

CHAPTER 5

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CUMULATIVE IMPACTS

A. INTRODUCTION

CEQA Guidelines §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulative considerable, as defined in §15065(c). There are a number of projects proposed for development in the Paramount area that may contribute cumulative regional impacts to those generated by the Paramount Refinery's proposed project. These include reformulated fuels modifications planned by other petroleum refineries in Basin as well as other local projects. Figure 5-1 shows the locations of the six major southern California refineries. The reformulated fuels modifications are to be completed in order to supply reformulated gasoline as required by Executive Order D-5-99 and the resulting CARB RFG Phase 3 requirements. The discussion below lists projects which are reasonably expected to proceed in the foreseeable future, i.e., project information has been submitted to a public agency. Cumulative construction impacts were evaluated herein if the major portion of construction is expected to occur during the same construction period as Paramount's Clean Fuels project.

Public agencies were contacted to obtain information on projects in the Paramount area. Figure 5-2 identifies by number the location of each of the projects discussed below. The number is used to identify the related projects throughout the discussion of cumulative impacts. Localized impacts were assumed to include projects which would occur within the same timeframe as the Paramount's Clean Fuels project and which are in the Paramount area. These projects generally include the RFG Phase 3 project at the British Petroleum (formerly ARCO) refinery; the RFG Phase 3 project at the Conoco-Phillips (formerly Tosco) refinery; the RFG Phase 3 project at the Shell (formerly Equilon) refinery. Regional impacts were assumed to include projects throughout the Basin, e.g., all refineries.

Some of the impacts of the proposed Paramount project would primarily occur during the construction phase, e.g., traffic. Other impacts would primarily occur during the operational phase, e.g., hazards. Other impacts would occur during both phases, e.g., air quality.

B. LOCAL REFINERIES

1) Conoco-Phillips

The Conoco-Phillips Refinery (formerly Tosco and Unocal) is approximately 18 miles southwest of the Paramount Refinery. It consists of facilities at two locations (Wilmington and Carson) approximately three miles apart. The two integrated sites transfer raw, intermediate, and finished materials primarily by pipelines. Finished

products are transferred from the Wilmington location via the Torrance Tank Farm pipeline to distribution terminals in the southern California area or to interstate pipelines. The RFG Phase 3 project will involve physical changes only to the Conoco-Phillips Wilmington Plant, located at 1660 W. Anaheim Street, Wilmington, California, 90745.

Conoco-Phillips proposed to modify existing process units at the Wilmington Plant in order to produce gasoline in compliance with CARB's Phase 3 requirements (SCAQMD, 2001). No new process units were proposed at the Refinery.

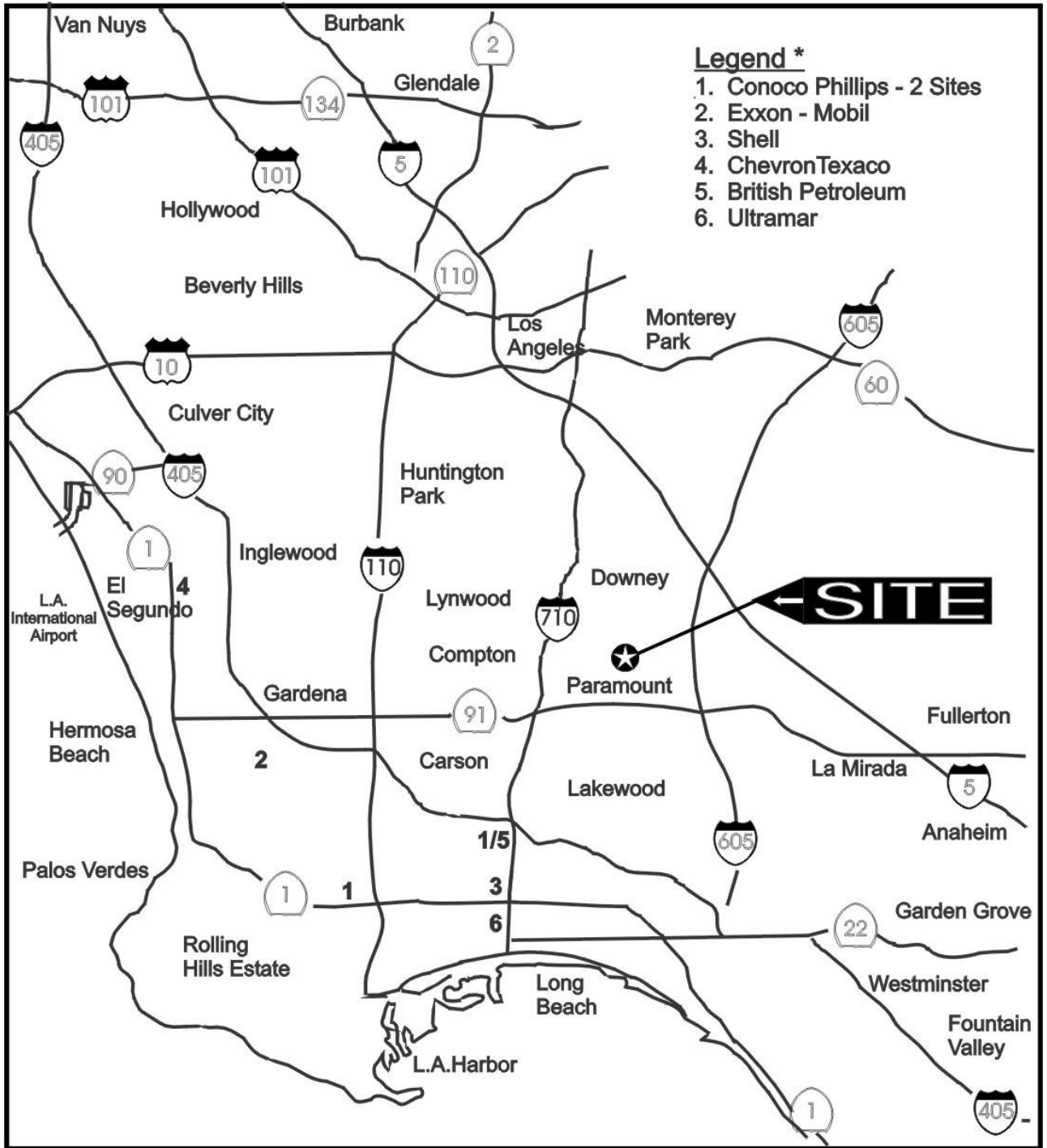
Modifications to the following units are proposed:

- Alkylation Unit (fractionation equipment, refrigeration compressor system, pumps, heaters and exchangers)
- Acid Plant (vapor recovery system)
- Butamer Unit (pumps)
- Catalytic Light Ends Fractionation Unit (fractionation equipment, pumps and piping)
- Rail Car Offloading Facilities
- Butane Storage Tank System
- Storage Tank System
- Utilities (the nitrogen, steam, water, condensate, electrical, hydrocarbon relief, and fresh/spent acid systems).

Associated modifications and additions to storage facilities, pipelines and support facilities are also expected (SCAQMD, 2001). The original CARB Phase 3 project was evaluated in the Final EIR (SCAQMD, SCH No. 2000091056, certified April 5, 2001).

An Addendum to the April 5, 2001 Final EIR was prepared to include modifications to the Los Angeles Terminal including expansion of rail service at the terminal to include the unloading of ethanol (SCAQMD 2003b).

In addition to the CARB Phase 3 project, Conoco-Phillips has been issued permits for an Ethanol Import and Distribution Project. In order to produce gasoline without MTBE as required by the Governor's Executive Order and to remain compliant with state and federal reformulated fuel standards, Conoco-Phillips will replace MTBE with ethanol. This project is comprised of modifying existing facilities to permit ethanol to be received into the Marine Terminal for transshipment through the Wilmington Plant for ultimate blending into gasoline at existing, offsite marketing terminals. A Negative Declaration has been completed (SCAQMD, 2000b) and approved for this project. Because this project was found not to have any significant effect on the environment, no cumulative impacts are expected. The ConocoPhillips Refinery is located approximately fifteen miles from the Paramount Refinery so cumulative localized impacts are not expected to occur.



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REGIONAL MAP SHOWING
REFINERIES

* Project numbers correspond to the project numbers discussed in the text of Chapter 5.



Figure 5-1

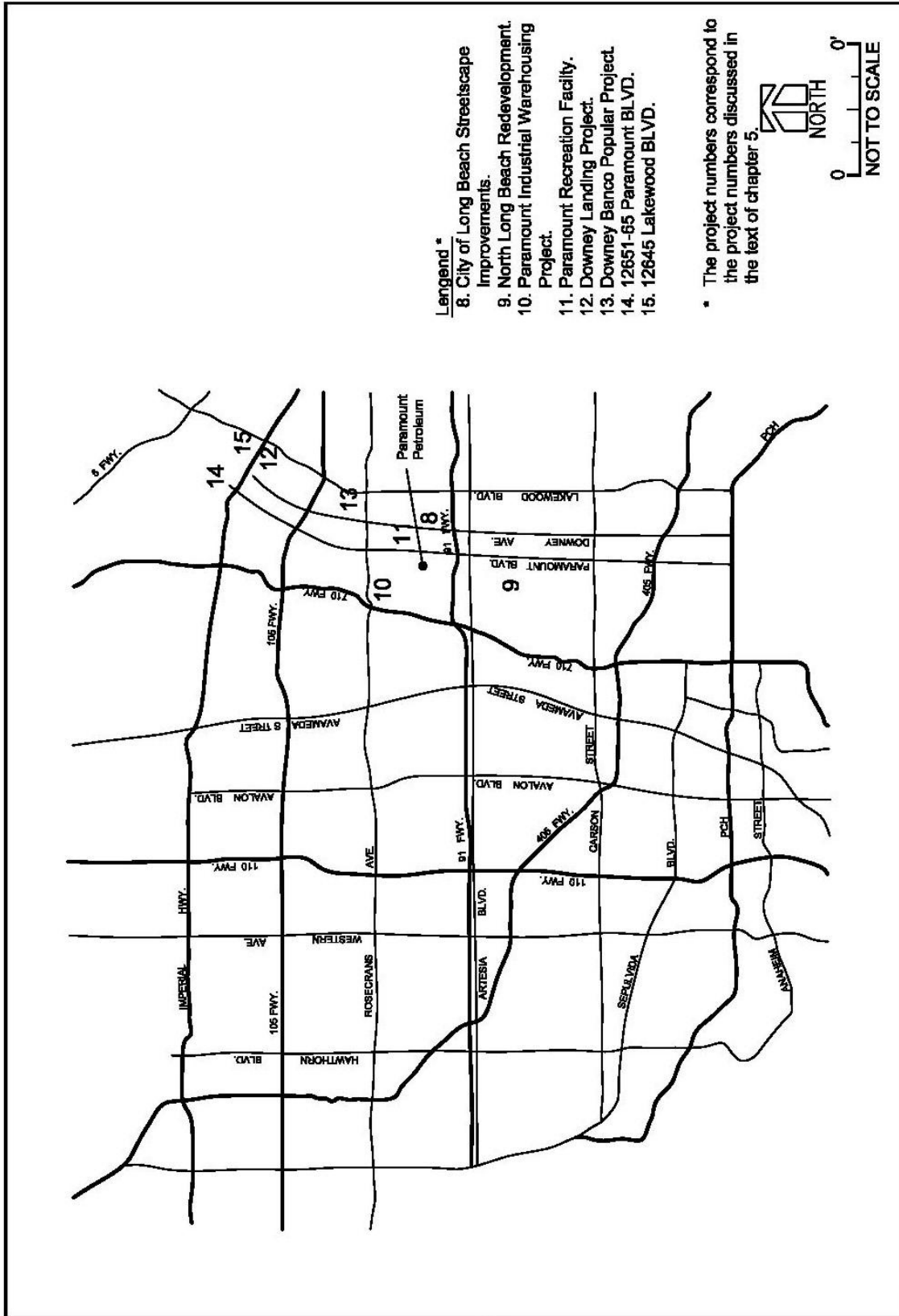


Figure 5-2

2) Exxon-Mobil

The Exxon-Mobil refinery is located at 3700 W. 190th Street in Torrance, about fourteen miles southwest of the Paramount Refinery. The RFG Phase 3 project includes modifications and/or additions to the following equipment:

- Light FCCU – Unsaturated Gas Plant Debutanizer
- Light HDC – Stabilizer, Gasoline Component Isolation Piping
- Deisobutanizer Tower – Butane Handling, KOH Tower
- Alky Feed – Hydrotreating
- Liquefied Petroleum Rail Facilities – Vessels, Loading and Additional Track
- Fuel Ethanol Storage – Tanks, Rail and Off-loading Facilities
- Gasoline Storage – Tanks
- FCC – Hydrotreater Reactors and Heater Modifications
- Alkylate – Additive Water Wash System and Merox System
- Sulfur Contamination Elimination – Overhead Compressor Modifications
- Light FCC Gasoline – Splitter Modifications
- Torrance Loading Rack (add fuel ethanol off-loading rack; modify vapor recovery unit, piping, and manifolds)
- Vernon Terminal (add rail car off-loading system, two truck off-loading areas, gasoline tank, lighting area and drainage system; modify rail spur, loading rack, vapor recovery unit, vapor destruction unit, and two storage tanks)
- Anaheim (Atwood) Terminal (add two truck off-loading areas, storage tank, lighting area and drainage system; modify truck rack)
- One new pentane sphere

Associated modifications and additions to storage facilities, pipelines and support facilities are also expected (SCAQMD, 2001a and SCAQMD 2003c). The Torrance refinery and loading rack, and the Vernon and Anaheim distribution terminals are located at least 10-15 miles from the Paramount Refinery so cumulative localized impacts are not expected to occur.

3) Shell

The Shell refinery (formerly Equilon and Texaco) is located at 2101 East Pacific Coast Highway, Wilmington and is sixteen miles south of the Paramount refinery. Shell's Wilmington Terminal is located adjacent to the southwestern portion of its Refinery at 1926 East Pacific Coast Highway, and the marine terminal is located on Mormon Island at Berths 167-169 within the Port of Los Angeles. The proposed project will also require changes to Shell's other southern California area distribution terminals located in Signal Hill, Carson, Van Nuys, and Colton/Rialto. The RFG Phase 3 project includes the following proposed modifications:

- Alkylation Unit (Contactor and Settler, refrigeration unit, exchangers/pumps, and effluent treating vessels)

- C4 Isomerization Unit (vessels, exchangers, pumps, piping, stabilizer, gas scrubber, and drier)
- Hydrotreater Unit No. 2 (Olefins Saturation Reactor, pretreatment reactor, charge pumps, heat exchangers, trays, stripper reboiler, and control valves)
- Hydrotreater Unit No. 4 (diesel side stripper, feed steam preheater, and heat exchangers)
- Hydrotreater Unit No. 1
- Catalytic Reforming Unit No. 2 (sulfur guard reactor)
- Fractionator Changes (HCU Main Fractionator, FCCU Debutanizer, Feed Prep Tower, Depentanizer, Alky Deisobutanizer, Alky Debutanizer and C4 Isomerization Deisobutanizer, and HCU Depropanizer)
- Refinery Storage Tank modifications
- Storage Tanks (at Wilmington, Carson, Signal Hill, Van Nuys, and Colton/Rialto Terminals)
- Pentane Sphere
- No. 2 (debutanizer tower)
- Flare
- Vapor Recovery Systems
- Carson Terminal (includes storage tanks modifications and a new truck loading rack)
- Lomita Terminal (includes an ethanol railcar unloading facility)
- Signal Hill Terminal (includes storage tank and truck loading rack modifications)
- Colton/Rialto Terminal (includes storage tank and truck loading rack modifications)
- Van Nuys Terminal (includes storage tank and truck loading rack modifications)
- Marine Terminal (includes storage tank modifications)
- Wilmington Terminal (includes storage tank and truck loading rack modifications)

Associated modifications and additions to storage facilities, pipelines and support facilities also are expected (SCAQMD, 2001b and SCAQMD 2002). The Shell refinery is located 16 miles south of the Paramount refinery. The Shell terminal in Signal Hill, is located at least eight miles from the Paramount Refinery and the Van Nuys and Colton/Rialto Terminals are located over 30 miles from the Paramount refinery. Localized cumulative impacts are not anticipated for any of these facilities because of the distance from the Paramount refinery.

4) ChevronTexaco

The ChevronTexaco refinery (formerly Chevron) is located at 324 West El Segundo Boulevard in El Segundo, California, about 18 miles west of the Paramount refinery, which is a sufficient distance away to avoid cumulative localized impacts with the Paramount refinery. The ChevronTexaco refinery has proposed to make changes to the reconfiguration of the Refinery by modifying existing process operating units, constructing and installing new equipment, and providing additional ancillary facilities in order to produce the RFG Phase 3 reformulated gasolines (SCAQMD, 2001c). The proposed new refinery units include:

- Isomax Complex (distillation column, steam reboilers and overhead condensers)
- TAME Plant (steam reboilers and overhead condensers)

- Pentane Storage Sphere
- Pentane Sales (rail loading facilities and railcar storage area)
- TAME Unit (distillation column, reflux pumps, steam reboilers and overhead condensers)
- No. 1 Naphtha hydrotreater (under Option A: one furnace, compressors, exchangers, and pumps. Under Option B: compressors, exchangers, and pumps).
- FCCU Depropanizer
- FCCU Debutanizer
- FCCU Deethanizer (vessels, pumps and exchangers)
- FCCU Propylene Caustic Treating Facilities
- FCCU Butene Caustic Treating Facilities
- FCCU Amine Absorber
- FCCU Relief System (headers)
- FCCU Wet Gas Compressor Interstage System Upgrades (two exchangers and one vessel)
- Alkylation Plant (two contactors and an acid settler)
- Cooling Tower
- Trim coolers for existing Distillation Columns
- Iso-octene Plant (pressure vessels, exchangers and pumps)
- Two floating roof gasoline component storage tanks

Modifications to existing refinery units are proposed for the following:

- TAME Unit (Depentanizer column)
- No. 1 Naphtha hydrotreater (under Option A: modify one furnace; under Option B: modify two furnaces)
- Deethanizer (column)
- Relief Systems (vapor recovery facilities and flare)
- Main air blower rotor replacement
- Wet Gas Compressor
- Rotor and Gearbox Upgrade
- Recommission Existing Out-of-Service Deisobutanizer
- Retraining Distillation Columns
- MTBE storage tank

The proposed project also includes modifications to the ChevronTexaco Montebello Terminal (storage tank and loading rack modifications and a new ethanol railcar unloading facility), the Van Nuys Terminal (storage tank and loading rack modifications), and the Huntington Beach Terminal (storage tank and loading rack modifications).

Due to the distance separating the ChevronTexaco refinery and terminals from the Paramount refinery, no cumulative impacts are expected during the construction or operation of the proposed project.

5) British Petroleum

The British Petroleum (BP) Refinery (formerly ARCO), located at 1801 E. Sepulveda Boulevard in Carson, is approximately eleven miles south of the Paramount refinery. The BP Carson terminal is located at 2149 E. Sepulveda Boulevard; the Marine Terminal 2 is located at 1300 Pier B Street within the Port of Long Beach. The proposed RFG Phase 3 project will also require changes to BP's other southern California area distribution terminals located in South Gate, Rialto, Long Beach and Signal Hill. The BP refinery has proposed to make changes to the Refinery by modifying existing process operating units, constructing and installing new equipment, and providing additional ancillary facilities in order to produce the RFG Phase 3 reformulated gasolines (SCAQMD, 2001d). The proposed new refinery units include:

- FCCU Gasoline Fractionation (Option #1) – rerun bottoms splitter (splitter tower, heat exchangers, etc.)

Modifications to existing refinery units are proposed for the following:

- Light Hydro Unit (modify heat exchangers; new exchangers, piping pumps and control systems)
- Isomerization Sieve (convert unit to hydrotreater; modifications to heat exchangers, piping and control systems; new reactor, exchangers, pumps and control systems)
- No. 3 Reformer Fractionator and Overhead Condenser (piping and control systems; new pumps)
- Gasoline Fractionation Area (retraying, piping and control systems)
- FCCU Gasoline Fractionation (Option #2) – convert gasoline fractionation area depentanizer to a FCCU bottoms splitter (retraying; new exchangers, flash drum, and product cooling)
- North hydrogen plant (new feed drum, pump and vaporizer)
- MTBE Unit (Option #1) – convert into ISO Octene Unit (modify heat exchangers, piping and control systems; new reactive, steam heater and heat exchangers)
- MTBE Unit (Option #2) – convert into Selective Hydrogenation Unit (modify stripper, reboiler, piping and control systems; new heat exchangers)
- Cat Poly Unit – modify to a Dimerization Unit Hydrotreater reactor system (modify piping and control systems; new pumps, heat exchangers, vessels, piping and control systems)
- Mid-Barrel Unit – modify to a Gasoline Hydrotreater (modify feed and product piping, hydrogen supply system and heat exchanger, controls systems)
- Tank Farm – piping modifications
- Pentane railcar loading facility – modify for pentane off-loading (new repressurizing vaporizer system and two railcar spots)
- Propylene railcar loading facility – modify for butane off- loading.

Associated modifications and additions to distribution storage facilities, pipelines and support facilities also are expected (SCAQMD, 2001d). The BP Arco Refinery is located

about 11 miles from the Paramount Refinery, so cumulative localized impacts are not expected.

6) Ultramar Inc, Valero Refinery

The Ultramar refinery is located at 2042 East Anaheim Street in the Wilmington district of the City of Los Angeles. The Ultramar refinery is about 15 miles south of the Paramount Refinery. In order to produce the RFG Phase 3 project gasoline Ultramar has proposed both new and modified refinery units (SCAQMD, 2000c). The Ultramar's RFG Phase 3 project would include the following new refinery equipment:

- Merox Treater
- Sour Water Stripper – (storage tank, stripper and vapor recovery system)
- Storage Tanks
- Boiler
- Flare
- Cooling Tower

Modifications to the following refinery units were proposed:

- Fluid Catalytic Cracking Unit (FCCU) – (new Gas Concentration Unit Debutanizer, new primary absorber and stripper, new accumulators, pumps, reboiler, distillation columns, vessels and heat exchangers)
- Fluid Catalytic Cracking Unit Liquefied Gas Merox Unit – (new liquefied petroleum gas (LPG) dryer and Selective Hydrogenation Unit, convert existing dryer column to depropanizer)
- Light Ends Recovery Unit – (new debutanizer and depentanizer, convert existing depropanizer to recover butane in Butamer Unit; new vessels, pumps and fin-fans)
- Naphtha Hydrotreater Unit – (modify compressor, new heat exchangers and pumps)
- Olefin Treater – (convert to hydrotreater; new reactor, new stripper, new compressor, changes to piping and new catalyst)
- Gas Oil Hydrotreater – (new pumps, new compressors and modify heater)
- Platformer – (new compressor and depropanizer)
- Butamer Unit – (new column, new heat exchangers, vessels and pumps)
- Storage Tanks
- Flare System

Associated modifications and additions to storage facilities, pipelines and support facilities are also expected (SCAQMD, 2000c). The project also includes modification to existing storage tanks and new storage tanks at the Ultramar Marine Tank Farm, Olympic Tank Farm, and Marine Terminal. The Ultramar Refinery is located about 15 miles from the Paramount Refinery, so no localized cumulative impacts are expected.

7) Third Party Terminals

A number of petroleum companies use third party terminals to distribute their fuel to gasoline stations. The terminals include the Kinder Morgan Orange Terminal, and the Kinder Morgan Colton Terminal. The modifications to the Kinder Morgan Orange and Colton Terminals included the conversion of an existing fixed roof tank to an internal floating roof tank and a change in service of the tank from diesel to ethanol. In addition, new truck unloading racks were added to both the Orange and Colton Terminals.

C. OTHER NEARBY PROJECTS

Other proposed projects within the general vicinity of the Paramount Refinery are described below.

City of Long Beach

8) Street Construction

As part of the ongoing effort by the City of Long Beach to revitalize certain areas, a number of streetscape improvements have been proposed over the next three years. Streetscaping involves landscaping, widening of streets, sidewalk construction and repair, installation of lighting and signage, and construction of medians on streets. Several of these streetscaping activities are currently ongoing or will be conducted in the future within the vicinity of the Paramount Refinery, including the following:

- Atlantic Avenue to Artesia Blvd.
 - Artesia Blvd. – Downey Ave. to Obispo Ave.
 - Paramount Boulevard – 70th Street and Artesia Blvd.
 - Downey Avenue – 70th Street and Artesia Blvd.
- (Personal communication, Lee Mayfield, May 2003).

9) North Long Beach Redevelopment Project Area

North Long Beach covers an area of 7,540 acres of land. The majority of the land is within the Redevelopment project area and is located north of I-405 freeway. The area is bordered by the cities of Compton, Paramount and Lakewood. Many of the existing commercial properties in the area are in varying stages of physical deterioration and were built with substandard design and lack adequate parking.

The redevelopment of North Long Beach is already underway and is scheduled to be completed in approximately 2026. Part of the revitalization plan for the area includes converting declining commercial land uses to residential housing or other alternatives, and initiating streetscape improvements (Long Beach, City of, 2002).

City of Paramount

10) Industrial Warehousing Project

An industrial warehousing project located at the intersection of Garfield Avenue and Rosecrans Boulevard is projected to begin construction in approximately August 2004. This project will add 78,605 square feet of warehouse space and is scheduled to be completed within approximately six to eight weeks from commencement (Personal Communication, John Caver, May 2003 and November 2003).

11) Recreation Facility

The City of Paramount plans to build a new recreation center at Progress Park. Progress Park is located at 15500 Downey Ave. The 4,000-square-foot recreation center will replace a 1,400-square-foot preschool that was originally a house built in the 1940s. The new facility will be home to the City's preschool, the Park Pals after-school program, youth and adult recreation classes, the local girls softball league, as well as meetings and counseling sessions for GRIP (Gang Resistance in Paramount) and Neighborhood Watch. In addition, a plaza will be created and there will be extensive landscape and hardscape improvements to the park in the center's vicinity. Construction is scheduled to begin approximately, in April 2004. (Paramount, City of, Press Release, October 2002, Linda Benedetti-Leal and David Johnson, Paramount, City of, Recreation Department, November 2003).

City of Downey

12) Downey Landing

A mixed-use commercial and industrial complex is being proposed in the City of Downey which is located five miles north of the Paramount refinery. The site is bounded by Stewart and Gray roads on the north, Lakewood Boulevard and Clark Avenue on the west, Imperial Highway on the south, and Bellflower Boulevard on the east. The Downey Landing's proposal included multiple uses for 117 acres of the 160 acre site, including a 28-acre retail center that will occupy the northern portion, a movie/TV production studio complex for the central portion, and a business/technology park on the eastern portion. Kaiser Permanente plans a new hospital/medical office complex for 30 acres on the southern portion of the property. The proposed Kaiser Permanente project will include a six-story hospital and a four-story medical office building. The remaining 13 acres of the 160 acres will be reserved for a school/park/learning center.

The final Environmental Impact Report (EIR) (City of Downey, 2002) discusses the impact of the Specific Plan, and contains recommended mitigation measures designed to lessen the extent of identified impacts (City of Downey, 2002).

13) Banco Popular Project

The Banco Project is proposed for the northwest corner of the Rosecrans Avenue/Lakewood Boulevard intersection (13451 Lakewood Boulevard). The project site contains 15,577 square feet and; development will consist of one building containing a 1,200 square foot restaurant and a 2,013 square foot bank. A grading permit has been issued by the City of Downey for the project (Personal Communication Mark Selheim, May 2003).

14) 12651-65 Paramount Boulevard

A residential tract consisting of eight single-family residences is under construction at 12651-65 Paramount Boulevard (Personal Communication Mark Selheim, May 2003).

15) 12645 Lakewood Boulevard

A residential tract consisting of eight single-family residences is proposed for 12645 Lakewood Boulevard (Personal Communication Mark Selheim, May 2003).

City of Bellflower

16) 91 Freeway Ramp Beautification

Landscaping and decorative painting is being performed on the 91 Freeway on/off ramps at Bellflower Boulevard. (City of Bellflower, 2003).

17) Town Center Plaza Project

The Town Center Plaza project is part of the redevelopment plan to revitalize the downtown area of Bellflower. This project will span five acres and feature an outdoor stage, businesses and a train station that would connect to the Metrolink transit system. Environmental clearance is being sought for a two and one half mile bicycle path and walkway on what is currently a railroad track that is scheduled to be removed in the near future. This project is scheduled to begin construction approximately at the end of 2003. (City of Bellflower, 2003).

D. AIR QUALITY

CONSTRUCTION IMPACTS

Construction activities associated with CARB RFG Phase 3 projects at other refineries have or will be essentially completed prior to the commencement of construction activities at the Paramount Refinery. December 31, 2003 is the date when MTBE must be phased out of gasoline sold in California so most of the construction activities at other refineries and terminals have been or will be completed prior to construction of the

Paramount Clean Fuels project. No cumulative construction impacts are expected from other refinery projects.

Air quality impacts due to construction at the Paramount Refinery are considered to be less than significant. It is expected that construction activities associated with several other local projects will occur during the same timeframe as the proposed project including the Industrial Warehousing Project (No. 10), the Recreational Facility (No. 11), the Banco Popular Project (No. 13), and two residential developments (No. 14 and 15). Potential construction emissions have been estimated using the URBEMIS2002 Model. The default assumptions in the URBEMIS2002 Model (Yolo-Solano AQMD, 2003) were used since little information is available regarding these projects (see Appendix B for additional information).

TABLE 5-1
CUMULATIVE PROJECT
PEAK DAY CONSTRUCTION EMISSIONS⁽¹⁾
(lbs/day)

| ACTIVITY | CO | VOC | NOx | SOx | PM10 |
|---|--------------------|-------------------|---------------------|-----------------|--------------------|
| Paramount Clean Fuels Project | 308 340 | 32 20 | 76 97 | 6 7 | 118 120 |
| Industrial Warehouse Project (No. 10) | 11 206 | 133 64 | 194 7 | <1 - | <1 67 |
| Recreational Center Project (No. 11) | 1 7 | 2<1 | <1 31 | <1 - | <1 2 |
| Banco Popular Project (No. 13) | <1 15 | 5 | <1 70 | <1 - | 5<1 |
| Residential Development (No. 14 and 15) | 2 | 66 | 4 | 0 | <1 |
| Cumulative Emissions | 322 568 | 236 94 | 81 1,145 | 6 7 | 118 194 |
| SCAQMD Thresholds | 550 | 75 | 100 | 150 | 150 |
| Cumulatively Significant (?) | YES NO | YES | NO YES | NO | NO YES |

Table 5-1 summarizes the construction emissions of the related projects (projects within approximately one mile of the Refinery) with construction schedules that might coincide with construction of the Paramount Clean Fuels Project. On a cumulative basis, construction emissions would exceed the CEQA thresholds established by the SCAQMD for VOC, assuming the construction projects occur at the same time. Therefore, the cumulative air quality construction impacts are considered significant for VOC emissions. The cumulative air quality construction impacts are less than significant for CO, NOx, SOx and PM10.

OPERATIONAL IMPACTS - CRITERIA POLLUTANTS

The RFG Phase 3 projects at all of the local refineries will increase the criteria pollutants emitted from the refineries. Direct stationary emission sources are generally subject to regulation. The emissions associated with the cumulative CARB Phase 3 projects are shown in Table 5-2. The operation of the CARB Phase 3 projects are expected to exceed

SCAQMD thresholds for CO, VOC, NOx, SOx and PM10, so air quality impacts are significant. No localized increases in air emissions are expected because the refineries and terminals are located a sufficient distances from the Paramount Refinery (see Figure 5-1).

Cumulative impacts associated with other local projects could also occur during the operational phase. Operational emissions from projects other than Paramount are expected to be largely due to mobile source emissions. The operational emissions have been estimated in Table 5-2.

TABLE 5-2
CUMULATIVE PROJECT
PEAK DAY OPERATIONAL EMISSIONS⁽¹⁾
(Pounds per day)

| SOURCE | CO | VOC | NOx | SOx | PM10 |
|---|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Ultramar CARB Phase 3 Project | 514 | 156 | 2,164 | 2,678 | 287 |
| ConocoPhillips Ethanol Import & Dist. Project | 9 | -54 ⁽¹⁾ | 10 | -- | 1 |
| ConocoPhillips CARB RFG Phase 3 | 136 | 22 | 514 | 402 | 43 |
| BP ARCO CARB Phase 3 Project | 42 | 86 | 49 | 0 | 57 |
| Shell CARB Phase 3 Project | 2,213 | 482 | 2030 | 71 | 57 |
| ExxonMobil CARB Phase 3 Project | 29 | 288 | 138 | 12 | 103 |
| ChevronTexaco CARB Phase 3 Project | 393 | 347 | 3,103 | 2,498 | 843 |
| Third Party Terminals | - | 4 | - | - | - |
| Paramount Clean Fuels Project | 10448 | 6647 | 5552 | 11 | 61159 |
| Industrial Warehouse Project (No. 10) ⁽²⁾ | 1676 | 97 | 10155 | <1 | 25 |
| Recreational Center Project (No. 11) ⁽²⁾ 1 ⁽²⁾ | 398 | 43 | 765 | <1 | 31 |
| Banco Popular Project (No. 13) ⁽²⁾ 1 ⁽²⁾ | 6109 | 94 | 6114 | <1 | 18 |
| Residential Development (No. 14 and 15) ⁽²⁾ | 80 | 25 | 5 | <1 | 10 |
| Cumulative Emissions | 3,744 3,414 | 1,395 1,441 | 8,355 8,094 | 5,665,66 22 | 1,510 1,486 |
| SCAQMD Thresholds | 550 | 55 | 55 | 150 | 150 |
| Significant (?) | YES | YES | YES | YES | YES |

(1) Negative numbers represent emission reductions.
(2) Based on URBEMIS2002 Model, using default assumptions.

On a regional basis, RFG Phase 3 fuels produced by the refineries are expected to result in a reduction in emissions from mobile sources that utilize the reformulated fuels. Table 5-3 summarizes the expected statewide emission decreases from the mobile sources, which use the reformulated fuels. As a conservative approach, the statewide mobile source emissions reductions are not credited toward mitigation of cumulative impacts.

TABLE 5-3

**CARB PHASE 3 EXPECTED STATEWIDE EMISSION CHANGES
(Pounds per Day)**

| POLLUTANT | 1998 Average In-Use Fuel | | Future Representative In-Use Fuel Based on Flat Limits | | Difference |
|--------------------------|--------------------------|---------|--|---------|------------|
| | 2005 | 2010 | 2005 | 2010 | 2005 |
| NOx | 4,200 | 3,400 | -33,200 | -27,200 | -37,400 |
| Exhaust Hydrocarbons | -16.0 | -9.3 | -16.5 | -9.6 | -0.5 |
| | -32,000 | -18,600 | -33,000 | -19,200 | -1,000 |
| Evaporative Hydrocarbons | -28,800 | -22,600 | -28,800 | -22,600 | 0 |
| Total Hydrocarbons | -60,800 | -41,200 | -61,800 | -41,800 | -1,000 |

Negative numbers indicate emission reductions. Source: CARB, 1999

Air quality impacts associated with operation of the six RFG Phase 3 projects are considered significant since SCAQMD mass emissions thresholds are expected to be exceeded. Although operations will exceed the significance thresholds, there will be large regional benefits from the use of the reformulated fuels by mobile sources. Emissions of mobile sources will be reduced for NOx and VOCs counteracting the emissions being produced by the refineries and providing an environmental benefit. The emission reductions are expected to be far greater than the direct cumulative emissions from the refineries. In addition, the RFG Phase 3 compliant fuels are expected to result in a 7.2 percent reduction in potency-weighted emissions of toxic air contaminants from mobile sources using the fuel providing additional emissions benefits. Further, the diesel sulfur limit of 15 ppmw will help generate significant air quality benefits by enabling the effective performance of advanced diesel exhaust emissions control technologies that reduce emissions of ozone precursors (NOx and VOCs) and diesel particulate matter.

The cumulative operational emissions associated with projects in the Paramount area are expected to exceed SCAQMD thresholds for CO, VOC, NOx, SOx and PM10. Therefore, cumulative air quality impacts are significant.

OPERATIONAL IMPACTS - TOXIC AIR CONTAMINANTS

In order to determine the cumulative impacts of toxic air contaminants, the emissions from the implementation of the proposed project were analyzed. This is referred to as the post-project scenario and includes all the existing emission sources at the Paramount Refinery, plus the proposed modified emission sources associated with the revised reformulated fuels program. In addition, the potential cumulative impacts associated with the overlap of emissions from other refineries were addressed in the analysis provided below. The other cumulative projects (Projects 8-17) are not expected to emit toxic air contaminants during operations and, therefore, were not included in this analysis.

A comprehensive air dispersion modeling analysis and a Health Risk Assessment (HRA) were performed for the projected refinery emissions following completion of the proposed project. This section discusses the results of the air dispersion modeling and health risk assessment. The procedures used to complete the projected HRA are the same as those used to complete the baseline HRA (see Chapter 3, Air Quality). The HRA is contained in Volume II, which should be consulted for further details.

Hazard Identification

The list of TACs evaluated in the post-project scenario is the same as those identified in the baseline assessment (see Table 3-6).

Emission Estimations and Sources

The estimated mass emissions of toxic air contaminants were based on a combination of the baseline emissions and engineering estimates that reflect operation of the proposed project. For further details on the emission estimates see Chapter 4, Air Quality and Volume II.

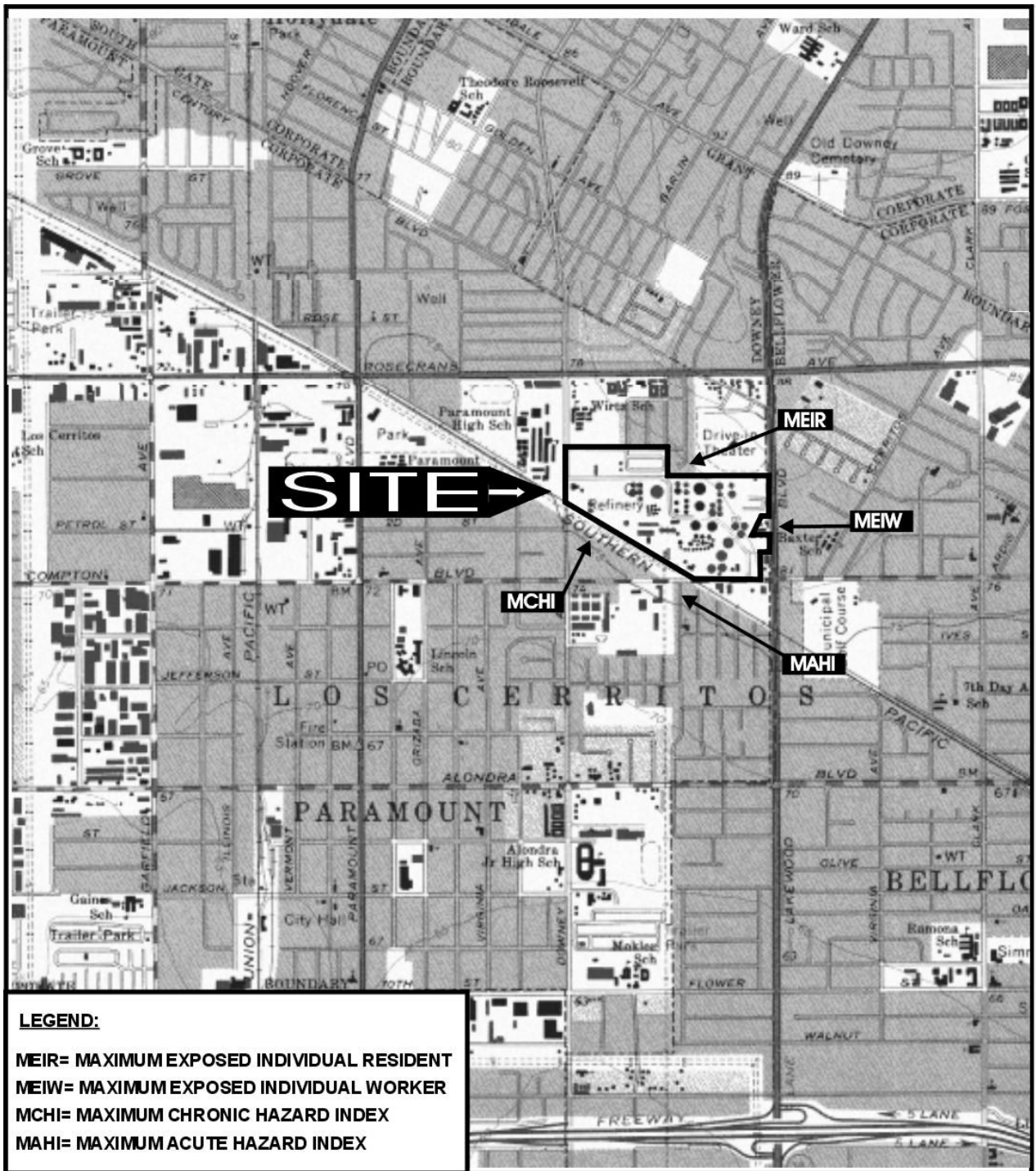
HRA Methodology

The source parameters for the post-project scenario were used as input to the ISCST3 model to determine unitized ground-level concentrations. The output from the ISCST3 model was combined with estimated emissions for each TAC in the ACE2588 model. The ACE2588 model calculated the health risks associated with the post-project scenario. The ISCST3 model used the same assumptions as the baseline model for receptor grids, meteorological data, and so forth. The ACE2588 model used the same assumptions for the post-project scenario as the baseline model for multi-pathway analysis, pathways to exposures, and default exposure assumptions. The model was used to identify the MEIW and MEIR for the post-project scenario. The ACE2588 model calculated both carcinogenic and non-carcinogenic health impacts.

Post-Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Worker

The predicted maximum cancer risk at the MEIW area due to exposure to projected post-project emissions was calculated to be 2.15E-06 or two per million. The location of the MEIW is the same as that for the baseline scenario and is shown in Figure 5-3. Table 5-4 shows major source contributions to the MEIW. Emissions from Fugitives – Northeast Tank Farms account for about 45 percent of the MEIW cancer risk. Emissions of benzene are responsible for about 75 percent of the MEIW risk (see Table 5-5). The cancer risk at the MEIW does not exceed the cancer risk significance threshold in Table 4-1 and is less than significant.



Environmental Audit, Inc.

0 2500ft



PROJECT MAXIMUM IMPACT LOCATIONS
 14700 Downey Avenue
 Paramount, California

Figure 4-1

TABLE 5-4

**EMISSION SOURCE CONTRIBUTION TO CANCER RISK FOR
POST-PROJECT SCENARIO MEIW**

| Source No. | Source Name | Percent Contribution |
|-------------------|---------------------------------------|-----------------------------|
| 100 | Fugitives for Northeast Tank Farm | 45.0 |
| 111 | Heaters H303-306 | 9.2 |
| 130 | Fugitives for HDS Units | 6.3 |
| 89 | Fugitives for Crude Unit 1 | 4.2 |
| 92 | Fugitives for Jet Fuel Area | 3.6 |
| 90 | Fugitives for Crude Unit 2 | 3.6 |
| 101 | Fugitives for Northwest Tank Farm | 3.0 |
| 116 | Fugitives for New BenSat/Isom Unit | 2.9 |
| 114 | COGEN | 1.7 |
| 102 | Fugitives for North-Central Tank Farm | 1.1 |
| 41 | Tank 12502 | 1.0 |
| 19 | Flare | 1.0 |

TABLE 5-5

**TAC CONTRIBUTION TO CANCER RISK FOR
POST-PROJECT SCENARIO MEIW**

| Toxic Air Contaminant | Cancer Risk | Percent Contribution |
|------------------------------|--------------------|-----------------------------|
| Acetaldehyde | 4.42E-10 | <0.1 |
| Arsenic | 1.22E-08 | 0.6 |
| Benzene | 1.58E-06 | 74.8 |
| 1,3-Butadiene | 3.81E-09 | 0.2 |
| Cadmium | 1.65E-08 | 0.8 |
| Carbon Tetrachloride | 2.14E-12 | <0.1 |
| Chloroform | 2.10E-13 | <0.1 |
| Chromium (Hex) | 1.16E-07 | 5.5 |
| Ethylene Dibromide | 4.36E-12 | <0.1 |
| Ethylene Dichloride | 7.22E-13 | <0.1 |
| Formaldehyde | 1.20E-08 | 0.6 |
| Lead | 2.66E-11 | <0.1 |
| Methylene Chloride | 2.77E-14 | <0.1 |
| Nickel | 8.75E-10 | <0.1 |
| Perchloroethylene | 1.26E-09 | 0.4 |
| PAHs | 3.61E-07 | 17.10 |
| Propylene Oxide | 2.03E-16 | <0.1 |
| Styrene | 4.20E-13 | <0.1 |
| Vinyl Chloride | 1.61E-12 | <0.1 |
| Total | 2.10E-06 | |

Maximum Exposed Individual Resident

The predicted maximum cancer risk at the MEIR area due to exposure to projected post-project emissions was calculated to be 9.81E-06 or about ten per million. The location of the MEIR is east of the Refinery and is shown in Figure 5-3. Table 5-6 shows major source contributions to the MEIR. Emissions from Fugitives - HDS Unit account for about 21 percent of the MEIR risk (see Table 5-6). Emissions of benzene are responsible for about 60 percent of the MEIR risk (see Table 5-7).

TABLE 5-6

**EMISSION SOURCE CONTRIBUTION TO CANCER RISK FOR
POST-PROJECT SCENARIO MEIR**

| Source No. | Source Name | Percent Contribution |
|-------------------|---------------------------------------|-----------------------------|
| 100 | Fugitives for Northeast Tank Farm | 21.0 |
| 89 | Fugitives for Crude Unit 1 | 11.1 |
| 111 | Heaters H303-306 | 10.0 |
| 90 | Fugitives for Crude Unit 2 | 7.9 |
| 130 | Fugitives for HDS Units | 5.7 |
| 92 | Fugitives for Jet Fuel Area | 4.6 |
| 114 | COGEN | 2.9 |
| 101 | Fugitives for Northwest Tank Farm | 2.8 |
| 5 | Heater H-601 | 2.6 |
| 116 | Fugitives for New BenSat/Isom Unit | 2.3 |
| 1 | Heater H-801 | 2.2 |
| 2 | Heater H-802 | 2.1 |
| 4 | Heater H-860 | 1.6 |
| 6 | Heater H-602 | 1.4 |
| 104 | Fugitives for North-Central Tank Farm | 1.3 |
| 112 | Heater H501 | 1.2 |
| 19 | Flare | 1.2 |
| 18 | Heater H-907 | 1.1 |

TABLE 5-7

**TAC CONTRIBUTION TO CANCER RISK FOR
POST-PROJECT SCENARIO MEIR**

| Toxic Air Contaminant | Cancer Risk | Percent Contribution |
|------------------------------|--------------------|-----------------------------|
| Acetaldehyde | 3.35E-09 | <0.1 |
| Arsenic | 8.92E-08 | 0.9 |
| Benzene | 5.88E-06 | 59.9 |
| 1,3-Butadiene | 2.89E-08 | 0.3 |
| Cadmium | 1.20E-07 | 1.2 |
| Carbon Tetrachloride | 1.62E-11 | <0.1 |
| Chloroform | 1.59E-12 | <0.1 |
| Chromium (Hex) | 8.50E-07 | 8.7 |
| Ethylene Dibromide | 3.30E-11 | <0.1 |
| Ethylene Dichloride | 5.46E-12 | <0.1 |
| Formaldehyde | 9.04E-08 | 0.9 |
| Lead | 2.01E-10 | <0.1 |
| Methylene Chloride | 2.10E-13 | <0.1 |
| Nickel | 6.41E-09 | 0.1 |
| Perechloroethylene | 4.63E-08 | 0.5 |
| PAHs | 2.70E-06 | 27.5 |
| Propylene Oxide | 1.59E-15 | <0.1 |
| Styrene | 3.18E-12 | <0.1 |
| Vinyl Chloride | 1.22E-11 | <0.1 |
| | | |
| Total | 9.81E-06 | |

The one per million-cancer risk isopleth for the post-project scenario is shown in Figure 5-3. This isopleth was calculated based on the same assumptions used to calculate the residential cancer risk including a 70-year exposure and multi-pathway assumption. The cancer risk at the MEIR does not exceed the cancer risk significance threshold in Table 4-1 of ten per million and is less than significant. The post project cancer risk is reduced as a result of the project. The reduction is due to the reduced benzene content in products and process streams in order to meet CARB Phase 3 requirements, 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.

Cancer Burden

The cancer burden for the area surrounding the Paramount Refinery was calculated using the same assumptions as the baseline cancer burden calculations. The total excess cancer burden within the area of influence was predicted to be 0.122 and 0.0054 for the residential and occupational populations, respectively. (See Volume II for further details.) The combined excess cancer risk was predicted to be 0.127. The cancer burden does not exceed the cancer risk significance threshold in Table 4-1 and is less than significant.

Sensitive Receptors

The maximum cancer risk to a sensitive receptor was estimated to be 7.64E-06 or approximately eight per million at the Baxter Elementary School. This risk estimate is conservative as it is based on a 70-year continuous exposure period. The cancer risk at the sensitive receptors does not exceed the cancer risk significance threshold in Table 4-1 and is less than significant.

Post-Project HRA Results - Non-Carcinogenic Health Impacts

Acute Hazard Index

The highest total acute hazard index for any single toxicological endpoint was estimated to be 0.014, at an occupational receptor, for the respiratory system, primarily due to exposure to hydrogen sulfide (44 percent). The acute hazard index does not exceed the significance threshold in Table 4-1 and is less than significant.

Chronic Hazard Index

The highest chronic hazard index for any single toxicological endpoint was estimated to be 0.031, at an occupational receptor, for the respiratory system, primarily due to exposure to benzene (39 percent) and formaldehyde (23 percent). The chronic hazard index does not exceed the significance threshold in Table 4-1 and is less than significant.

The cumulative impacts associated with the post-project scenario would be below the significance criteria for cancer risk at the MEIW and the MEIR for the chronic and acute hazard indices. Further, the proposed project would reduce emissions of some toxic air contaminants, e.g. benzene, thus reducing the overall health risks associated with exposure to Refinery emissions. Therefore, adverse cumulative impacts associated with toxic air contaminants are not expected from the Paramount Clean Fuels Project.

TAC Impacts from Other Cumulative Projects

Based on the available data, the cumulative impacts associated with other proposed Clean Fuels projects (Project Nos. 1 through 7) are not expected to result in significant TAC impacts since the projects are disbursed throughout the southern California area so TAC emissions would not be expected to overlap. The other cumulative projects (Project Nos. 8 through 17) are not expected to generate significant quantities of toxic air contaminants.

MITIGATION MEASURES

Mitigation measures for construction activities have been imposed on the various individual projects. There are no additional feasible mitigation measures to further control construction emissions.

The mitigation measures to minimize emissions associated with operation of the related projects include the use of BACT for all new emission sources and modifications to existing sources. The use of BACT would control localized emissions. A BACT review will be completed during the SCAQMD permit approval process for all new/modified sources. In addition, the related refinery projects would provide regional emission benefits by reducing emissions from mobile sources that use the reformulated fuels.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The cumulative air quality impacts due to construction and operation of the RFG Phase 3 projects exceed the SCAQMD significance thresholds in spite of implementing all feasible mitigation measures. The cumulative impacts of TACs for cancer risk at the MEIR as less than significant. The cumulative impacts associated with the post-project scenario would be below the significance criteria for cancer risk at the MEIW, MEIR, and for the chronic and acute hazard index.

E. HAZARDS AND HAZARDOUS MATERIALS

PROJECT IMPACTS

The cumulative impacts from and between the onsite operation of the refineries' RFG Phase 3 projects (Project Nos. 1-7) are not expected to be significant because of the distance between Paramount and the other facilities. The closest refinery with a clean fuels project to the Paramount Refinery is the BP ARCO Refinery located about 11 miles south of the Paramount Refinery. The impacts associated with the Paramount Refinery proposed project are expected to travel less than 1,000 feet, which would not reach the other local refineries or any of the other cumulative projects. Projects Nos. 8 through 17 are not expected to involve hazardous materials or generate significant hazard impacts. Therefore, no significant cumulative hazard impacts are expected with the other related projects.

MITIGATION MEASURES

The proposed project impacts on hazards are considered significant. However, these impacts will not combine with the impacts of related projects due to the distance between the facilities. A number of existing rules and regulations apply to the Paramount Refinery and other proposed projects. Compliance with these rules and regulations is expected to minimize refinery-related hazards. Compliance with these rules and regulations should also minimize the hazards at other refineries.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The impacts of the various projects on hazards are not expected to be cumulatively considerable as hazards at or within one project area are not expected to impact or lead to hazards at other facilities or to combine in the same location.

F. TRANSPORTATION/TRAFFIC

For the proposed project, the project's contribution to cumulative transportation/traffic impacts is not significant because the traffic conditions would essentially be the same whether or not the proposed project is implemented, because the proposed project has such minimal effects on traffic conditions as explained below.

Cumulative traffic impacts have been analyzed using the traffic counts taken in 2003 and assuming general growth in the area. Table 5-8 shows the baseline and the cumulative LOS analysis and volume to capacity ratios due to general growth in the area. These ratios were calculated assuming a projected traffic growth of one percent per year and no changes in existing intersection geometrics. Cumulative impacts are not expected to result in significant changes in LOS.

The cumulative 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 significantly adversely impacted. Therefore, cumulative impacts on traffic during the morning are less than significant.

The cumulative traffic analysis for the evening peak hour indicates that there would be no change in the LOS for all but one intersection in the Paramount area. The Downey Avenue/Alondra Boulevard intersection is expect to change from LOS C to D. LOS D typically is the level for which a metropolitan area street system is designed. The growth in traffic is less than two percent of the overall traffic at the intersection and is considered less than significant. Therefore, cumulative impacts on traffic during the p.m. operations are less than significant.

On-and-Off Ramp Freeway Traffic During Operations

Two freeways bordering the proposed project were analyzed for traffic impacts during operations. The Century Freeway (I-105) is located approximately six miles north of the proposed project and the Artesia Freeway (SR-91) is approximately 14 miles south. The cumulative traffic analysis 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 analysis indicates that the LOS at these intersections is not expected to change. Therefore, the cumulative impacts at these intersections are expected to be less than significant.

TABLE 5-8

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

| INTERSECTION | BASELINE | | | | CUMULATIVE IMPACTS | | | | | |
|---|----------|--------------------------|---------|--------------------------|--------------------|--------------------------|-----------------------------------|---------|--------------------------|-----------------------------------|
| | AM PEAK | | PM PEAK | | AM PEAK | | | PM PEAK | | |
| | 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 | 0.674 | 0.000 | C | 0.777 | 0.003 |
| Downey Ave. & Somerset Blvd. | D | 0.854 | B | 0.687 | D | 0.871 | 0.001 | B | 0.701 | 0.001 |
| Downey Ave. & Alondra Blvd. | B | 0.637 | C | 0.793 | B | 0.649 | 0.000 | D | 0.808 | 0.000 |
| Downey Ave. & SR91 WB offramp/ SR91 WB on & EB offramps. | C | 0.780 | B | 0.625 | C | 0.795 | 0.000 | B | 0.637 | 0.000 |
| Downey Ave. & SR91 EB onramp/ SR91 EB offramp. | B | 0.661 | B | 0.622 | B | 0.673 | 0.000 | B | 0.633 | 0.000 |
| Lakewood Blvd. & I105 EB offramp/ I105 WB offramp. | A | 0.560 | C | 0.749 | A | 0.573 | 0.000 | C | 0.766 | 0.001 |
| Lakewood Blvd. & Rosecrans Ave. | A | 0.562 | C | 0.745 | A | 0.577 | 0.000 | C | 0.764 | 0.000 |
| Lakewood Blvd. & Somerset Blvd. | A | 0.598 | B | 0.671 | B | 0.621 | 0.000 | B | 0.685 | 0.000 |
| Lakewood Blvd. & Alondra Blvd. | A | 0.540 | C | 0.750 | A | 0.551 | 0.000 | C | 0.765 | 0.000 |
| Lakewood Blvd & SR91 WB on/off ramps SR91 WB onramp. | A | 0.418 | A | 0.586 | A | 0.427 | 0.000 | A | 0.598 | 0.000 |
| Lakewood Blvd & SR91 EB onramp SR91 EB on/off ramps. | A | 0.520 | B | 0.691 | A | 0.529 | 0.000 | B | 0.704 | 0.000 |

LEVEL OF SIGNIFICANCE

All intersections near the Paramount Refinery are considered to have less than significant cumulative impacts, since free-flowing traffic would continue and is not expected to change. Therefore, the cumulative impacts on traffic during the a.m and p.m. would be considered less than significant.

MITIGATION MEASURES

No significant cumulative impacts have been identified so no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The traffic impacts associated with the proposed project and other related projects are not expected to be significant or result in adverse traffic impacts that would contribute to the cumulative traffic impacts.