposed project were analyzed for the construction phase having the maximum number of construction trips (peak construction period) over the entire construction period. The analysis indicated that construction worker traffic associated with the proposed project would be less than significant at all affected intersections except one, the Wilmington Ave./Interstate 405 Southbound Ramps during the morning peak hour. The proposed project is expected to require about 696 construction workers. Peak construction activities under Alternative 3 are expected to be similar to construction activities required for the proposed project during peak construction activities. Alternative 3 is expected to require about the same magnitude of construction activities and approximately the same number of construction workers as the proposed project during the peak construction period because similar types of new or modified equipment would be constructed and the peak construction period would also occur during a Refinery turnaround. The construction traffic impacts associated with the proposed project during peak construction are considered to be less than significant after mitigation. Since construction traffic impacts during peak construction under Alternative 3 are the same as the proposed project and are also expected to be significant, the same mitigation measure required for the proposed project would be required for Alternative

3. Therefore, construction traffic impacts under Alternative 3 would be less than significant after mitigation and would be equivalent to the proposed project.

6.4.4 ALTERNATIVE 4 – INTERCONNECTING PIPELINE AND NEW GASOLINE HYDROTREATER AT CARSON OPERATIONS

Air Quality: Air quality impacts associated with construction of the proposed project (see Table 4.2-2) would be reduced under Alternative 4 because construction activities would be reduced and only include construction of the Interconnecting Pipelines, new Gasoline Hydrotreater and new SHU. Construction emissions associated with the proposed project were considered significant for VOC and NO_x, as well as the LSTs for NO₂ emissions. In spite of implementing mitigation measures, construction air quality impacts would remain significant. Under Alternative 4, approximately 192 construction workers are expected to be needed to construct the pipeline, compared to 696 construction workers associated with the proposed project. An additional 250 construction workers are estimated to be required to construct the new Gasoline Hydrotreater and SHU. Therefore, there would be an approximately 45 percent reduction in the number of construction workers needed during peak construction under Alternative 4 compared to the proposed project during peak construction activities. The level of construction activities (including construction equipment) is also expected to be reduced by about 45 percent (see Table 6.4-3). Therefore, air quality impacts from construction under Alternative 4 would be less than significant for VOC, CO, SO_x, PM₁₀ and PM_{2.5}. The LSTs for NO₂ emissions during construction activities under Alternative 4 are also expected to be less than significant. Daily construction emissions for NO_x under Alternative 4 would remain significant, but would be less than daily construction NO_x emissions under the proposed project. As a result, all mitigation measures identified for the proposed project would be required for Alternative 4. Therefore, with the exception of NO_x emissions, which would continue to be significant, construction air quality impacts under Alternative 4 would be less than significant and less than construction air quality impacts under the proposed project.

The operational emissions effects associated with the proposed project's new and modified units would be eliminated under Alternative 4, as none of the proposed unit modifications or new units would be installed and operated. Under Alternative 4, there would be no emission increases associated with DCU Heater H-100, HCU Heaters H-300/301, the SARP, PSTU, new storage tanks, or fugitive emissions increases at the Wilmington Operations (CRU-3, HCU, HTU-1, HTU-2, or HTU-4) or Carson Operations (No. 51 Vacuum Unit, Alkylation Unit, HCU, LHU, LPG Railcar Unloading facilities, Mid Barrel Distillate Treater, Naphtha Isomerization Unit, NHDS Unit, and Wet Jet Treater).

TABLE 6.4-3
Comparison of Proposed Project and Alternative 4
Peak Construction Emissions
(lb/day)

ACTIVITY	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
Proposed Project Construction Emissions						
Proposed Project Construction Emissions ^(a)	106.65	515.54	575.73	1.41	68.55	38.67
SCAQMD Threshold Level	75	550	100	150	150	55
Significant?	Yes	No	Yes	No	No	No
Alternative 4 Estimated Construction Emissions						
Alternative 4 Construction Emissions ^(b)	69.32	335.10	374.23	0.92	44.56	25.14
SCAQMD Threshold Level	75	550	100	150	150	55
Significant?	No	No	Yes	No	No	No

(a) See Table 4.2-2 for detailed construction emissions estimates.

(b) Assumes construction activities are 65 percent of the construction activities for the proposed project.

The operational emissions from the proposed project were considered to be less than significant, primarily due to the shutdown of the Wilmington Operations FCCU. Under Alternative 4, there are expected to be emission increases associated with the new Gasoline Hydrotreater/SHU as two new heaters would be required (with a combined heat duty of 120 mm Btu/hr). The total combined heat duty of all new heaters and heater modifications associated with the proposed project is an increase of approximately 202 mmBtu/hr, so that operational GHG and criteria pollutant emissions increases under Alternative 4 are expected to be less than the proposed project. Under Alternative 4, the Wilmington Operations FCCU would not be shut down because none of the Refinery modifications needed for that to occur would be made. Crude tank modifications at the Carson and Wilmington Operations would not occur and the crude unloading rate from the marine terminal would remain unchanged at 5,000 bbl/hr. Therefore, the beneficial local emission reduction effects of the proposed project associated with reduced annual ship emissions due to the increased crude offloading rate (see Table 4.2-9) would also be eliminated.

Consequently, operational air quality impacts under Alternative 4 would be less than significant as all emission increases from new stationary sources would be required to be offset. Under Alternative 4 overall operational emissions from the Refinery would be less than significant, but higher than overall operational emissions from the proposed project as the emissions reduction benefits associated with the proposed project would not be achieved (see Table 6.4-4).

TABLE 6.4-4

Predicted Operational Criteria Pollutant Air Emissions Under Alternative 4

Sources	Emissions (lbs/day)					
	VOC	CO	NOx	SOx	PM10	PM2.5 ^(a)
Total Proposed Project Emissions ^(a)	49.09	-589.28	38.18	<0.01	1.16	0.89
Significance Threshold	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Alternative 4 Operational Emissions ^(b)	318.96	959.79	572.59	416.38	171.35	171.35
New Gasoline Hydrotreater Heaters	15	76	7	15	16	15
Alternative 4 Increase in Operational Emissions ^(c)	0	76	0	0	0	0
Significant?	No	No	No	No	No	No

Note: Negative numbers represent emission reductions.

(a) See Table 4.2-4 for further details.

(b) The Wilmington Operations FCCU would not be shut down so the daily emissions associated with the FCCU operation would remain. These results reflect baseline emissions at the Refinery and do not represent emission increases.

(c) In addition to the FCCU emissions, additional emissions would be associated with the new Gasoline Hydrotreater and SHU, but sufficient engineering information is not available to provide more than an emissions estimate from those units. VOC, NOx, SOx, and PM10 are required to comply with offset requirements of Regulations XIII and XX. Therefore, no net increase in emissions would be expected.

Alternative 4 would eliminate the increased TAC emissions and the associated cancer and non-cancer health risks that were projected to occur under the proposed project. The cancer health risks from the proposed project were calculated to be less than the cancer risk significance threshold of ten in one million and, therefore, were considered to be less than significant. Similarly, non-cancer health risks from the proposed project were calculated to be substantially less than the acute and chronic hazard index significance thresholds of 1.0. The TAC emission reduction benefits associated with the shutdown of the Wilmington Operations FCCU and the reduced annual ship emissions due to the increased crude offloading rate were not included as part of the HRA analysis in the EIR; however, under Alternative 4 these TAC emission reductions would not occur. It is assumed that TAC emission increases associated with the new Gasoline Hydrotreater/SHU would be greater than the proposed project due to combustion emissions from the new heaters. However, emissions from the proposed project from rail transport would not occur. Therefore, TAC emission increases and associated cancer and non-cancer health risks under Alternative 4 are expected to be less than the proposed project and would still be less than significant.

Hazards: The construction phase of the proposed project will require construction workers to excavate soil across the Wilmington Operations, the southeastern portion of the Carson Operations, and the Carson Crude Terminal, where construction of the new crude storage tanks will occur. Therefore, under the proposed project construction workers could encounter contaminated soils and groundwater during site excavation; however, because of on-site worker safety equipment and training and the fact that the Refinery would be required to comply with numerous worker safety regulations, the impact was concluded to be less than significant.

Under Alternative 4, there is the potential for the discovery of contaminated soils during construction activities associated with constructing the Interconnecting Pipelines and the new Gasoline Hydrotreater and SHU. The proposed Interconnecting Pipelines associated with the proposed project would be underground off-site (i.e., approximately 80 feet under Alameda Street and Sepulveda Boulevard). At on-site locations, the pipeline would be located above ground and little soil excavation would be required, minimizing the potential for exposure to contaminated soils or groundwater. The air sampling results for the proposed project indicated that in areas within the Refinery where excavation is expected to be less than 20 feet, VOC concentrations are expected to be less than the SCAQMD Rule 1166 50 ppm limit that requires special soil handling procedures to be implemented, with the exception of two areas. The two areas that may have VOC concentrations greater than 50 ppm could be excavated under Alternative 4, depending on the location of the Gasoline Hydrotreater and SHU. As a result, potential hazard impacts from encountering contaminated soil could occur, but would be less than significant for the same reasons identified for the proposed project and equivalent to construction hazard impacts from the proposed project.

The hazard impacts associated with the proposed project are considered to be significant for the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP, as the hazard impacts could extend off-site. Since Alternative 4 does not include these pieces of equipment, significant adverse hazard impacts associated with the Naphtha Isomerization Unit, new crude tanks, and SARP components of the proposed project would not occur as these project components would be eliminated. Alternative 4 would include the installation of a new Gasoline Hydrotreater and SHU, which could result in significant adverse hazard impacts, depending on the location of the unit. Note that sufficient design details are not available to determine the magnitude of hazards, but the conservative assumption is that hazardous impacts could occur off-site. As a result the same hazard mitigation measure identified for the proposed project would be required for Alternative 4. In spite of implementing this mitigation measure hazard impacts are expected to remain significant. Alternative 4 would not eliminate the proposed project hazard impacts associated with the Interconnecting Pipeline and those hazards would remain significant. Overall, Alternative 4 has the potential to generate significant adverse hazard impacts associated with the Interconnecting Pipeline and new equipment; however, hazard impacts would be less than potential hazard impacts from the proposed project as fewer modifications would be required.

Although the proposed project would require increased transportation of fresh and spent caustic and LPG, traffic hazard impacts were determined to be less than significant. Alternative 4 would not result in an increase in the transport of spent caustic or LPG because new or modified equipment that would generate spent caustic or require LPG would not be constructed and operated. However transportation of spent caustic that is currently occurring under the existing Refinery operations would continue to occur. Due to the construction of the SARP, the proposed project would reduce the sulfuric acid transport trips by over 6,000 truck miles per year. Under Alternative 4, the SARP would not be constructed and the truck miles traveled to transport sulfuric acid would not be reduced, but would continue to occur. Under the Alternative 4, net transportation hazards are expected to be less than significant and less than transportation hazards from the proposed project because transporting spent caustic and LPG would require substantially longer trips than occurs for sulfuric acid.

Hydrology/Water Quality: Total daily potable water demand during construction of the proposed project is expected to be a maximum of 40,000 gpd (10,000 gpd associated with dust suppression activities at the Wilmington Operations and up to 30,000 gpd for piping hydrostatic testing of new tanks and pipelines). Alternative 4 would eliminate approximately 45 percent of the construction site preparation activities, such as grading, as grading would only be required for the new Gasoline Hydrotreater and SHU, so the water demand for dust suppression would be less than 10,000 gpd required for the proposed project. Water demand associated with pipeline hydrostatic testing during the construction period would still be required. Under Alternative 4, the Interconnecting Pipelines that will be routed under the Alameda Corridor and Sepulveda Boulevard will be hydrotested using potable water, as there will be no access to the wastewater system at either the Carson or Wilmington Operation. Similar to the proposed project, it is not expected that the fill rate of piping for hydrostatic testing would exceed 500 gpm, which corresponds to 30,000 gpd, which is less than the water demand significance threshold of 262,820 gpd. Potable water demand associated with Alternative 4 during construction would also be less than significant and less than the potable water demand associated with construction of the proposed project.

Under the proposed project, water used for the hydrostatic testing new tanks and associated pipelines would be Refinery wastewater that is diverted for testing prior to discharge to the industrial sewer system. Using diverted wastewater will eliminate the need for using additional potable water supplies and will not increase the amount of wastewater generated by the Refinery, but will vary the discharge rate during construction. Proposed project impacts on wastewater generated during construction activities were determined to be less than significant. Alternative 4 would result in an increase in wastewater associated with hydrostatic testing of the new pipelines, but no wastewater would be needed for hydrostatic testing of new tanks because these would be eliminated under Alternative 4. Wastewater associated with construction is expected to be discharged in compliance with existing IWDPs. Wastewater impacts during construction are expected to be less than significant under Alternative 4 and less than wastewater impacts during construction of the proposed project.

Under Alternative 4, it is expected that the operation of the Gasoline Hydrotreater and SHU would require water. The proposed project is expected to result in a net increase in water demand of about 191,275 gpd associated with modifications to the NHDS, No. 51 Vacuum, Alkylolation, and Wet Jet Treater Units, as well as indirect water demand increases associated with cooling water. The proposed project also includes shutting down the FCCU at the Wilmington Operations, which would reduce existing wash water demand by an estimated 99 gpm (about 142,560 gpd) and cooling water by an estimated 415.50 gpm (about 598,320 gpd). Therefore, the proposed project will increase the net direct potable water demand at the Refinery by about 76.5 gpm or about 110,160 gpd, which is less than the applicable potable water demand significance threshold of 262,820 gpd. Further, as discussed in Sections 3.4.1 and 4.4.2.1.2, the Refinery owns and operates private water wells to produce process water and purchases additional potable and reclaimed water to supplement the water drawn from the wells. As discussed in Section 4.4.2.1.2, the incremental increase in water demand of 191,275 gpd (approximately 69.8 million gallons per year) from the proposed project is expected to be produced by the privately-owned wells (i.e., from the available 1.2 billion gallons per year of adjudicated water rights). The existing water supply can meet the water demand of the proposed

project. The impacts of the proposed project on water demand during operation were determined to be less than significant. Since Alternative 4 includes the installation of two new units as opposed to modification to a number of units, the water demand is expected to be less than the proposed project. Under Alternative 4, the FCCU would continue operating, there would be no reduction in water demand, and water demand from the FCCU would be unchanged from baseline conditions. Therefore, water demand impacts during operation of Alternative 4 would be less than significant and would also be met from privately-owned wells. However, under Alternative 4, the 740,880 gpd reduction in water use from the shutdown of the FCCU would not be realized so water demand under Alternative 4 would be greater than the proposed project.

The proposed project was expected to reduce the overall wastewater generated during operations at the Refinery by about 79,344 gpd, largely due to the shutdown of the Wilmington Operations FCCU. Under Alternative 4, the Wilmington Operations FCCU will continue to operate so there would be no decrease in wastewater generation and there would be additional wastewater generated by the Gasoline Hydrotreater/SHU. Nonetheless, wastewater generation under Alternative 4 would remain less than significant. Wastewater impacts under Alternative 4 are expected to be greater than the proposed project because the FCCU would not be shut down.

Noise: The proposed project is expected to increase the noise levels at the Refinery during construction due to the numbers and types of construction equipment. Using the SoundPLAN model, the noise levels from the proposed project at the closest residential noise receptors are expected to increase from 0.1 to 0.9 dBA depending on the location and the time of day. The increased noise levels associated with the proposed project were considered less than significant during the construction phase of the proposed project as noise levels at off-site residential noise receptors were concluded to be less than the applicable noise significance thresholds. Implementation of the Alternative 4 would reduce the potential noise impacts associated with construction activities as approximately 45 percent of the number of pieces of construction equipment would be needed to construct the Interconnecting Pipeline and Gasoline Hydrotreater/SHU. As a result, construction noise impacts from Alternative 4 would be less than significant and less than construction noise impacts from the proposed project.

Under the proposed project, construction would involve equipment and activities that may have the potential to temporarily generate groundborne vibration. Based on the activities and equipment which would be used during the proposed project construction phases, the construction equipment source levels are estimated to range between 58 VdB and 100 VdB at a distance of 25 feet. The vibration from construction activities was concluded to be less than the applicable vibration significance threshold. Because Alternative 4 would require approximately 45 percent fewer numbers and types of construction equipment, vibration impacts during construction would be less than vibration impacts from the proposed project. Consequently, construction vibration impacts from Alternative 4 would be less than significant and less than construction vibration impacts from the proposed project.

Additional noise sources associated with the operation of the proposed project generally include process equipment components such as valves, flanges, vents, pumps, and compressors. The SoundPLAN model concluded that the noise levels associated with operation of the proposed project at three of the four noise receptor locations would be unchanged and at one location the

noise level was projected to increase by 0.1 dBA which is well below the 3.0 dBA significance threshold (see Table 4.5-3). Based on SoundPLAN model results, increased noise levels associated with the proposed project were considered to be less than significant during the operational phase. Under Alternative 4, less noise-generating refinery equipment would be installed and operated at the Refinery. Therefore, noise impacts during operation under Alternative 4 are expected to be less than significant and less than operational noise impacts from the proposed project.

Equipment associated with the operation of the proposed project is not expected to generate detectable groundborne vibration during normal operation because new equipment is not expected to have oscillating parts, which have the potential to generate groundborne vibration. Therefore, vibration impacts from operation of the proposed project are expected to be less than significant and no significant vibration impacts are expected during operation. Alternative 4 includes constructing and operating the Interconnecting Pipeline and Gasoline Hydrotreater/SHU and does not include any operational equipment that could generate vibration impacts. Therefore, operational vibration impacts from Alternative 4 are considered to be less than significant and less than operational vibration impacts from the proposed project.

Solid/Hazardous Waste: Construction activities associated with the proposed project involve grading and excavation activities that could generate solid waste. Demolition activities could generate demolition waste. Solid waste from constructing the proposed project were concluded to be less than significant because steel from demolition of tanks and piping is a commodity and would be recycled, while concrete foundations would be transported off-site for crushing and recycling or disposal at inert or municipal landfills, which have available capacity. The proposed project impacts on the generation of solid wastes were considered to be less than significant. Alternative 4 does not involve grading for, or demolition of tanks, foundations, or other structures. As a result, Alternative 4 is not expected to generate any solid waste impacts during construction, so solid waste impacts from construction are considered to be less than significant and less than solid waste impacts during construction of the proposed project.

Site preparation, grading, and construction activities for the proposed project have the potential to encounter contaminated soils or groundwater, which would require treatment or removal and disposal. The amount of contaminated soil that may be encountered during construction of the proposed project was concluded to be well below the daily disposal capacity of the available hazardous waste landfills and, therefore, was concluded to be less than significant. Alternative 4 would include site preparation and grading for the Gasoline Hydrotreater/SHU. Under Alternative 4, there is the potential for the discovery of contaminated soils during construction activities associated with constructing Gasoline Hydrotreater/SHU and the Interconnecting pipelines in the same volumes that would occur under the proposed project. Under Alternative 4 the area associated with construction the Interconnecting pipelines and the Gasoline Hydrotreater/SHU would be smaller than the area that would need to be graded under the proposed project, e.g., construction of the six new crude tanks would not be built under Alternative 4. If contaminated soil is encountered under Alternative 4, the volume is expected to be less than the volume encountered under the proposed project. Since Alternative 4 would generate smaller volumes of contaminated soils, local landfills and treatment facilities have sufficient capacity to handle the one-time generation of hazardous construction waste.

Therefore, hazardous waste impacts during construction of Alternative 4 would be less than significant and less than hazardous waste impacts during construction of the proposed project.

Once the proposed project becomes operational, the average annual amounts of solid waste are not expected to change as there would be no increase in workers and refinery units do not tend to generate solid waste. Sources and amounts of solid waste generated by Alternative 4 are expected to be less than significant and equivalent to the proposed project.

The proposed project is expected to increase the amount of spent sulfuric acid (used as a catalyst), primarily from the Carson Operations Alkylation Unit. Following completion of the SARP, eight trucks per day would transport spent sulfuric acid from the Carson Operations to the SARP at the Wilmington Operations. All of the spent sulfuric acid from Wilmington Operations would then be treated on-site and reused, so that spent sulfuric acid would be regenerated and recycled on-site. Alternative 4 would eliminate the construction of the SARP so that sulfuric acid would continue to be transported to ECO Services Dominguez Carson for recycling via pipeline from the Carson Operations and via truck from the Wilmington Operations. Therefore, hazardous waste impacts from spent sulfuric acid during operation would be less than significant under Alternative 4 as all spent sulfuric acid would be recycled, as it would under the proposed project.

Under the proposed project, the Wet Jet Treater, and SARP are expected to use caustic and generate spent caustic. As with the current procedures at the Refinery, the additional amounts of spent caustic will be transported for recycling off-site. Under Alternative 4, no new sources of spent caustic would be constructed and operated, so spent caustic waste impacts during operation would remain unchanged, be less than significant and less than spent caustic waste impacts during operation of the proposed project.

Under the proposed project, the new storage tanks could require sludge removal approximately once every 20 years. The daily volume of waste generated during the periodic cleaning of the new storage tanks is expected to be about the same as current operations because no change in the method for tank cleaning is proposed and no more than one storage tank would be cleaned at any time. The sludge is expected to remain on-site and will be used as feedstock to the DCU (i.e., recycled on-site); therefore, no increase in waste disposal would be expected from operation of the new and modified storage tanks. Alternative 4 does not include construction of new storage tanks, so the amount of sludge generated would remain unchanged compared to baseline conditions, so the daily hazardous sludge waste impacts during operation would remain unchanged, but would be less over longer time periods, would be less than significant and equivalent to daily hazardous sludge waste impacts during operation, but less than long-term hazardous waste impacts from the proposed project.

Traffic/Transportation: Construction traffic conditions under the proposed project were analyzed for the construction phase having the maximum number of construction trips (peak construction period) over the entire construction period. The analysis indicated that construction worker traffic associated with the proposed project would be less than significant at all affected intersections except one, the Wilmington Ave./Interstate 405 Southbound Ramps during the morning peak hour. Peak construction traffic impacts at this location were concluded to be

significant, in part, because the southbound ramps are currently undergoing construction to improve traffic flow. Alternative 4 would reduce traffic associated with construction activities since only the pipeline portion of the proposed project and two new units would be constructed. The number of construction workers during peak construction activities under Alternative 4 are expected to be a maximum of approximately 445 workers as compared to 696 workers associated with the proposed project. Because construction of the Wilmington Avenue/Interstate 405 Southbound Ramps could occur during the construction phase of Alternative 4, it is expected that construction traffic impacts at the Wilmington Ave./Interstate 405 Southbound Ramps would still exceed one or more applicable traffic impact significance thresholds. Therefore, the same construction traffic mitigation measure required for the proposed project would be required during the construction period for Alternative 4. Implementing the traffic mitigation measures is expected to reduce construction traffic impacts associated Alternative 4 to less than or significant and less than traffic impacts during construction of the proposed project.

6.4.5 ALTERNATIVE 5 – ALTERNATIVE CONSTRUCTION SCHEDULE

Air Quality: Construction emissions associated with the proposed project were considered significant for VOC and NO_x, as well as the LSTs for NO₂ emissions (see Tables 4.2-2 and 4.2-3). Air quality impacts associated with construction of the proposed project would be reduced under Alternative 5 because construction activities would continue to overlap as much as they do under the proposed project but with less intensity. All project components would be constructed, but the construction activities would be more spread out (see Figure 6.3-1). Under Alternative 5, it is assumed that peak construction activities would be less than the proposed project, but construction of more project components would extend through 2021. The level of peak construction activities (including construction equipment) is also expected to be reduced by about 40 percent (see Table 6.4-5) because (some project components will be built on a more extended, less intensive, schedule (No. 51 Vacuum Unit, HTU 4, and LPG Rail Unloading facilities), or would be built later in the construction schedule (Wet Jet Treater, HTU-1 and HTU-2 modifications).

As shown in Table 6.4-5, air quality impacts from construction activities under Alternative 5 would be less than significant for VOC, CO, SO_x, PM₁₀ and PM_{2.5}. Construction emissions for NO_x, including LSTs, under Alternative 5 are expected to remain significant.

TABLE 6.4-5
Comparison of Proposed Project and Alternative 5
Peak Construction Emissions
(lb/day)

ACTIVITY	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}
Proposed Project Construction Emissions						
Proposed Project Construction Emissions ^(a)	106.65	515.54	575.73	1.41	68.55	38.67
SCAQMD Threshold Level	75	550	100	150	150	55
Significant?	Yes	No	Yes	No	No	No
Alternative 5 Estimated Construction Emissions						
Alternative 5 Construction Emissions ^(b)	63.99	303.32	345.44	0.85	41.13	23.20
SCAQMD Threshold Level	75	550	100	150	150	55
Significant?	No	No	Yes	No	No	No

a) See Table 4.2-2 for detailed construction emissions estimates.

b) Assumes construction activities are 60 percent of the construction activities for the proposed project.

In order for the construction emissions associated with the proposed project to be less than significant, there would need to be an 71 percent reduction in total NO_x emissions. That level of emission reductions is not expected to be feasible given the need for construction equipment and workers required for construction/modifications to refinery units as all proposed project modifications (see Subsection 2.7 for a description of all proposed project components) would still occur. The construction emissions from rescheduling project components would lessen the daily emissions, but would not reduce all project construction emissions to less than significant. As a result, all construction mitigation measures required to reduce construction emission impacts under the proposed project would be required under Alternative 5. In spite of implementing these mitigation measures, it is expected that NO_x construction emissions would be reduced in proportion to the proposed project (i.e., 40 percent). However, the reduced NO_x emissions (i.e., 207.26 lb/day) would remain significant.

Under Alternative 5, the operational emissions would be the same as the proposed project after construction is completed in 2021 as all project components would be built and operational by that time. The same indirect project emissions and mobile source emission increases would also be expected to occur (see Table 4.2-4) as would occur under the proposed project. Under Alternative 5, the Wilmington Operations FCCU would be shut down in 2021 instead of 2017. Therefore, the Wilmington Operations FCCU would operate for four additional years resulting in a continuation of baseline emissions and, therefore, substantially greater emissions due to the delay in completion of construction over the proposed project (see Table 6.4-6) during this period. Delaying the shutdown of the Wilmington Operations FCCU would result in continued operational emissions of 318.96 pounds per day of VOC, 959.79 pounds per day of CO, 572.59 pounds per day of NO_x, 416.38 pounds per day of SO_x, 171.35 pounds per day of PM₁₀, and 171.35 pounds per day of PM_{2.5} from 2017 through 2021. During the four-year delay in the completion of construction under Alternative 5, a total of 232.8 tons of VOC, 700.8 tons of CO,

418 tons of NO_x, 304 tons of SO_x, 125.2 tons of PM₁₀ and 125.2 tons of PM_{2.5} would be emitted from the Wilmington Operations FCCU that would not occur under the proposed project. Continued operation of the Wilmington Operations FCCU during construction of Alternative 5 would not only eliminate the benefits of spreading construction out over a longer time frame, but would actually result in higher emissions during the construction period compared to the proposed project as construction emissions would overlap with the continued operation of the Wilmington Operations FCCU for a longer period of time.

TABLE 6.4-6
Operational Criteria Pollutant Emissions Between 2017 and 2021
Under Alternative 5

Sources	Emissions (lbs/day)					
	VOC	CO	NO _x	SO _x	PM ₁₀	PM _{2.5} ^(a)
Wilmington Operations FCCU Daily Emissions (lbs/day) ^(b)	318.96	959.79	572.59	416.38	171.35	171.35
Wilmington Operations FCCU Annual Emissions (lbs/year) ^(a)	116,420	350,323	208,995	151,979	62,543	62,543
Wilmington Operations FCCU Annual Emissions (tons/year)	58.2	175.2	104.5	76.0	31.3	31.3
Wilmington Operations FCCU Emissions from 2017 to 2021 (tons/4 years)	232.8	700.8	418	304	125.2	125.2

Note: Negative numbers represent emission reductions.

(a) See Table 4.2-4 for further details.

(b) The Wilmington Operations FCCU would not be shut down so the daily emissions associated with the FCCU operation would remain.

The operational emissions from the proposed project were considered to be less than significant, primarily due to the shutdown of the Wilmington Operations FCCU. Under Alternative 5, the operational emissions are expected to be higher than the proposed project because the Wilmington Operations FCCU would operate for four additional years than under the proposed project. Therefore, operational emission impacts from the proposed project would be less than operational impacts from Alternative 5 between the years 2017 and 2021 and less than significant under both scenarios. From 2021 on, operational air quality impacts from Alternative 5 would be less than significant and equivalent to the proposed project (see Table 4.2-4).

The cancer health risks from the proposed project were calculated to be less than the cancer risk significance threshold of ten in one million (ranging from 2.1 in one million at Bethune Mary School to 9.2 in one million at the maximum exposed individual worker). Similarly, non-cancer health risks from the proposed project were calculated to be substantially less than the acute and chronic hazard index significance thresholds of 1.0 (0.052 for the maximum acute hazard index, 0.127 for the maximum chronic hazard index, and 0.108 for the maximum 8-hr chronic hazard index). Therefore, cancer and non-cancer health risks from the proposed project are considered to be less than significant (see Table 4.2-13). Under Alternative 5, TAC emissions and associated cancer and non-cancer health risks from the Wilmington Operations FCCU would continue for four additional years compared to the proposed project. The TAC emission reduction benefits associated with the shutdown of the Wilmington Operations FCCU were not

included as part of the HRA analysis in the EIR; however, under Alternative 5 these TAC emissions would continue to occur between 2017 and 2021 and would be unchanged compared to baseline conditions. The proposed project components would not become operational until 2021, after the turnaround is completed. At that time, TAC emissions associated with Alternative 5 are expected to be the same as the proposed project as the same project components would be constructed and operated. Therefore, TAC emissions and the resulting cancer and non-cancer health risks under Alternative 5 are also expected to be less than significant and equal to the proposed project after construction of the remainder of the project components is completed in 2021.

Hazards: The construction phase of the proposed project will require construction workers to excavate soil across the Wilmington Operations, the southeastern portion of the Carson Operations, and the Carson Crude Terminal, where construction of the new crude storage tanks will occur. Therefore, under the proposed project construction workers could encounter contaminated soils and groundwater during site excavation. Soil monitoring showed that the potential to generate hydrocarbon emissions from soil excavation is limited to the area along the pipeline route in the central portion of the Wilmington Operations where VOC emissions could exceed 50 ppm, which exceeds the SCAQMD Rule 1166 50 ppm limit that requires special handling procedures. However, because on-site worker safety equipment and training procedures would be in effect and the Refinery would be required to comply with numerous worker safety regulations, it was concluded that significant adverse health impacts to construction workers would not occur if contaminated soil or groundwater is encountered. Because construction activities and the locations of new equipment under Alternative 5 would be the same as those for the proposed project, it is assumed that construction worker health impacts from encountering contaminated soil or groundwater would be equivalent to the proposed project and also less than significant.

The hazard impacts associated with the proposed project are considered to be significant. Under the proposed project, hazards impacts associated with the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP were considered to be significant as the hazard impacts could extend off-site. The Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP would continue to be built under Alternative 5, thus, generating the same significant adverse hazard impacts as would occur under the proposed project. As a result the same hazard mitigation measure identified for the proposed project would be required under Alternative 5. In spite of implementing these mitigation measures hazard impacts would remain significant. The hazards impacts under Alternative 5 are considered to be equivalent to the proposed project as Alternative 5 would still include the Naphtha Isomerization Unit, new crude tanks, Interconnecting Pipelines, and SARP which were considered to be significant as the hazard impacts could extend off-site. Therefore, the operational hazards under Alternative 5 would be the same as the proposed project and would be considered significant.

The proposed project would require increased transportation of fresh and spent caustic and LPG, but the hazard impact was determined to be less than significant. Spent sulfuric acid from the Wilmington Alkylation Unit is currently transported via six trucks per day to the ECO Services Dominguez Carson for recycling, a distance of approximately 5.55 miles. Following completion

of the SARP, spent sulfuric acid from Wilmington Operations would be treated on-site and reused so that the transportation of spent sulfuric acid from Wilmington Operations would be eliminated, thus, reducing the sulfuric acid transport by over 6,000 truck miles per year. Under Alternative 5, the SARP would still be constructed and the transportation of hazardous materials would be the same as the proposed project once construction is completed because all proposed project components would be built under Alternative 5. Therefore, under Alternative 5, transportation hazards are expected to be less than significant and equivalent to the proposed project.

Hydrology/Water Quality: Total daily potable water demand during construction of the proposed project is expected to be a maximum of 40,000 gpd (10,000 gpd associated with dust suppression activities at the Wilmington Operations and up to 30,000 gpd for hydrostatic testing of new tanks and pipelines). Under Alternative 5, all of the proposed project components would be modified or constructed, but some would not become operational until 2021. The total daily potable water demand during construction of the proposed project is expected to be a maximum of 40,000 gpd (10,000 gpd associated with dust suppression activities at the Wilmington Operations and up to 30,000 gpd for hydrostatic testing of new tanks and pipelines), which is less than the significance threshold of 262,820 gpd. Construction activities under Alternative 5 are expected to be similar to the proposed project, but would occur over a longer timeframe. Therefore, water demand during construction activities under Alternative 5 are expected to be similar to the proposed project as the pipelines and storage tanks that require hydrostatic testing are also included under Alternative 5. The daily water demand during construction activities under Alternative 5 is expected to be less for dust suppression activities because fewer pieces of construction equipment would be operating, but similar to the proposed project for hydrostatic testing as the pipelines and storage tanks that require hydrostatic testing are also included under Alternative 5. Water demand associated with the proposed project construction activities was determined to be less than significant and water demand impacts associated with construction under Alternative 5 are also expected to be less than significant, but less than water demand under the proposed project.

Under the proposed project, water used for the hydrostatic testing new tanks and associated pipelines would be Refinery wastewater that is diverted for testing prior to discharge to the industrial sewer system. Using diverted wastewater will eliminate the need for using additional potable water supplies and will not increase the amount of wastewater generated by the Refinery, but will temporarily vary the discharge rate during construction. Wastewater associated with construction of the proposed project is expected to be discharged in compliance with existing IWDPs. Proposed project impacts on wastewater during construction activities were determined to be less than significant. Like the proposed project, under Alternative 5 wastewater used for the hydrostatic testing new tanks and associated pipelines would be Refinery wastewater that is diverted for testing prior to discharge to the industrial sewer system. Wastewater impacts during construction activities are expected to be the same as the proposed project and would be less than significant under Alternative 5 as well.

Operation of the proposed project is expected to result in an increase in water demand of about 191,275 gpd associated with modifications to the NHDS, No. 51 Vacuum, Alkylation, and Wet Jet Treater Units, as well as indirect water demand increases associated with cooling water,

which was determined to be less than significant. Under Alternative 5, all of these project components would be included so that water demand impacts under Alternative 5 are expected to be the same as the proposed project, except that they would occur once construction is completed in 2021. As discussed in Subsections 3.4.1 and 4.4.2.1.2, the Refinery owns and operates private water wells to produce process water and purchases additional potable and reclaimed water to supplement the water drawn from the wells. As discussed in Subsection 4.4.2.1.2, the incremental increase in water demand of 191,275 gpd (approximately 69.8 million gallons per year) from the proposed project is expected to be produced by the privately-owned wells (i.e., from the available 1.2 billion gallons per year of adjudicated water rights). The existing water supply can meet the water demand of the proposed project. The water demand associated with Alternative 5 is expected to be the same as the proposed project and the daily water demand associated with the Alternative 5 would also be met from privately-owned wells, except that the units would not start operating until 2021. Therefore, Alternative 5 water demand impacts after the completion of construction are expected to be the same as the proposed project and less than significant.

The proposed project was expected to reduce the overall amount of wastewater generated during operations at the Refinery by about 55.1 gpm (79,344 gpd) (see Table 4.4-2). This is due in large part, to the shutdown of the Wilmington Operations FCCU. While there will be an increase in wastewater generation from some operations, such as the SARP, adequate capacity in the existing wastewater treatment facilities is available as described in Section 4.4.2.1.1. Therefore, wastewater impacts from the proposed project were concluded to be less than significant. Under Alternative 5, the Wilmington Operations FCCU would also be shutdown, reducing wastewater generation from the Refinery; however, the FCCU would operate for an additional four years and wastewater discharge would not be reduced until the FCCU was shut down in 2021. Wastewater from operating the FCCU would remain at baseline levels until 2021, when the FCCU would be shut down. Therefore, wastewater impacts during operation of Alternative 5 would be less than significant, but would be greater than the proposed project. After the FCCU is shut down, wastewater impacts would be reduced, would be less than significant and would be equal to the proposed project.

Noise: The proposed project is expected to increase the noise levels at the Refinery due to the use of construction equipment and new Refinery equipment. Using the SoundPLAN model, the noise levels at the closest residential noise receptors are expected to increase from 0.1 to 0.9 dBA depending on the location and the time of day. The increased noise levels associated with the proposed project were considered less than significant during the construction phase of the proposed project as noise levels at off-site residential noise receptors were concluded to be less than the applicable noise significance thresholds. Implementation of Alternative 5 would spread out the construction schedule for a longer period of time but would reduce the numbers and types construction equipment and workers by an estimated 40 percent, compared to the proposed project during peak construction periods. Therefore, construction noise impacts under Alternative 5 are also less than significant and also expected to be less than the construction noise impacts from the proposed project.

Under the proposed project, construction would involve equipment and activities that may have the potential to temporarily generate groundborne vibration. Based on the activities and

equipment that would be used during the proposed project's peak construction phases, the construction equipment source levels are estimated to range between 58 VdB and 100 VdB at a distance of 25 feet. The vibration from construction activities was concluded to be less than the applicable vibration significance threshold. Under Alternative 5, the numbers and types of construction equipment and workers are estimated to be approximately 40 percent, compared to the proposed project, during peak construction periods. Therefore, construction vibration impacts under Alternative 5 are also expected to be less than significant and less than construction vibration impacts from the proposed project.

Additional noise sources associated with the proposed project generally include process equipment components such as valves, flanges, vents, pumps, and compressors. The SoundPLAN model projected that the noise levels at three of the four noise receptor locations would be unchanged and at one location the noise level was projected to increase by 0.1 dBA which is well below the 3.0 dBA significance threshold (see Table 4.5-3). Based on SoundPLAN model results, increased noise levels associated with the proposed project were considered to be less than significant during the operational phase. Alternative 5 would result in the construction and operation of all the same project components as the proposed project, except that they would not all be operational until 2021. As a result, it is expected that operational noise impacts of Alternative 5 would be the same as the proposed project with noise increases an estimated 0.1 dBA, which is well below the 3.0 dBA significance threshold (see Table 4.5-3). When all of the proposed project components become operational in 2021, noise impacts under Alternative 5 would continue to be less than significant and equal to the proposed project.

Equipment associated with the operation of the proposed project is not expected to generate detectable groundborne vibration during normal operation because new equipment is not expected to have oscillating parts, which have the potential to generate groundborne vibration. Therefore, vibration impacts from operation of the proposed project are expected to be less than significant. Alternative 5 would result in the modification/construction and operation of all of the proposed project components, but all of the project components would not become operational until 2021. As a result, since the refinery units do not generate ground vibration, it is expected that any vibration impacts associated with the operation of Alternative 5 would be the same as the proposed project. Therefore, vibration impacts under Alternative 5 are expected to remain less than significant and equal to the proposed project.

Solid/Hazardous Waste: Construction activities associated with the proposed project involve grading and excavation activities that could generate solid waste. Demolition activities could generate demolition waste. Solid waste from constructing the proposed project were concluded to be less than significant because steel from demolition of tanks and piping is a commodity and would be recycled, while concrete foundations would be transported off-site for crushing and recycling or disposal at inert or municipal landfills, which have available capacity. The proposed project impacts on the generation of solid wastes were considered to be less than significant during construction. The magnitude of construction activities under Alternative 5 is expected to be the same as the proposed project as all proposed project components would be built; therefore, solid and hazardous waste impacts would be less than significant under Alternative 5 and equivalent to the proposed project.

Site preparation, grading, and construction activities for the proposed project have the potential to encounter contaminated soils or groundwater, which would require treatment or removal and disposal. The amount of contaminated soil that may be encountered during construction of the proposed project was concluded to be well below the daily disposal capacity of the available hazardous waste landfills, no significant impacts would occur from the proposed project and, therefore, was concluded to be less than significant. Construction activities under Alternative 5 would be similar to the proposed project, but since they would occur over a longer period of time, it is expected that the same amount of contaminated soil requiring disposal would be encountered during construction activities under Alternative 5 as compared to the proposed project. Since the total volume of contaminated soil encountered during the construction phase would be the same as the proposed project, hazardous waste disposal capacity under Alternative 5 would also be sufficient for disposal of contaminated soils, would be less than significant, and would be equivalent to the proposed project.

As indicated in Section 4.6.3, operation of the proposed project is not expected to affect in any way generation of solid waste as no increase in employees is expected and refinery units do not generally produce solid waste, so solid waste impacts during operation were concluded to be less than significant. The same is true under Alternative 5. Solid waste impacts from operation of Alternative 5 would be less than significant and equal to the solid waste impacts from the proposed project.

Following completion of the SARP in 2021, eight trucks per day would transport spent sulfuric acid from the Carson Operations to the SARP at the Wilmington Operations. All of the spent sulfuric acid from Wilmington Operations would then be treated on-site and reused, so recycling of spent sulfuric acid will not create an additional hazardous waste stream from the Refinery requiring disposal. Because Alternative 5 includes this same equipment, no significant adverse hazardous waste impacts associated with the handling of spent sulfuric acid would be expected, as would be the case under the proposed project.

The proposed project components that would generate hazardous waste would still be included in the project under Alternative 5. The Wet Jet Treater and SARP are expected to use caustic and generate spent caustic. Under Alternative 5, any increased generation of spent caustic would continue to be recycled so this impact is considered to be less than significant and equal to the proposed project when they begin operation.

The new storage tanks could require sludge removal approximately once every 20 years. Under Alternative 5, the new storage tanks would be constructed and become operational in 2021 as would be the case under the proposed project. The daily volume of waste generated during the periodic cleaning of the new storage tanks is expected to be about the same as current operations because no change in the method for tank cleaning is proposed and no more than one storage tank would be cleaned at any time. The sludge is expected to remain on-site and will be used as feedstock to the DCU (i.e., recycled on-site); therefore, no increase in waste disposal would be expected from operation of the new and modified storage tanks. Under the proposed project, all hazardous waste streams are expected to be reused or recycled (see Section 4.6.3). This would also be true under Alternative 5 regardless of when equipment is constructed and operated. Therefore, Alternative 5 is not expected to require additional waste disposal capacity and will not

interfere with the Tesoro Refinery's ability to comply with existing federal, state, and local regulations for solid and hazardous waste handling and disposal. Therefore, hazardous waste impacts during operation of Alternative 5 would be less than significant and equivalent to the proposed project.

Traffic/Transportation: Construction traffic conditions under the proposed project were analyzed for the construction phase having the maximum number of construction trips (peak construction period) over the entire construction period. The analysis indicated that construction worker traffic associated with the proposed project would be less than significant at all affected intersections except one, the Wilmington Ave./Interstate 405 Southbound Ramps during the morning peak hour. The proposed project is expected to require about 696 construction workers. Peak construction activities under Alternative 5 are expected to be an estimated 40 percent less than the construction activities required for the proposed project, but would be spread out for a longer timeframe. Alternative 5 would require an estimated 420 construction workers. The construction traffic impacts associated with the proposed project are considered to be significant at the Wilmington Ave./Interstate 405 Southbound Ramps. Construction traffic impacts at this location were concluded to be significant, in part, because the southbound ramps are currently undergoing construction to improve traffic flow.

It is expected that construction traffic impacts at the Wilmington Ave./Interstate 405 Southbound Ramps would exceed one or more applicable traffic impact significance thresholds with the 420 construction workers under Alternative 5. The construction activities at the Wilmington Ave./Interstate 405 Southbound Ramps are expected to be completed in 2016 and well before the completion of the construction of the project under Alternative 5. However, it is still expected that the number of construction worker trips would still contribute to an exceedance of one or more traffic impact significance thresholds. Therefore, under Alternative 5, the same construction traffic mitigation measures required for the proposed project would be required during the construction phase. Implementing the traffic mitigation measures is expected to reduce construction traffic impacts from Alternative 5 to less than significant and less than construction traffic impacts from the proposed project.

6.5 CONCLUSION

6.5.1 COMPARISON OF ENVIRONMENTAL IMPACTS

Table 6.5-1 compares the potential environmental impacts of the various alternatives relative to the proposed project. Based on the analyses herein, no feasible alternatives were identified that would completely reduce or eliminate the potentially significant air quality impacts during construction or the potentially significant hazard impacts during operation, while achieving most of the objectives of the proposed project. Only Alternative 1, the No Project Alternative would eliminate all significant adverse impacts that would be caused by the proposed project.

The No Project Alternative would continue the operation of the Wilmington and Carson Operations under their current configurations and it would not achieve any of the proposed project objectives such as: (1) improving the efficiency of the Refinery, allowing the shutdown of the Wilmington Operations FCCU; (2) reducing overall emissions from the Refinery, including GHG emissions; (3) recovering and upgrading distillate range materials from FCCU feeds; (4) complying with federal, state, and local regulations; (5) improving the financial viability of the Refinery; (6) better integration of the Carson and Wilmington Operations; and (7) improving the efficiency of water-borne crude oil receipt and marine vessel unloading. Not only would Alternative 1 not achieve any of the proposed project objectives, but because portions of Alternative 1 do not include the regulatory compliance projects, it may not be considered a feasible alternative as the Tesoro Refinery would be in violation of regulatory mandates if not implemented.

Although Alternative 1 would eliminate all the significant and less than significant impacts that would occur under the proposed project, the locally beneficial impacts of the proposed project would also be eliminated. The Wilmington Operations FCCU would not be shut down because none of the refinery modifications needed for that to occur would be implemented. Finally, the beneficial aspects of the proposed project associated with reduced annual ship emissions due to the increased crude offloading rate (see Tables 4.2-9 and 4.2-11) would also be eliminated. Similarly, the overall reduction in wastewater generated during operation of the proposed project (79,344 gpd reduced) (see Table 4.4-2) would not occur. Consequently, Alternative 1 would continue current operational emissions, which would be substantially higher than operational emissions under the proposed project as the local emission reduction benefits associated with the proposed project would not be achieved (see Table 6.5-1).

TABLE 6.5-1
Environmental Impacts of Alternatives
as Compared to Proposed Project

ENVIRONMENTAL TOPIC	Proposed Project	Alt. 1^(a)	Alt. 2^(b)	Alt. 3^(c)	Alt.4^(d)	Alt.5^(e)
Air Quality						
Construction	S	NS(-)	S(=)	S(=)	S(-)	S(-)
Operation	NS	NS(+)	NS(+)	NS(+)	NS(+)	NS(+)
Toxic Air Contaminants	NS	NS(+)	NS(+)	NS(+)	NS(=)	NS(+)
Hazards						
Construction Hazards	NS	NS(-)	NS(=)	NS(=)	NS(=)	NS(=)
Operational Hazards	S	NS(-)	S(+)	S(+)	S(-)	S(=)
Transportation Hazards	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(=)
Hydrology/Water Quality						
Water Demand Construction	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(-)
Wastewater Construction	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(=)
Water Demand Operation	NS	NS(-)	NS(=)	NS(=)	NS(+)	NS(=)
Wastewater Operation	NS	NS(+)	NS(+)	NS(+)	NS(+)	NS(+)
Noise						
Construction Noise	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(-)
Construction Vibration	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(-)
Operational Noise	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(=)
Operational Vibration	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(=)
Solid/Hazardous Waste						
Construction Solid Waste	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(=)
Construction Haz. Waste	NS	NS(-)	NS(=)	NS(=)	NS(-)	NS(=)
Operation Solid Waste	NS	NS(=)	NS(=)	NS(=)	NS(=)	NS(=)
Operation Haz. Waste	NS	NS(-)	NS(+)	NS(+)	NS(-)	NS(=)
Transportation/Traffic						
Construction	MNS	NS(-)	MNS(=)	MNS(=)	MNS(-)	MNS(-)

Alternatives:

- 1 No Project
- 2 New FFHDS Fractionator at Carson Operations and New Diesel Hydrotreater at Wilmington Operations
- 3 New Gasoline Hydrotreater at Carson Operations
- 4 Interconnecting Pipelines and New Gasoline Hydrotreater at Carson Operations
- 5 Alternative Construction Schedule

Notes:

- S = Significant, mitigation applied by impacts remain significant
 NS = Not Significant
 MNS = Mitigated, Not Significant
 (-) = Potential impacts are less than the proposed project.
 (+) = Potential impacts are greater than the proposed project.
 (=) = Potential impacts are approximately the same as the proposed project.

TABLE 6.5-1 (Concluded)

- (a) None of the objectives are met.
- (b) Alternative 2 does not achieve the objectives of reducing overall emissions from the Refinery.
- (c) Alternative 3 does not achieve the objectives of reducing overall emissions from the Refinery.
- (d) Alternative 4 does not achieve the objectives of improving efficiency of the Refinery, reducing overall emissions from the Refinery, recovering and upgrading distillate range materials from FCCU feeds, or improving efficiency of water-borne crude receipts.
- (e) Alternative 5 does not achieve the objectives of improving the efficiency and enabling shutdown of the Wilmington Operations FCCU by 2017. Operational emission reduction benefits would be delayed by five years. Other project objectives would be achieved but delayed due to the schedule.

Alternative 2 would result in significant adverse impacts to air quality during construction and hazards during operation and would require the construction of two additional new refinery units (FFHDS Fractionator and Diesel Hydrotreater). Construction of the new Refinery units would potentially result in higher air quality, water quality, hazard, and operational hazardous waste impacts than the proposed project. Alternative 2 would not reduce any of the potentially significant proposed project impacts to less than significant. Impacts to other environmental topic areas analyzed were generally equivalent to impacts in those same areas that would be generated by the proposed project.

Alternative 2 would achieve most the objectives of the proposed project, including: (1) improving the efficiency of the Refinery, allowing the shutdown of the Wilmington Operations FCCU; (2) reducing overall emissions from the Refinery, including GHG emissions; (3) recovering and upgrading distillate range materials from FCCU feeds; (4) complying with federal, state, and local regulations; (5) improving the financial viability of the Refinery; (6) better integration of the Carson and Wilmington Operations; and (7) improving the efficiency of water-borne crude oil receipt and marine vessel unloading. However, Alternative 2 would not achieve the objectives of reducing overall emissions from the Refinery as much as would the proposed project.

Alternative 3 would result in significant adverse impacts to air quality during construction and would result in greater operational GHG and criteria pollutant emissions associated with the two new heaters as compared to the proposed project. In addition, Alternative 3 also would result in significant adverse hazard impacts during operation. Alternative 3 would have greater impacts than the proposed project on operational air quality, wastewater, and hazardous waste impacts and it would not reduce any of the potentially significant adverse impacts of the proposed project to less than significant. Impacts to other environmental topic areas analyzed were generally equivalent to impacts in those same areas that would be generated by the proposed project.

Alternative 3 would achieve most the objectives of the proposed project, including: (1) improving the efficiency of the Refinery, allowing the shutdown of the Wilmington Operations FCCU; (2) reducing overall emissions from the Refinery, including GHG emissions; (3) recovering and upgrading distillate range materials from FCCU feeds; (4) complying with federal, state, and local regulations; (5) better integration of the Carson and Wilmington Operations; and (6) improving the efficiency of water-borne crude oil receipt and marine vessel unloading. Alternative 3 would require the installation of two new heaters, which means that

this alternative would not achieve as effectively as the proposed project the objective of reducing overall emissions from the Refinery as a whole, including GHG emissions. Additionally,

Alternative 4 would result in significant adverse impacts to air quality during construction and hazards during operation; however, the impacts are expected to be less than the proposed project. Alternative 4 would eliminate the VOC significant construction air quality impacts and most of the hazard impacts. NO_x emissions associated with the construction phase would remain significant under Alternative 4. The hazard impacts associated with the Interconnecting pipelines would remain significant under Alternative 4; however, Alternative 4 would eliminate the potentially significant hazards associated with Naphtha Isomerization Unit, new crude tanks, and SARP. Alternative 4 would have greater impacts than the proposed project on operational air quality, TAC emissions, and wastewater impacts as the FCCU would not be shut down under Alternative 4. Alternative 4 would not reduce any of the potentially significant adverse impacts of the proposed project to less than significant.

Alternative 4 would not accomplish the major objectives of the proposed project. Alternative 4 would meet the objective of better integration of the Carson and Wilmington Operations by constructing the Interconnecting Pipelines and complying with federal, state, and local regulations. However, Alternative 4 would not meet any of the other objectives of the proposed project including: (1) improving the efficiency of the Refinery, allowing the shutdown of the Wilmington Operations FCCU; (2) reducing overall emissions from the Refinery, including GHG emissions; (3) recovering and upgrading distillate range materials from FCCU feeds; and (4) improving the efficiency of water-borne crude oil receipt and marine vessel unloading. The beneficial aspects of the proposed project associated with reduced ship emissions due to the increased crude offloading rate (see Tables 4.2-9 and 4.2-11) would also be eliminated.

Alternative 5 would ultimately result in the same impacts as the proposed project in the areas of hazards, hydrology and water quality, noise, traffic and transportation, and solid and hazardous waste. Alternative 5 would reduce the peak construction emission impacts associated with the proposed project, but the construction emission impacts associated with NO_x would remain significant. In addition, under Alternative 5 the Wilmington Operations FCCU would be shut down in 2021 instead of 2017, resulting in four additional years of operating the FCCU, which means that emissions from the FCCU would be unchanged from 2017 through 2021 and overall emissions during the construction phase would be substantially greater than what they would be under the proposed project. Alternative 5 would ultimately result in the same hazard impacts as the proposed project as all project components would be included in Alternative 5. Therefore, hazard impacts would remain significant. After all components of the proposed project are completed in 2021, Alternative 5 would have the same potentially less than significant and significant adverse environmental impacts as the proposed project.

Alternative 5 would achieve most the objectives of the proposed project, although there would be an approximately five-year delay in achieving some of the objectives, which would include: (1) improving the efficiency of the Refinery, allowing the shutdown of the Wilmington Operations FCCU; (2) reducing overall emissions from the Refinery, including GHG emissions; (3) recovering and upgrading distillate range materials from FCCU feeds; (4) better integration of the Carson and Wilmington Operations; and (5) improving the efficiency of water-borne crude

oil receipt and marine vessel unloading. Alternative 5 would not achieve the objective of improving the efficiency and enabling shutdown of the Wilmington Operations FCCU by 2017. It also would delay a significant amount of local emission reductions, resulting in an additional five years of operation at increased rates. Under Alternative 5, it is assumed that the project components that would allow for the compliance with the U.S. EPA Tier 3 gasoline sulfur requirements would occur prior to 2017 so this objective would be achieved.

6.5.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires identification of the environmentally superior alternative in an EIR. There is no set methodology for comparing the alternatives or determining the environmentally superior alternative under CEQA. Therefore, the number of significant adverse impacts for the proposed project and each of the alternatives are compared. The alternative with the least number of significant unavoidable impacts and maintains the proposed project environmentally beneficial impacts aspects would be considered the environmentally superior alternative. If the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines 15126.6 (e)(2)).

As shown, in Table 6.5-1, the proposed project and Alternatives 2 through 5 would result in significant adverse impacts on two environmental resource areas (air quality during construction and operational hazard impacts). Alternative 1, the No Project Alternative would eliminate all adverse significant impacts making it the environmentally superior alternative.

Alternatives 2 and 3 would likely result in equivalent or more significant environmental impacts than the proposed project as additional new Refinery units would be constructed. However, under Alternatives 2 and 3 the Wilmington Operations FCCU would be shutdown, which is expected to provide large reductions in criteria pollutant emissions, GHG emissions, TACs emissions, and wastewater discharge. Both alternatives would also improve the efficiency of water-borne crude oil receipt and marine vessel unloading reducing the time it takes for marine vessels to unloading and reducing overall marine vessel emissions. Alternative 3 would be the environmental superior alternative because it would reduce construction emissions from the proposed project and it would result in: (1) the shutdown of the Wilmington Operations FCCU which provides a number of environmental benefits; and (2) improvements in the efficiency of water-borne crude oil receipt that would reduce the time for marine vessels to unload crude, reducing overall marine vessel emissions.

Alternative 4 would reduce the scope of the proposed project and the overall construction activities; however, Alternative 4 would not allow the shutdown of the Wilmington Operations FCCU and would not improve the efficiency of water-borne crude oil receipt and marine vessel unloading. Consequently, Alternative 4 would continue current operational emissions from the FCCU, which would be substantially higher than operational emissions under the proposed project as the local emission reduction benefits associated with the proposed project would not be achieved (see Table 6.4-3). Therefore, the overall emissions, including criteria, GHG, and TACs, associated with Alternative 4 would be higher than the proposed project and higher than other alternatives. In addition, water demand and wastewater generation would be higher under

Alternative 4 than the proposed project because the Wilmington Operations FCCU would continue to operate. Therefore, Alternative 4 would not be the environmentally superior alternative.

Alternative 5 would extend the construction schedule associated with the proposed project over a five year period so that the full benefits of the proposed project would be achieved in 2021 instead of 2017. However, because operational emissions from the Wilmington Operations FCCU would continue until 2021, overall emissions during construction would be greater than under the proposed project. Therefore, Alternative 5 is not the environmentally superior alternative because greater operational emissions would occur due to the continued operation of the Wilmington Operations FCCU for an additional four years and no significant adverse impacts would be eliminated.

When balancing the environmental impacts with achieving the most project objectives, the proposed project is preferred because it would most effectively attain all project objectives. Although several alternatives meet many of the project objectives, none of the project alternatives would eliminate the potentially significant adverse construction air quality and hazard impacts, except Alternative 1, No Project Alternative. Alternative 3 would be similar in operational impacts to the proposed project and have less construction impacts, but would not eliminate significant project impacts or achieve all the project objectives.

M:\Dbs\2844 Tesoro Integration and Compliance\DEIR\2844 DEIR Ch.6 (rev7).doc