CHAPTER 4.0

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

INTRODUCTION

This chapter assesses the potential environmental impacts of construction and operation of the Tosco Wilmington Plant (Plant) CARB RFG Phase 3 proposed project discussed in Chapter 2.

Chapter 4 evaluates those impacts that are considered potentially significant under the requirements of CEQA. Specifically, an impact is considered significant under CEQA if it leads to a "substantial, or potentially substantial, adverse change in the environment."

Impacts from the proposed project fall within one of the following categories:

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

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

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

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

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

AIR QUALITY

Significance Criteria

To determine whether or not air quality impacts from the proposed project are significant, impacts will be evaluated and compared to the significance criteria in Table 4-1. If impacts equal or exceed any of the following criteria, they will be considered significant. All feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible.

TABLE 4-1

AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation (Non-RECLAIM Sources)**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
Sox	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
TAC, AHM, and Odor Thresholds		
Toxic Air Contaminants (TACs)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Hazard Index $\geq$ 1.0 (project increment) Hazard Index $\geq$ 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants		
NO_2 1-hour average annual average	20 ug/m^3 (= 1.0 pphm) 1 ug/m^3 (= 0.05 pphm)	
PM10 24-hour annual geometric mean	2.5 ug/m^3 1.0 ug/m^3	
Ambient Air Quality for Criteria Pollutants		
Sulfate 24-hour average	1 ug/m^3	
CO 1-hour average 8-hour average	1.1 mg/m^3 (= 1.0 ppm) 0.50 mg/m^3 (= 0.45 ppm)	

ug/m^3 = microgram per cubic meter; pphm = parts per hundred million; mg/m^3 = milligram per cubic meter; ppm = parts per million; TAC = toxic air contaminant

To maintain compliance flexibility inherent in the SCAQMD's RECLAIM program, the SCAQMD has established separate NOx and SOx mass daily operational emissions significance thresholds for RECLAIM facilities. Because the Tosco Wilmington Plant emits four or more tons per year of NOx and SOx, it is a RECLAIM facility so the revised NOx and SOx significance thresholds apply.

Under the RECLAIM program, the SCAQMD issues facility-wide permits to these sources which specified annual emission allocations for NOx and SOx. The allocations decline each year from 1994 through 2003. RECLAIM sources must reduce their emissions each year to remain within their declining annual allocations, or must purchase emission credits (called RECLAIM Trading Credits) from other facilities in the RECLAIM program which have reduced emissions to levels below their required allocations. The program guarantees that emissions of NOx and SOx from RECLAIM facilities will decline. However, each facility is given the flexibility to determine the best means of compliance through reducing emissions at the facility to remain within its declining allocations or purchasing RECLAIM Trading Credits on the market to cover any emissions in excess of the annual allocation.

Because of the dynamic nature of the RECLAIM program, significance is determined as follows. Air quality impacts for a RECLAIM facility are considered to be significant if the incremental mass daily emissions of NOx or SOx from sources regulated under the RECLAIM permit, when added to the allocation for the year in which the project will commence operations, will be greater than the facility's 1994 allocation (including non-tradable credits) plus the increase established in the SCAQMD Air Quality Handbook for that pollutant (55 pounds per day (lbs/day) for NOx and 150 lbs/day for SOx). In order to make this calculation, annual allocations as well as the project's incremental annual emissions are converted to a daily average by dividing by 365. Thus, the proposed project is considered significant if:

$$(A_1/365) + I < (P + A_2)/365$$

Where:

P = the annual emissions increase associated with the proposed project.
A_1 = 1994 initial annual allocation (including non-tradable credits).
A_2 = Annual allocation in the year the proposed project will commence operations.
I = Incremental emissions established as significant in the SCAQMD Air Quality Handbook (55 lbs/day NOx or 150 lbs/day SOx).

The revised approach is appropriate for a RECLAIM facility since the emissions from the universe of RECLAIM sources were capped in 1994 and the emissions cap is declining each year. In order for one facility to increase its emissions, it must reduce its emissions from other on-site sources or purchase RECLAIM trading credits from another facility that has reduced its emissions beyond what is required under RECLAIM. Therefore, overall, NOx and SOx emissions from RECLAIM sources are declining on a regional basis. For localized impacts associated with a physical modification, the RECLAIM regulations require modeling and establish thresholds that cannot be exceeded.

The Tosco Wilmington Plant is a RECLAIM facility for both NOx and SOx. Using the allocation calculation described above, the significance thresholds for NOx and SOx are calculated in Table 4-2.

TABLE 4-2

SIGNIFICANCE THRESHOLDS FOR NOx AND SOx

POLLUTANT (annual)	INITIAL ALLOCATION* (lbs/year)	INITIAL ALLOCATION (lbs/day)	CEQA INCREMENT (lbs/day)	SIGNIFICANCE THRESHOLD (lbs/day)
NOx	3,035,918	8,318	55	8,373
SOx	1,802,538	4,938	150	5,088

* Including non-tradable credits.

The revised RECLAIM significance thresholds apply only to operational emissions of NOx and/or SOx that would be included in the RECLAIM allocation and subject to the RECLAIM regulations. The revised RECLAIM significance thresholds do not apply to sources that would not be regulated by the RECLAIM regulations (i.e., indirect sources of emissions such as trucks, rail cars, and marine vessels), construction emission sources, and to non-RECLAIM pollutants (i.e., VOCs, CO, and PM10) for which the SCAQMD has established significance thresholds. This Final EIR uses the revised NOx and SOx significance criteria to determine the significance of air quality impacts from stationary sources on-site (i.e., at the Wilmington Plant).

The SCAQMD has also revised its approach to determining significance for construction emissions from that outlined in the CEQA Air Quality Handbook (SCAQMD, 1993). The SCAQMD suggests that significance determinations be made based on the maximum daily emissions during the construction period, which provides a worst-case analysis of the construction emissions. The SCAQMD no longer requires the calculation of construction emissions on a quarterly basis so this analysis is not provided in the EIR.

Project Impacts - Construction Emissions

Construction activities associated with the proposed project would result in emissions of CO, VOCs, NOx, SOx, and PM10. Construction activities will consist of completing projects necessary for producing reformulated fuels and adding new facilities to improve the operational efficiency of the Wilmington Plant. Construction emissions are expected from the following equipment and processes:

- Construction Equipment (dozers, backhoes, graders, etc.),
- Fugitive Dust Associated with Site Construction Activities,
- Emissions from Workers Commuting and Truck Deliveries, and
- Fugitive Dust Associated with Travel on Roads.

Daily construction emissions were calculated for the peak construction day activities. Peak day emissions are the sum of the highest daily emissions from employee vehicles, fugitive dust sources, construction equipment, and transport activities for the construction period. Overall construction emissions are summarized in Table 4-3. Detailed construction emissions calculations are provided in Appendix B.

Construction Equipment

On-site construction equipment will be a source of combustion emissions. Construction equipment may include; compressors, dozers, backhoes, compactors, forklifts, generators, manlifts, welding machines, cranes, and demolition hammers. The equipment is assumed to be operational for 8 hours per day, which likely overestimates actual operations and the related air emissions. Emission factors for construction equipment were taken from the CEQA Air Quality Handbook (SCAQMD, 1993). Estimated emissions from construction equipment used for construction activities are as follows: 578 pounds per day (lbs/day) for CO; 61 lbs/day for VOC; 662 lbs/day for NOx; 74 lbs/day for SOx; and 47 lbs/day for PM10.

Fugitive Dust Associated with Site Construction Activities

Fugitive dust sources include grading, excavation, demolition and clearing of the site to construct necessary foundations. During construction activities, water used as a dust suppressant will be applied, if applicable, in the construction area during grading, excavation, and earth-moving activities to control or reduce fugitive dust emissions. Application of water reduces emissions by a factor of approximately 34 to 68 percent (SCAQMD, 1993). It is assumed in the emission calculations herein that water application reduces emissions by 34 percent. Fugitive dust suppression, often using water, is a standard operating practice and is one method of complying with SCAQMD Rule 403. Estimated controlled PM10 emissions from peak construction activities for fugitive dust sources are 31 lbs/day. The detailed emission calculations are provided in Appendix B.

Commuting and Delivery

Emissions will be generated by vehicles and trucks associated with workers traveling to the site and materials being delivered to the site. About 300 construction workers are expected to be required during the peak construction periods. Emission calculations were estimated assuming each vehicle traveled 27 miles, as estimated by the company, and from work each day, making two one-way trips per day. Light duty trucks and heavy diesel trucks will be used for delivering supplies to the construction site, and transporting various materials on-site to other locations. Buses will also be used on-site to transport workers from the parking lots to the work sites. Primary emissions generated will include combustion emissions from engines during idling and while operating. Emissions are based on the estimated number of trips per day and the round trip travel distances. Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix B.

TABLE 4-3

TOSCO CARB RFG PHASE 3 PROPOSED PROJECT
PEAK DAY CONSTRUCTION EMISSIONS
(lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Construction Equipment	578	61	662	74	47
Workers Commuting/Equipment Delivery	411	109	40	--	2
Fugitive Dust From Construction	--	--	--	--	31
Fugitive Dust/Travel on Paved Roads	--	--	--	--	42
Total Construction Emissions	989	170	702	74	122
SCAQMD Threshold Level	550	75	100	150	150
Significant?	YES	YES	YES	NO	NO

Estimated emissions from worker vehicles and delivery trucks are as follows: 411 lbs/day for CO; 109 lbs/day for VOC; 40 lbs/day for NOx; and 2 lbs/day for PM10.

Fugitive Dust Associated with Travel on Roads

Vehicles and trucks traveling on paved and unpaved roads are also a source of fugitive emissions during the construction period. The emissions estimates for travel on paved roads assumed that 300 vehicles per day associated with construction workers, 27 delivery and light duty/pickup trucks, 3 buses, and 21 trucks will travel on paved roads. Emissions of dust caused by travel on paved roads were calculated using the U.S. EPA's, AP-42 emission factor for travel on paved roads. The estimated PM10 emissions from trucks and passenger autos for fugitive dust on roads is 42 lbs/day.

Miscellaneous Emissions

In addition to the construction-related emissions already identified for the proposed project, the project could generate emissions of VOC if contaminated soil is found and soil remediation activities are necessary. Emission estimates for VOC would be speculative at this time, however, because the amount of contaminated soil, if any, and the levels of contamination are currently unknown. VOC contaminated soil is defined as soil which registers 50 parts per million or greater per the requirements of SCAQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil. If VOC contamination is found, soil remediation must occur under an SCAQMD approved Rule 1166 Plan to assure the control of fugitive emissions which generally includes covering soil piles with heavy plastic sheeting and watering activities to assure the soil remains moist. Soil remediation activities are under the jurisdiction of the RWQCB and it may be necessary for the RWQCB and SCAQMD to coordinate in order to assure air quality impacts are adequately mitigated.

Construction Emissions Summary

Construction emissions are summarized in Table 4-3, together with the SCAQMD daily construction threshold levels. The construction phase of the Tosco proposed project will exceed the significance thresholds for CO, VOC, NOx, and PM10. Therefore, the air quality impacts associated with construction activities are considered significant. The significance threshold for SOx is not expected to be exceeded during the construction phase, and the air quality impacts of SOx emissions are less than significant. A large portion of the total emissions is associated with on-site construction equipment and mobile sources (trucks and worker vehicles). Mitigation measures for construction emissions are identified on page 4-20.

Project Impacts - Operational Emissions

Modifications associated with the Tosco CARB RFG Phase 3 proposed project will add equipment to the Wilmington Plant that will generate additional emissions. Also, the proposed project will generate additional traffic and emissions related to mobile sources. Emissions are expected from the following activities:

- Fugitive emissions from process equipment
- Butane Unloading emissions
- Modifications to Existing Combustion Sources
- Emissions from Acid Plant Modifications
- Flare Modifications
- Storage Tank Modifications
- Emissions from Mobile Sources Associated with Material Transport

The proposed project operational emissions are evaluated in this section. More detailed emission calculations are provided in Appendix B.

Stationary Source Emissions

Direct operational emission sources are stationary sources located at the Wilmington Plant and generally subject to regulation. The emissions associated with the proposed project modifications are shown in Table 4-4. Stationary emission sources include combustion sources and fugitive emissions.

Fugitive Emissions

Fugitive emission sources are associated with process equipment components such as valves, flanges, vents, pumps, drains, and compressors. Fugitive emissions will also be associated with modifications to existing units including the Alkylation Unit, Fluid Catalytic Cracking Unit (FCCU), Acid Plant, and piping modifications. The emissions

TABLE 4-4

TOSCO WILMINGTON PLANT
CARB RFG PHASE 3 PROPOSED PROJECT
STATIONARY SOURCE OPERATIONAL EMISSIONS
(lbs/day)

SOURCE	CO	VOC	NOx	SOx	PM10
Stationary Source Emissions:					
Fugitive Emissions (e.g., pumps, valves).					
Alkylation Unit (U-110)	--	-34.0	--	--	--
FCCU (U-152)	--	-4.2	--	--	--
Acid Plant (U-141)	--	1.9	--	--	--
Butamer Unit	--	0	--	--	--
Piping mods. for Tanks	--	-10.3	--	--	--
Butane Unloading	--	8.8	--	--	--
Utilization of Existing Combustion Sources	110.9	14.5	350.7	20.1	9.9
Acid Plant/Sulfur Plant Utilization	--	--	46.6	375.3	11.3
Flare Modifications	0.4	<1	1.8	0.6	<1
Storage Tank Modifications	--	114.4	--	--	--
New Cooling Tower	--	17.3	--	--	--
Total Stationary Source Emissions:	**111.3**	**109.4**	**399.1**	**396.0**	**22.2**
Indirect Emission Sources:					
New Heavy Diesel Trucks (within Basin)	13.4	2.8	13.5	--	1.0
Fugitive Dust Emissions	--	--	--	--	17.3
Railcar Emissions (within Basin)	8.9	3.4	90.5	5.7	2.2
Total Indirect Emissions:	**22.3**	**6.2**	**104.0**	**5.7**	**20.5**
TOTAL OPERATIONAL EMISSIONS	**133.6**	**115.6**	**503.1**	**401.7**	**42.7**

calculations herein are based on emission factors that are outlined in a Memorandum from Jay Chen of the SCAQMD dated April 2, 1999. That Memorandum provides the appropriate emission factors to use for fugitive sources that include best available control technology (BACT) and lowest achievable emission rates (LAER). The fugitive emissions for some of the new sources indicate emission reductions (a negative number). These reductions are associated with the removal of older equipment and the installation of new equipment that complies with the current BACT requirements and emits less than the older equipment. As required by SCAQMD regulations, modifications to existing equipment and new equipment are required to comply with BACT requirements. Therefore, some of the modifications will result in overall reductions of fugitive emissions from the unit. No emission increases are expected at the Butamer Unit since the proposed modifications only include new motors and impellers on existing pumps associated with the unit. No new fugitive components are expected.

Butane Unloading

The proposed project will result in an increase in butane shipped to the Wilmington Plant from outside suppliers. The project will result in piping modifications at the butane rail car offloading facilities and replacement of pumps to increase the rate at which rail cars can be unloaded. There also will be an increase in the unloading of butane at the Wilmington Plant. These modifications are expected to increase the VOC emissions at the Wilmington Plant by 8.8 lbs/day (see Table 4-4).

Utilization of Existing Combustion Sources

No new combustion sources are part of the proposed project. However, the project will increase the firing rates at some existing heaters and boilers. The increased firing rates will result in an increase in emissions resulting in increased criteria pollutant emissions from these combustion sources. The estimated increase in combustion emissions is included in Table 4-4.

Acid Plant/Sulfur Plant Utilization

The proposed project is expected to result in an increase in acid processed in the Acid Plant. The increase in acid processed is expected to increase the SOx and acid mist (or PM10) emissions from the Acid Plant as well as SOx emissions from the Sulfur Plant. The estimated SOx emissions from this increase assume that the Acid Plant will operate at a higher capacity. Emissions were estimated by a test run of the Acid Plant while the emissions at the Acid Plant and Sulfur Plant using the existing Continuous Emission Monitoring System. The emissions of PM10 were calculated based on a SCAQMD emission factor of 0.25 lbs/ton. The increased SOx and PM10 emissions are included in Table 4-4.

Flare Modifications

The proposed project is expected to result in an additional load to the butane flare. These incremental emission increases are shown in Table 4-4.

Storage Tank Modifications

The proposed project includes modifications to existing storage tanks. The modifications to existing storage tanks include changing the throughput and service (material stored) of some of the tanks. Emissions increases associated with the changes to the product storage at the Wilmington Plant were calculated using the U.S. EPA TANKS 4.7 model and are shown in Table 4-4.

Cooling Tower

A new cooling tower will be constructed as part of the proposed project. The emissions from the new cooling tower where calculated using the U.S. EPA AP-42 emission factor of 0.7 lbs of VOC per million gallons of water circulation. The estimated water circulation rate is about 17,200 gallons per minute.

Additional documentation of the procedures used to calculate the emissions estimates is provided in Appendix B. All proposed modifications are required to conform with the SCAQMD's BACT Guidelines.

Best Available Control Technology

The criteria pollutant emission rates associated with all project components assumed the use of BACT. The BACT associated with each of the major project components is discussed below.

Process Pumps: Sealless pumps will be used, to the extent feasible, as BACT for pumps in hydrocarbon service. Sealless pumps will be evaluated for use as BACT in New Source Performance Standards (NSPS) Subpart GGG and SCAQMD Rule 1173 services and determined if they are suitable given the design and safety considerations of each unit. For those instances where sealless pumps are deemed unacceptable, two types of double or tandem mechanical seals will be evaluated for use: (1) tandem mechanical seals that use a barrier fluid and a seal pot vented to a closed system; and (2) dry-running tandem mechanical seals vented to a closed system. The dry-running tandem mechanical seals are considered to be equivalent control technology since they control fugitive VOC emissions as well as the tandem mechanical seals with the barrier system. All pumps will be subject to an SCAQMD approved inspection and maintenance program.

Process Valves: Leakless valves will be installed on project components to reduce fugitive VOC emissions. The SCAQMD BACT/LAER guidelines indicate that leakless valves must be used, except for these applications:

- Heavy hydrocarbon liquid service
- Control valves
- Instrument tubing/piping
- Installations where valve failure could pose a safety hazard
- Retrofit/special applications with space limitations
- Applications requiring torsional valve stem motion
- Specific processes where valves not commercially available (e.g., non-standard size, material, or special connection requirements)

For heavy hydrocarbon liquids and for applications where leakless valves cannot be used, valves of standard API/ANSI design will be used. Fugitive VOC emissions from these valves will be monitored and controlled in accordance with an SCAQMD-approved Inspection and Maintenance Program. Valves in gas/vapor and in light liquid service initially will be monitored on a monthly basis, in compliance with the federal *Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries* (40 CFR Part 60, Subpart GGG). Valves that do not leak during two successive monthly inspections will revert to a quarterly inspection interval. New valves will be subject to a 500 ppm performance limit.

Process Drains

New process drain lines will be provided with two normally closed block valves in series, or a single block valve in series with a cap or plug. New drain hubs (funnels) will be equipped with P-Traps and/or seal pots along with an SCAQMD approved Inspection and Maintenance Program.

Flanges

The use of flanged connections will be minimized to the extent practicable. Where required for maintenance or other routine operations, flanged connections will be designed in accordance with ANSI B16.5-1988, *Pipe Flanges and Flanged Fittings*. Fugitive emissions will be monitored and controlled in accordance with an approved Inspection and Maintenance program.

Pressure Relief Devices (PRDs)

PRDs will be routed to the existing Wilmington Plant vapor recovery system, to the extent feasible, to control VOC emissions. In the fuel gas system, VOCs are recovered, treated, and used as fuel in various combustion sources.

In addition, emission offsets are required for new and modified emission sources by SCAQMD Regulation XIII and/or Regulation XX. Emission offsets are required for all emission increases associated with stationary sources (except those portions directly related to the manufacture of reformulated fuels), thus minimizing the impacts associated with emissions from stationary sources. Per the requirements of SCAQMD Rule 1304(c)(4), offsets are not required for projects that are needed to comply with state and federal regulations. The CARB RFG Phase 3 project at the Wilmington Plant is required to comply with state and federal reformulated fuels requirements. Therefore, emission offsets are not expected to be required for the reformulated fuels projects identified in this EIR.

Emissions from Mobile Sources Associated with Material Transport

Indirect emission sources are those that are related to the project but that would not be directly emitted from the project site, i.e., trucks and worker vehicles. The potential indirect emissions associated with the project are discussed below.

Truck Trips

The proposed project is expected to result in increases in the routine delivery to or transport from the Wilmington Plant of additional materials by truck, including sulfuric acid, perchloroethylene, ammonia and ammonium sulfate. The project will require six additional trucks per day to transport chemicals and by-products to/from the Wilmington Plant. The operation of the proposed project is not expected to require additional workers at the Wilmington Plant so no increase in emissions associated with worker vehicles traveling to/from the Wilmington Plant is expected. The proposed project also will not generate additional on-site vehicle trips, on-site buses or on-site diesel buses. The emission increases associated with the increased heavy diesel truck traffic are shown in Table 4-4.

Railroad

Increased butane usage will result in additional receipts of butane from outside suppliers, resulting in the delivery of nine additional railroad tank cars per day. The emission increases associated with the increased railcars are shown in Table 4-4. It should be noted that the emissions related to railcars most likely have been overestimated herein since it is expected that the additional nine railcars will be added to the existing trains

Marine vessels

The proposed project is expected to result in a reduction in the number of marine vessels. Due to changes in the types of blendstocks that will be received, the number of ships will decrease by about 11 ships per year. Therefore, no increase in emissions is expected due to marine vessels.

Operational Emissions Summary

Operational emissions are summarized in Table 4-5, together with the SCAQMD's daily operational threshold levels. The operation of the project will exceed the significance thresholds for the VOC and NOx. Therefore, the air quality impacts associated with operational emissions from the proposed project are significant. The VOC emissions are primarily associated with modifications to the storage tanks. NOx emissions from indirect sources are primarily from railcar emissions. Mitigation measures for the operation of the proposed project are provided on page 4-20. The operational emissions of CO, SOx and PM10 are expected to be less than significant.

Impacts to Ambient Air Quality

Air dispersion modeling is not required for the proposed project since it will not result in an increase in NOx, PM10 or CO from new combustion sources at the Wilmington Plant. The proposed project will only result in an incremental increase in these pollutants from increased firing at existing combustion sources (heaters and boilers). The existing heaters and boilers are permitted and have previously demonstrated that the emissions of criteria pollutants would be less than air quality impacts thresholds outlined in SCAQMD Rule 1303. Therefore, no significant impacts are expected for air quality or attainment of ambient air quality standards.

TABLE 4-5

TOSCO WILMINGTON PLANT
STATIONARY SOURCE OPERATIONAL EMISSIONS SUMMARY
(lbs/day)

	CO	VOC	NOx	SOx	PM10
Background Data:					
2001/2002 RECLAIM Allocation(1)	--	--	5,191	4,085	--
Stationary Sources (see Table 4-4)	--	--	399	396	--
Significance Determination for Direct Sources of RECLAIM Pollutants:					
Project + 2001/2002 Allocation	--	--	5,590	4,481	--
Significance Threshold for RECLAIM Pollutants(1)	--	--	8,373	5,088	--
SIGNIFICANT?	**--**	**--**	**NO**	**NO**	**--**
Significance Determination for Mobile Sources of RECLAIM Pollutants:					
Project Emissions	--	--	104	6	--
Significance Threshold	--	--	55	150	--
SIGNIFICANT?	**--**	**--**	**YES**	**NO**	**--**
Significance Determination for All Project Emissions of Non-RECLAIM Pollutants:					
Project Emissions	134	116	--	--	43
Significance Threshold	550	55	--	--	150
SIGNIFICANT?	**NO**	**YES**	**--**	**--**	**NO**

(1) See Table 4-2 for CEQA significance threshold for RECLAIM pollutants.

CO Hot Spots

The potential for high concentrations of CO emissions associated with truck/vehicle traffic was considered and evaluated per the requirements of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993). The Handbook indicates that any project that could negatively impact levels of service at local intersections may create a CO hot spot and should be evaluated. Since the traffic analyses herein (see Section E, Transportation/Circulation) indicates that there are no significant impacts at local intersections during the project operation, no significant increase in CO is expected such that a hot spot or high concentration of CO would be created. The proposed project would only result in an increase of six trucks per day to/from the Wilmington Plant. No other increase in vehicle traffic is expected.

Air Quality Management Plan

Existing emissions from the industrial facilities are included in the Air Quality Management Plan (AQMP). The SCAQMD identifies air emission reductions from existing sources and air pollution control measures that are necessary in order to comply with the state and federal ambient air quality standards (SCAQMD, 1993). New emission sources associated with the proposed project are required to comply with the SCAQMD's New Source Review regulations that include the use of BACT and the requirement that all new emissions be offset. Offsets are generally not required for projects required to comply with state and federal regulations because these projects generally have wide spread emission benefits, e.g., the reformulated fuels projects. The control strategies in the AQMP are based on projections from the local general Plans from various cities in Southern California (including the City of Los Angeles). Projects that are consistent with the local General Plans are consistent with the air quality related regional plans. Therefore, the proposed project is considered to be consistent with the air quality related regional plans since it is consistent with the City of Los Angeles' General Plan. In fact, the proposed project will assist in reducing emissions from mobile sources that use the reformulated fuels (CARB, 1999).

Odors

The proposed project is expected to overall reduce the potential for odors from the Wilmington Plant. The proposed project includes a new Acid Plant vapor recovery system to handle vapors from the existing sulfuric acid tank and the existing sulfuric acid truck loading rack. The sulfuric acid tank is a potential source of odors due to the presence of odiferous sulfur compounds. Controlling the emissions from the existing sulfuric acid tank and truck loading rack will reduce the potential for odors from these sources.

Fugitive emissions or leaks from project equipment could result in potential odor impacts. Fugitive emission components are under the purview of formal regulatory inspection and maintenance programs required under federal New Source Performance Standards and SCAQMD Rule 1173. These programs ensure correction of conditions that may cause odor events. In addition, the Wilmington Plant maintains a 24-hour environmental surveillance effort. This activity also has the effect of minimizing the frequency and magnitude of odor events. In addition, the use of BACT (e.g., leakless valves) also reduces the emissions of compounds that could produce odor impacts. The proposed project will remove older fugitive components and replace them with newer components that must comply with the BACT requirements, thus reducing emissions and the potential for odors. The proposed project will increase the use of ammonia but not the amount of ammonia stored at the Plant. Ammonia odors have not been a problem at the site and the proposed project will not introduce new conditions (new tanks or new sources that use ammonia) that could potentially generate odors. Potential odor impacts from the proposed project are not expected to be significant.

Toxic Air Contaminants

A health risk assessment (HRA) was performed to determine if emissions of toxic air contaminants generated by the proposed project would exceed the SCAQMD thresholds of significance for cancer risk and is included as Volume II to this EIR. The results of the HRA will be used to evaluate the impacts of toxic air contaminants from the proposed project.

Hazard Identification

The list of potentially-emitted substances considered in the preparation of the HRA for the Tosco Wilmington Plant is contained in Appendix A-I of the CARB AB2588 requirements and by OEHHA. The AB2588 toxic air contaminants emitted from the proposed project at the Wilmington Plant are shown in Table 4-6. A total of 77 toxic air contaminants were evaluated for inclusion in the HRA (see Table 4-6). Some of these pollutants were consolidated into one category, e.g., polycyclic aromatic hydrocarbons (PAHs). Health effects data are not available for all compounds. Therefore, a total of 40 toxic air pollutants were included in the air dispersion modeling. For carcinogens, unit risk factors were used for computing cancer risk through inhalation. If the carcinogen is a multi-pathway pollutant, a potency slope was used for the estimation of risk from non-inhalation pathways. For non-cancer health effects, reference exposure levels (REL) and acceptable oral doses (for multi-pathway pollutants) were used. The non-carcinogenic hazard indices were computed for chronic and acute exposures with their respective toxicological endpoints shown.

Emission Estimations and Sources

The estimated mass emissions of toxic air contaminants were based on a combination of the most recent AB2588 Air Toxics Inventory Report (ATIR) and engineering estimates that reflect operation of the proposed project.

The emission factors for toxic air contaminants from combustion sources not associated with the proposed project are based on the assumption that the average consumption of the fuel gas will remain substantially unchanged since the baseline HRA. This is an appropriate assumption since no significant change in the quality of natural gas supplied by The Gas Company is expected. Therefore, the same air toxics emission factors, derived from source testing of existing site-specific combustion equipment, were used for the proposed project heater and boiler modifications.

VOC emission factors for fugitive components installed in conjunction with the reformulated fuels program were based on the SCAQMD's latest guidelines for fugitive components, assuming the use of BACT and an inspection and monitoring program (Jay

Chen memo, SCAQMD, April 2, 1999). Speciation of VOC emissions were derived from factors based on the most recent ATIR (June 2000).

The proposed project is expected to result in increases in some toxic air contaminants including benzene, hydrogen sulfide, lead, mercury, and xylenes. The total toxic air contaminants associated with the proposed project are listed in Table 4-6.

TABLE 4-6

MAXIMUM EMISSION RATES
TOXIC POLLUTANTS
PROPOSED PROJECT SCENARIO

CHEMICAL	CAS No.	Proposed Project	
		Emissions (lbs/hr)	Emissions (lbs/yr)
Acenaphthene*	83329	0.00E-00	2.21E-03
Acenaphthylene*	208968	2.43E-06	3.69E-02
Acetaldehyde	75-07-0	9.75E-03	1.57E+02
Ammonia	7664-41-7	9.28E-03	1.41E+03
Aluminum*	7429905	5.77E-04	1.28E+01
Anthracene*	120127	9.53E-08	1.66E-03
Antimony*	7440-03-60	4.14E-07	6.11E-02
Arsenic	7440-38-2	1.39E-06	1.06E-01
Barium*	7440-03-93	2.06E-04	3.24E+00
Benz(a)anthracene**	56-55-3	0.00E+00	5.63E-05
Benzene	71-43-2	8.67E-03	7.98E+01
Benzo(a)pyrene**	50-32-8	0.00E+00	1.50E-04
Benzo(b)fluoranthene**	205-99-2	0.00E+00	7.01E-05
Benzo(g,h,i)perylene *	191242	0.00E+00	1.78E-06
Benzo(k)fluoranthene**	207-08-9	0.00E+00	4.14E-05
Beryllium	7440-41-7	0.00E+00	5.29E-03
1,3-Butadiene	106-99-0	1.26E-03	1.10E+01
Cadmium	7440-43-9	2.90E-06	8.46E-02
Chromium (Hexavalent)	18540-29-9	0.00E+00	1.14E-02
Chromium (Total)*	7440473	8.06E-06	2.54E-01
Chrysene*	218019	1.59E-05	1.39E-01
Cobalt*	7440-04-84	8.90E-06	1.53E-01
Copper	74400508	1.05E-04	2.55E+00
Cresols	1319773	4.76E-03	4.17E-02
Cumene*	98828	1.9E-03	1.67E+01
Cyclohexane*	110827	5.72E-02	5.01E+02
Dibenz(a,h)anthracene**	226-36-8	0.00E+00	1.61E-05
Ethylbenzene	100-41-4	2.81E-02	2.48E+02

TABLE 4-6 Concluded

CHEMICAL	CAS No.	Proposed Project	
		Emissions (lbs/hr)	Emissions (lbs/yr)
Ethylene*	74851	8.18E-04	7.17E+00
Fluoranthene*	206440	5.87E-07	8.98E-03
Fluorene*	86737	1.81E-07	3.23E-03
Formaldehyde	50-00-0	4.01E-03	6.22E+01
Hexane	110-54-3	4.88E-01	4.27E+03
Hydrogen Sulfide	2148878	2.61E-02	3.96E+02
Indeno(1, 2, 3-c,d)pyrene**	193395	7.95E-05	6.95E-01
Lead	7439-92-1	3.28E-05	6.38E-01
Manganese	7439-96-5	1.59E-04	2.63E+00
Mercury	7439-97-6	8.05E-07	3.09E-02
2-Methylnaphthalene*	91576	4.71E-07	9.83E-03
Naphthalene	91-20-3	7.95E-03	6.98E+01
Nickel	7440-02-0	4.08E-04	6.30E+00
PAHs	1150	1.36E-05	1.59E-01
Phenanthrene*	127-18-4	9.74E-07	1.51E-02
Phenol	108-95-2	1.59E-05	1.64E-01
Phosphorous*	7723140	7.97E-05	1.29E+00
Propylene	115071	1.85E-02	1.62E+02
Pyrene*	129000	6.25E-07	9.84E-03
Selenium	7782-49-2	1.03E-06	6.41E-02
Silver*	7440224	9.80E-07	3.69E-02
Styrene	100-42-5	8.33E-04	7.30E+00
Sulfuric Acid	7664-93-9	4.85E-01	4.43E+03
Thallium*	7440280	0.00E+00	4.38E-02
1,2,4-Trimethylbenzene*	96636	4.70E-02	4.12E+02
2,2,4-Trimethylpentane*	540841	8.38E-01	7.34E+03
Toluene	108-88-3	1.12E-01	9.89E+02
Vanadium	7440622	1.92E-06	5.28E-02
Xylenes	1210	1.48E-01	1.31E+03
Zinc*	7440-66-6	1.61E-04	4.25E+00

* Emissions were calculated; however, health data do not exist for these compounds. Therefore, health risk calculations using these compounds were not completed.

** These compounds are all considered to be PAHs and evaluated as PAHs herein.

HRA Methodology

The existing (or baseline) Wilmington Plant health impacts are based on the most recent AB2588 HRA prepared for and submitted to the SCAQMD (October 2000). The emissions of toxic air contaminants from the proposed project were calculated. The impact from the proposed project alone was determined in the same manner as the baseline HRA. One new source was added to the assessment, the proposed Unit 110 cooling tower. All other sources remained the same. See Volume II of this EIR for more detailed information on the HRA.

Proposed Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Risk: The predicted maximum cancer risk at the MEIR area due to exposure to proposed project emissions was calculated to be 2.93×10^{-7} or 0.3 per million (see Table 4-7). The location of the project MEIR is shown in Figure 4-1.

Maximum Exposed Individual Worker: The cancer risk estimates are shown in Table 4-7. Based on the air quality modeling and related assumptions, the cancer risk to the MEIW associated with the proposed CARB RFG Phase 3 project at the Wilmington Plant was calculated to be 1.85×10^{-8} or 0.02 in a million. The MEIW is based on a 46-year exposure period. The maximum value was multiplied by 0.15 to account for an occupational exposure period (5 days per week, 50 weeks per year for 46 years). The project MEIW location is the same as for the baseline project, which is also shown in Figure 4-1.

TABLE 4-7

SUMMARY OF PROPOSED PROJECT CANCER RISK

EXPOSURE PATHWAY	Proposed Project	
	Maximum Exposed Individual Resident	Maximum Exposed Individual Worker
Inhalation	2.451E-07	1.446E-08
Dermal	3.270E-09	3.335E-10
Soil Ingestion	1.943E-08	1.139E-09
Water Ingestion	0.000E+00	0.000E+00
Ingestion of Home Grown Produce	2.531E-08	2.595E-09
Ingestion of Animal Products	0.000E+00	0.000E+00
Ingestion of Mother's Milk	0.000E+00	0.000E+00
Total Cancer Risk	**2.931E-07**	**1.853E-08**

Insert figure 4-1 here.

Sensitive Receptors: The maximum cancer risk from the proposed project alone to a sensitive receptor was estimated to be 0.12×10^{-6} or approximately 0.1 per million at the William Christian Elementary School. This risk estimate is overly conservative as it is based on a 70-year continuous exposure period.

Cancer Burden: The incremental impact of the proposed project on the total excess cancer burden is approximately 3×10^{-3} and 3×10^{-4} for the residential and occupational populations, respectively. (See Table 6 in Volume II for further details.)

Proposed Project HRA Results - Non-Carcinogenic Health Impacts

Acute Hazard Index: The highest acute hazard index for the proposed project is estimated to be 0.053 for the respiratory tract. The acute health effects are based on maximum hourly emissions of TAC that have acute target endpoints. The project maximum hourly emissions did not significantly change the hazard index.

Chronic Hazard Index: The highest chronic hazard index for the proposed project is estimated to be 2.4×10^{-3} for the respiratory tract.

The detailed HRA calculations and data are provided in Volume II of this EIR.

The impacts associated with the proposed project would be below the significance criteria for cancer risk of 10×10^{-6} and below the significance criteria for hazard indices of 1.0 for non-cancer health effects. Therefore, the proposed project is not expected to have significant impacts due to toxic air contaminants.

Mitigation Measures

Mitigation measures are required to minimize the significant air quality impacts associated with the construction and operational phases of the proposed project. Mitigation measures focus on: (1) the construction emissions of CO, VOC, NOx, and PM10; (2) operational emissions of VOCs from storage tanks; and (3) operational emissions of NOx from indirect (railcar) emissions.

Construction Mitigation Measures

Mitigation measures to reduce air emissions associated with Wilmington Plant construction activities are necessary primarily to control emissions from heavy construction equipment and worker travel. The following mitigation measures are required:

On-Road Mobile Sources:

A-1 Develop a Construction Traffic Emission Management Plan for the proposed project. The Plan shall include measures to minimize air emissions from vehicles including, but not limited to: schedule truck deliveries to avoid peak hour traffic conditions, consolidate truck deliveries, and prohibit truck idling in excess of 10 minutes.

Off-Road Mobile Sources:

A-2 Suspend use of all construction equipment during second-stage smog alerts.

A-3 Prohibit trucks from idling longer than 10 minutes.

A-4 Use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.

A-5 Maintain construction equipment tuned up and retard diesel engine timing.

A-6 Use electric welders to avoid emissions from gas or diesel welders in portions of the Plant where electricity is available.

A-7 Use on-site electricity rather than temporary power generators in portions of the Plant where electricity is available.

PM10 Emissions from Grading, Open Storage Piles, and Unpaved Roads:

A-8 Develop a fugitive dust emission control plan. The plan shall be reviewed and approved by the SCAQMD. Measures to be included in the plan include, but are not limited to the following: (1) water active construction sites three times per day, except during periods of rainfall. Implementation of this mitigation measure would reduce PM10 emissions by 34 to 68 percent (SCAQMD, 1993); (2) enclose, cover, water twice daily, or apply approved soil binders according to manufacturer's specifications to exposed piles (i.e., gravel, dirt and sand) with a five percent or greater silt content. Implementation of this mitigation measure would reduce PM10 emissions 30 to 74 percent (SCAQMD, 1993); (3) suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph. The emission reductions associated with this mitigation measure cannot be quantified (SCAQMD, 1993); (4) apply water three times daily, except during periods of rainfall, to all unpaved road surfaces. This mitigation measure would reduce PM10 emissions by a minimum of 45 percent (SCAQMD, 1993); and (5) limit traffic speeds on unpaved roads to 15 mph or less. The emission benefits of this mitigation measure are estimated to be 40 to 70 percent (SCAQMD, 1993). These control efficiencies were reflected in the project emission calculations so no further emission reduction credit has been taken into account herein.

Other mitigation measures listed in the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993), were considered but were rejected because they would not further mitigate the potential significant impacts. These mitigation measures included: (1) provide temporary traffic control during all phases of construction activities (traffic safety hazards have not been identified); (2) implement a shuttle service to and from retail services during lunch hours (most workers eat lunch on-site and lunch trucks will visit the construction site); (3) use methanol, natural gas, propane or butane powered construction equipment (equipment is not commercially available); and (4) pave unpaved roads (travel on unpaved roads is not expected) (SCAQMD, 1993).

Operational Mitigation Measures

Mitigation measures to reduce air emissions associated with the operational phase of the proposed project are necessary to control VOC emissions from storage tanks and NOx emissions from railcars.

Storage tank emissions are controlled through the use of BACT. Tanks 146, 169, 170, 292 and 452 all have external floating roofs with SCAQMD approved seals. The proposed project will not involve the construction of new tanks, only a change in the material stored and/or the throughput of the tank. Nonetheless, the storage tanks have been constructed using BACT. BACT, by definition, is control equipment with the lowest achievable emission rate. The use of BACT controls emissions to the greatest extent feasible for the modified emission sources. Therefore, additional emission reductions (through mitigation measures) from the proposed project equipment are not feasible.

NOx emissions from railcars used to transport butane to the Wilmington Plant are expected to be significant. Since railcars are the largest contributor to significant non-RECLAIM NOx air quality impacts, the SCAQMD evaluated whether or not it had jurisdictional authority to regulate railcar emissions. The SCAQMD has no authority to regulate railcar emissions. The U.S. EPA controls emissions from railcars. The U.S. EPA has established emission standards for NOx, VOCs, CO, particulate matter, and smoke for newly manufactured and remanufactured diesel-powered locomotives and locomotive engines which have been previously unregulated. Three separate sets of emission standards have been adopted, with applicability of the standards dependent on the date a locomotive is first manufactured. The first set of standards (Tier 0) apply to locomotives and locomotive engines manufactured from 1973 through 2001. The second set of standards (Tier 1) applies to locomotives and locomotive engines manufactured from 2002 through 2004. The final set of standards (Tier 2) apply to locomotives and locomotive engines originally manufactured in 2005 and later (U.S. EPA, 1997). With the new national emission standards for both newly manufactured and remanufactured locomotives originally built after 1972, future locomotive emission rates are projected to be much lower than the current emission rates. The U.S. EPA estimates that the NOx emissions will be reduced by about 62 percent from their current levels to levels for locomotives manufactured after 2004 (U.S. EPA, 1997). This would reduce project-related NOx emissions from railcars from 90.5 lbs/day to about 56 lbs/day, which would be below the significance threshold. However, the actual emission reductions are a function of the date that new locomotives come into service and are used to transport materials to/from the Tosco Wilmington Plant. Since the date at which this conversion actually happens is uncertain and not guaranteed, the NOx emissions from project-related railcars are expected to remain significant.

Other transportation methods (i.e., trucks and ships) would be expected to generate NOx emissions as well. It is estimated that the facility would need to receive about 45 trucks/day to transport the equivalent of nine railcars per day. These trucks would generate an estimated 140 lbs/day of NOx. Therefore, NOx emissions would be worse if the project used trucks to transport butane. Ships could also be used to transport butane to/from the Wilmington Plant. The use of ships to transport butane would result in additional marine vessel emissions into the Port of Los Angeles. (See Chapter 6, Alternatives for a further discussion on marine vessel emissions.) Ships would visit the ports less frequently than railcars or trucks because the ships could hold larger quantities of product. However, additional marine vessel trips would generate air emissions that exceed the SCAQMD threshold levels for NOx (and most other pollutants) (SCAQMD, 2000).

Based on the above there are no other feasible mitigation measures to minimize or eliminate the VOC emissions from storage tanks and the NOx emissions from railcars.

Level of Significance After Mitigation

Construction

Construction emissions are expected to remain significant following mitigation. Table 4-8 estimates the emission reductions that may be expected due to implementation of the construction mitigation measures. The emission reductions from some mitigation measures are not quantifiable and have not been included in Table 4-8. Implementation of these mitigation measures is still expected to provide some air quality benefit, even if the emission reductions cannot be quantified. The emission benefits associated with the mitigation measures are based on estimates provided in Table A11-1 of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993).

Operations

Operation emissions of all criteria pollutants are expected to remain significant for VOCs from stationary sources and NOx emissions from indirect sources, although long-term environmental benefits may occur due to the implementation of emission standards for railcars.

The proposed project impact on ambient air concentrations of NOx, CO, and PM10 are expected to be less than the ambient air quality criteria thresholds (see Table 4-1) since no new combustion sources are proposed. Therefore, the ambient concentrations of NOx, CO, and PM10 due to emissions from the proposed project are expected to be less than significant.

The proposed project’s impacts on toxic air contaminants are expected to be less than significant. The carcinogenic health impacts to the MEIR, MEIW, all sensitive populations and all other receptors are expected to be less than 10 per million and, therefore, less than significant.

The proposed project’s impacts associated with exposure to non-carcinogenic compounds are expected to be less than significant. The chronic hazard index and the acute hazard index are both below 1.0. Therefore, no significant non-carcinogenic health impacts are expected.

TABLE 4-8

PEAK DAY CONSTRUCTION EMISSIONS FOLLOWING MITIGATION (lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Unmitigated Emissions(1)	989	170	702	74	122
SCAQMD Threshold Level	550	75	100	150	150
SIGNIFICANT?	**YES**	**YES**	**YES**	**NO**	**NO**
Amount Needed to Reduce Emissions Below Significance Level	439	95	602	--	--
MITIGATION MEASURES(2)					
Use On-Site Electricity	-88	-3	<-1	-<1	-<1
Use Electric Welders	-8	-2	-14	-2	-1
Water Active Construction Sites(3)	--	--	--	--	--
Total Emission Reductions	-96	-5	-14	-2	-1
Total Emissions After Mitigation	893	165	688	72	121
SIGNIFICANT AFTER MITIGATION?	**YES**	**YES**	**YES**	**NO**	**NO**

(1) See Table 4-3.
(2) Emission reductions were estimated from the SCAQMD (1993) CEQA Handbook.
(3) A 34 percent emission reduction for watering active construction sites was included in the project emission calculations, so no further reduction was included.

GEOLOGY/SOILS

Significance Criteria

The impacts on geology/soils will be considered significant if any of the following criteria apply:

> Topographic alterations would result in significant changes, disruptions, displacement, excavation, and compaction or over covering of large amounts of soil.
>
> Substantial alteration of topography can result in changes, which would accelerate wind or water erosion of soils.
>
> Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.

Generate soil contamination due to site activities, which may cause significant health impacts or which will not be handled in accordance with applicable regulations.

Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, seiche or tsunami.

Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.

Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Proposed Project Impacts

Construction Impacts

No significant topographic changes are expected to the project site. The Wilmington Plant has been graded as part of existing industrial operations. Grading will be limited to that required to construct building pads, foundations, and underground utilities. No substantial topographic changes are proposed for the Wilmington Plant. Therefore, the topographic changes at the project site are less than significant.

Soil erosion from wind or water could occur during construction as a result of earthmoving activities. These activities are expected to be minor since the proposed project will be constructed within already developed areas and the storm water is controlled. The proposed project involves the addition of new equipment to existing facilities so major grading/trenching is not expected to be required and is expected to be limited to minor foundation work and minor trenching for piping modifications. As part of the proposed project, standard construction practices will be employed to minimize water erosion. Construction sites will be watered twice daily (except during periods of rain) to minimize the potential for wind erosion. Water erosion at the site would be limited to periods of rain. Therefore, water erosion that could occur during construction activities will be controlled through the existing Storm Water Pollution Prevention Plan. Storm water is controlled, collected, treated if necessary, and discharged under the existing industrial wastewater permit. The implementation of these practices is expected to prevent the proposed project from generating significant impacts due to wind or water erosion. Construction mitigation measures for potential air quality impacts due to soil erosion are identified in Chapter 3, Air Quality.

No unique geological resources (rock formations, hillsides, mountains, etc.) are present at the project site, so no significant project impacts on such resources during construction are expected.

Previous construction activities have been conducted at the Wilmington Plant and contaminated soils have been uncovered. Given the heavily industrialized nature of the site and that refining activities have been conducted at the site since the 1920s, contaminated soils may be uncovered during construction activities. It is not uncommon for a refinery and other types of industrial properties to contain contaminated soils and ground water. Currently, there is no evidence that soil contamination is located within the areas of the Wilmington Plant proposed for new construction.

Excavated soils that contain concentrations of certain substances including heavy metals and hydrocarbons generally are regulated under California hazardous waste regulations. No significant impacts are expected as a result of the potential for contaminated soils to be excavated during construction of the proposed project since there are numerous local, state (Title 22 of the California Code of Regulations) and federal rules which regulate the handling, transportation, and ultimate disposition of these soils. Title 22 of the California Code of Regulations establishes many requirements for hazardous waste handling, transport and disposal including requirements to use approved disposal/treatment facilities, use certified hazardous waste transporters, and use manifests to track hazardous materials, among many other requirements.

Operational Impacts

Based on the historical record, it is highly probable that earthquakes will affect the Los Angeles region in the future. Research shows that damaging earthquakes will occur on or near recognized faults which show evidence of recent geologic activity. The proximity of major faults to the Tosco Wilmington Plant increases the probability that an earthquake may affect the Tosco facilities. There is the potential for damage to the new structures in the event of an earthquake. Impacts of an earthquake could include structural failure, spill, etc. The impacts of a release due to an earthquake are addressed in the "Hazards" section below.

No faults or fault-related features are known to exist within any of the project sites. The sites are not located in any Alquist-Priolo Earthquake fault zone and are not expected to be subject to significant surface fault displacement. Therefore, no significant impacts to the proposed project facilities are expected from seismically-induced ground rupture. No significant damage has occurred to the Tosco facilities as a result of previous earthquakes in Southern California over the life of the facilities.

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

The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

Tosco shall obtain building permits, as applicable, for all new structures at the site. Tosco shall submit building plans to the City of Los Angeles for review and approval. Tosco must receive approval of all building plans and building permits to assure compliance with the latest Building Code adopted by the cities or counties prior to commencing construction activities. Therefore, the affects from potential geological activity are considered less than significant.

Liquefaction is considered unlikely in relationship to the proposed project since the parameters required for liquefaction to occur are not evident at the site, e.g., unconsolidated granular soils and a high water table. The site is not located within a liquefaction zone as determined by the California Division of Mines and Geology.

There are no other unique geological resources located within the Tosco site. No other potentially significant impacts to soils and geology are expected.

Mitigation Measures

No significant impacts on geology/soil resources have been identified so that no mitigation measures are required.

Level of Significance After Mitigation

The proposed project impacts on geology/soil resources are less than significant prior to mitigation.

HAZARDS & HAZARDOUS MATERIALS

Significance Criteria

Hazard impacts will be considered significant if any of the following criteria are met:

> Non-compliance with any applicable design code or regulation.
>
> Non-conformance to National Fire Protection Association standards.
>
> Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
>
> Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Proposed Project Impacts

Process Units

A hazard analysis was conducted for the proposed project modifications. The details of the analysis are included in Volume III. The potential hazards associated with the proposed project were evaluated. The proposed project included the new and modified units listed in Table 4-9.

The hazard methodology included a review of the hazard scenarios for the existing units that are a part of the proposed project and for the units following the proposed modifications.

Hazard Identification

The potential hazards associated with Tosco's existing Wilmington Plant and those associated with the proposed project are a function of the materials being processed, processing systems, procedures used for operating and maintaining the Plant, and hazard detection and mitigation systems. Common hazards include toxic gas clouds (gas with hydrogen sulfide, sulfuric acid, etc.), torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires (flammable/combustible liquid releases), vapor cloud explosions (gas and liquefied gas releases), and boiling liquid expanding vapor explosions (BLEVEs) (major failures of liquefied gas storage tanks). The hazards specifically found at the Wilmington Plant, related to those units that are part of the proposed project are shown in Table 3-10.

In order to compare the hazards of toxic gases, fires and explosions on humans, equivalent levels of hazards must be defined. The endpoint hazard criterion defined in this study corresponds to a hazard level that might cause an injury. Table 4-10 provides the endpoint hazard criterion used in this study. The endpoint hazard criteria were used in the modeling to determine the extent of impacts due to an upset condition.

TABLE 4-9

PROCESS UNITS AND FACILITIES INVOLVED IN THE PROPOSED PROJECT

Designation	Description	Existing/New	Modified
Process Units			
ALKYL	Alkylation Unit	Existing	Yes
ACID	Acid Plant	Existing	Yes
BUT	Butamer	Existing	Yes
LEF	Light Ends Fraction Unit (in FCCU)	Existing	Yes
Storage			
TANK	Atmospheric Storage	Existing/New	Yes
Product Transfer			
TT	Tank Trucks	Existing	No
RC	Railcars	Existing	No

TABLE 4-10

ENDPOINT CRITERIA FOR CONSEQUENCE ANALYSIS

Hazard Type	Injury Threshold		
	Exposure Duration	**Hazard Level**	**Reference**
Ammonia Inhalation	Up to 60 min.	200 ppm	ERPG-2[(1)]
Hydrogen Sulfide Inhalation	Up to 60 min.	30 ppm	ERPG-2[(1)]
Perchloroethylene Inhalation	Up to 60 min.	200 ppm	ERPG-2[(1)]
Sulfuric Acid Inhalation	Up to 60 min.	10 mg/m^3	ERPG-2[(1)]
Radiant Heat Exposure	40 sec.	1,600 $Btu/(hr\text{-}ft^2)$	40 CFR Part 68
Explosion Overpressure	Instantaneous	1.0 psig	40 CFR Part 68
Flash fires (fireballs)	40 sec.	1,600 $Btu/(hr\text{-}ft^2)$	40 CFR Part 68
Flash fires (flammable vapor clouds)	Instantaneous	LFL	40 CFR Part 68

(1) 40 CFR Part 68 – U.S. EPA RMP endpoints.

Methodology

A hazard analysis for each unit that is part of the proposed project was completed in order to define the maximum credible hazard scenario. In addition, hazard analyses were completed for storage tanks and transfer operations. The hazard analysis was developed in seven increments that include:

- Initial review of available documentation
- Detailed review of process flow diagrams
- Review of process material balances
- Review of available safety studies
- Development of hazard scenarios
- Screening of hazard scenarios via hazards analysis
- Final selection of hazards cases

After the potential hazard scenarios were determined, they were screened to determine which scenario could adversely affect any off-site areas (i.e., areas outside of the Plant boundaries). The scenarios resulting in potential off-site consequences were also identified. The maximum potential consequences were then used to identify the number of people that could possible be affected in the event of an upset.

The procedures identified above were applied to the existing units and processes to identify the existing hazard conditions. In addition, the same procedures were applied to all unit modifications and new facilities that are a part of the proposed project.

Modeling

The hazard zones resulting from the "worst-case" releases are evaluated to determine the process areas that could release material with a potential for public (off-site) impacts. When performing site-specific consequence analysis studies, the ability to accurately model the release, dilution, and dispersion for gases and aerosols is important if an accurate assessment potential public exposure to a hazard is to be determined. Therefore, a set of models was used to calculate release conditions, initial dilution of the vapor, and the subsequent dispersion of the vapor introduced into the atmosphere. The models contain algorithms that account for thermodynamics, mixture, behavior, transient release rates, gas cloud density relative to air, initial velocity of the release gas, and heat transfer effects from the surrounding atmosphere and the substrate. See Volume III for details on the risk of upset modeling and for further discussions on the model algorithms.

Meteorological data from the Long Beach Airport was used to determine the "worst-case" wind speed/stability conditions at the Tosco site.

Results

With the completion of the hazard identification and consequence modeling calculations for both the existing and proposed Plant configurations, the release which generates the largest hazard zone can be defined. Table 4-11 lists the potential releases as a result of the proposed project. Most of the proposed modifications do not affect the size of the largest potential release. In other words, the potential releases, which would result in the largest hazard zones, already exist at the site.

Table 4-11 presents a listing of the type and size of potential hazards that dominate each of the units evaluated. The largest hazards are listed for releases from the existing units and the units after the proposed modifications. In all but three cases, the addition of new equipment and modification of existing equipment does not significantly increase the size of the potential hazard zones already in place. Any slight increase in individual hazard zones would be restricted to Tosco's property. The railcar loading/unloading area already handles liquefied gas railcars; having a greater number of railcar loading and unloading does not increase the maximum potential hazard zone. Similarly, the addition of truck loading racks to those already in place does not increase the maximum potential hazard zones following an accidental release. Complete sets of hazard zone maps for each unit evaluated are presented in Volume III.

TABLE 4-11

POTENTIAL ACCIDENTS RESULTING IN MAXIMUM POTENTIAL HAZARD

Process Unit/Area	Status of Potential Hazard	Potential Release (Hazard)
ALKY	Existing	Rupture of line exiting contactor and entering settler (sulfuric acid toxicity)
	New	Rupture of deisobutanizer reboiler line (torch fire)
ALKY – REFRIG	Existing, Modified	Rupture of line leaving refrigerant separator (flash fire)
ACID	Existing, Modified	No change in hazards
BUT	Existing, Modified	Rupture of stabilizer reboiler line (explosion overpressure)
LEF	Existing	Rupture of liquid line from depentanizer overhead accumulator to depropanizer (flash fire)
	Modified	Rupture of liquid line from depropanizer overhead accumulator (hydrogen sulfide toxicity)
TANK	Existing, Modified	Tank fire involving T-170 (tank fire)
TT	Existing, Modified	No change in hazards
RC	Existing, Modified	No change in hazards

The proposed modifications and additions do not result in substantially larger potential hazard zones than those posed by the existing configuration of the facility. This result is primarily due to the nature of many of the modifications, which are described as follows:

- Slight modification of a unit such that the vessel generating the largest potential hazard is unchanged (e.g., Butamer).

- Addition of equivalent equipment such that the potential hazards added are the same as those which already exist (e.g., railcar and truck unloading). However, the probability of an accident involving a release increases because the project will add equipment to the Wilmington Plant.

- Exchanging products of equivalent hazard in storage (e.g., for the atmospheric storage tanks, the hazards associated with atmospheric storage of liquid hydrocarbons are basically equal and do not extend off-site).

The three potential releases that produce significantly larger hazard zones than those that currently exist and the reasons for the increases are included in Table 4-12.

TABLE 4-12

RELEASES RESULTING IN INCREASED HAZARD DISTANCES DUE TO PROPOSED PROJECT MODIFICATIONS

RELEASE	REASONS FOR INCREASED HAZARD
Rupture of liquid line leaving depropanizer overhead accumulator (FCCU LEF)	Higher initial hydrogen sulfide concentration in liquid for post project (7,750 ppm) than currently exists (3,100 ppm).
Rupture of liquid line from depentanizer overhead accumulator (FCCU LEF)	Higher initial hydrogen sulfide concentration in liquid for post project (1,900 ppm) than currently exists (560 ppm).
Rupture of stabilizer reboiler outlet line (new equipment in Alkylation Unit)	New equipment. Potential hazard from release larger than existing hazards from unit. New maximum hazard of 1,400 (torch fire radiation); current maximum hazard 1,310 (sulfuric acid toxicity).

The single project modification that results in an off-site impact that did not exist before is the change to the depropanizer overhead accumulator in the FCCU LEF. The increased hydrogen sulfide content in the liquid allows the 30 ppm hydrogen sulfide concentration to extend 200 feet north of Anaheim Street. This condition can only be achieved if the following occurs: (1) a full rupture of the six-inch line leaving the overhead accumulator; (2) the release does not ignite within minutes of the rupture; (3) the wind is blowing toward the north; (4) the wind speed is low (less than three miles per hour; and (5) the atmosphere is calm. This sequence of events is unlikely and produces the only off-site consequence in this analysis. It should be noted that the land north of Anaheim Street that could be affected is vacant land, owned by Tosco, and there are no residences or commercial properties present. Thus, if this release were to occur, the only potential hazard would be a short-term (e.g., seconds) exposure to hydrogen sulfide in the 30 ppm range by motorists on Anaheim Street. This short-term exposure would not produce the health effects defined by the ERPG-2 Guidelines that are based on exposure up to 60 minutes. Therefore, there are no significant off-site project impacts due to the proposed project modifications.

Transportation of Hazardous Materials

The transportation of hazardous materials also can result in offsite releases through accidents or equipment failure. The proposed project will increase the amount of hazardous materials transported to the Wilmington Plant. The impacts due to transportation of hazardous materials are addressed in this section. For more details on the transportation of hazardous materials, see Volume III of this EIR.

Ammonia

The use of anhydrous ammonia at the Acid Plant will increase. Assuming all spent sulfuric acid is processed in the Acid Plant, an additional 33 truck trips per year will be required to deliver ammonia. The proposed project will not increase the magnitude of the consequences of a release from an ammonia truck and the impacts would be the same as the existing conditions. The magnitude of the release would not change because there would be no increase in the amount of ammonia transported in each truck; therefore, no increase in the amount of material potentially released would be expected. The truck route used to transport ammonia to the Plant would remain the same as it currently is so that no new areas would be potentially impacted by a release. The probability of an accident involving an ammonia truck will increase by about 0.00046 or about one accident every 2,165 years (using a an accident rate of 0.28 accidents per million miles traveled, see Table 3-11, and a travel distance of 50 miles) because the project requires additional ammonia truck trips to the Wilmington Plant. The increase in probability of 0.00046 for an ammonia truck accident is small and considered to be less than significant.

Butane

The project will increase the import of butane to the Wilmington Plant. Butane may be imported to the Wilmington Plant to feed the Alkylation Unit and the Butamer Unit. It is estimated that up to 5,357 additional barrels per day (about nine railcars) of butane could be transported as part of the proposed project.

Similar to ammonia, the magnitude of potential impacts associated with butane transport would be unchanged from the existing setting as a result of the reformulated fuels project because the size, amount of butane per railcar, construction of the transport vessel, and the transport route will not be changed. The proposed project is not expected to change the probability of a train accident, derailment, or potential release of material in the event of an accident. Rail accidents are generally weather or mechanical-related. The proposed project will not change the average number of railcars that would derail and/or rupture in the event of an accident. The proposed project will only add additional railcars to existing trains and will not increase the number of trains that arrive at the site. No new locomotive engines will be used to transport the additional butane. Therefore, the proposed project is not expected to change the consequence or probability of a train accident.

Sulfuric Acid

The proposed project includes modifying the existing alkylation unit and increasing the flow rate of sulfuric acid used as a catalyst in this unit. The proposed project will expand the alkylation unit, increase the amount of sulfuric acid needed by the Wilmington Plant, and increase the amount of spent sulfuric acid generated by the Wilmington Plant. Assuming shipment of the entire incremental volume of spent sulfuric acid, there will be an increase of about 1,460 trucks per year associated with acid movement. Truck accidents could result in a release of liquid sulfuric acid that can be hazardous due to ingestion or skin contact. The vapor pressure of sulfuric acid is negligible so a fire is very unlikely. Sulfuric acid would continue to be shipped by truck and no increase in the volume transported per truck is expected, so the severity of transportation accidents involving sulfuric acid would not change with implementation of the proposed project. "Worst-case" modeling results indicate that less than one person would be exposed to sulfuric acid concentrations at the injury or irritation level in the event of a truck accident. Therefore, the consequence of a sulfuric acid release during transport and the increased transport of sulfuric acid from the Wilmington Plant are not expected to result in significant impacts (SCAQMD, 1991).

Perchloroethylene

The use of perchloroethylene in the Butamer Unit is expected to increase by about three truck trips per year. Perchloroethylene is currently used in the Butamer Unit but the proposed project would result in an incremental increase in use of the material. The proposed project will not increase the magnitude of the consequences of a release from a perchloroethylene truck and the impacts would be the same as the existing conditions. The amount of perchloroethylene per trip will not increase. The probability of an accident involving an perchloroethylene truck will increase by about 0.000042 or about one accident every 23,810 years (using a an accident rate of 0.28 accident per million miles traveled, see Table 3-11 and a travel distance of 50 miles) because the project requires additional perchloroethylene truck trips to the Wilmington Plant. The increase in probability of 0.000042 for a perchloroethylene truck accident is small and considered to be less than significant.

Transportation of Other Commodities

The proposed project will result in an increase in ammonium sulfate production, resulting in an increase of 448 truck trips per year to transport the material off-site. In addition, 40 truck trips per year of liquid sulfur shipments will be required to handle the increased sulfur processed at the Plant. Both of these materials are non-volatile liquid material so that an accident resulting in a release of ammonium sulfate or sulfur during transport of these materials from the Wilmington Plant is not expected to create a vapor cloud and result in significant impacts or expose individuals to concentrations that would injure a person.

Compliance Issues

The proposed project modifications will require compliance with various regulations, including OSHA regulations (29 CFR Part 1910) that require the preparation of a fire prevention plan, and 20 CFR Part 1910 and Title 8 of California Code of Regulations that require prevention programs to protect workers that handle toxic, flammable, reactive, or explosive materials.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances. The Hazardous Materials Transportation Act is the federal legislation that regulates transportation of hazardous materials.

The Wilmington plant is expected to comply with all applicable design codes and regulations, conform to National Fire Protection Association standards, and conform to policies and procedures concerning leak detection containment and fire protection. Therefore, no significant impacts are expected.

Impacts on Water Quality

A spill of any of the hazardous materials (generally petroleum products and by-products from the refining process) used and stored at the Wilmington Plant could occur under upset conditions, e.g., earthquake, tank rupture, and tank overflow. Spills also could occur from corrosion of containers, piping and process equipment; and leaks from seals or gaskets at pumps and flanges. A major earthquake would be a potential cause of a large spill. Other causes could include human or mechanical error. Construction of the vessels, and foundations in accordance with the Uniform Building Code Zone 4 requirements helps structures to resist major earthquakes without collapse, but result in some structural and non-structural damage following a major earthquake. Tosco has emergency spill containment equipment and would implement the spill control measures in the event of an earthquake. Storage tanks have secondary containment. Therefore, the rupture of a tank would be collected within the containment system and pumped to an appropriate leakless tank for storage.

Spills at the facility would generally be collected within containment facilities. Large spills outside of containment areas are expected to be captured by the process water system where it could be controlled. Spilled material would be collected and pumped to an appropriate tank, or sent off-site if the materials cannot be used on-site. Because of the containment system, spills are not expected to migrate from the facility and impacts are considered to be less than significant.

Mitigation Measures

No significant impacts associated with hazards are expected from the Wilmington Plant. Therefore, no mitigation measures are required. There are a number of rules and regulations that Tosco has been or must comply with that serve to minimize the potential impacts associated with hazards at the facility. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a PSM Program (40 Code of Federal Regulations (CFR) Part 1910, Section 119, and Title 8 of the California Code of Regulations, Section 5189). Risk Management Programs are covered under the California Health and Safety Code Section 25534 and 40 CFR Part 68, and Section 112r, by the Clean Air Act.

A PSM that meets the requirements of the regulations and is appropriately implemented is intended to prevent or minimize the consequences of a release involving a toxic, reactive, flammable, or explosive chemical. The primary components of a PSM include the following:

- Compilation of written process safety information to enable the employer and employees to identify and understand the hazards posed by the process;
- Performance of a process safety analysis to determine and evaluate the hazard of the process being analyzed;
- Development of operating procedures that provide clear instructions for safely conducting activities involved in each process identified for analysis;
- Training in the overview of the process and in the operating procedures is required for facility personnel and contractors. The training should emphasize the specific safety and health hazards, procedures, and safe practices; and
- A pre-start up safety review for new facilities and for modified facilities where a change is made in the process safety information.

An RMP is required for certain chemicals at the Refinery. The RMP consists of four main parts: hazard assessment that includes an off-site consequence analysis, five-year accident history, prevention program, and emergency response program.

Level of Significance After Mitigation

The impacts of the proposed project on hazards are expected to be less than significant prior to mitigation and provide some beneficial impacts. Compliance with existing regulations and implementation of the recommended safety measures would further minimize the potential for a release that could impact the public.

NOISE

Significance Criteria

Impacts on noise will be considered significant if:

Construction noise levels exceed the City noise ordinance; or if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Construction activities would exceed the ambient noise level by three dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. Saturday, or anytime on Sunday.

The project operational noise levels exceed the local noise ordinance at the site boundary; or if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Project Impacts

Construction Impacts

Heavy construction equipment is required during construction activities associated with the proposed project. The highest noise impacts from construction will be during equipment installation. Examples of noise levels from construction equipment are presented in Table 4-13. These noise sources will operate primarily during daylight hours and will be a temporary noise source over the approximately one year construction period. During construction, most of the Tosco facilities will continue normal operation. For the purpose of this evaluation, current major sources of noise within the Wilmington Plant are assumed to continue throughout construction.

The estimated noise level during equipment installation at the Wilmington Plant is expected to be an average of about 85 dBA at 50 feet from the center of construction activity. The major portions of the construction activities will occur near the central portion of the Wilmington Plant. Using an estimated six dBA reduction for every doubling distance, the noise levels at various locations surrounding the facility are estimated in Table 4-14. Most of the construction noise sources will be located near ground level, so the noise levels are expected to attenuate further than analyzed herein. Noise attenuation due to existing structures has not been included in the analysis.

The construction activities at the Wilmington Plant will be normally carried out during daytime from Monday to Friday, or as permitted by the City of Los Angeles. Because of the nature of the construction activities, the types, number, operation time and loudness of construction equipment will vary throughout the construction period. The noise impacts assume peak construction periods when most equipment is operating simultaneously. As a result, the sound level associated with construction will change as construction progresses. Construction noise sources will be temporary and will cease following construction activities.

The noise levels from the construction equipment are expected to be within the allowable noise levels established by the Los Angeles noise ordinance (see Table 3-12) for heavy industrial areas (70 dBA). The proposed project is expected to increase the noise levels at the residential area adjacent to the eastern Wilmington Plant boundary (Location 6). The noise level at the closest residential area is expected to be 68 dBA (Location 6) during construction activities which is an increase of about 2 dBA during the daytime. A noise increase of less than 3 dBA is not expected to be noticeable (audible). Further, the City noise ordinance prohibits construction activities that generate noise between the hours of 7 p.m. and 7 a.m. Therefore, noise increases are not expected to occur during the more sensitive nighttime hours.

TABLE 4-13

CONSTRUCTION NOISE SOURCES

EQUIPMENT	TYPICAL RANGE (decibels)(1)	ANALYSIS VALUE (decibels)(2)
Truck	82-95	82
Front Loader	73-86	82
Backhoe	73-95	80
Vibrator	68-82	80
Air Compressor	85-91	85
Saws	72-82	82
Jackhammers	81-98	85
Pumps	68-72	70
Generators	71-83	85
Compressors	75-87	80
Concrete Mixers	75-88	75
Concrete Pumps	81-85	81
Tractor	77-98	85
Scrapers, Graders	80-93	80
Pavers	85-88	75
Cranes	75-89	85

1. City of Los Angeles, 1998. Levels are in dBA at 50-foot reference distance. These values are based on a range of equipment and operating conditions.
2. Analysis values are intended to reflect noise levels from equipment in good conditions, with appropriate mufflers, air intake silencers, etc. In addition, these values assume averaging of sound level over all directions from the listed piece of equipment.

The largest noise increase, of 4.4 dBA, was predicted to occur near the western boundary of the facility (Location 5). However, this noise monitoring location is within an industrial area where the acceptable noise levels are 70 dBA and below. Therefore, the operation of the existing Wilmington Plant plus the proposed construction activities are expected to be within the noise ordinance limitation of 70 dBA. The noise levels at the other monitoring locations are not expected to be significant. Therefore, the proposed project noise impacts during the construction phase are expected to be less than significant.

TABLE 4-14

PROJECT CONSTRUCTION NOISE LEVELS

Location(1)	Baseline Noise Levels (dBA)(2)	Distance from Construction (feet)	Construction Sound Level at Location (dBA)	Total Sound Level at Location (dBA)(3)	Increased Noise Levels due to Construction (dBA)
1	68.1	1,250	58	68.4	0.3
2	57.2	3,600	49	57.6	0.4
3	69.4	2,400	52	69.4	0
4	59.0	1,200	58	61.5	2.5
5	64.5	400	67	68.9	4.4
6	65.8	600	64	68.0	2.2
7	66.3	1,800	54	66.5	0.2

(1) Refers to the sampling locations identified in Figure 3-5.
(2) Includes all ambient noise sources. Noise levels are from Table 3-13.
(3) The total sound level was calculated using the following formula: $T_{sl}=10\log_{10}(10^{Bsl/10} + 10^{Csl/10})$ where T_{sl} = the total sound level (dBA); B_{sl} = baseline sound level (dBA); and C_{sl} = construction sound level (dBA)

Workers exposed to noise sources in excess of 85 dBA for an 8-hour period will be required to wear hearing protection devices that conform to Occupational Safety and Health Administration/National Institute for Occupational Safety and Health (NIOSH) standards. Since the maximum noise levels during construction activities are expected to be 85 decibels or less, no significant impacts to workers during construction activities are expected.

Construction Traffic

The proposed project is expected to increase the traffic at the Wilmington Plant by about 300 construction worker vehicles, 27 delivery vehicles and pick up trucks, 3 buses, and 21 trucks during the peak construction period. The Federal Highway Administration Highway Traffic Noise model indicates that traffic levels need to double in order for the traffic noise levels to increase by 3 dBA. The existing traffic levels at the Figueroa Street/Anaheim Street intersection is estimated to be about 3,350 vehicles during the peak hour. The proposed project would increase the total traffic at this intersection by less than seven percent. Therefore, the noise increases related to the construction traffic are expected to generate noise levels less than 3 dBA and not result in significant noise impacts.

Traffic noise is not expected to coincide with operation of construction equipment. Most of the traffic is associated with worker vehicles driving to/from the Wilmington Plant. The noise related to construction equipment would occur after the workers arrive at the Wilmington Plant and cease when the workday is over.

Operations Noise

The proposed project will add equipment to the existing Wilmington Plant so that there will be additional noise sources at the facility. Additional noise sources associated with the proposed project generally include process equipment components such as valves, flanges, vents, pumps, drains, compressors, and cooling tower. Wilmington Plant operations are continuous over a 24-hour period. The maximum noise level of new equipment added to the Wilmington Plant is expected to be limited to 85 dBA at three feet in order to comply with OSHA standards. These noise specifications will be enforced and included as part of the equipment purchase agreement for all new and modified equipment. Given the 85 dBA criteria for plant equipment, it is expected that the maximum noise level from several pieces of equipment operating concurrently would be about 90 dBA. The estimated noise levels associated with the proposed project operation are summarized in Table 4-15. Assuming an operational worst-case noise level of 90 dBA and a six dBA noise attenuation, noise levels would drop off to 60 dBA or less at about 100 feet from the sources. Noise generated by project equipment, therefore, would not increase the overall noise levels at the Wilmington Plant (when compared to baseline conditions).

The proposed project is not expected to increase the noise levels at the nearest residential area, located at the eastern boundary of the Wilmington Plant (about 600 feet from proposed project structures, see Table 4-15). The estimated noise level at the closest residential area is 65.8 dBA (Location 6), of which the Wilmington Plant and the Harbor 110 Freeway are the major contributors. This noise level is not expected to change due to the operation of the proposed project. A block wall exists at the eastern Wilmington Plant boundary that provides a barrier that helps to minimize noise impacts on the residential area from the Wilmington Plant. The noise levels within residential areas are expected to be within the allowable range established by the noise ordinance. In addition, the typical noise reduction provided by buildings is 12 to 18 decibels (with windows partially open) (State of California, 1987). Therefore, the estimated noise levels inside the homes are expected to comply with general noise guidelines.

The noise increases related to the proposed project at all other locations is expected to be less than one dBA. Therefore, no significant noise impacts related to project operation are expected. The noise levels in the area are expected to comply with the City's Noise Ordinance.

Emergency/non-routine activities, such as excess/purge-gas flaring, steam/gas venting, etc., that are not part of normal operational procedures would have a disturbing intrusive noise impact on the area surrounding the Wilmington Plant. The proposed project is not expected to increase the occurrence of non-routine events or increase the need for non-routine purging/venting/flaring.

TABLE 4-15

PROJECT OPERATION NOISE LEVELS

Location(3)	Baseline Noise Levels (dBA)(2)	Distance from New Units (feet)	Operation Sound Level at Location (dBA)	Total Sound Level at Location (dBA)(3)	Increased Noise Levels due to Operation (dBA)
1	68.1	1,200	42	68.1	<1
2	57.2	1,400	38	57.2	<1
3	69.4	2,400	33	69.4	<1
4	59.0	3,500	30	59.0	<1
5	64.5	1,500	36	64.5	<1
6	65.8	600	42	65.8	<1
7	66.3	3,000	30	66.3	<1

(1) Refers to the sampling locations identified in Figure 3-5.
(2) Includes all predicted noise sources.
(3) The total sound level was calculated using the following formula: $T_{sl}=10\log_{10}(10^{Bsl/10} + 10^{Osl/10})$ where T_{sl} = the total sound level (dBA); B_{sl} = baseline sound level (dBA); and O_{sl} = operational construction sound level (dBA)

The proposed project will increase the number of truck trips to the Wilmington Plant by six trucks per day. The trucks will be distributed throughout the day. The noise from the six additional truck trips is expected to be less than significant as it will be a very small increase in the current total traffic noise in the area.

The proposed project is expected to increase the number of railcars that are received by about nine railcars per day. The project is not expected to increase the number of railroad trips to the Wilmington Plant but rather increase the number of railcars that are part of the train on each trip. The increase in railroad traffic is not expected to create noticeable noise impacts since no new trips will be generated. No significant noise impact due to railroad trips associated with the proposed project is expected.

Mitigation Measures

No significant impacts on noise have been identified so that no mitigation measures are required.

Level of Significance After Mitigation

The proposed project impacts on noise are less than significant prior to mitigation.

TRANSPORTATION/TRAFFIC

Significance Criteria

The impacts on transportation and traffic will be considered significant if any of the following criteria apply:

Peak period levels on major arterials within the vicinity of the proposed project site are disrupted to a point where intersections with a LOS of C or worse are reduced to the next lower LOS, as a result of the project for more than one month.

An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already E or F for more than one month.

A major roadway is closed to all through traffic, and no alternate route is available.

There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

The demand for parking facilities is substantially increased.

Substantial alterations to current circulation or movement patterns of people and goods are induced.

Water borne, rail car or air traffic is substantially altered.

Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.

Construction Impacts

Construction and modification of the proposed project at the Wilmington Plant is expected to take about one year. The proposed project is expected to increase the traffic at the Wilmington Plant by about 300 construction worker vehicles, 27 delivery vehicles and pick up trucks, 3 buses, and 21 trucks during the peak construction period. Project construction anticipates 9-hour shifts per day for five days per week, Monday through Friday, with shifts running from 7:00 am to 5:30 p.m. The LOS for the construction traffic impacts did not include the a.m. peak hour because construction activities are scheduled to begin prior to the a.m. peak hour (7:00 to 9:00 a.m.). Therefore, the construction traffic associated with the Wilmington Plant modifications will avoid the peak hour traffic conditions minimizing the potential for traffic impacts during the morning. Construction traffic is expected to leave the site during the evening peak hour. The details for the LOS analysis are provided in Appendix C.

Table 4-16 shows the predicted proposed project LOS analysis and volume to capacity ratios due to peak construction activities. This table indicates that only two intersections show any change in LOS due to the construction phase of the proposed project. The Figueroa St. and "I" St./110 on-ramp intersection is estimated to change from LOS A to LOS B during the evening peak hour during the construction phase. The Gaffey/Palos Verde Dr. No./Normandie/Vermont/Anaheim St. intersection would change from LOS B to LOS C. The traffic changes at these intersection are not considered to be significant since free-flowing traffic would continue (i.e., LOS B and C). The LOS at other intersections near the Wilmington Plant is not expected to change. Therefore, the proposed project impacts on traffic during the construction phase would be considered less than significant.

TABLE 4-16

CONSTRUCTION TRAFFIC IMPACTS
LEVEL OF SERVICE ANALYSIS AND VOLUME-TO-CAPACITY RATIOS

INTERSECTION	BASELINE(1)				IMPACTS			
	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C
Figueroa St./Anaheim St.	D	0.855	B	0.654	-	-	B	0.680
Figueroa Pl./Anaheim St.	C	0.789	D	0.812	-	-	D	0.894
Figueroa St. and “I” St./110 on-ramp	D/E	0.875	A	0.560	-	-	B	0.670
Figueroa St. and “G” St./110 off-ramp	A	0.320	A	0.328	-	-	A	0.332
Figueroa Pl. and “I” St./110 off-ramp	A	0.466	D	0.841	-	-	D	0.854
Figueroa Pl. and 110 on-ramp/“G” Street	A	0.288	A	0.303	-	-	A	0.315
Frigate Ave and “C” Street/110 off-ramp	A	0.416	A	0.573	-	-	A	0.578
John Gibson truck entry/110 ramps	A	0.583	A	0.442	-	-	A	0.446
John Gibson and Channel St.	C	0.776	B	0.612	-	-	B	0.618
76 Products Lane and Anaheim St.	A	0.505	A	0.439	-	-	A	0.487
Gaffey St. and Channel St.	C	0.778	C	0.788	-	-	C	0.799
Gaffey/Palos Verde Dr. No./Normandie/Vermont/ Anaheim St.	C	0.720	B	0.700	-	-	C	0.720

Notes: (1) = based on 2000 traffic data.
V/C = Volume to capacity ratio (capacity utilization ratio)
LOS = Level of Service

Any transport of heavy construction equipment or oversized equipment that will require oversized transport vehicles on state highways will require a Caltrans Transportation permit.

Construction will require contractor parking areas, equipment laydown and materials stockpiling areas. Parking for project construction will be in areas currently used for contractor parking and sufficient parking is available at the contractor parking area west of 76 Products Lane and the administrative building so no significant impacts on parking are expected. Equipment laydown and stockpiling areas will be within the confines of the existing Wilmington Plant and are not expected to result in any significant impacts.

The construction phase of the proposed project is not expected to result in an increase or decrease in marine or rail traffic.

Operations Impacts

The proposed project is not expected to increase the number of permanent workers at the Wilmington Plant. The project will require an additional six trucks per day to transport chemicals and by-products to/from the Wilmington Plant. Table 4-17 shows the projected LOS analysis and volume to capacity ratios due to operation phase impacts.

This table indicates that the LOS analysis for the morning and evening peak hours would not change and all intersections in the vicinity of the Tosco Wilmington Plant are expected to operate at LOS D or better. The proposed project would not change an intersection from LOS A, B, or C to LOS D, E or F, or increase the traffic at an intersection that is LOS E or F by more than 0.02. Therefore, the proposed project impacts on traffic during the operational phase would be considered less than significant.

The proposed project will increase the rail traffic to/from the Wilmington Plant associated with the delivery of butane to the Wilmington Plant. The proposed project is expected to require an additional nine railroad tank cars per day. It is expected that the additional railcars will be delivered on each current trip so the number of railroad trips is not expected to increase.

The proposed project is expected to decrease the number of tanker calls to the Port by about 11 ships per year. Therefore, no significant impact to the Long Beach/Los Angeles Harbor system is expected.

Mitigation Measures

No mitigation measures are proposed for transportation/traffic and circulation impacts during construction or operation since no significant impacts are expected.

Level of Significance After Mitigation

The proposed project impacts on transportation/traffic would be considered less than significant.

TABLE 4-17

TOSCO REFINERY WILMINGTON PLANT
OPERATIONAL TRAFFIC IMPACTS
LEVEL OF SERVICE ANALYSIS AND VOLUME-TO-CAPACITY RATIOS

INTERSECTION	BASELINE				IMPACTS			
	A.M LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C	A.M. LOS	Peak Hour V/C	P.M. LOS	Peak Hour V/C
Figueroa St./Anaheim St.	D	0.855	B	0.654	D	0.856	B	0.655
Figueroa Place/Anaheim St.	C	0.789	D	0.812	C	0.790	D	0.812
Figueroa St. and "I" St./110 on-ramp	D	0.875	A	0.560	D	0.876	A	0.560
Figueroa St. and "G" St./110 off-ramp	A	0.320	A	0.328	A	0.320	A	0.329
Figueroa Pl. and "I" St./ 110 off-ramp	A	0.466	D	0.841	A	0.467	D	0.841
Figueroa Pl. and 110 on-ramp/"G" Street	A	0.288	A	0.303	A	0.288	A	0.303
Frigate Ave and "C" Street/110 off-ramp	A	0.416	A	0.573	A	0.416	A	0.573
John Gibson truck entry/110 ramps	A	0.583	A	0.442	A	0.583	A	0.442
John Gibson and Channel St.	C	0.776	B	0.612	C	0.776	B	0.612
76 Products Lane and Anaheim St.	A	0.505	A	0.439	A	0.506	A	0.440
Gaffey St. and Channel St.	C	0.778	C	0.788	C	0.778	C	0.778
Gaffey/Palos Verde Dr. No./Normandie/Vermont/ Anaheim St.	C	0.720	B/C	0.700	C	0.720	B/C	0.700

V/C = Volume to capacity ratio (capacity utilization ratio)
LOS = Level of Service

DABWORD:2021EIR4