CHAPTER 4
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER 4.0

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

INTRODUCTION

This chapter assesses the potential environmental impacts of the construction and operation of the Alkylation Improvement project discussed in Chapter 2.

Chapter 4.0 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.

A. 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 and Table 4-2. 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**
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
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	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[(a)]		
NO_2 1-hour average annual average	In attainment; significant if project causes or contributes to an exceedance of any standard: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour annual geometric mean annual arithmetic mean	10.4 ug/m^3 (recommended for construction)[(b)] 2.5 ug/m^3 (operation) 1.0 ug/m^3 20 ug/m^3	
Sulfate 24-hour average	1 ug/m^3	
CO 1-hour average 8-hour average	In attainment; significant if project causes or contributes to an exceedance of any standard: 20 ppm (state) 9.0 ppm(state/federal))	

(a) Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

(b) Ambient air quality threshold based on SCAQMD Rule 403.

ppm = parts per million; µg/m^3 = microgram per cubic meter; mg/m^3 = milligram per cubic meter; lbs/day = pounds per day; $\geq$ greater than or equal to

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; AHM = Acutely Hazardous Material

~~Because the Refinery emits four or more tons per year of NOx and SOx, it is a RECLAIM facility and specific CEQA significance thresholds apply to emissions of NOx and SOx from the operations of the proposed project. Under the RECLAIM~~

~~program, the SCAQMD issues facility-wide permits to sources, which specify annual emission allocations for NOx and SOx. The allocations declined 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) generated by other facilities in the RECLAIM program which have reduced emissions to levels below their required allocations. 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.~~

Subsequent to the adoption of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993), the SCAQMD adopted the RECLAIM program, fundamentally changing the framework of air quality rules and permits that apply to the largest NOx and SOx sources within the air district. The RECLAIM program is a pollution credit trading program for large sources of NOx and SOx emissions within the jurisdiction of the SCAQMD. Companies within the program are given an emissions allocation that reflects historical usage, but that decline yearly to reduce total emissions from the program. Facilities are allowed to buy and sell credits, reflecting the facilities emissions for the year. The emissions from the universe of RECLAIM sources were capped in 1994. The emissions cap declined each year from 1995 through 2003, and is now fixed at a level of approximately 78 percent below the initial levels. As implementation of the RECLAIM program proceeded, the SCAQMD realized that it needed to examine how to apply the CEQA significance thresholds to RECLAIM facilities, recognizing that CEQA case law directs that the existing environmental setting includes permits and approvals that entitle operators to conduct or continue certain activities. The SCAQMD determined that the baseline should be the RECLAIM initial allocations, and that a project would be considered significant if the proposed project would cause the facility's emissions to exceed the baseline plus the adopted significance threshold.

Under the RECLAIM program, the SCAQMD issues facility-wide permits to sources. The facility permits specify an initial allocation and annual emission allocations for NOx and SOx. The initial allocations were based on historical, reported emissions for the years immediately prior to implementation of the RECLAIM program. Annual allocations represent the number of RECLAIM Trading Credits or RTCs the facilities begin with each year. The allocations generally declined each year from 1994 through 2003. Operators of RECLAIM sources must not emit more than the total number of RECLAIM credits they posses, which include the annual allocation plus any credits bought and minus any credits sold. Some facilities reduce emissions through a variety of ways including curtailing production, and installing pollution control equipment, to remain below annual allocations. Facilities in the program can generate credits to sell by reducing their emissions beyond their annual allocation.

The 1994 annual emission allocation (reflected in the RECLAIM permit) for the Ultramar Inc. Valero Wilmington Refinery reflects the historical emissions reported for that facility

in the years prior to 1994. Although the allocations for the facility have declined each year since 1994, the maximum annual emissions of NOx and SOx permitted from the Refinery remains at the 1994 limits – so long as that facility acquires additional allocations ("trading credits") from another RECLAIM facility that has reduced its emissions below its current-year allocation. In this way, the RECLAIM permit process operates to reduce on an annual basis the overall emissions of NOx and SOx in the Basin while providing flexibility at individual facilities to vary emissions up to the levels of the actual emissions as determined in 1994.

~~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.~~ 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 above analysis provides a way of applying the standard CEQA significance thresholds to the facilities that have CEQA baselines that are determined by the unique permitting program of RECLAIM. The analysis ensures that the CEQA significance criteria are applied properly and fairly, taking into account the unique aspects of the RECLAIM permit program. ~~This 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.~~ For localized impacts associated with a physical modification, the RECLAIM regulations require modeling and establish thresholds that cannot be exceeded. The significance thresholds for RECLAIM pollutants NOx and SOx are calculated in Table 4-2.

The CEQA significance thresholds for RECLAIM facilities 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 RECLAIM CEQA 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., VOC, CO, and PM10) for which the SCAQMD has established significance thresholds. This ~~Draft~~ Final EIR uses the RECLAIM CEQA NOx and SOx significance criteria to determine the significance of air quality impacts from stationary sources at the Refinery.

TABLE 4-2

RECLAIM CEQA SIGNIFICANCE THRESHOLDS FOR ULTRAMAR INC. – VALERO WILMINGTON REFINERY

POLLUTANT	INITIAL ALLOCATION (lbs/year)*	INITIAL ALLOCATION (lbs/day)*	*CEQA SIGNIFICANCE THRESHOLD* (lbs/day)	*INITIAL ALLOCATION + CEQA SIGNIFICANCE THRESHOLD*** (lbs/day)
NOx	849,881	2,328	55	2,383
SOx	1,010,497	2,768	150	2,918

* Including non-tradable credits.

** *RECLAIM facility projects generating emissions that exceed either of these amounts are considered to have significant air quality impacts.*

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

CONSTRUCTION EMISSION IMPACTS

Construction activities associated with the modifications to the Refinery would result in emissions of CO, VOC, NOx, SOx, and PM10. Construction emissions are expected from the following equipment and processes:

Construction Equipment (dump trucks, backhoes, graders, etc.)
Equipment Delivery/On-Site Travel
Heavy Diesel Trucks
Construction Workers Commuting
Fugitive Dust Associated with Site Construction Activities
Fugitive Dust Associated with Travel on Unpaved and Paved Roads
Architectural Coatings

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. *Emission calculations have been provided in Appendix B for the different phases of the construction period. The modifications to the reactors that have been proposed by the Ultramar Inc., Valero Wilmington Refinery since the preparation of the Draft EIR are not expected to change the estimated workforce required during the peak construction phase because no increase in construction work efforts are needed due to the reactor modifications. One larger crane will be required during the construction phase to move the large reactors into their place. The construction equipment required during the peak construction phase (September 2005) has been modified to include one larger (450-horsepower) crane and nine 194-horsepower cranes, whereas the Draft EIR included emissions for 11 194-horsepower cranes. These revisions were made following additional review of the construction equipment requirements and it was determined that 11 cranes could not physically fit into the construction site. Construction activities are physically limited as the construction site for the modifications to the Alkylation Unit is small. Therefore, the construction emission calculations have been revised to include a larger crane (crane with more horsepower) and to adjust the construction equipment to reflect a more realistic and feasible work effort. Further, about one percent less piping and construction activities would be required because the recontactor will not be constructed. However, the construction calculations used conservative assumptions and the work efforts associated with the recontactor were minor (installation of one new vessel). The Ultramar Valero Refinery is committed to using the construction equipment included in the construction emission calculations and expects that the estimated construction activities and related emissions are conservative and the actual construction equipment on-site during the construction phase will be less than estimated herein. The construction emission calculations are slightly higher than estimated in the Draft EIR (see Table 4-3) but do not represent a significant increase and do not change the significance conclusions from the Draft EIR.*

Following the completion of the construction of the modifications to the Alkylation Unit, demolition activities will be required to remove the two existing reactors that will no longer be used. Demolition for these reactors is simple as it requires that the reactors be unbolted and removed using a crane. It is estimated that it will take an additional three to five days to conclude demolition activities associated with the removal of the two reactors. The emissions associated with the additional demolition activities will occur subsequent to the peak construction phase and are included in Appendix B. The additional demolition activities are minor and will include about 10 workers, one crane, and two flatbed trucks, which is the level of demolition activities that was considered for the originally proposed project. Demolition of the existing reactors is only expected to extend the demolition period by three to five days. No additional equipment or workers are expected to be required above the equipment and workers needed during construction estimates included in the Draft EIR. The emissions from demolition of the existing reactors are included in Appendix B to demonstrate that the peak emissions do not change. The peak emissions were determined for each pollutant and included in Table 4-

3. The peak emissions for all pollutants, except PM10, are estimated to occur during September, 2005 (see Appendix B). Due to site clearing activities, peak emissions for PM10 are estimated to occur during January, 2005. 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 backhoes, compactors, trench machines, air compressors, forklifts, generators, manlifts, welding machines, cranes, and pavers. All of the equipment is assumed to be operational for eight hours per day, which likely over estimates actual operations and the related emissions. Construction workers may be at the site for longer than eight hours per day, but including time for lunch and breaks, organization meetings, and so forth, construction equipment would not be expected to operate the entire time. Assuming that construction equipment operates for eight hours per day ~~is expected to~~ provide*s* a conservative estimate of construction emissions. Emission factors for construction equipment were taken from the CEQA Air Quality Handbook (SCAQMD, 1993, Tables 9-8-A, 9-8-B, 9-8-C and 9-8-D) using site-specific information, where available. Estimated emissions from construction equipment used for construction activities are included in Table 4-3.

Light Duty Trucks/Buses

Light-duty trucks will be used for delivering supplies to the construction site, and transporting various materials on-site to other locations. 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. All light-duty trucks whether used for delivery or on-site travel were assumed to travel 16.2 miles per trip (SCAG, 2000). Buses will be used for delivering workers from parking areas to the construction site. 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. All buses were assumed to travel 1.5 miles per trip. Emission factors, their sources, and other assumptions used to estimate emissions from trucks and buses are provided in Appendix B. Estimated emissions for light-duty trucks/buses are included in Table 4-3.

Heavy Diesel Trucks

Heavy diesel trucks include water trucks, dump trucks and other trucks that will be watering, or delivering and removing materials from the site. Primary emissions generated will include exhaust emissions from diesel engines while operating. Emission calculations were estimated assuming a maximum of 11 delivery trucks traveling to the site each weekday to deliver large equipment. Emissions are based on the estimated number of trips per day and the round trip travel distances. One heavy diesel truck will be a water truck for dust control at the site. The water truck is expected to remain onsite

during the construction period and is assumed to travel four miles per day. The other heavy diesel trucks will be used for delivery or removal of materials and is assumed to travel 50 miles per day. Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix B. Estimated emissions for heavy trucks are included in Table 4-3.

TABLE 4-3

ULTRAMAR INC. – VALERO WILMINGTON REFINERY PEAK DAY(1) CONSTRUCTION EMISSIONS FOR ALKYLATION IMPROVEMENT PROJECT (lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Construction Equipment	*1280* ~~1278~~	*103* ~~102~~	*619* ~~614~~	*58* ~~57~~	24
Light Duty Trucks/Buses	9	1	2	--	<1
Heavy Diesel Trucks	23	33	30	<1	1
Workers Commuting	390	42	42	<1	<1
Fugitive Dust From Construction(2,3)	--	--	--	--	217
Fugitive Road Dust(2,3)	--	--	--	--	33
Architectural Coatings	--	210	--	--	--
Total Construction Emissions(4)	***1,702*** ~~**1,700**~~	***389*** ~~**388**~~	***693*** ~~**688**~~	***60*** ~~**57**~~	***277*** ~~**275**~~
SCAQMD Threshold Level	550	75	100	150	150
Significant?	YES	YES	YES	NO	YES

(1) Peak emissions for all pollutants except PM10 predicted to occur during September 2005.
(2) Peak emissions of PM10 predicted to occur during January 2005.
(3) Assumes application of water two times per day.
(4) The emissions in the table may differ slightly from those in Appendix B due to rounding.

Construction Workers Commuting

Construction emissions also include emissions from construction worker vehicles traveling to and from the work site. Emission calculations were estimated assuming about 727 workers traveling to the site each weekday during Month 12, since Month 12 represents the highest total emissions (see Appendix A. Each worker commute vehicle is assumed to travel 16.2 miles (SCAG, 2000) to and from work each day, making two one-way trips per day. Emissions from employee vehicles are presented in Table 4-3. Emissions from employee vehicles were calculated using the EMFAC2002 emission factors developed by CARB. Estimated exhaust emissions for workers commuting are included in Table 4-3.

Fugitive Dust Associated with Site Construction Activities

Fugitive dust sources include grading, trenching, wind erosion and truck filling/dumping at the site to construct necessary foundations. During construction activities, water used as a dust suppressant will be applied, if applicable, in the construction area during grading, trenching, 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 herein that one water application per day reduces emissions by 34 percent and two applications reduce emissions by 50 percent. Fugitive dust suppression, often using water, is a standard operating practice and is one method of complying with SCAQMD Rule 403. Estimated peak controlled PM10 emissions from construction activities for fugitive dust sources are 217 pounds per day (see Table 4-3). The detailed emission calculations are provided in Appendix B.

Fugitive Dust Associated with Travel on Paved and Unpaved 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 727 vehicles per day associated with construction workers will travel on paved roads. Fugitive dust emissions were also calculated for on-site cars, light duty trucks and buses. The fugitive emissions for trucks assumes delivery trucks will travel on paved roads and water trucks will travel on unpaved roads. Emissions of dust caused by travel on paved roads were calculated using the U.S. EPA's, AP-42, Section 13.2.1 emission factor for travel on paved roads and using the CARB's Methodology 7.9 to determining the appropriate silt loading. Emissions of dust caused by travel on unpaved roads were calculated using the U.S. EPA's AP-42 Section 13.2.2 methodology. The estimated PM10 emissions from trucks and passenger autos for fugitive dust on paved and unpaved roads is 28 pounds per day (see Table 4-3).

Architectural Coatings

There is the potential for emissions from the use of architectural coatings on new structures, e.g., new storage tanks. A maximum of 100 gallons per day of paint is expected to be used in September 2005 when the completed storage spheres are expected to be painted. Assuming that the VOC content of the coating complies with SCAQMD Rule 1113 (2.1 pounds per gallon for industrial maintenance coatings), a maximum of 210 pounds per day of VOC emissions would be expected from the use of architectural coatings. As of July 1, 2002, the VOC content of industrial maintenance coatings must be 2.1 pounds per gallon or less.

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 Emission Summary

Construction emissions for the alkylation improvement project are summarized in Table 4-3, together with the SCAQMD's daily construction threshold levels. The construction phase of this portion of the Refinery's 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.

OPERATIONAL EMISSION IMPACTS

The total operational emissions from the project are identified in Table 4-4. Part of these emissions are associated with modifications to existing refinery units, including the Alkylation Unit, Butamer Unit, Fuel Gas Treating Unit, Light Ends Recovery Unit, Naptha Hydrotreater, and the Modified Heater (56-H-2). Additional emissions are associated with installing new refinery units, including the Boiler Unit (68), Butane Storage Unit, Flares, Hot Oil Heater (68-H-2) and the Propane Storage Unit.

Proposed modifications at the Refinery are expected to generate emissions from the following activities or sources.

Fugitive components additions and modifications
New and modified combustion sources
New storage tanks
Heavy duty trucks

TABLE 4-4

ULTRAMAR INC. – VALERO WILMINGTON REFINERY STATIONARY SOURCE OPERATIONAL EMISSIONS (lbs/day)

Sources	CO	VOC	NOx	SOx	PM10
STATIONARY SOURCES:					
Alkylation Unit	--	75.7	--	--	--
Boiler Unit 86	--	3.8	--	--	--
Butamer Unit	--	6.4	--	--	--
Butane Storage Unit	--	4.8	--	--	--
Flare	--	7.5	--	--	--
Fuel Gas Treating Unit	--	21.2	--	--	--
Hot Oil Heater	--	8.2	--	--	--
Light Ends Recovery Unit	--	7.8	--	--	--
Naptha Hydrotreater	--	8.3	--	--	--
Propane Storage Unit	--	3.2	--	--	--
Boiler Unit 68	168.0	29.4	64.3	71.0	88.2
Hot Oil Heater 68-H-2	240.0	42.0	91.9	101.4	126.0
New Flare	0.2	<0.1	0.8	--	<0.1
Modified Heater 56-H-2	41.0	7.2	--	17.4	21.6
Total Stationary Source Emission Increases:	**449.2**	**225.5**	**157.0**	**189.8**	**235.8**
INDIRECT EMISSION SOURCES:					
Daily Delivery Trucks	33.6	49.8	45.0	0.4	0.8
Fugitive Road Dust	--	--	--	--	32.2
Total Indirect Emission Increases:	**33.6**	**49.8**	**45.0**	**0.4**	**33.0**
Total Operational Emission Increases:	**482.8**	**275.3**	**202.0**	**190.2**	**268.8**

The proposed project operational emissions are evaluated in this section. Detailed emission calculations are provided in Appendix B. *The modifications to the reactors that have been proposed by the Ultramar Inc., Valero Wilmington Refinery since the preparation of the Draft EIR are not expected to change the estimated operational emissions associated with the proposed project. The change associated with the reactors will not result in any increase in the fugitive component counts, change the heat requirements of the unit, or result in any emission increases. No emissions are associated with reactors, settlers or coolers because this equipment does not vent to the atmosphere; however, fugitive components (pumps, valves, flanges, etc.) that connect this equipment may generate emissions. Based on preliminary engineering estimates in the Draft EIR and the SCAQMD permit applications prior to the proposed modifications, the following*

components counts were estimated from the proposed modifications to the alkylation unit: 31 pumps, 1,974 valves; 19 drains, 14 pressure relief devices, and 3,120 fittings. The estimated component counts have not changed from the estimates reported in the SCAQMD permit applications and the Draft EIR. In actuality, when detailed engineering is completed, it is expected that the fugitive component counts (primarily for fittings) would be reduced (and the VOC emissions would be less by about one percent) due to the fact that only two reactors will be included in the modified project versus four in the originally proposed project, and the recontactor has been eliminated. Therefore, the emission estimates in the Final EIR are conservative and expected to be overestimated.

The proposed project and related emissions associated with the operation of the proposed project remain unchanged from those reported in the Draft EIR. Operational emissions are characterized as either stationary source emissions or indirect source emissions. Stationary emission sources include fugitive emissions sources with process equipment components such as valves, flanges, vents, pumps, drains, and compressors. Fugitive emissions will also be associated with modifications at the Refinery. The emissions calculations herein are based on emission factors that are outlined in a Memorandum from the SCAQMD dated April 2, 1999 (SCAQMD, 1999). That Memorandum provides the appropriate emission factors for fugitive sources that include best available control technology (BACT) and lowest achievable emission reductions (LAER). Modifications to existing and new equipment are required to comply with BACT requirements in SCAQMD Rules 1303 or 2005 for RECLAIM equipment.
The proposed project also includes new storage tanks, heaters and boilers. The new storage tanks are used to store components used in the alkylation process (butane sphere and propane storage tank).

Additional documentation of the procedures used to calculate the emissions estimates is provided in Appendix B. All new and modified process components are required to conform to the SCAQMD's BACT Guidelines. 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. Fugitive emission sources are also regulated under New Source Performance Standards (NSPS) Subpart GGG and SCAQMD Rule 1173.

> **Process Pumps:** Sealless pumps will be used, to the extent feasible and commercially available, as BACT for pumps in gas or light hydrocarbon service. 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, as required under SCAQMD Rule 1173.

Process Valves: Bellow sealed 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 the following 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
- Drain valves with stems in a horizontal position

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, as required under SCAQMD Rule 1173. 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, as required under SCAQMD Rule 1173.

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, as required under SCAQMD Rule 1173.

Pressure Relief Devices (PRDs): PRDs will be routed to the existing Refinery fuel gas 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, as required under SCAQMD Rule 1173.

Storage Tanks: All new and modified storage tanks that store organic liquids with a true vapor pressure greater than 0.1 psia will be required to install internal

floating roof tanks or domes on external floating roof tanks. Domes further reduce VOC emissions from the tanks.

In addition, emission offsets are required for new and modified permitted emission sources by SCAQMD Regulation XIII and/or Regulation XX. Emission offsets are required for all emission increases associated with stationary sources, 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 or federal regulations provided that there is no increase in rating. The reformulated fuels projects are required to comply with state reformulated fuels requirements. Therefore, emission offsets are not required for the reformulated fuels projects identified in this EIR, as long as there is no increase in the crude throughput capacity of the Refinery. The proposed project is not expected to result in an increase in crude throughput capacity at the Refinery. Offsets will not be provided for the emission increases associated with the proposed project.

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. The operation of the proposed project is expected to require 16 additional delivery trucks per day at the facility on a daily basis. The emission increases associated with the increased delivery trucks are shown in Table 4-4.

Operational Emissions Summary

Total operation emissions from the alkylation improvement project are summarized in Table 4-5, together with the SCAQMD's daily operational threshold levels. The operation of the proposed project is not expected to result in an increase in NOx and SOx at the Refinery that exceeds the applicable SCAQMD RECLAIM significance threshold. The operation of the proposed project will exceed the SCAQMD significance threshold for indirect emissions of NOx and SOx. The operation of the proposed project will exceed the SCAQMD significance thresholds for VOCs and PM10. Therefore, the air quality impacts associated with operational emissions from the proposed project are significant and mitigation measures are required.

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. The traffic analysis indicates that there are no significant impacts at local intersections (i.e., there is no change in LOS from C, D, or E to the next lower LOS or an intersection's volume to capacity does not increase by two percent or more) during the project operation, so no significant increase in CO is expected such that a hot spot or high concentration of CO would be created.

Air Quality Management Plan

Pursuant to CEQA Guidelines CCR Title 14 §15125(d), an EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans which include air quality management plans. An inventory of existing emissions from the industrial facilities is included in the baseline inventory in the Air Quality Management Plan (AQMP). The AQMP identifies potential future emission reductions from existing sources and air pollution control measures that are necessary in order to attain and maintain with a margin of safety the state and federal ambient air quality standards (SCAQMD, 2003). The control strategies in the AQMP are based on projections from the local general plans provided by the cities in the district (including the City of Los Angeles). Projects that are consistent with the local General Plans are consistent with the air quality related regional plans. 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.

TABLE 4-5

ULLTRAMAR REFINERY ALKYLATION IMPROVEMENT PROJECT
TOTAL OPERATIONAL EMISSIONS SUMMARY
(lbs/day)

	CO	VOC	NOx	SOx	PM10
Background Data					
2006 RECLAIM Allocation(1)	--	--	1,295.0	1,140.0	--
Stationary Sources	449.2	225.5	157.0	189.8	235.8
Indirect Sources	33.6	49.8	45.0	0.4	33.0
Significance Determination for Emissions Subject to RECLAIM Thresholds:					
Project + 2006 RECLAIM Allocation	--	--	1,452.0	1,329.0	--
Significance Threshold for RECLAIM Pollutants(1)	--	--	2,383.0	2,918.0	--
SIGNIFICANT?			**NO**	**NO**	
Significance Determination for Emissions Not Subject to RECLAIM Thresholds:					
Project Emissions	482.8	275.3	45.0	0.4	268.8
Significance Thresholds	550	55	55	150	150
SIGNIFICANT?	**NO**	**YES**	**NO**	**NO**	**YES**

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

The 2003 AQMP demonstrates that applicable ambient air quality standards can be achieved within the timeframes required under federal law. This project must comply with applicable SCAQMD requirements and control measures for new or modified sources. It must also comply with prohibitory rules, such as Rule 403, for the control of

fugitive dust. By meeting these requirements, the project will be consistent with the goals and objectives of the AQMP. Furthermore, the production of CARB Phase 3 reformulated gasoline will result in emission reductions from motor vehicles throughout the state, which will further the SCAQMD's efforts to attain and maintain the applicable ambient air quality standards with a margin of safety for sensitive receptors.

Odors

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. The Refinery maintains a 24-hour environmental surveillance effort. This activity also has the effect of minimizing the frequency and magnitude of odor events. The use of BACT (e.g., leakless valves) also reduces the emissions of compounds that could produce odor impacts. Potential odor impacts from the proposed project are not expected to be significant as a result of installing BACT pursuant to Rules 1303 or 2005.

The Refinery complies with 40 CFR Part 60, Subpart J – Standards of Performance for Petroleum Refineries. The refinery has a single fuel gas system where vapors from refinery operations are collected and treated, as necessary to be used as fuel gas. The refinery has an analyzer to monitor the hydrogen sulfide content of the fuel gas. Monitoring results are recorded and reviewed by the operator to ensure compliance with the emissions limits defined in this subpart. Compliance with the hydrogen sulfide content limitations for fuel gas also helps to minimize odors, thus, further ensuring that the proposed project will not generate significant adverse odor impacts.

Ambient Air Quality Modeling – Criteria Pollutants

Air quality modeling is required for permitted stationary sources pursuant to SCAQMD Rule 1303(b)(1) to assure that additional project emissions will not result in an increase in the ambient concentrations of criteria pollutants that could cause a violation or make significantly worse an existing violation of any ambient air quality standard at any receptor location in the district. Proposed modifications to the Refinery will result in an increase in NOx, CO and PM10 emissions associated with the proposed new boiler, the new flare, the new hot oil heater and modifications to existing heater 56-H-2.

To calculate air concentrations of criteria pollutants, air dispersion modeling was completed using the ISCST3 model with "worst-case" meteorological conditions. The total emission increases of NOx, CO, and PM10 from new stationary sources only were modeled (i.e., the total emission increases associated with the proposed new boiler, the new flare, the new hot oil heater and modifications to existing heater 56-H-2.). The total concentration, obtained as the sum of modeled concentration and background concentration for each criteria pollutant, was compared to the California Ambient Air

Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS) to determine the potential for impacts (see Table 4-6).

The model-predicted impacts on ambient air concentrations of NOx, and CO are below the significance threshold for both the one-hour and annual averaging periods. The model-predicted that impacts on ambient air concentration of PM10 exceed the 24-hour concentration threshold and are below the annual threshold. Therefore, the ambient air concentrations of PM10 (based on the 24-hour averaging period) are considered significant.

TABLE 4-6

LOCALIZED AIR QUALITY IMPACTS

Criteria Pollutant	Averaging Period	Ambient Background Conc. (ug/m^3)	Calculated Conc. (ug/m^3)	Total Conc. (ug/m^3)	Most Stringent Air Standard (ug/m^3)	Significant Change in Air Quality Conc. (ug/m^3)	Below Threshold?
NO_2	1-hour	283.21	62.76	345.97	**500**	20	Yes
	Annual	64.57	0.49	65.06	**100**	1	Yes
CO	1-hour	11494.00	15.93	11509.93	23000	**1100**	Yes
	8-hour	6666.52	18.43	6684.95	**10000**	500	Yes
PM10	24-hour	105	2.88	107.88	50	**2.5**	No(1)
	Annual	36.4	0.69	37.09	30	**1**	Yes

(1) Modeling for the individual permit units indicated that the results for each unit would be less than the threshold, for permitting purposes individual units comply with the modeling requirements in SCAQMD Rule 1303(b).

Modeling is not required for mobile sources unless significant concentrations of CO or CO hot spots are expected. As discussed previously, no significant increase in CO is expected such that a hot spot or high concentration of CO would be created. Therefore, no additional air quality modeling is required for mobile sources.

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 following section outlines the HRA for the modifications to the Refinery. The results of the HRA will be used to evaluate the impacts of toxic air contaminants from the proposed project.

Proposed Project HRA

The following section summarizes the HRA for the modifications to the Refinery. The HRA summarized herein for the proposed project evaluates the emission changes at the Ultramar Inc. - Valero Wilmington Refinery for the Alkylation Improvement Project.

HRA Methodology

The existing (or baseline) Refinery health impacts are based on the most recent AB2588 HRA prepared for and submitted to the SCAQMD (October 2000). Total Refinery emissions of toxic air contaminants were calculated based on implementing this proposed project. The impact from the proposed project alone was determined by subtracting the baseline impacts from the total post project impacts.

Hazard Identification

The list of potentially-emitted substances considered in the preparation of the HRA for the Refinery 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 Refinery are shown in Table 4-7. A total of 72 toxic air contaminants were evaluated for inclusion in the Refinery HRA (see Table 4-7). Some of the pollutants were consolidated into one category, e.g., polycyclic aromatic hydrocarbons (PAHs) or were not detected at the Refinery. Health effects data are not available for all compounds. Therefore, a total of 41 toxic air pollutants were included in the air dispersion modeling. Of the 41 toxic air contaminants included in the HRA, only 29 will be emitted by the proposed project. 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 limits (REL) and acceptable oral doses (for multipathway 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.

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 (September 2000).

TABLE 4-7
MAXIMUM REFINERY TAC EMISSION RATES
PROPOSED PROJECT SCENARIO

CHEMICAL	CAS No.	Emissions (lbs/hr)	Emissions (lbs/yr)
Acetaldehyde	75-07-0	1.34E-02	9.30E+01
Acrolein	107-02-8	0.00E+00	0.00E+00
Ammonia	7664-41-7	5.40E+00	5.54E+04
Aniline	62-53-3	2.70E-04	2.36E+00
Arsenic	7440-38-2	1.46E-04	4.90E-02
Benzene	71-43-2	1.57E-02	7.80E+00
Beryllium	7440-41-7	8.30E-07	2.20E-02
Butadiene-1,3	106-99-0	2.70E-04	2.36E+00
Cadmium	7440-43-9	2.92E-04	2.40E-02
Carbon disulfide	75-15-0	8.20E-02	3.06E+03
Chlorobenzene	108-90-7	-1.75E-01	1.57E+00
Chromium (hex.)	18540-29-9	4.91E-04	3.79E+00
Copper	7440-50-8	1.05E-03	3.58E-01
Cresols	1319-77-3	5.30E-04	4.50E+00
Dibromo3chloropropane	96-12-8	0.00E+00	0.00E+00
Ethyl Benzene	100-41-4	1.90E-04	1.50E+00
Formaldehyde	50-00-0	1.99E-02	1.11E+02
Hexane	110-54-3	0.00E+00	0.00E+00
Hydrochloric acid	7647-01-0	0.00E+00	0.00E+00
Hydrogen cyanide	74-90-8	0.00E+00	0.00E+00
Hydrogen fluoride	7664-39-3	0.00E+00	0.00E+00
Hydrogen sulfide	7783-06-4	2.00E-02	1.63E+02
Lead	7439-92-1	6.94E-04	5.17E-01
Manganese	7439-96-5	9.72E-04	3.70E-01
Mercury	7439-97-6	2.83E-05	2.30E-01
Methyl chloroform	71-55-6	0.00E+00	0.00E+00
Methyl Ethyl Ketone	78-93-3	0.00E+00	0.00E+00
Methyl methacrylate	80-62-6	0.00E+00	0.00E+00
Methyl t-Butyl Ether	1634-04-4	0.00E+00	0.00E+00
Naphthalene	91-20-3	8.40E-04	6.00E+00
Nickel	7440-02-0	1.69E-03	7.30E-01
Perchloroethylene	127-18-4	0.00E+00	0.00E+00
Phenol	108-95-2	1.31E-02	3.45E+02
Polycyclic arom. HC	1-15-0	1.00E-06	1.00E-03
Propylene	115-07-1	2.48E-02	2.17E+02
Selenium	7782-49-2	2.01E-05	1.62E-01
Styrene	100-42-5	7.40E-05	6.50E-01
Tetrachloroethane	79-34-5	0.00E+00	0.00E+00
Toluene	108-88-3	5.03E-02	2.50E+01
Xylene	1-21-0	5.98E-02	3.60E+01
Zinc	7440-66-6	2.17E-02	1.14E+01

Proposed Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Worker: The cancer risk estimates are shown in Table 4-8. Based on the air quality modeling and related assumptions, the cancer risk to the MEIW associated with the proposed project at the Refinery was calculated to be 0.15×10^{-6} or less than one in a million. This result does not exceed the cancer risk significance threshold identified in Table 4-1. The MEIW is based on a 46-year exposure period. The maximum value was multiplied by 0.14 to account for an occupational exposure period (five days per week, 50 weeks per year for 46 years). The project MEIW location is shown in Figure 3-2 (i.e., the same as the baseline location).

Maximum Exposed Individual Resident: The predicted maximum cancer risk at the MEIR area due to exposure to proposed project emissions was calculated to be 1.49×10^{-6} or about 1.5 per million (see Table 4-8), which does not exceed the cancer risk significance threshold in Table 4-1. The location of the project MEIR is also shown in Figure 3-2 (i.e., the same as the baseline location).

TABLE 4-8

SUMMARY OF PROPOSED PROJECT CANCER RISK FOR THE ULTRAMAR INC. – VALERO WILMINGTON REFINERY

EXPOSURE PATHWAY	Proposed Project	
	Maximum Exposed Individual Resident	Maximum Exposed Individual Worker
Inhalation	1.47E-06	1.46E-07
Dermal	2.20E-09	1.00E-09
Soil Ingestion	1.10E-08	1.00E-09
Water Ingestion	-	-
Ingestion of Home Grown Produce	4.00E-09	-
Ingestion of Animal Products	-	-
Ingestion of Mother's Milk	-	-
Total Cancer Risk	**1.49E-06**	**1.48E-07**

Cancer Burden: The incremental impact of the proposed project on the total excess cancer burden is approximately 0.15 and 0.008 for the residential and occupational populations, respectively. (See Table 8 in Volume II for further details.) The cancer burdens for residential and occupational populations do not exceed the cancer burden significance threshold identified in Table 4-1.

Sensitive Receptors: The maximum cancer risk from the proposed project alone to a sensitive receptor was estimated to be 1.39×10^{-6} or approximately one per million at the Edison School. This risk estimate is overly conservative as it is

based on a 70-year continuous exposure period. This risk does not exceed the cancer risk threshold identified in Table 4-1.

Proposed Project HRA Results - Non-Carcinogenic Health Impacts

Acute Hazard Index: The highest acute hazard index for the proposed project is estimated to be 0.001 for the respiratory tract. The acute health effects are based on maximum hourly emissions of TACs that have acute target endpoints. (See Volume II, pages 15 and 16 for further details). The acute hazard index for the proposed project does not exceed the relevant significance threshold in Table 4-1. The maximum acute hazard index location is the same as the proposed project MEIW.

Chronic Hazard Index: The highest chronic hazard index for the proposed project is estimated to be 0.0031 for the respiratory tract. (See Volume II, pages 15 and 16 for further details). This result does not exceed the chronic hazard index significance threshold identified in Table 4-1. The maximum chronic hazard index location is the same as the estimated project MEIW.

Asbestos Emissions from Tank Demolition

Asbestos was often used in the construction of older buildings and structures. The demolition of tanks at the facility could generate emissions of asbestos. Asbestos is a toxic air contaminant and regulated under SCAQMD Rule 1403, Asbestos Emissions from Demolition/Renovation Activities. Rule 1403 requires that the facility conduct a survey of the structures to be removed for the presence of friable asbestos-containing material, notify the SCAQMD of the intent to demolish or renovate the facilities, remove asbestos-containing material before activities begin that would break up, dislodge, or disturb the asbestos-containing material, and establishes procedures for the handling of and control of asbestos-containing material. Rule 1403 requires that asbestos-containing material be removed under isolation and using air pollution control equipment, such as HEPA filters. Three tanks will be demolished and it is not currently known if the tanks contain asbestos. The three tanks that will be demolished or renovated are located near the center portion of the Refinery, within a heavy industrial area, and are not located near residential areas. If asbestos is found in the demolition materials, demolition will occur in compliance with SCAQMD Rule 1403, which is expected to minimize asbestos emissions so that no significant impacts would be expected.

MITIGATION MEASURES

Feasible mitigation measures are required, if available, to minimize the significant air quality impacts associated with the construction and operational phases of the proposed project as the emissions of certain pollutants are considered significant.

Construction Mitigation Measures

The following mitigation measures to reduce emissions associated with construction activities have been identified to control emissions from heavy construction equipment and worker travel. The proposed project is expected to have significant adverse air quality impacts during the construction phase. Therefore, the following mitigation measures will be imposed on the revised proposed project:

On-Road Mobile Sources:

A-1 Develop a Construction Emission Management Plan for the proposed project. The Plan shall include measures to minimize emissions from vehicles including, but not limited to: scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting truck idling in excess of ~~10~~ *five* minutes. *[Note: Since the completion of the Draft EIR, CARB adopted a diesel air toxic control measure on July 22, 2004, that requires trucks and interstate buses to shut their engines down after five minutes of non-essential idling. Therefore, mitigation measures for the proposed project have been revised to be consistent with the CARB control measure.]*

Off-Road Mobile Sources:

A-2 Prohibit trucks from idling longer than ~~10~~ *five* minutes at the Refinery. *[See note regarding Mitigation Measure A-1.]*

A-3 Use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.

A-4 Maintain construction equipment tuned up and with two to four degree retard diesel engine timing.

A-5 Use electric welders instead of gas or diesel welders in portions of the Refinery where electricity is available.

A-6 Use on-site electricity rather than temporary power generators in portions of the Refinery where electricity is available.

A-7 Prior to construction, the project applicant will evaluate the feasibility of retrofitting the large off-road construction equipment that will be operating for significant periods. Retrofit technologies such as selective catalytic reduction, oxidation catalysts, air enhancement technologies, etc., will be evaluated. Such technologies will be required if they are commercially available and can feasibly be retrofitted onto construction equipment.

A-8 Prior to construction, the project applicant will evaluate the feasibility of using alternative fuels in large off-road construction equipment that will be operating for significant periods. Alternative fuels can include fuel additives or modified fuels, e.g., PuriNOx, that have been demonstrated by CARB to result in emission reductions. PuriNOx fuel is comprised of the PuriNOx additive package, purified water and diesel fuel. These components are mixed in a blending unit to produce a finished fuel. The water content promotes an atomization of the mixture during fuel injection and improves combustion, while lowering combustion temperatures, and reducing NOx emissions.

Water emulsion diesel fuels (e.g., PuriNOx) have a much lower energy content than regular diesel fuels which typically translates into a significant loss in fuel economy. This is offset slightly by an increase in thermal efficiency. Lubrizol, the manufacturer of PuriNOx, indicates that its product, containing 20 percent water emulsions, results in a 13 percent reduction in fuel economy. Lubrizol also warns of a power loss when operating with its fuel stating that the equipment should be tolerant of up to a 20 percent loss in power.

Emulsion-based diesel products do not meet ASTM D-975 specifications for diesel fuel due to their water content. Most manufacturers of diesel engines specify use of an ASTM D-975 compliant fuel in their engine applications. Potential users of an emulsion-based diesel fuel should confirm the suitability of the fuel for use in their specific engine application and ensure that such use would not void any aspect of the engine warrantee.

PuriNOx can be used in direct injection heavy-duty compression ignition engines, including construction equipment. Lubrizol representatives indicate that a large-scale batch blending unit has been installed in southern California. The blending unit is estimated to have a throughput of 20 million gallons per year. ~~PuriNOx is estimated to result in a 14 percent reduction in NOx and a 63 percent reduction in particulate matter in off-road engines.~~

The use of PuriNOx is considered to be a feasible mitigation measure. ~~when it becomes commercially available.~~ It is recommended that PuriNOx should be used in construction equipment, if the engine manufacturer indicates that the use of the fuel is compatible with the engine so that the engine warrantee is not voided.

A-9 Use low sulfur diesel (as defined in SCAQMD Rule 431.2) if available.

A-10 Use CARB certified construction equipment for all construction equipment that requires CARB certification.

A-11 Suspend use of all construction activities that generate air emissions during first stage smog alerts.

A-12 The engine size of construction equipment shall be the minimum practical size.

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

A-13 Develop a fugitive dust emission control plan. Measures to be included in the plan include, but are not limited to the following: (1) water active construction site three times per day, except during periods of rainfall. Watering construction sites two times per day complies with SCAQMD Rule 403 and provides about a 50 percent emission reduction. Watering construction sites three times per day will reduce PM10 emissions by an additional 18 percent (total control of 68 percent); (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 miles per hour. 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). With the exception of watering the site three times, 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

AQ-14 The Refinery shall investigate measures to reduce the VOC emissions associated with the use of paints for coating the new storage tanks. The Refinery shall require that the painting of storage tanks be completed prior to delivery to the site to minimize the amount of paint used at the site. Under this mitigation measure paint use is expected to be limited to about 10 gallons per day. The Refinery shall also investigate the use of paints with VOC contents less than 2.1 pounds per gallon.

Other mitigation measures 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 CARB-certified or commercially available); and (4) pave unpaved roads (most refinery roads are paved).

Operational Mitigation Measures

The impacts associated with operation of the proposed project are expected to be significant for VOC and PM10 emissions so feasible mitigation measures are required. The major source of VOC emissions are from fugitive components (e.g., pumps, valves, drains, flanges, etc.).

The proposed project requires the installation of fugitive components (e.g., valves, flanges, and pumps) which are large sources of VOC emissions from the proposed project. VOC emissions from fugitive components are controlled through the use of BACT. BACT, by definition, is the cleanest commercially available control equipment or technique. The use of BACT controls emissions to the greatest extent feasible for the new and modified emission sources. In addition, the fugitive components will be required to be included in an inspection and maintenance program, as required by SCAQMD Rule 1173, to ensure that the equipment is properly maintained. Therefore, additional VOC emission reductions (through mitigation measures) from fugitive components associated with the proposed project equipment are not feasible.

Offsets are not required for projects that are needed to comply with state or federal regulations provided that there is no increase in rating (SCAQMD Rule 1304(c)(4)). The reformulated fuels projects are required to comply with state reformulated fuels requirements. Therefore, emission offsets are not required for the proposed project identified in this EIR, as long as there is no increase in the crude throughput capacity of the Refinery. The proposed project is not expected to result in an increase in crude throughput capacity at the Refinery. Offsets will not be provided for the emission increases associated with the proposed project.

PM10 emissions are generated from additional combustion sources (e.g., heaters and boilers). BACT for PM10 control from heaters and boilers is the use of natural gas or refinery fuel gas. The Refinery will use natural gas or refinery fuel gas in the new/modified heaters and boilers. No other feasible control measures have been identified.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction

Construction emissions for the proposed project for CO, VOCs, NOx, and PM10 are expected to remain significant following mitigation (see Table 4-9). The construction emissions associated with SOx are expected to be less than significant. Additional emissions reductions may occur associated with some of the mitigation measures, even if some of the emission reductions cannot be quantified. The emission benefits associated with the mitigation measures are based on estimates provided in the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993). Construction emissions are expected to be short-term and they will be eliminated following completion of the construction phase.

TABLE 4-9

PEAK DAY CONSTRUCTION EMISSIONS FOLLOWING MITIGATION (lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Unmitigated Emissions[1]	*1,702* ~~1,700~~	*389* ~~388~~	*693* ~~688~~	*60* ~~57~~	*277* ~~275~~
SCAQMD Threshold Level	550	75	100	150	150
SIGNIFICANT?	**YES**	**YES**	**YES**	**NO**	**YES**
Amount Needed to Reduce Emissions Below Significance Level	*1,152* ~~1,150~~	*314* ~~313~~	*593* ~~588~~	--	*127* ~~125~~
MITIGATION MEASURES[2]					
Use Electric Welders	-82	-15	-134	-15	-7
Water Active Construction Sites[3]	--	--	--	--	-87
~~Use of PuriNOx~~	~~--~~	~~--~~	~~-86~~	~~--~~	~~-23~~
Use of Electricity Instead of Generators	-623	-23	-1	-0.3	-0.1
Require Tanks be Pre-painted	--	-210	--	--	--
Total Emission Reductions	-705	-248	*-135* ~~-221~~	-15	*-94* ~~-117~~
Total Emissions After Mitigation	*997* ~~995~~	*141* ~~140~~	*558* ~~467~~	*45* ~~42~~	*183* ~~158~~
SIGNIFICANT AFTER MITIGATION?	**YES**	**YES**	**YES**	**NO**	**YES**

(1) See Table 4-3.
(2) Emission reductions were estimated from the SCAQMD (1993) CEQA Handbook.
(3) A 50 percent emission reduction for the standard practice of watering active construction sites was included in the project emission calculations. These emission calculations assume an additional 18 percent emission reduction associated with the mitigation measure of watering the site three times per day (instead of two times per day).

Operation

No feasible mitigation measures were identified for operational emissions since the proposed project modifications require the use of BACT. The project emissions are expected to remain significant for VOC and PM10. Emissions of CO, NOx and SOx are expected to be less than significant. The proposed project's impacts on ambient air quality (as determined by air quality modeling are expected to be significant for 24-hour PM10 concentrations. Additionally, long-term air quality benefits are expected to occur due to the implementation of the CARB Phase 3 regulations (see Chapter 5), which will reduce emissions from gasoline powered vehicles. The analysis, however, does not take credit for the emission reductions anticipated for mobile sources.

The proposed project's impacts on toxic air contaminants (as well as the emissions from all other sources at the Refinery) 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.

B. HAZARDS & HAZARDOUS MATERIALS

SIGNIFICANCE CRITERIA

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

Non-compliance with any applicable design code or regulation.

Non-conformance to National Fire Protection Association standards.

Non-conformance to regulations or generally accepted industry practices related to operating 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

A hazard analysis was conducted for the proposed new and modified units, which is summarized in Table 4-10. *The purpose of the proposed project is to reduce the hazard impacts associated with the use of HF. The project as proposed in the Draft*

EIR resulted in a reduction in hazards associated with the use of HF and the modified project would still obtain the same objective.

TABLE 4-10

MAXIMUM HAZARD DISTANCES

Process Unit/Release		Status of Potential Hazard	Maximum Distance (ft) from Center of Unit to				
			Flash Fire (LFL)	Explosion Overpressure (1.0 psig)	Pool/Torch Fire Thermal Radiation (1,600 Btu/(hr ft^2))	H_2S Gas Concentration (30 ppm for 60 min.)	HF Gas Concentration (20 ppm for 60 min.)
LER1	Release from sour gas line leaving absorber	Existing	80	60	100	1,280	
		Modified	80	60	100	1,130	
	Release from sour gas line leaving debutanizer accumulator	Existing	280	200	80	1,510	
		Modified	290	200	80	990	
	Release from debutanizer accumulator liquid	Existing	640	440	150		
		Modified	620	440	160	1,820*	
	Release from depropanizer bottoms	Existing	500	430	200	500	
		Modified	570	490	210	570	
LER2	Release from sour gas line leaving absorber	Existing	80	60	100	1,290	
		Modified	80	60	100	1,140	
	Release from sour gas line leaving debutanizer accumulator	Existing	230	180	90	1,650	
		Modified	310	250	110	2,330*	
	Release from sour gas line leaving debutanizer accumulator	Existing	760	600	240	2,880	
		Modified	770	610	230	3,350*	
	Release from debutanizer accumulator liquid	Existing	1,020	750	400		
		Modified	1,130	830	410		
NHT	Release from reactor effluent line	Existing	230	170	360	1,320	
		Modified	230	180	350	880	
	Release from stripper bottoms	Existing	1,200	1,010	480		
		Modified	1,290	1,090	470		
	Release from naphtha stripper bottoms	Existing	1,380	990	590		
		Modified	1,300	950	590		
	Release from splitter overhead accumulator	Existing	1,940	1,220	450		
		Modified	1,770	1,160	470		
	Release from splitter overhead accumulator	Existing	90	60	110	1,530	
		Modified	80	60	100	1,310	
	Release from debutanizer reflux line	New	1,090	790	350	2,150*	
MEROX	Release of LPG from caustic pre-wash vessel	Existing	1,030	620	170		
		Modified	1,270*	820	220		

LER = light ends recovery units. NHT = naphtha hydrotreater. MEROX = LPG Merox Unit

***** These hazards have the potential to migrate off-site and would be considered potentially significant.

(1) Number in this box refers to the ammonia concentration.

TABLE 4-10

MAXIMUM HAZARD DISTANCES (CONTINUED)

Process Unit/Release		Status of Potential Hazard	Maximum Distance (ft) from Center of Unit to				
			Flash Fire (LFL)	Explosion Overpressure (1.0 psig)	Pool/Torch Fire Thermal Radiation (1,600 Btu/(hr ft^2)	H_2S Gas Concentration (30 ppm for 60 min.)	HF Gas Concentration (20 ppm for 60 min.)
ALKY	Release from settler acid outlet	Existing					25,240
		Modified					*23,250* ~~18,850~~
	Release from olefin feed to reactor #2	Existing	1,960	1,300	360		
		Modified	*2,060* ~~1,960~~	*1,490* ~~1,300~~	*470* ~~360~~		
	Release from reactor #2 outlet	Existing	90	110	190		24,790
		Modified	*40* ~~50~~	*50* ~~60~~	*130* ~~150~~		*19,990* ~~20,570~~
	Release from isostripper bottoms	Existing	1,320	1,060	770		
		Modified	1,380	1,100	770		
	Release from depropanizer receiver outlet	Existing	1,090	910	440		
		Modified	1,170	970	440		
	~~Release from recontactor acid line~~	~~New~~					~~5,540~~
FGTU	Release from fuel gas inlet	Existing	120	90	150	210	
		Modified	120	90	150	210	
BUTAMER	Release from feed surge drum	Existing	1,180	830	400		
		Modified	1,280*	890	410		
	Release from stabilizer bottoms	Existing	830	670	270		
		Modified	960	750	290		
	Release from debutanizer overhead accumulator	Existing	1,750	1,400	595		
		Modified	1,960*	1,570*	590		
LPG (BUTANE STORAGE)	Release from butane sphere	Existing	2,450	5,490	2,485		
		Modified	2,510*	7,880*	2,530*		
LPG (PROPANE STORAGE)	Release from propane bullet	Existing	2,010	5,300	2,175		
		Modified	2,250*	5,640*	2,685*		
BOILER	Release from boiler fuel gas line	Existing	90	70	80		

ALKY = alkylation unit. FGTU = fuel gas treating unit. BUTAMER = Butamer Unit.

***** These hazards have the potential to migrate off-site and would be considered potentially significant.

(1) Number in this box refers to the ammonia concentration.

TABLE 4-10

MAXIMUM HAZARD DISTANCES (CONCLUDED)

Process Unit/Release		Status of Potential Hazard	Maximum Distance (ft) from Center of Unit to				
			Flash Fire (LFL)	Explosion Overpressure (1.0 psig)	Pool/Torch Fire Thermal Radiation [1,600 Btu/(hr ft^2)]	H_2S Gas Concentration (30 ppm for 60 min.)	HF Gas Concentration (20 ppm for 60 min.)
AQNH3 TANK	Release from aqueous NH_3 tank	Existing				210(1)	
		Modified				300(1)	
HOH	Release from fuel gas line	Existing	80	60	70		
		Modified	90	70	80		
TANKS	Release from Tank 95-TK-1, 95-TK-950, and 95-TK-752 (Recovered Oil)	Existing			70		
		Modified			70		

psig = pounds per square inch gravity. AQNH3 = aqueous ammonia. HOH = hot oil heater.
***** These hazards have the potential to migrate off-site and would be considered potentially significant.
(1) Number in this box refers to the ammonia concentration.

Table 4-10 lists the potential hazards (fires, explosion overpressure, thermal radiation, or release of hydrogen sulfide, HF and ammonia) from the new or modified units associated with the proposed project and the results of the modeling for these hazards. For each potential release, the distance to the threshold level was determined before and after the proposed project (where applicable). For new units, the distance to the threshold level for each release was determined. Most of the proposed modifications do not affect the size or the location of the largest potential release for the specific unit. In other words, most of the potential releases, which would result in the largest hazard zones, already exist for many of the units.

For most units modified as a result of the proposed project, little change is expected to occur to their overall hazard zones for the following reasons:

- Modification of a unit such that the largest potential hazard is changed only slightly (e.g., Butamer Unit).
- Addition of equivalent equipment such that the potential hazards are essentially the same as those which already exist (e.g., the Merox Unit).
- Relocating products within the Refinery property (e.g., relocating storage tanks), the hazards remain essentially the same and remain on-site.

The project as proposed in the Draft EIR would result in a reduction in the distance that an HF release would travel under worst-case conditions. Under a worst-case release from the existing alkylation unit, an HF release would travel about 25,240 feet. The previously proposed project in the Draft EIR, predicted that an HF release would travel a maximum distance of about 18,850 feet (see Table 4-10). A reduction in the distance that a release would travel indicates that fewer individuals (or receptors) would be exposed in the event of a release.

The modifications to the reactors that have been proposed by the Ultramar Inc., Valero Wilmington Refinery since the preparation of the Draft EIR changes the hazard analysis prepared for the proposed project. The hazards associated with the modified project are different than the previously proposed project as some of the components, e.g., the reactors and settlers, will be larger. In addition, the revised Alkylation Unit will operate under less pressure because it will be a gravity fed system, as compared to the project proposed in the Draft EIR which was a pressurized system. Therefore, the hazard analysis has been revised herein (see Table 4-10 and Appendix C).

In some cases, the hazards associated with the new design will result in reduced hazard impacts, e.g., the releases from reactor #2 are expected to travel less distance (40 feet to the lower flammable level [LFL] versus 50 feet in the project evaluated in the Draft EIR) and the potential hazards associated with an HF release from the recontactor have been eliminated (see Table 4-10) since the recontactor was eliminated. Most of the potential releases from the Alkylation Unit remain about the same or slightly larger. For example, the distances that potential releases from the isostripper bottoms, and the depropanizer receiver outlet are the same. The distance that a potential release from the olefin reactor #2 would travel in the event of an explosion is approximately 110 feet longer. This potential increase in distance that an explosion could travel is expected to remain on-site so that no significant impacts would be expected.

A release from the settler acid outlet would result in a potential hazard impact greater than the previously proposed project. The previously proposed project predicted that an HF release would travel a maximum distance of about 18,850 feet, while the modified project would result in a maximum distance of about 23,250 feet. The results of the revised hazard analysis reached the same conclusion as the hazard analysis in the Draft EIR, i.e., that while the potential hazard impact would travel off-site; the hazards associated with HF in the modified Alkylation Unit (23,250 feet) will be reduced from the existing Alkylation Unit (25,240 feet) (see Table 4-10), providing beneficial hazard impacts. Therefore, based on a review of the proposed project modifications and review of the potential environmental impacts, the changes in the proposed project do not constitute "new information" or trigger any of the requirements of CEQA Guidelines §15088.5 and recirculation of the Draft EIR is not required. The details of the analysis are included in Appendix C.

With the maximum hazard zones defined for each release, the units can be divided into three categories dependent on their potential to impact the public. The categories are defined as follows:

- **Units with No Potential Existing or Post-Project Off-Site Impacts** (i.e., hazard zones are contained on-site): The process units that fall into this category include the hot oil heater (HOH), the new boiler (BOILER), the fuel gas treating unit (FGTU), storage tanks (TANKS), and the ammonia storage tank (AQNH3 TANK) (see Table 4-10).

- **Units with Potential Existing or Post-Project Off-Site Impacts, But Post-Project Impacts Are Less Than Existing Impacts:** The unit that falls into this category includes the Alkylation Unit (ALKY).

- **Units with Potential Off-Site Impacts** (i.e., the post-project impacts are larger than the existing impacts): The units that falls into this category includes the Light Ends Recovery Units (LER1 and LER2), the Naphtha Hydrotreater (NHT), the Merox Unit (MEROX), the Butamer Unit (BUTAMER), the Butane Storage Sphere (C4 Storage) and the Propane Storage Sphere (C3 Storage) (see Table 4-10).

Two specific conclusions can be drawn from the worst-case consequence modeling results. First, for those units where post-project off-site impacts are larger than existing off-site impacts, none of the increased hazard zones reach a residential area. All are confined to the industrial area near the Refinery complex. The worst-case comparison is only valid for the maximum impact distances. All other potential releases are smaller and, in many cases, there is no difference between the existing and post-project impacts. Nonetheless, since a number of the hazards release scenarios have the potential to result in increased off-site exposure, the potential hazard impacts are considered significant.

The second specific conclusion that can be drawn from the hazard analysis is that the modifications to the Alkylation Unit produce a reduction in the potential worst-case impact following a release of HF bearing materials. The implementation of the ReVAP process, with its use of the acid additive that reduces the volatility of the acid phase, will result in a ~~an 18.5 percent~~ reduction in the maximum hazard distance providing a beneficial impact.

None of the modified or new units associated with the proposed project creates a hazard that could extend into residential areas; all off-site project-related hazards are confined to heavy industrial areas surrounding the facility. Releases from new or modified equipment that result in an increase in the potential off-site exposure (based on the consequence modeling and the given hazard endpoints), do so only under "worst-case" conditions. For this type of scenario, the accident can only occur if the following conditions occur:

- full rupture of the line occurs;
- release does not ignite within minutes of the rupture;
- wind speed is low (less than three miles per hour); and
- atmosphere is calm

The sequence of events for a "worst-case" release is highly unlikely and only results in an off-site hazard (toxic or flammable vapor dispersion) for a limited number of potential releases. The other hazard that was found to be larger after the proposed additions and modifications was a boiling liquid expanding vapor explosion (BLEVE) of one of the new propane/butane bullets. These events, which do not require the occurrence of the previously described sequence of events, are also very rare. For all hazard types, the potentially affected areas surrounding the facility are industrial. Nonetheless, the potential hazard impacts associated with the proposed project are considered to be significant because there is the potential for some individuals to be exposed to the potential hazards that exceed the ERPG 2 levels. *The potential significant hazard impacts are associated with the project as proposed in the Draft EIR and include modifications to the Light Ends Recovery Units (LER1 and LER2), the Naphtha Hydrotreater (NHT), the Merox Unit (MEROX), the Butamer Unit (BUTAMER), the Butane Storage Sphere (C4 Storage) and the Propane Storage Sphere (C3 Storage) (see Table 4-10). These significant hazard impacts are unrelated to the modifications proposed to the project in this Final EIR.*

Upon completion of construction, anhydrous HF will be removed from the existing Alkylation Unit before modified HF is added to the new Alkylation Unit. Therefore, there will be no overlap in the operation of the existing and modified Alkylation Unit. As noted above, the revised hazard analysis indicated that an HF release would travel a maximum of 23,250 feet under the modified project, which is less than the estimated 25,240 feet associated with the existing Alkylation Unit, providing a beneficial impact on hazards

The proposed project is required to comply with applicable design codes and regulations, with National Fire Protection Association Standards, and with generally accepted industry practices.

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 Refinery has prepared an RMP for

the existing Refinery which may need to be revised to incorporate the changes associated with the proposed project. The Hazardous Materials Transportation Act is the federal legislation that regulates transportation of hazardous materials.

The Refinery will 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 adverse compliance 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 Refinery 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. The Refinery has emergency spill containment equipment and would implement the spill control measures in the event of an earthquake. Storage tanks have secondary containment capable of containing 110 percent of the contents of the storage tanks. Therefore, the rupture of a tank would be collected within the containment system and pumped to an appropriate storage tank.

Spills at the Refinery facilities would generally be collected within containment facilities. Large spills outside of containment areas at the Refinery 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 potential adverse water quality hazard impacts are considered to be less than significant.

Transportation Hazards

The transportation of hazardous materials can result in offsite releases through accidents or equipment failure. The proposed project will increase the amount of hazardous materials transported to the Refinery. The impacts due to transportation of hazardous materials are addressed in this section.

Following completion of the proposed project, the Refinery estimates that there will be an increase in the number of trucks need to deliver materials to the site by about 16 trucks per day. The contents of these trucks vary and include modified HF, the HF additive, KOH, alumina, aqueous ammonia, butane, and propane. Regulations for the transport of hazardous materials by public highway are described in 49 Code of Federal Regulations (CFR) 173 and 177.

The accident rates developed based on transportation in California were used to predict the accident rate associated with trucks transporting materials to the refinery. Assuming an average truck accident rate of 0.28 accidents per million miles traveled (Transportation Research Board, 1984), the estimated accident rate associated with the increase in the transport of hazardous materials is 0.082 or about one accident every 12 years.

Modified HF: Following completion of the proposed project, modified HF will be transported to the Refinery with the additive added and anhydrous HF will no longer be transported to the Refinery. This will not prevent an accidental release of the HF/additive mixture, but it will reduce the amount of HF that enters the atmosphere in the event of a release. The modified HF will be transported to the Refinery at a minimum of six percent by weight of additive. The addition of the additive to the acid displaces a portion of the HF utilized in the MHF process. There will be an increase in truck trips associated with delivery of modified HF to the Refinery due to the displacement of HF with the additive and the increased size of the Alkylation Unit. The proposed project will eliminate the existing 25 trucks per year used to transport concentrated HF and result in an increase in 44 trucks per year to transport modified HF. Therefore, there will be an increase of 19 (44 – 25) trucks per year to transport modified HF compared to the existing transport of HF, requiring 25 truck trips per year. [Note that an additional two truck trips per year will be associated with the transport of the additive only so that the total truck trips related to the acid catalyst is 46 trucks per year (44 + 2) with an increase in truck trips associated with the proposed project of 21 (46 - 25)]. See next paragraph for further details). The increase in truck traffic could increase the probability of an accident, however, the presence of the additive in the HF will reduce the potential for exposure in the event of an accident. The use of the additive displaces some of the HF, resulting in less HF being released during an accident. As noted above, the use of the acid additive reduces the volatility of the acid phase, with about an 18.5 percent reduction in the maximum hazard distance in the event of a truck accident, thus resulting in a reduction in hazard risks from an accidental release of the material during transport. Therefore, the proposed project is not expected to result in significant adverse impacts related to transportation hazards.

The proposed project is expected to result in an increase of about two trucks per year related to the transport of the HF additive (alone) back to the supplier for reuse. The additive presents no hazard because of its low vapor pressure and low toxicity. No significant transportation hazards are expected due to the transport of the HF additive.

Aqueous Ammonia: The Refinery will receive additional quantities of ammonia from a local ammonia supplier located in the greater Los Angeles area. Deliveries of aqueous ammonia would be made to the facility by tanker truck via public roads. The maximum capacity of a tanker truck is 150 barrels (approximately 6,300 gallons). Based on the onsite storage capacity and consumption of ammonia, delivery frequency from the supplier to the refinery would be one truck per month. Regulations for the transport of hazardous materials by public highway are described in 49 Code of Federal Regulations

(CFR) 173 and 177. Nineteen percent aqueous ammonia is considered a hazardous material under 49 CFR 172, therefore, Parts 173 and 177 apply to the proposed project. The hazards associated with the transport of regulated (CCR Title 19, Division 2, Chapter 4.5 or the CalARP requirements) hazardous materials, including aqueous ammonia, would include the potential exposure of numerous individuals in the event of an accident that would lead to a spill. Factors such as amount transported, wind speed, ambient temperatures, route traveled, and distance to sensitive receptors are considered when determining the consequence of a hazardous material spill.

In the unlikely event that the tanker truck would rupture and release the entire 150 barrels of aqueous ammonia, the ammonia solution would likely pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent toxic emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. Without this pooling effect on an impervious surface, the spilled ammonia would not evaporate into a toxic cloud and, thus, would not result in exposures that exceed ERPG-2 levels to residences or other sensitive receptors in the area of the spill. Due to the use of aqueous ammonia, the hazard impacts associated with a transportation accident are less than significant.

Propane/Butane: The proposed project will increase the transport of propane and butane transported to/from the Refinery. It is estimated that about 1-2 trucks per day of propane or butane could be transported as part of the proposed project. The magnitude of potential impacts associated with propane and butane transport would be unchanged from the existing setting as a result of the proposed project because the size, amount of propane or butane per truck, construction of the transport vessel, and the transport route will not be changed. Therefore, the proposed project is not expected to change the consequence in the event of a truck accident.

MITIGATION MEASURES

The proposed project could result in significant impacts associated with "worst-case" hazards in the Light Ends Recovery Units, the Naphtha Hydrotreater, the Merox Unit, the Butamer Unit, the Butane Storage Sphere, and the Propane Storage Sphere. Therefore, pursuant to CEQA Guidelines §15126.4, this EIR describes "feasible measures which could minimize significant adverse impacts . . ."

In addition to mitigation measures, there are a number of rules, regulations, and laws that the Refinery has complied or must comply with that serve to minimize the potential adverse impacts associated with hazards at the facility and will minimize the hazards associated with the new units. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a PSM Program (40 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. A PSM review will be required as part of the proposed project. 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. The Refinery's existing RMP will need to be reviewed and revised to include the new and modified refinery units.

Because of the potential safety risk, the Refinery has instituted control systems and rigorous safety measures to prevent and/or control a potentially harmful HF release which are described below. These systems will still be effective and will be maintained as part of the proposed project.

1. A detection system capable of identifying and notifying of an HF release:

    - 26 HF sensors surround the Alkylation Unit, which are set to alarm at six parts per million. This alarm system is connected electronically to the SCAQMD, the control room, and the Alkylation Unit change room to inform SCAQMD and the Refinery operations personnel of the exact location of an alarm.
    - Orange paint sensitive to HF painted on all flange connections in HF services. The paint turns to brown upon contact with HF.
    - A surveillance video camera which allows operations control to zoom into an

area of concern within the unit.
- This system will work with the modified Alkylation Unit because it detects HF releases and will continue to detect HF in the modified form.

2. A water deluge system which, in the event of an HF release is capable of covering the Alkylation Unit area with water to prevent the release of HF from the immediate vicinity of the unit.

   - A water curtain system capable of delivering 10,000 gallons per minute (gpm) of water.
   - Five overhead water canons capable of delivering 5,000 gpm of water.
   - A deluge system with pumps capable of delivering 5,000 gpm of water.
   - Stationary monitors/portable hired guns (water nozzle systems), each capable of delivering 1,000 gpm of water.

3. The HF Acid Isolation and Evacuation System, which reduces the amount of acid exposed to the environment and mitigates the effects in the event of a leak, by reducing the duration and potential for exposure. If a leak occurs from piping, flanges, piping connections, or from a process vessel, the system permits isolation of the leaking component, and if necessary, provides the ability to transfer acid from the leaking vessel to another part of the system. This system consists of:

   - Remotely operated tight shut-off valves and a dedicated pump to isolate leaking sections of piping systems and/or quickly transfer acid from a leaking vessel to a non-leaking vessel.
   - Twelve remotely operated valves located at key points in acid-containing piping systems to quickly isolate a leak and minimize the quantity of HF released, and to allow the quick transfer of acid contained in the acid storage drum or either of the two reactor/acid settler systems to the acid settler which is not leaking.
   - For the acid storage drum, a dedicated pump to quickly move the acid to one of the acid settlers.

   Other safety measures include the following:

   - The area at and around the acid section of the Alkylation Unit is designated as “no heavy lifting” zone.
   - Cages and barriers are placed around the Alkylation Unit to prevent external intrusions.
   - Detailed written safety procedures, annual HF safety training for all employees and contractors, and emergency response training are in place.
   - An Emergency Response Team is on call 24 hours a day at the refinery.
   - Limited and controlled access is required at the Alkylation Unit. All persons must sign in at the Alkylation Unit change room.

- The Refinery, including the Alkylation Unit, must comply with the OSHA Process Safety Management Program and the EPA Risk Management Program.
- Any changes at the Alkylation Unit are thoroughly reviewed through the refinery's Management of Change review process.
- HF transportation to the refinery is subject to strict traffic, procedural and delivery requirements.

The above measures are currently in place and will remain in place as part of the proposed project. These control measures are not direct mitigation, however, they would help minimize the potential exposures in the event of a release. The Alkylation Unit was designed and built approximately 20 years ago. It has been in continual operation with no offsite consequences related to HF process use, HF storage or transportation of HF to the Refinery.

No additional feasible mitigation measures have been identified, over and above the extensive safety regulations that currently apply to the Refinery facilities.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

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

C. HYDROLOGY AND WATER QUALITY

In the NOP/IS prepared for the proposed project, it was concluded that the proposed project would generate a slight increase in wastewater, but this could be accommodated under the existing Industrial Wastewater Discharge Permit. The only other topic under "Hydrology/Water Quality" where significant averse impacts could occur was water demand. No comment letters were received that reflected this conclusion. Therefore, the following analysis focuses only on potential water demand impacts.

SIGNIFICANCE CRITERIA

The project impacts will be considered significant if any of the following criteria apply:

> The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water, greater than or equal to five million gallons per day.

CONSTRUCTION IMPACTS

Water will be used during the construction phase primarily for control of fugitive dust emissions. Water used for dust control is not expected to exceed 4,000 gallons per day, which is below the significance criterion of five million gallons per day. Further, the water use will cease following the early construction phases of the proposed project. Therefore, no significant adverse impacts on water demand are expected during the construction phase.

OPERATIONAL IMPACTS

Potable water is supplied to the Refinery by the LADWP. The Refinery is located in the LADWP's Harbor Area Water Service District and all potable water in the area is purchased by the LADWP from the Metropolitan Water District. Potable water enters the Refinery via a ten-inch fire service line that stems off a 12-inch main line. The Refinery currently uses about 650 gallons per minute or about 936,000 gallons per day (about 341,640,000 gallons per year). This water is used in many of the refining processes at the facility including crude desalting, cooling towers, and steam generation.
The proposed project is expected to increase the water demand at the site by about 434 gallons per minute or about 625,000 gallons per day. The additional water will be used for boiler make-up water, cooling tower make-up, and steam. The increase in water demand is less than the significance criteria of five million gallons per day and is considered less than significant.

It should be noted that the increase in water demand would be equal to or greater than the amount of water needed to service a 500-dwelling unit project (CEQA Guidelines §15083.5(a)(1)(F)). However, the proposed project does not require an amendment to, or revision of the land use element of a general plan or a specific plan and does not require the adoption of a specific plan (CEQA Guidelines §15083.5(a)(2)(A-B)). Therefore, the requirements of CEQA Guidelines §15083.5 do not apply to the proposed project.

MITIGATION MEASURES

No significant impacts associated with hydrology/water quality, including water demand are expected from the proposed project so that no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant impacts associated with hydrology/water quality are expected from the proposed project.

D. NOISE

SIGNIFICANCE CRITERIA

Noise impacts will be considered significant if:

> Construction noise levels exceed the City of Los Angeles' noise ordinance (see Table 3-18); or if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (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.

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 4-11. These noise sources will operate primarily during daylight hours and will be a temporary noise source over the approximately one-year construction period.

The estimated noise level during equipment installation at the Refinery 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 Refinery. Using an estimated six dBA reduction for every doubling of distance, the noise levels at various locations surrounding the facility are estimated in Table 4-12. Most of the construction noise sources will be located near ground level, so the noise levels are expected to attenuate to a greater extent than analyzed herein as a result of existing structures. Noise attenuation due to existing structures has not been included in the analysis.

The construction activities at the Refinery will be normally carried out during daytime from Monday to Friday. Because of the nature of the construction activities, the types, number, operation time and loudness of construction equipment will vary throughout the construction period. 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. Noise levels at the closest residential area (see Table 4-12, location 6) are not expected to noticeably increase during construction activities.

Noise levels during construction activities at other locations are not expected to exceed one dBA.

The noise levels from the construction equipment at the Refinery are expected to be within the allowable noise levels established by the Los Angeles noise ordinance (see Table 3-17). The project is not expected to increase the noise levels at residential areas. The noise level at the closest residential area is expected to be 62 dBA (Location 6), which is within the normally acceptable noise range. The noise levels at the other noise monitoring locations are within industrial areas and no significant (audible) increase in noise levels is expected. Therefore, no significant noise impacts related to project construction are expected. Therefore, the proposed project noise impacts during the construction phase are expected to be less than significant.

TABLE 4-11

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	80
Jackhammers	81-98	85
Pumps	68-72	70
Generators	71-83	85
Compressors	75-87	85
Concrete Mixers	75-88	75
Concrete Pumps	81-85	85
Pile Driving (peaks)	95-107	95
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.

Workers exposed to noise sources in excess of 90 dBA for an eight-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 is expected.

TABLE 4-12

PROJECT CONSTRUCTION NOISE LEVELS

Location[(1)]	Baseline Noise Levels (decibels)[(2)]	Distance to Noise Sampling Location from Construction Activities (feet)	Construction Sound Level at Noise Sampling Location (decibels)	Total Sound Level at Noise Sampling Location (decibels)[(3)]	Increased Noise Levels at Noise Sampling Locations due to Construction Activities (decibels)
1	72.9	1,200	58	73.0	0.1
2	67.4	1,200	58	67.9	0.5
3	68.3	1,000	60	68.9	0.6
4	66.3	900	60	67.2	0.9
5	68.9	1,200	58	69.2	0.3
6	61.6	3,000	49	61.8	0.2

(1) Refers to the sampling locations identified in Figure 3-4.
(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)

OPERATIONAL IMPACTS

The proposed project will add equipment to the existing Refinery 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, cooling towers, and heaters. Refinery operations are continuous over a 24-hour period. The maximum noise level of new equipment added to the Refinery is expected to be limited to 85 dBA at three feet in order to comply with OSHA and City noise standards. These noise specifications will be enforced and included as part of the equipment purchase agreement for all new and modified equipment. Given the 85 dBA criteria for refinery equipment, it is expected that the maximum noise level from several pieces of equipment operating concurrently would be about 90 dBA. The estimated noise levels associated with the proposed project operation are summarized in Table 4-13. Assuming an operational "worst-case" noise level of 90 dBA, and a six dBA noise attenuation for every doubling distance, 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 Refinery (when compared to baseline conditions). Therefore, no significant noise impacts related to project operation are expected. The noise levels in the area are expected to be about the same as the current levels.

TABLE 4-13

PROJECT OPERATION NOISE LEVELS

Location[3]	Baseline Noise Levels (decibels[2]	Distance from New Units to Noise Sampling Locations (feet)	Operation Sound Level at Noise Sampling Locations (decibels)	Total Sound Level at Noise Sampling Location (decibels)[3]	Increased Noise Levels due to Operation at Noise Sampling Locations (decibels)
1	72.9	1,200	39	72.9	<0.1
2	67.4	1,200	39	67.4	<0.1
3	68.3	2,400	33	68.3	<0.1
4	66.3	1,200	39	66.3	<0.1
5	68.9	1,000	40	68.9	<0.1
6	61.6	3,000	31	61.6	<0.1

(1) Refers to the sampling locations identified in Figure 3-4.
(2) Includes all predicted noise sources. Noise levels are from Table 3-13.
(3) The total sound level was calculated using the following formula: $T_{sl}=10\log_{10}(10^{Bsl/10} + 10^{Osl/10})$ where T_{sl} = the total sound level (dBA); B_{sl} = baseline sound level (dBA); and O_{sl} = operational construction sound level (dBA)

In general, the noise level in the Wilmington area near the Refinery is compatible with the industrial nature of the immediately surrounding area with noise levels of about or less than 70 decibels.

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 Refinery. A new flare will be included as part of the proposed project as a safety measure in the event of an upset condition. Flaring events are generally rare and the proposed project is not expected to increase the occurrence of non-routine events or increase the need for purging/venting/flaring.

The overall noise impact on residential areas is expected to be minimal since the nearest residential areas are located approximately one-half mile west of the major new Refinery noise-generating equipment, just northwest of the Anaheim Boulevard/Alameda Street intersection. A school is also located within this residential area. The estimated noise level at the closest residential area is 61.6 dBA (Location 6), of which the Refinery is a

minor contributor. The Refinery operations are not expected to change or increase the noise level at the closest residential areas. 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 be within general noise ordinance guidelines.

Traffic Noise

The modifications to the Refinery will include about 16 additional trucks per day to/from the Refinery. The truck routes to/from the Refinery generally are from the Long Beach Interstate 710 Freeway to/from the Refinery via Anaheim Street and from the San Diego Interstate 405 Freeway along Alameda Street. No sensitive receptors or residential areas are located along the truck routes so that no significant noise impacts are expected. The truck traffic is expected to be distributed throughout the day so that the proposed project is expected to increase the truck traffic at the Refinery by about one truck per hour. This level of traffic is small so that the noise level in the area surrounding the Refinery would not noticeably change or be significant.

MITIGATION MEASURES

No significant impacts associated with noise are expected from the proposed project so no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project is expected to comply with the City of Los Angeles noise ordinance, so no significant impacts on noise are expected.

E. 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 increases by 0.02 (two percent) or more when the LOS is already D, 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

The following evaluates the construction traffic impacts associated with the Alkylation Improvement Project. Construction of the proposed project is expected to take about one year. The proposed project is expected to require a maximum of about 350 workers during the construction phase and about 727 workers during the Refinery turnaround (about September 2005) when the modified equipment is tied into and incorporated into the Refinery operation.

The LOS analysis assumes 727 construction workers will be commuting to the Refinery, during peak construction activities. All construction workers will be directed to the Refinery or adjacent lots for parking. It is expected that a portion of the construction workers will be bused into the Refinery from nearby areas. The LOS analysis assumes that all workers will be driving alone to the Refinery to provide a worst-case estimate of project impacts.

It is estimated that a maximum of 15 construction trucks will travel to the site during the peak construction day to transport the construction equipment, process equipment, and construction materials to the site. It is anticipated that project construction will include eight-hour shifts per day for five days per week, Monday through Friday, with shifts running from 7:00 a.m. to 5:30 p.m. The LOS for the construction traffic impacts did not include the a.m. peak hour because construction workers will arrive at the work-site prior to the a.m. peak hour (see Table 4-14). The a.m. peak hour runs from about 7:00 to 9:00 a.m. Construction workers are expected to arrive at the site by 6:30 a.m. Therefore, the construction traffic associated with the Refinery modifications will avoid the peak hour traffic conditions, minimizing the potential for traffic impacts during the morning. Construction workers are expected to leave the site during the evening peak hour.

Table 4-14 shows the predicted proposed project LOS analysis and volume to capacity ratios due to peak construction activities (see Appendix D for the complete traffic analysis). This table indicates that one intersection shows a change in the LOS due to the

construction phase of the proposed project. The 9th Street/"I" Street/Anaheim Street intersections will change from LOS A to LOS B. The traffic change at this intersection is not considered to be significant since free-flowing traffic would continue (i.e., LOS B) and no significance criteria are exceeded. The LOS at the other local intersections is expected to remain unchanged. Therefore, the proposed project impacts on traffic during the construction phase would be considered less than significant.

TABLE 4-14

ULTRAMAR INC. – VALERO WILMINGTON REFINERY
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
Alameda St./I-405	A	0.426	A	0.436	n/a	n/a	A	0.447
Alameda St./223rd Ramp	A	0.305	A	0.341	n/a	n/a	A	0.341
ICTF entry/I-405 Ramps/ Wardlow/223rd St.	A	0.519	A	0.574	n/a	n/a	A	0.597
Alameda St./Sepulveda Blvd	A	0.416	A	0.365	n/a	n/a	A	0.411
Alameda St./Anaheim St.	B	0.616	B	0.611	n/a	n/a	B	0.611
Wilmington Ave/223rd St.	C	0.718	D	0.826	n/a	n/a	D	0.826
Wilmington Ave/Sepulveda	A	0.588	B	0.622	n/a	n/a	B	0.622
Santa Fe/PCH	B	0.636	B	0.671	n/a	n/a	B	0.682
Henry Ford/Anaheim St.	A	0.476	A	0.539	n/a	n/a	A	0.582
Santa Fe/Anaheim St.	A	0.454	A	0.462	n/a	n/a	A	0.519
9th St/"I" St/Anaheim St.	A	0.597	A	0.539	n/a	n/a	B	0.617

Notes: (1) = based on 2003 traffic data, adjacent by 1% per year growth rate to 2005, the beginning of the construction phase.
V/C = Volume to capacity ratio (capacity utilization ratio)
LOS = Level of Service

The proposed modifications to the project since the Draft EIR would not change the traffic analysis. Some of the larger reactors are pre-made and will be delivered to the port areas. The reactors will be transported to the Ultramar Inc. – Valero Wilmington Refinery via a large transport vehicle. Delivery of the reactors will only require one delivery trip using a heavy-duty delivery truck and will not involve any major highways as the Refinery is located across the street from marine terminals. Any transport of heavy

construction equipment or oversized Refinery 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 during the major portion of project construction will be in areas currently used for contractor parking and sufficient parking is expected to be available. Parking during the Refinery turnaround period is expected to include parking at the Refinery as well as in nearby parking lots with workers bussed to the Refinery. The Refinery is currently discussing possible locations for parking with the Port of Long Beach. The Refinery turnaround period is expected to last one to two months only. No significant adverse impacts on parking are expected as workers will park at or near the Refinery.

The construction phase is not expected to result in an increase or decrease in marine vessel or rail traffic.

Based on the above, the proposed project is not expected to result in significant adverse transportation/traffic impacts during the construction phase.

OPERATIONAL IMPACTS

The proposed project will not increase the permanent number of workers at the Refinery. The proposed project will result in an increase in truck traffic of about 4,700 additional truck trips per year, or about 16 truck trips per day traveling to/from the Refinery. The content of these trucks will vary and include modified HF, the HF additive, potassium hydroxide, alumina, aqueous ammonia, butane, and propane. Table 4-15 shows the projected LOS analysis and volume to capacity ratios due to the increased traffic associated with the operational phase. These ratios were calculated assuming an ambient traffic growth of one percent per year to 2003, plus project operational phase related traffic.

Table 4-15 indicates that the proposed project will not result in any changes in LOS at the local intersections during the morning peak hours or evening peak hour. The LOS at all local intersections are expected to remain unchanged. Therefore, the proposed project impacts on traffic during the operational phase would be considered less than significant.

The proposed project is not expected to require importing additional blending products or other hydrocarbon products that would require transport by rail or marine vessel. Therefore, the proposed project will not result in an increase the rail traffic or marine traffic. As indicated by the traffic analysis, the proposed project impacts on transportation/traffic during project operation would be considered less than significant.

TABLE 4-15

ULTRAMAR INC. – VALERO WILMINGTON REFINERY
OPERATIONAL 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
Alameda St./I-405	A	0.426	A	0.436	A	0.426	A	0.436
Alameda St./223rd Ramp	A	0.305	A	0.341	A	0.305	A	0.341
ICTF entry/I-405 Ramps/ Wardlow/223rd St.	A	0.519	A	0.574	A	0.519	A	0.574
Alameda St./Sepulveda	A	0.416	A	0.365	A	0.416	A	0.366
Alameda St./Anaheim St.	B	0.616	B	0.611	B	0.616	B	0.611
Wilmington Ave/223rd St.	C	0.718	D	0.826	C	0.718	D	0.826
Wilmington Ave/Sepulveda	A	0.588	B	0.622	A	0.588	B	0.622
Santa Fe/PCH	B	0.636	B	0.671	B	0.636	B	0.671
Henry Ford/Anaheim St.	A	0.476	A	0.539	A	0.476	A	0.540
Santa Fe/Anaheim St.	A	0.454	A	0.462	A	0.455	A	0.463
9th St/"I" St/Anaheim St.	A	0.597	A	0.539	A	0.598	A	0.540

Notes: (1) = based on projected year 2003 traffic data, which assumed one percent growth per year.
V/C = Volume to capacity ratio (capacity utilization ratio)
LOS = Level of Service

MITIGATION MEASURES

No significant adverse impacts are identified for transportation/traffic during construction or operation for the proposed project so that no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

No significant adverse transportation/traffic impacts are expected to be generated by the proposed project.

F. OTHER CEQA TOPICS

GROWTH-INDUCING IMPACTS OF THE PROPOSED PROJECT

CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing,

either directly or indirectly, in the surrounding environment. Included in this are projects, which would remove obstacles to population growth" (CEQA Guidelines §15126.2(d)).

The proposed project is not expected to foster population growth in the area, nor will additional housing or infrastructure be required. The project involves the modification of existing industrial facilities. No new services will be required; therefore, no infrastructure development or improvement will be required, and no population growth will be encouraged as a result of the project. It is expected that construction workers necessary to build new, or modify existing equipment can be drawn from the existing workforce pool in southern California, Further, operation of the proposed project is not expected to require any additional refinery workers.

The proposed project will allow the Refinery to produce more alkylate and consequently additional quantities of gasoline. The increase in gasoline production is not expected to result in growth-inducing impacts but rather to keep up with existing demand. The phase out of MTBE caused an estimated reduction in gasoline supplies by five to 10 percent (CEC, 2002). The import of crude oil as well as petroleum blendstocks and products has increase substantially since 1996 and the State has become a net importer of all categories of petroleum products (CEC, 2002). Producing additional quantities of alkylate and gasoline is expected to minimize the import of these products and not result in growth-inducing impacts. No growth-inducing impacts are expected from the proposed project.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES AND ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

CEQA requires an EIR to discuss significant environmental effects (CEQA Guidelines §15126.2(b)) and irreversible environmental changes (CEQA Guidelines §15126.2(c)), which would result from a proposed project, should it be implemented. Significant environmental impacts are impacts that would exceed established threshold levels (e.g., air emissions would exceed SCAQMD established threshold levels). Irreversible changes include a large commitment of nonrenewable resources, committing future generations to specific uses of the environment (e.g., converting open spaces into urban development), or enduring environmental damage due to an accident.

It was determined that implementation of the proposed project would result in potentially significant impacts on air quality (see Chapter 4, Section A). However, implementation of CARB Phase 3 reformulated fuel requirements has resulted in large emission benefits (CARB, 2003). Therefore, the clean fuel projects have had and are expected to continue to have long-term environmental benefits on air quality.

The proposed project could result in significant impacts related to the "worst-case" hazards associated with modifications to the Refinery, including the Light Ends Recovery Units, the Naphtha Hydrotreater, the Merox Unit, the Butamer Unit, the Butane Storage Sphere, and the Propane Storage Sphere. There are a number of rules and regulations that the Refinery must comply with that serve to minimize the potential impacts

associated with hazards at the facility. The proposed project will phase out the use of HF and replaces it with modified HF, which reduces hazard impacts from the transport, storage and use of HF. Therefore, the proposed project is expected to provide overall benefits related to hazard impacts.

The proposed project involves modifications to an existing Refinery, located within an industrial area, which has been operating since the 1970's. Therefore, there is no major commitment of nonrenewable resources or changes that would commit future generations to specific uses of the environment.

ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

The environment effects of the Alkylation Improvement Project are identified and discussed in detail in the preceding portions of Chapter 4 of this EIR and in the Initial Study (see Appendix A) per the requirements of the CEQA Guidelines (§15128). The following topics of analysis in this EIR were found to have no potentially significant adverse effects:

- Hydrology/Water Quality
- Noise
- Transportation/Traffic

The following topics of analysis were found to have no potentially significant adverse effects in the Initial Study (see Appendix A):

- Aesthetics
- Agriculture Resources
- Biological Resources
- Cultural Resources
- Geology/Soils
- Land Use/Planning
- Mineral Resources
- Population/Housing
- Public Services
- Recreation
- Utilities/Services Systems