CHAPTER 4
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER 4.0

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

INTRODUCTION

This chapter assesses the potential environmental impacts of construction and operation of the Paramount Refinery proposed project discussed in Chapter 2.

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

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

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

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

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

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

Potentially significant and mitigation measures are not available to reduce to insignificance – Adverse impacts may occur that would be significant even after mitigation measures have been applied to lessen their severity. The Initial Study found that the following impacts were potentially sigificant: Air Quality; Hazards and Hazardous Materials; and Transportation/Traffic (see Appendix A). The impacts to these three resources areas are evaluated in this chapter.

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

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

CONSTRUCTION IMPACTS

Construction activities associated with the proposed project would result in emissions of CO, VOCs, NOx, SOx, and PM10. Significance determinations are based on the maximum daily emissions during the construction period, which provides a worst-case analysis of the construction emissions. 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

Daily construction emissions were calculated for the peak construction day activities based on activities at the Refinery. Peak day emissions are the sum of the highest daily emissions from employee vehicles, fugitive dust sources, construction equipment, and transport activities during the construction period. The peak construction emissions were calculated by peak day in each of the several phases of project construction (see Appendix B). The peak day is based on the day in which the highest emissions occur for each pollutant. The peak day varies by pollutant, although the peak day for most pollutants (CO, VOC, NOx and PM10 emissions is expected to occur during month six of the construction period (piping installation within the modified units). The peak day was picked for each pollutant. The criteria pollutant emissions for that peak day were then compared to their respective significance thresholds. Overall construction emissions are summarized in Table 4-2. Detailed construction emissions calculations are provided in Appendix B.

TABLE 4-2

SUMMARY OF PEAK CONSTRUCTION ACTIVITIES
(pounds per day)

Construction Activities	CO	VOC	NOx	SOx	PM10
Construction Equipment	263.8	15.5~~24.14~~	60.1~~83.54~~	6.0~~8.34~~	3.9~~5.37~~
Construction Vehicles Emissions	43.9	16.8~~70~~	15.7~~60~~	<0.1~~01~~	0.2~~17~~
Fugitive Dust from Roadways	0	0	0	0	11.8
Fugitive Construction Emissions	0	0	0	0	102.3
Total Construction Emissions	**307.7**	**32.3~~40.8~~**	**75.8~~99.1~~**	**6.0~~8.4~~**	**118.2~~9.4~~**
SCAQMD Thresholds	**550**	**75**	**100**	**150**	**150**
Significant	**NO**	**NO**	**NO**	**NO**	**NO**

Construction Equipment

On-site construction equipment will be a source of combustion emissions. Construction equipment may include: backhoes, compressors, forklifts, generators, manlifts, welding machines, cranes, front end loaders, and dump trucks. Most of the equipment is assumed to be operational for five to nine hours per day, with most equipment assumed to operate eight hours per day, which likely over estimates actual operations and the related emissions. Emission factors for construction equipment were taken from the CEQA Air Quality Handbook (SCAQMD, 1993). Estimated emissions from construction equipment used for construction activities are provided in Table 4-2.

Construction Vehicle Emissions

Equipment Delivery/On-Site Travel: Light-duty trucks will be used for delivering supplies to the construction sites 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 day (SCAG, 2000). Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix B. Estimated emissions for light-duty trucks are provided in Table 4-2.

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 using the projected peak truck traffic. Emissions are based on the estimated number of trips per day and the round trip travel distances. Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix B.

Construction Workers Commuting: Construction emissions also include emissions from construction worker vehicles traveling to and from the work site. Emission calculations were estimated assuming the maximum projected workers traveling to/from the site each weekday. Each 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 were calculated using the emission factors developed by SCAQMD using EMFAC2002. Emissions from construction vehicle emissions are presented in Table 4-2.

Fugitive Dust Associated with Site Construction Activities

Fugitive dust sources include grading, excavation, demolition and clearing of the site to construct necessary foundations. During construction activities, water used as a dust suppressant will be applied, or other best available control measures will be implemented, in the construction area during grading, excavation, and earth-moving activities to control or reduce fugitive dust emissions. Application of water reduces emissions by a factor of approximately 34 to 68 percent (SCAQMD, 1993). It is assumed herein that water application one time per day reduces emissions by 34 percent and watering two times per day reduces emissions by 50 percent (SCAQMD, 1993). Fugitive dust suppression, often using water, is a standard operating practice and is one method of complying with SCAQMD Rule 403. The fugitive dust emissions are provided in Table 4-2 and 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 dust emissions during the construction period. The emissions estimates for travel on paved roads assumed that construction worker vehicles and light duty trucks will travel on paved roads. The fugitive emissions for trucks assumes travel on both paved and unpaved roads. Water trucks are assumed to travel on unpaved roads. Emissions of dust caused by travel on paved and unpaved roads were calculated using the U.S. EPA's, AP-42 emission factors for travel on paved roads. The estimated PM10 emissions from trucks and passenger vehicles for fugitive dust are provided in Table 4-2 and detailed emission calculations are provided in Appendix B.

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. There is currently no data that indicates soil contamination exists near the proposed construction sites. Therefore, emission estimates for VOC are 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

The peak construction emissions for the proposed project are summarized in Table 4-2, together with the SCAQMD's daily construction threshold levels. The significance threshold for CO, VOC, NOx, SOx and PM10 are not expected to be exceeded during the construction phase, and the air quality impacts of CO, VOC, NOx, SOx and PM10 are less than significant. A large portion of the total construction emissions are associated with on-site construction equipment.

OPERATIONAL IMPACTS

Modifications associated with the Paramount Clean Fuels Proposed Project will add equipment to the Refinery that will generate additional emissions. The proposed project will also generate additional traffic and emissions related to mobile sources due to the transport of materials. Emissions are expected from the following activities.

Fugitive emissions from process equipment
Truck Loading Emissions
Vehicle and Truck Emissions
Railcar Emissions

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

Refinery Emissions

Direct operational emission sources are stationary sources located at the Refinery that are generally subject to regulation. The emissions associated with the proposed project modifications are shown in Table 4-3 and include fugitive emissions from process equipment, and truck loading emissions. Fugitive emission sources are associated with process equipment components such as valves, flanges, vents, pumps, drains, and compressors. Fugitive emissions at the Refinery will be

associated with the Bensat/Isomerization Unit, the Naphtha Splitter, the Naphtha Stripper, the Gasoline Blender, the LSR Chiller, Ethanol Unloading facilities, and the PSA Unit. The emissions calculations herein are based on emission factors that are outlined in a Memorandum from Jay Chen of the SCAQMD dated April 2, 1999. That Memorandum provides the appropriate emission factors to use for fugitive sources that include best available control technology (BACT) and lowest achievable emission rate (LAER). As required by SCAQMD regulations, modifications to existing equipment and new equipment are required to comply with BACT requirements in SCAQMD Rules 1303 or 2005.

TABLE 4-3
PARAMOUNT CLEAN FUELS PROPOSED PROJECT
PEAK OPERATIONAL EMISSIONS(1)
(pound per day)

SOURCE	CO	VOC	NOx	SOx	PM10
Fugitive Emissions (e.g., pumps)	0.0	44.8	0.0	0.0	0.0
Truck Loading Emissions	0.0	15.8	0.0	0.0	0.0
Truck/Vehicle Emissions	103.447.9	5.66.2	47.252.1	0.4	0.91.7
Fugitive Dust from Trucks/Vehicles	0.0	0.0	0.0	0.0	68.4113.5
Railcar Emissions	0.53	0.21	4.72.5	0.32	0.1
Project Emission Summary	**103.948.2**	**66.4 47.2**	**51.94.6**	**0.76**	**69.4115.3**
CEQA Thresholds	550	55	55	150	150
Significant?	NO	YESNO	NO	NO	NO

(1) See Appendix B for detailed emission calculations.

Additional documentation of the procedures used to calculate the emissions estimates is provided in Appendix B. All new process components will 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 new project components is discussed below.

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

Process Valves: Leakless valves will be installed on new 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; and
- Valves not commercially available (e.g., non-standard size, material, or special connection requirements).

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

Process Drains: New process drain lines will be provided with two normally closed block valves in series, or a single block valve in series with a cap or plug. New drain hubs (funnels) will be equipped with covers, P-Traps and/or seal pots along with an SCAQMD-approved inspection and maintenance program.

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

Pressure Relief Devices (PRDs): PRDs will be routed to the existing 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.

The proposed project would result in additional gasoline and diesel product loaded into trucks at the loading rack. The emission calculations for loading emissions were calculated using the SCAQMD default emission calculation from the Annual Emission Fee forms. It should be noted that, while an increase in loading emissions may occur over current operations, the Refinery is currently permitted to load the estimated quantity of gasoline and diesel so that no permit modifications to the existing loading racks are required.

Emission offsets are typically required for new and modified emission sources by SCAQMD Regulation XIII and/or Rule 2005. SCAQMD rules require that offset emission reductions occur within the Basin and specifically from the SCAQMD Zone 1 (coastal). Therefore, the overall emissions within the Basin are not expected to increase. Per the requirements of SCAQMD Rule

1304(c)(4), however, offsets are not required for projects undertaken to comply with state and federal regulations. The reformulated fuels projects are required to comply with new state reformulated fuels requirements. Therefore, emission offsets are not required for the reformulated fuels projects identified in this EIR. The emissions within the Paramount area may increase due to the operation of the proposed project.

In addition, the proposed project will modify the materials stored in some of the storage tanks at the Refinery. In general, additional gasoline and gasoline blending components (including ethanol) will be stored in some of the storage tanks. The emission changes associated with these modifications were calculated using the U.S. EPA TANKS model and were determined to result in an emission decrease of about 15.2 pounds per day (see Appendix B). The proposed project is expected to result in a decrease in emissions associated with storage tanks due to a decrease in the vapor pressure of the material stored in the tanks. However, no credit has been taken for these emission reductions in Table 4-3.

Indirect Emissions

Indirect emissions at the Refinery are generally related to emissions from mobile sources that transport petroleum products. The proposed project is expected to require about 14 new employees traveling to/from the Refinery on a daily basis. The proposed project also is expected to result in an increase in the number of trucks used to transport gasoline, diesel, ethanol, alkylate, and pentane to/from the Refinery by about 55 trucks per day. About 52 trucks per day are expected to transport gasoline and diesel. One truck per day is expected to transport pentane from the Refinery. One truck per day is expected to transport alkylate to the Refinery. Finally, the proposed project will require ethanol to produce the reformulated fuel. The ethanol is expected to be transported from the mid-western portions of the United States into the Los Angeles area via railcar to a regional, third party, unloading facility and then transported to the Paramount Refinery via truck. One truck per day is expected to transport ethanol to the Refinery. Therefore, the proposed project will result in an increase in emissions associated with the new employees and trucks and these emission increases associated are included in Table 4-3. The estimated emission increases also assumes that one railcar per day will be added to an existing train. The railcar emissions are based on the increased load on the engine due to the increased weight of one railcar (see Table 4-3).

Operational Emission Summary

Operation emissions are summarized in Table 4-3, together with the SCAQMD's daily operational threshold levels. The operation of the proposed project will not exceed the significance thresholds for CO, NOx, SOx and PM10. Therefore, the air quality impacts associated with operation emissions of CO, NOx, SOx and PM10 from the proposed project are less than significant for these criteria pollutants. The operation of the proposed project will exceed the significance threshold for VOC emissions; therefore, air quality impacts associated with VOC emissions are significant.

IMPACTS TO AMBIENT AIR QUALITY

Air dispersion modeling is not required for the proposed project since it will not result in an increase in NOx, PM10 or CO from new combustion sources at the Refinery. The incremental

increase in combustion emissions is within the scope of existing permit conditions. No modifications are required to the existing permits and the emissions from these existing sources are considered as part of the baseline (i.e., existing air quality setting). Therefore, no significant impacts are expected on air quality or attainment of ambient air quality standards.

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.

Increases in traffic from a project might lead to impacts of CO emissions on sensitive receptors if the traffic increase worsens congestion on roadways or at intersections. An analysis of these impacts is required if:

- The project is anticipated to reduce the level of service (LOS) on an intersection rated C or worse by one full level; or

- The project is anticipated to increase the volume-to-capacity ratio of an intersection rated D or worse by two percent.

As evaluated in the Transportation/Traffic impact analysis (see Chapter 4, Section C), the proposed project is not expected to result in a significant change in LOS or increase the volume-to-capacity by two percent or more at any of the local intersections. Therefore, the potential impacts from the proposed project is not anticipated to lead to adverse CO impacts on the local population.

CONSISTENCY WITH THE AIR QUALITY MANAGEMENT PLAN

Existing emissions from industrial facilities, such as the Paramount Refinery, are included in the SCAQMD Air Quality Management Plan (AQMP). The SCAQMD identifies emission reductions from existing sources and air pollution control measures that are necessary in order to comply with the state and federal ambient air quality standards (SCAQMD, 1993). New emission sources associated with the proposed project are required to comply with the SCAQMD's New Source Review regulations that include the use of BACT and the requirement that all new emissions be offset. Pursuant to SCAQMD Rule 1304(c)(4), offsets are not required for projects required to comply with state and federal regulations if these projects are being undertaken to comply with air pollution control rules, regulations, orders, e.g., the reformulated fuels projects. The control strategies in the AQMP are based on projections from the local general plans from various cities in Southern California (including the City of Paramount). Projects that are consistent with the local General Plans are consistent with the air quality related regional plans. In addition, the 1997 AQMP included reformulated gasoline as a control measure, which has already been implemented by the CARB. Therefore, the proposed project is considered to be consistent with the air quality related regional plans since it is consistent with the City of Paramount's General Plan and because the 1997 AQMP itself relied on the use of clean fuels in the region as a control measure which this project provides.

TOXIC AIR CONTAMINANTS

A health risk assessment (HRA) was performed to determine if emissions of toxic air contaminants generated by the proposed project would exceed the SCAQMD thresholds of significance for cancer risk and is included as Volume II to this EIR. The results of the HRA will be used to evaluate the proposed project. A detailed HRA was completed for the Paramount Refinery. See Table 4-1 for the SCAQMD significance thresholds for toxic air contaminants.

Refinery HRA

Hazard Identification

The list of potentially-emitted substances considered in the preparation of the HRA for the Paramount Refinery is contained in Appendix A-I of the CARB AB2588 requirements. The emissions of any pollutants contained on the AB2588 list were included in the HRA; however, health effects data are not available for all compounds. The most recent health effects data available from the OEHHA were used in the HRA. 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, REL and acceptable oral doses (for multi-pathway pollutants) were used. The non-carcinogenic hazard indices were computed for chronic and acute exposures with their respective toxicological endpoints shown.

Emission Estimates and Sources

The estimated mass emissions of toxic air contaminants were based on the baseline emissions speciated by product stream 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 was derived from speciation data contained in the most recent Refinery HRA (May 2002).

HRA Methodology

The proposed project is expected to result in decreases in the toxic air contaminants benzene, ethyl benzene, naphthalene, toluene, and xylenes. Toxic emission increases are expected for hexane and hydrogen sulfide. The impacts associated with the proposed project were determined by preparing the HRA for the Refinery baseline operations, as described in Chapter 3, preparing an HRA for the operation of the Refinery as it is predicted to operate following installation of the proposed project (referred to as the post project analysis), and comparing the two. The proposed project impacts are the difference between the baseline HRA and the post project HRA. The total toxic air contaminants

associated with the proposed project are listed in Volume II of the EIR. A summary of the TAC emission changes is presented in Table 4-4.

TABLE 4-4

PROJECT TAC EMISSIONS SUMMARY

TAC	Maximum Hourly Emissions (lbs/hr)	Annual Average Emissions (lbs/yr)
Benzene	-0.0773 ~~-7.73E-02~~	-675~~-6.75E+02~~
Ethyl Benzene	-0.000180 ~~-1.80E-04~~	-5.54 ~~-5.54E+00~~
Hexane	0.0269~~2.69E-02~~	238~~2.38E+02~~
Hydrogen Sulfide	0.00489~~4.89E-03~~	42.8~~4.28E+01~~
Naphthalene	-0.000005 ~~-5.00E-06~~	-0.07 ~~-7.00E-02~~
Perchloroethylene (PCE)	0.0063	49.0
Toluene	-0.0098 ~~-9.80E-03~~	-85.0 ~~-8.50E+01~~
Xylene	-0.00273 ~~-2.73E-03~~	-24.3 ~~-2.43E+01~~

* Minus sign (-) indicates that there is an emission decrease.

Proposed Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Worker (MEIW): The cancer risk estimates are shown in Table 4-5. Based on the air quality modeling and related assumptions, the cancer risk to the MEIW associated with the Proposed Clean Fuels Project at the Refinery was calculated to be reduced by 6.76×10^{-7} or about –0.68 per a million, which is below the significance criteria of 10 per million. 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). Therefore, the proposed project would have a beneficial impact on cancer risk at the MEIW since the cancer risk associated with the Refinery operations at the MEIW would be reduced over baseline conditions.

Maximum Exposed Individual Resident (MEIR): The predicted maximum cancer risk at the MEIR area due to exposure to proposed project emissions was calculated to be reduced by 5.11×10^{-6} or five per million (see Table 4-5) which is below the significance criteria of 10 per million. The reduction is due to the reduced benzene content in products and process streams, and the overall reduction of benzene at the facility by the addition of the benzene saturation and isomerization unit, which converts benzene to less toxic components. Therefore, the proposed project would have a beneficial impact on cancer risk at the MEIR since the cancer risk associated with the Refinery operations at the MEIR would be reduced over baseline conditions.

TABLE 4-5

SUMMARY OF PROPOSED PROJECT CANCER RISK
Paramount Refinery

EXPOSURE PATHWAY	Proposed Project	
	Maximum Exposed Individual Resident	Maximum Exposed Individual Worker
Inhalation	-6.10E-06	-6.76E-07
Dermal	9.60E-08	0.00E+00
Soil Ingestion	1.64E-07	0.00E+00
Water Ingestion	0.00E+00	0.00E+00
Ingestion of Home Grown Produce	7.30E-07	0.00E+00
Ingestion of Animal Products	0.00E+00	0.00E+00
Ingestion of Mother's Milk	0.00E+00	0.00E+00
Total Cancer Risk	**-5.11E-06**	**-6.76E-07**

Sensitive Receptors: The maximum cancer risk from the proposed project alone to a sensitive receptor was estimated to be a reduction of about 1.30×10^{-6} or approximately one per million at the Baxter Elementary School, assuming a 70-year continuous exposure period. This represents about a 15 percent reduction in cancer risk at the school over baseline conditions. The cancer risk estimate at the closest sensitive receptor is below the significance criteria of 10 per million.

Cancer Burden: The excess cancer burden for each centroid was calculated by multiplying the predicted 70-year lifetime risk at each centroid with the population within the census tract. The total excess cancer burden within the area of influence for the proposed project is reduced by 0.0240 and 0.0009 for the residential and occupational populations, respectively (see Volume II for further details), which is below the significance criteria of 1.0.

Proposed Project HRA Results - Non-Carcinogenic Health Impacts

Acute Hazard Index: The acute hazard index for the proposed project is estimated to be 0.017, which is below the significance criteria of 1.0. The acute hazard index was determined by comparing the baseline and proposed project acute hazard indices. The proposed project increases the acute hazard index due to increases in the TAC emissions with associated acute health effects. The acute health effects are based on maximum hourly emissions of toxic air contaminants that have acute target endpoints.

Chronic Hazard Index: The highest chronic hazard index for the proposed project is estimated to be 0.0010, which is below the significance criteria of 1.0. The chronic hazard index was determined by comparing the baseline and post project chronic hazard indices. The proposed project increases the chronic hazard index due to increases in TAC emissions associated with chronic health effects.

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

Health Risks from Diesel Exhaust Particulate Matter: The proposed project will lead to increased emissions of diesel exhaust particulate matter from onsite construction equipment and diesel-fueled truck exhaust and from off-site diesel truck exhaust during construction. In 1998, the CARB listed particulate matter in the exhaust from diesel-fueled engines (diesel particulate) as a toxic air contaminant and concluded that it is probably carcinogenic to humans. An Advisory Committee was formed to advise the CARB staff in its preparation of an assessment of the need to further control toxic air pollutants from diesel-fueled engines. The Risk Management Subcommittee was formed to identify the: (1) operating parameters; (2) emission factors; and (3) modeling methodologies recommended for estimating human health risks from diesel-fueled engines. The SCAQMD is waiting for this guidance before initiating a quantitative risk analysis for diesel particulate emissions.

Significant impacts associated with exposure to diesel particulate emissions are not expected during construction activities. As listed in Table 4-2 above, the highest construction related on-site and off-site diesel exhaust particulate matter emissions are estimated to be 3.9 pounds per day (emissions from construction equipment) and 0.2 pound per day (emissions from trucks), respectively. However, these emissions are temporary and are expected to cease within about one year. Therefore, long-term exposure to construction-related diesel exhaust particulate matter that could result in significant health affects to sensitive populations is not expected.

Significant impacts associated with exposure to diesel particulate emissions are not expected associated with the ~~or~~ operation of the proposed project. Total truck exhaust PM10 emissions from the 55 trucks are estimated to be only 0.9 pound per day (see Table 4-3), which would occur over a total distance of an estimated 1,650 miles (55 trucks traveling 30 miles per day). The maximum emissions at any single location will occur in the vicinity of the Refinery, because all of the trucks will arrive/leave that location. The emission rate for one truck at a speed of 25 mph is about 0.6 grams per mile. Therefore, the total emissions from 55 trucks per day (110 truck trips) travelling over the one-quarter mile into and out of the Refinery would be about 16.5 grams per day or about 0.04 pound per day and not significant.

No significant increase in emissions associated with railcars or railcar idling are expected because the proposed project will only result in an increase of one railcar being added to an existing train and delivering ethanol to a third party facility.

The use of ULSD is expected to result in PM10 emissions reductions from on-road vehicles of about 12 tons per day in 2010 (CARB, 2003), further reducing the health risk associated with exposure to diesel exhaust particulate matter.

ODORS

The proposed project will remove additional sulfur from refinery streams in the form of hydrogen sulfide. Hydrogen sulfide has a low odor threshold and smells like rotten eggs. Hydrogen sulfide is handled in the Refinery sulfur recovery units where it is converted into elemental (solid) sulfur (which is generally not an odor source). The maximum hourly hydrogen sulfide concentration, due to the implementation of the proposed project were estimated as part of the proposed project (see

Volume II, Table 7) and modeled to determine the ground level concentration (see Volume II, Table 7). The maximum hourly hydrogen sulfide concentration is 0.2 ug/m^3 based on the ISC Model, which can be compared to the odor threshold for hydrogen sulfide of 42 ug/m^3. The estimated hydrogen sulfide concentration is below the odor threshold concentration so no significant odor impacts are expected.

Fugitive emissions or leaks at the Refinery appear to be the only potential source of odors related to the proposed project. 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. In addition, the use of BACT (e.g., leakless valves) also reduces the emissions of compounds that could produce odor impacts. The proposed project will not introduce new conditions (new processes) that are associated with significant odors. The proposed project will introduce ethanol at the Refinery, but the odors associated with ethanol are minimal and high concentrations of ethanol generally do not cause odors. Further, ethanol will be stored within storage tanks that comply with BACT requirements so that emissions and odors are expected to be minimal.

Potential odor impacts from the proposed project are not expected to be significant.

MITIGATION MEASURES

Mitigation measures are not required for air quality impacts associated with the construction phase of the proposed project since air quality impacts are less than significant.

The impacts associated with operation of the proposed project are expected to be significant for VOC 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 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)). Therefore, emission offsets are not required for the proposed project identified in this EIR, as long as there is no increase in the crude capacity of the Refinery. The proposed project is not expected to result in an increase in crude capacity at the Refinery. Offsets will not be provided for the emission increases associated with the proposed project.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The air quality impacts associated with the construction of the proposed project are less than significant prior to mitigation. The air quality impacts associated with the operation of the proposed project are less than significant for CO, NOx, SOx, and PM10 emissions prior to mitigation. The air quality impacts associated with the operation of the proposed project are significant for VOC emissions. BACT, as required by the SCAQMD, will be installed on all new sources.

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

The proposed project's impacts on toxic air contaminants are expected to be less than significant. The carcinogenic health impacts to the MEIR, MEIW, 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.

The contribution of the proposed project traffic at any intersection would be less than one percent. Therefore, potential impacts from the proposed project are not anticipated to lead to significant adverse CO impacts on sensitive receptors.

B. HAZARDS & HAZARDOUS MATERIALS

SIGNIFICANCE CRITERIA

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

Non-compliance with any applicable design code or regulation.

Non-conformance to National Fire Protection Association standards.

Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Increased risk of off-site fatality or serious injury.

PROPOSED PROJECT IMPACTS

Process Units

A hazard analysis was conducted for the proposed project modifications. The details of the analysis are included in Appendix C of this EIR. The potential hazards associated with the proposed project were evaluated. The proposed project included the new and modified units listed in Table 4-6. ~~The methodology included a review of the release scenarios for the existing units that are a part of the proposed project and for the units following the proposed modifications.~~

TABLE 4-6

Preliminary Results for Paramount Refinery Modification
Release and Dispersion Calculations

	Release Form	Old System	New System	Approx. Distance (ft) to Fenceline	Max. Distance (ft) to LFL*	Distance (ft) to 30 ppm H_2S	Offsite Hazard ?
1	Reformer Stabilizer Overhead Accumulator	X	X	135	620	--	Yes
	BSIU Reformate Splitter Reflux Drum		X	~310	445	--	Yes
	BSIU Stabilizer Reflux Drum		X	~310	430	--	Yes
2	Existing Light Naphtha Stabilizer	X		220	655	--	Yes
	Modified Light Naphtha Stabilizer		X	220	655	--	Yes
3	Existing #1 HDS Stripper Overhead	X		245	75	50	No
	Modified #1 HDS Stripper Overhead		X	245	105	185	No
	#1 HDS Stripper Reflux Accumulator		X	245	390	330	Yes
4	Light Naphtha Stabilizer Overhead Accumulator	X	X	230	590	350	Yes
	Naphtha Splitter Overhead Accumulator		X	190	700	470	Yes**
5	Butane Loading Hose	X	X	310	410	--	Yes
	Gasoline Loading Hose	X	X	75	180	--	Yes
	Pentane Loading Hose		X	310	190	--	No
	Ethanol Loading Hose		X	500	140	--	No
6	Light Naptha at Gasoline Blending	X	X	310	290	--	No
	Butane at Gasoline Blending	X	X	310	365	--	Yes
	Pentane at Gasoline Blending		X	310	90	--	No
7	Reformer Stabilizer Offgas	X	X	140	60	--	No
	Reformer Produced Hydrogen	X	X	140	50	--	No
	PSA High Purity Hydrogen		X	70	65	--	No
	PSA Fuel Gas		X	70	35	--	No

*** LFL – Lower Flammability Limit**

**** Indicates potentially significant impact**

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

Hazard Identification

Potential hazards associated with the existing and proposed units at the Refinery are those associated with accidental releases of toxic/flammable gas, toxic/flammable liquefied gas, and flammable liquids. Potential consequences associated with gas releases include toxic gas clouds, torch fires, and vapor cloud explosions. Consequences associated with potential releases of toxic/flammable liquefied gases include toxic clouds, torch fires, flash fires, and vapor cloud explosions. Releases of flammable liquids may result in pool fires, flash fires, or vapor cloud explosions.

The primary hazards associated with accidental release scenarios of interest for the Paramount Refinery are flammable and toxic material that form gas clouds. This is because the consequence zones for torch fires, pool fires, and vapor cloud explosions are smaller than for flammable and toxic gas clouds.

The chemical that could produce a toxic gas cloud in the event of an accidental release is hydrogen sulfide. The hazard level for hydrogen sulfide to be evaluated is the Emergency Response Planning Guideline (ERPG)-2 level. The ERPG-2 level for a toxic hazard is defined as a hazard level that would irritate, but not seriously injure, exposed members of the public following exposure for up to 60 minutes. The ERPG-2 level for hydrogen sulfide is 30 ppm. The endpoint in the dispersion modeling for flammable vapor clouds is the lower flammable limit (LFL), which is the lowest concentration that could burn if an ignition source was present.

Methodology

The main focus of the review was to identify whether there was an increase or decrease in the extent of potential hazards resulting from the addition of equipment or the alteration of the existing operating conditions. The Refinery modifications were grouped into seven categories that form the basis for comparison.

A hazard analysis for each unit that is part of the proposed project was completed in order to define the maximum credible hazard scenario. The hazard analysis was developed using the following steps:

- Initial review of available documentation
- Evaluation of process parameters and equipment arrangement
- Selection of potential hazard scenarios

After the potential hazard scenarios were determined, they were screened to determine which scenario could adversely affect any off-site areas (i.e., areas outside of the Refinery boundaries). The scenarios resulting in potential off-site consequences were also identified.

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

Modeling

The study evaluated the 21 release scenarios under "worst-case" conditions to estimate the maximum expected downwind (and off-site) hazard zones. When performing site-specific consequence analysis studies, the ability to accurately model the release, dilution, and dispersion for gases and aerosols is important if an accurate assessment of potential public exposure is to be determined. Therefore, a set of models was used to calculate release conditions, initial dilution of the vapor, and the subsequent dispersion of the vapor introduced into the atmosphere. The models contain algorithms that account for thermodynamics, mixture, behavior, transient release rates, gas cloud density relative to air, initial velocity of the release gas, and heat transfer effects from the surrounding atmosphere and the substrate. See Appendix C for details on the hazard consequence modeling and for further discussions on the model algorithms.

Results

With the completion of the hazard identification and consequence modeling calculations for both the existing and proposed Refinery modifications, the release which generates the largest hazard zone can be defined. Table 4-6 lists the potential release scenarios as a result of the proposed project. Most of the proposed modifications do not affect the size of the largest potential release. In other words, the potential releases, which would result in the largest hazard zones, already exist at the site (see Figure 4-1).

Table 4-6 presents a listing of the dispersion distances for the "worst-case" flammable and toxic releases for the events evaluated under the current and proposed refinery configurations. About half of the selected potential releases do not have consequences that reach a facility property line, and thus do not have the ability to affect off-site populations. The findings are summarized below:

- Modifications to the Naphtha Splitter Overhead Accumulator result in an increase in the potential public exposure to hydrogen sulfide under a "worst-case" release scenario.

- The addition of the Benzene Saturation and Isomerization Unit results in potential off-site exposure to a flammable gas cloud, under "worst-case" conditions. The off-site area potentially exposed to the new hazard is less than areas that are currently exposed to a similar hazard from related equipment

- Modifications to the Light Naphtha Stabilizer do not produce increase hazard zones off-site.

- Modifications to the #1 Naphtha HDS Stripper result in increased potential exposure off-site to flammable gas clouds or gas clouds containing hydrogen sulfide. The area exposed to these hazards falls within areas exposed by current operations.

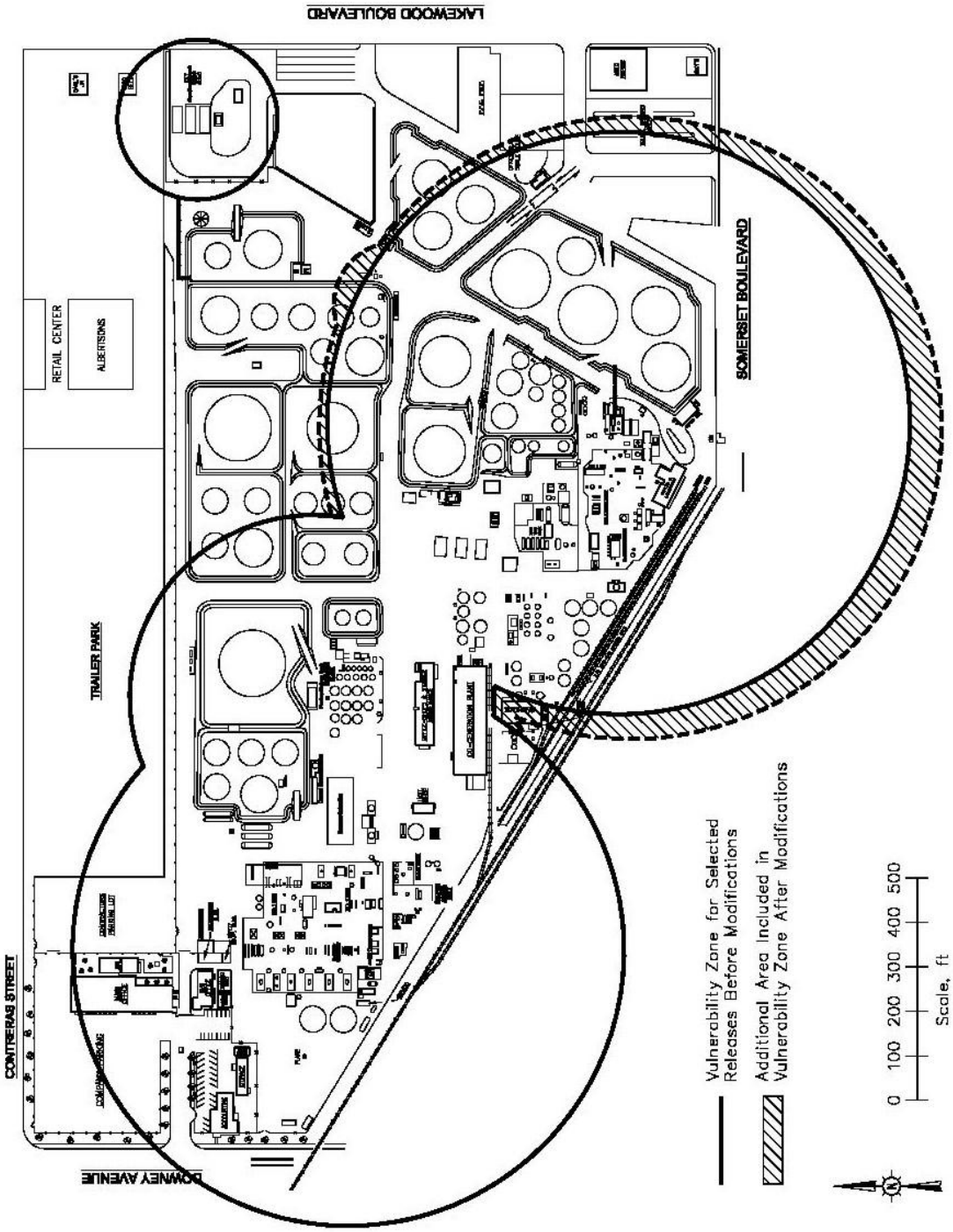
LAKEWOOD BOULEVARD
RETAIL CENTER
ALBERTSONS
SOMERSET BOULEVARD
TRAILER PARK
CONTRERAS STREET
DOWNEY AVENUE
Vulnerability Zone for Selected Releases Before Modifications
Additional Area Included in Vulnerability Zone After Modifications
0 100 200 300 400 500
Scale, ft

Figure 4-1

- The addition of pentane loading and ethanol unloading does not result in any new off-site hazards.

- An upgrade of the gasoline blending equipment does not result in any new off-site hazards.

- The addition of a PSA unit to the Refinery does not result in any new off-site impacts.

Of the releases that do produce off-site consequences, only one of the releases from the new system (after modifications) produces hazard zones that extend past the hazard zones for the current system that it is compared to, which is a rupture in the Naphtha Splitter Overhead Accumulator. Therefore, the modifications to the Naphtha Splitter will result in an increase in the potential public exposure under "worst-case" consequence analysis conditions. A release of hydrogen sulfide could allow the 30 ppm concentration level to extend an additional 120 feet south of the Refinery, under a "worst-case" release scenario. Likewise, the distance to the LFL assuming a "worst-case" release of flammable materials could extend an additional 110 feet, under "worst-case" conditions. Therefore, the potential for off-site hazard impacts could result in an exposure to a hazardous chemical in concentrations equal to or greater than the ERPG 2 levels and increase exposure to flammable materials. Therefore, the proposed project has the potential for significant hazard impacts.

Releases from new or modified equipment that result in an increase in the potential off-site exposures (based on the consequence modeling and the given hazard endpoints), do so only under "worst-case" conditions. The "worst-case" consequence condition can only be achieved if the following occurs: (1) a hole is created; (2) the hole would occur in the liquid portion of the vessel or in associated equipment handling this liquid; (3) the release would have to be oriented horizontally; (4) the release stream does not impact neighboring equipment; (5) the wind speed is low (less than three miles per hour); and (6) the atmosphere is calm. The probability of all these conditions existing at the same time is extremely low.

Transportation of Hazardous Materials

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

Gasoline Blending Components (Ethanol and Alkylate)

The proposed project is expected to require the delivery of ethanol and alkylate via railcars. The Refinery is expected to require about 6,300 gallons per day of ethanol. A maximum of about one railcar per day is expected to be required to deliver either ethanol or alkylate. The ethanol or alkylate is expected to be transported from the mid-western portions of the United States into the Los Angeles area via railcar to a regional, third party, unloading facility and then transported to the Paramount Refinery via truck. One railcar will handle more than the amount of ethanol or alkylate required by Paramount on a given day so that Paramount would only use a portion of the material or would only require delivery of gasoline blending components about once per week. Therefore,

only one railcar per day is expected to be associated with the proposed project. The railcar would arrive on a unit train. The proposed project is not expected to change the probability of a train accident, derailment, or potential release of material in the event of an accident. Rail accidents are generally weather or mechanical-related. The proposed project will not change the average number of railcars that would derail and/or rupture in the event of an accident. Further, in the event of an ethanol release, the health effects are expected to be less than significant.

Ethanol is replacing MTBE as an oxygenate in gasoline in California and ethanol is not an acutely hazardous material. The overall hazards associated with the handling and transport of ethanol are expected to be less than those associated with MTBE. Ethanol has a lower vapor pressure than MTBE (49-56.5 mmHg for ethanol as compared to 245-256 mmHg for MTBE) (API, 2000). Therefore, a release of ethanol would travel a smaller distance than a release of MTBE and persist in the environment for less time, given the same conditions. A release of ethanol would also be less flammable than MTBE due to the differences in vapor pressure. In addition, the toxicity of ethanol is less than the toxicity of MTBE as shown in Table 4-7 below. Therefore, the health impacts in the event of a release of ethanol also are expected to be less than the health impacts associated with an MTBE release.

TABLE 4-7

HEALTH ASSESSMENT VALUES AND HEALTH PROTECTIVE CONCENTRATIONS

	Non-Cancer		Cancer
	1-Hour (ug/m^3)	**Annual Average (ug/m^3)**	**Unit Risk Factor $(ug/m^3)^{-1}$**
Ethanol	100,000 (53,000 ppb)	100,000 (53,000 ppb)	No evidence of carcinogencity by inhalation.
MTBE	25,000 (7,000 ppb)	3000 (800 ppb)	2.6×10^{-7} (9.3×10^{-7} ppb^{-1})

Source: OEHHA, 2000.

Ethanol and alkylate will arrive into the Basin via railcar to a third party railcar unloading facility. The material would then be transferred into storage tanks and transferred via a truck loading rack into trucks. The truck would load at a regional truck loading facility (assumed to be located in Carson) and the truck would deliver the ethanol or alkylate to Paramount. The proposed project will increase the truck transport of ethanol or alkylate by about one truck per day. The distance traveled by all ethanol/alkylate trucks was estimated to be about 100 miles per day or about 36,500 miles per year. The estimated accidental release rate for all ethanol truck deliveries is about 0.01 or about one accident every 98 years. Ethanol and alkylate are not acutely hazardous materials and the hazards related to the transport of ethanol and alkylate are expected to be less than significant because a release would not be expected to create a vapor cloud. Further, alkylate and other petroleum products are currently shipped to and stored at the Refinery. No new hazards or increased risk will be introduced due to the use of ethanol and alkylate.

Pentane

The proposed project will increase the transport of pentane transported to/from the Paramount Refinery. It is estimated that up to 200 barrels per day (about one truck per day) of pentane could be transported as part of the proposed project. The potential consequences of a pentane release are similar to those for a mixed butane release, but less severe because pentane is less volatile than mixed butane. The existing Refinery currently receives butane by truck transport and will continue to do so after the project is completed. The proposed project is not expected to change the consequence of a transportation accident as the Refinery currently handles and transports materials that are more hazardous than pentane (e.g., butane). Therefore, no new hazards or increased risk will be introduced to the Paramount area.

Gasoline and Diesel Fuel

The proposed project is expected to result in the transport of additional quantities of gasoline and diesel fuels. It is expected that the increase in the transport of gasoline and diesel will result in an increase of about 52 trucks per day from the Refinery. These products have been shipped from the Refinery in the past and is considered part of the Refinery baseline. The proposed project would not transport any other additional materials from the Refinery that are not currently transported. Therefore, the proposed project is not expected to change the consequence of a transportation accident. Therefore, no new hazards will be introduced to the Paramount area.

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 who handle toxic, flammable, reactive, or explosive materials.

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

The Paramount 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 impacts are expected due to non-compliance with applicable design or industrial standards.

Impacts on Water Quality

A spill 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, resulting in a potential impact to water quality. 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. Paramount has emergency spill containment equipment and would implement the spill control measures in the event of an earthquake. Storage tanks have secondary containment. Therefore, the rupture of a tank would be collected within the containment system and pumped to an appropriate leakless tank for storage.

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

All Paramount facilities have a Spill Prevention Containment and Countermeasures (SPCC) Plan per the requirements of 40 CFR, Section 112. The SPCC Plan is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.

The potential impacts associated with a spill that could contaminate water quality during transportation activities are not expected to change over the baseline conditions. As discussed above, the proposed project is not expected to result in new hazards related to the transportation of hazardous materials. All materials are currently transported to/from the Refinery with the exception of ethanol. As discussed above, the hazards related to a release of ethanol are not expected to be significant since the health effects associated with exposure to ethanol are not significant.

MITIGATION MEASURES

The proposed project could result in significant impacts related to the "worst-case" hazards associated with modifications to the Refinery. The increased hydrogen sulfide associated with Naphtha Splitter will allow the 30 ppm concentration level to extend an additional about 150 feet south of the Refinery, resulting in potentially significant impacts. Therefore, feasible mitigation measures are required. There are a number of rules and regulations that Paramount has been or must comply with that serve to minimize the potential impacts associated with hazards at the facility. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a PSM Program (29 CFR Part 1910, Section 119, and Title 8 of the California Code of Regulations, Section 5189). RMPs are covered under the California Health and Safety Code Section 25534 and 40 CFR Part 68, and Title 1 §112(r)(7), by the Clean Air Act.

A PSM program 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 review 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 proposed project modifications, including the Naphtha Splitter.

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

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. Therefore, the impacts of the proposed project on hazards and hazardous materials are expected to remain significant.

C. 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 D 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 and modification to implement the proposed project at the Refinery are expected to take about 12 months. During that time, the LOS analysis assumes 60 construction workers will be commuting to the Refinery, during peak construction activities (see Table 4-8). All construction workers will be directed to the Refinery for parking since sufficient parking is available at the Refinery. It is estimated that a maximum of four 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 normal business hours, six days per week, Monday through Saturday.

The traffic analysis conducted for the Paramount Clean Fuels project construction phase indicates that there is no change in the LOS rating at any of the intersections (see Table 4-8) due to the construction phase of the proposed project. Therefore, the proposed project will have no significant adverse impacts on traffic during the a.m. or p.m. construction phase at the Refinery.

Two freeways bordering the proposed project were analyzed for traffic impacts. The Century Freeway (I-105) is located approximately two miles north of the proposed project and the Artesia Freeway (SR-91) is approximately two miles south. The traffic analysis conducted for the proposed Paramount Clean Fuels project included the intersections of Downey Avenue and SR-91, Lakewood Boulevard and SR-91 both of which are south of the Paramount Refinery and the intersection of Lakewood Boulevard and the I-105 which is north of the Refinery. The LOS at these freeway intersections is not expected to change. No significant adverse traffic impacts are expected during construction.

TABLE 4-8

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

	BASELINE				PROPOSED PROJECT					
	AM PEAK		PM PEAK		AM PEAK			PM PEAK		
INTERSECTION	LOS	Volume to Capacity Ratio	LOS	Volume to Capacity Ratio	LOS	Volume to Capacity Ratio	Volume to Capacity Ratio Increase	LOS	Volume to Capacity Ratio	Volume to Capacity Ratio Increase
Downey Ave. & Rosecrans Ave.	B	0.662	C	0.761	B	0.663	0.001	C	0.772	0.011
Downey Ave. & Somerset Blvd.	D	0.854	B	0.687	D	0.857	0.003	B	0.692	0.005
Downey Ave.& Alondra Blvd.	B	0.637	C	0.793	B	0.638	0.001	C	0.795	0.002
Downey Ave. & SR91 WB offramp/SR91 WB on & EB offramps.	C	0.780	B	0.625	C	0.782	0.002	B	0.627	0.002
Downey Ave. & SR91 EB onramp/SR91 EB offramp.	B	0.661	B	0.622	B	0.661	0.000	B	0.623	0.001
Lakewood Blvd. & I105 EB offramp/ I-105 WB offramp.	A	0.560	C	0.749	A	0.561	0.001	C	0.754	0.005
Lakewood Blvd. & Rosecrans Ave.	A	0.562	C	0.745	A	0.563	0.001	C	0.746	0.001
Lakewood Blvd. & Somerset Blvd.	A	0.598	B	0.671	A	0.600	0.002	B	0.672	0.001
Lakewood Blvd.& Alondra Blvd.	A	0.540	C	0.750	A	0.541	0.001	C	0.750	0.000
Lakewood Blvd & SR91 WB on/off ramps SR91 WB onramp.	A	0.418	A	0.586	A	0.418	0.000	A	0.587	0.001
Lakewood Blvd & SR91 EB onramp SR91 EB on/off ramps.	A	0.520	B	0.691	A	0.520	0.000	B	0.691	0.000

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. The permit will require that any oversized transport vehicles operate during non-peak hour traffic periods (usually at night).

Construction will require contractor parking areas, equipment laydown and materials stockpiling areas. Parking for project construction will be in areas currently used for contractor parking and sufficient parking is expected to be available so no significant impacts on parking are expected.

OPERATIONAL IMPACTS

The proposed project is expected to increase the permanent number of workers at the Refinery by 14. The increase in the number of trucks traveling to/from the Refinery is estimated to be about 55 per day to transport gasoline and diesel fuels, pentane, alkylate and ethanol. The truck trips are expected to occur throughout 24 hours each day. To assure a conservative analysis, it was assumed that they would occur during an eight-hour workday with about seven trucks traveling during peak

hours (or about 21 passenger car equivalents). Table 4-9 shows the projected LOS analysis and volume to capacity ratios due to operation phase impacts.

The traffic analysis for the morning peak hour indicates that there would be no change in the LOS for all but one intersection in the Paramount area. The Lakewood Blvd./Somerset Blvd. intersection is expected to change from LOS A to B, which is not considered significant since traffic flow would not be adversely impacted. Therefore, no significant adverse traffic impacts are expected during the morning peak hour.

TABLE 4-9

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

	BASELINE				PROPOSED PROJECT					
	AM PEAK		PM PEAK		AM PEAK			PM PEAK		
INTERSECTION	LOS	Volume to Capacity Ratio	LOS	Volume to Capacity Ratio	LOS	Volume to Capacity Ratio	Volume to Capacity Ratio Increase	LOS	Volume to Capacity Ratio	Volume to Capacity Ratio Increase
Downey Ave. & Rosecrans Ave.	B	0.662	C	0.761	B	0.662	0.000	C	0.763	0.002
Downey Ave. & Somerset Blvd.	D	0.854	B	0.687	D	0.855	0.001	B	0.688	0.001
Downey Ave.& Alondra Blvd.	B	0.637	C	0.793	B	0.637	0.000	C	0.794	0.001
Downey Ave. & SR91 WB offramp/SR91 WB on & EB offramps.	C	0.780	B	0.625	C	0.781	0.001	B	0.626	0.001
Downey Ave. & SR91 EB onramp/SR91 EB offramp.	B	0.661	B	0.622	B	0.661	0.000	B	0.622	0.000
Lakewood Blvd. & I105 EB offramp/ I-105 WB offramp.	A	0.560	C	0.749	A	0.562	0.002	C	0.752	0.003
Lakewood Blvd. & Rosecrans Ave.	A	0.562	C	0.745	A	0.567	0.005	C	0.750	0.005
Lakewood Blvd. & Somerset Blvd.	A	0.598	B	0.671	B	0.611	0.003	B	0.673	0.002
Lakewood Blvd.& Alondra Blvd.	A	0.540	C	0.750	A	0.541	0.001	C	0.751	0.001
Lakewood Blvd & SR91 WB on/off ramps SR91 WB onramp.	A	0.418	A	0.586	A	0.419	0.001	A	0.587	0.001
Lakewood Blvd & SR91 EB onramp SR91 EB on/off ramps.	A	0.520	B	0.691	A	0.520	0.000	B	0.691	0.000

The traffic analysis for the evening peak hour indicates that there would be no change in the LOS at any intersection near the Paramount Refinery. The LOS in the area is expected to remain in the A-C range for most of the intersections. Therefore, project impacts on traffic during the p.m. operations are less than significant.

MITIGATION MEASURES

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

LEVEL OF SIGNIFICANCE AFTER MITIGATION

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

D. 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. The proposed project is expected to require 14 additional refinery workers, which are expected to come from the existing labor force in southern California. *The Refinery currently operates 24 hours per day, 365 days per year (see page 2-8 of the EIR); therefore, the proposed project will not extend the hours of operation. Further, the proposed project will not increase the crude throughput capacity of the Refinery (see EIR page 1-4). Instead, the proposed project will change the mix of finished products produced at the Refinery.* –No growth-inducing impacts are expected from the proposed project.

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

An important consideration when analyzing the effects of a proposed project is whether it will result in short-term environmental benefits to the detriment of achieving long-term goals or maximizing productivity of these resources. The Paramount Clean Fuels Project is not expected to achieve short-term goals at the expense of long-term environmental productivity or goal achievement. The purpose of the project is to manufacture gasoline and diesel fuel in compliance with state and federal requirements that were established to minimize emissions from vehicles that use the fuels. In addition, the 1997 AQMP included reformulated gasoline as a control measure, which has already been implemented by CARB, to minimize emissions from mobile sources.

Implementing the Paramount proposed project does not narrow the range of beneficial uses of the environment. Of the potential environmental impacts discussed in Chapter 4, only those related to air quality and hazards and hazardous materials are considered potentially significant. However, the analysis does not include emission reductions associated with mobile sources that use the fuels where beneficial impacts are expected. Installation of BACT on new and modified sources ensures that emissions from stationary sources are reduced to the degree feasible.

The proposed project could result in significant impacts related to the "worst-case" hazards associated with modifications to the Refinery. The increased hydrogen sulfide associated with Naphtha Splitter will allow the 30 ppm concentration level to extend an additional about 150 feet south of the Refinery, resulting in potentially significant impacts. There are a number of rules and regulations that Paramount must comply with that serve to minimize the potential impacts associated with hazards at the facility. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a PSM Program (29 CFR Part 1910, Section 119, and Title 8 of the California Code of Regulations, Section 5189). RMPs are covered under the California Health and Safety Code Section 25534 and 40 CFR Part 68, and Title 1 §112(r)(7), by the Clean Air Act. In addition, an alternative location for the Naphtha Splitter within the Refinery may reduce the potential hazards.

Because no-short-term environmental benefits are expected at the expense of long-term environmental goals being achieved, there is no justification for delaying the proposed action. This project must be implemented to assure fuels are manufactured in compliance with state and federal fuel specifications.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA requires an EIR to discuss significant irreversible environmental changes, which would result from a proposed project, should it be implemented (CEQA Guidelines §15126.2(b)). 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) when only the emission increases are considered. However, implementation of CARB Phase 2 and 3 reformulated fuel requirements has resulted in large emission benefits. Implementation of the ULSD requirements are also expected to provide large emission reductions. CARB estimates that the NOx emissions reductions in California are expected to range from about 100 tons per year in 2005 to about 35 tons per year in 2020 due to the use of ULSD. CARB estimates that the particulate matter emissions reductions in California are expected to range from about 16 tons per year in 2005 to about seven tons per year in 2020 due to the sue of ULSD. Reductions in emissions of diesel particulate matter mean reduced ambient levels of toxic air contaminants found in diesel exhaust and reduced public exposure to those contaminants (CARB, 2003). Therefore, the clean fuel projects, like Paramount's proposed project, have had and are expected to continue to have long-term environmental benefits on air quality.

In addition, the proposed project could result in significant impacts related to the "worst-case" hazards associated with modifications to the Refinery. The increased hydrogen sulfide associated with Naphtha Splitter will allow the 30 ppm concentration level to extend an additional about 150 feet south of the Refinery, resulting in potentially significant impacts. There are a number of rules and regulations that Paramount must comply with that serve to minimize the potential impacts associated with hazards at the facility. In addition, an alternative location for the Naphtha Splitter within the Refinery may reduce the potential hazards to less than significant, if found to be feasible.

ENVIRONMENTAL EFFECTS FOUND NOT TO BE SIGNIFICANT

The environment effects of the Paramount Clean Fuels 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:

- 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
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Recreation
- Utilities/Services Systems

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