CHAPTER 3

ENVIRONMENTAL SETTING

Introduction
Air Quality
Hazards and Hazardous Materials
Transportation and Traffic

3.0 ENVIRONMENTAL SETTING

3.1 INTRODUCTION

CEQA Guidelines §15125 requires that an EIR include a description of the environment within the vicinity of a proposed project as it exists at the time the NOP/IS is published, or if no NOP/IS is published, at the time the environmental analyses commences, from both a local and regional perspective. This chapter presents the existing environmental setting for the proposed project, which normally constitutes the baseline physical conditions by which a lead agency determines whether an impact is significant. This chapter also describes the existing environment around the Tesoro Refinery and SRP, as applicable, that could be adversely affected by the proposed project. This EIR is focused only on the environmental topics identified in the NOP/IS (see Appendix A) that could be significantly adversely affected by the proposed project. The reader is referred to the NOP/IS for discussion of environmental topics not considered in this EIR and the rationale for inclusion or exclusion of each environmental topic. The environmental topics identified in this chapter include both a regional and local setting.

3.2 AIR QUALITY

The Refinery and SRP are located within the SCAQMD jurisdiction (referred to hereafter as the District). The District consists of the four-county Basin that includes Orange, and the non-desert portions of Los Angles, Riverside, and San Bernardino counties, the Riverside County portions of the SSAB, and the MDAB. The District is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east.

3.2.1 METEOROLOGICAL CONDITIONS

The climate in the District generally is characterized by sparse winter rainfall and hot summers tempered by cool ocean breezes. A temperature inversion, a warm layer of air that traps the cool marine air layer underneath it and prevents vertical mixing, is the prime factor that allows contaminants to accumulate in the District. The mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. The climate of the area is not unique, but the high concentration of mobile and stationary sources of air contaminants in the western portion of the District, in addition to the mountains, which surround the perimeter of the District, contribute to poor air quality in the region.

3.2.2 TEMPERATURE AND RAINFALL

Temperature affects the air quality of the region in several ways. Local winds are the result of temperature differences between the relatively stable ocean air and the uneven heating and cooling that takes place in the District due to a wide variation in topography. Temperature

also has a major effect on vertical mixing height and affects chemical and photochemical reaction times. The annual average temperatures vary little throughout the District, averaging 75^{o}F. The coastal areas show little variation in temperature on a year-round basis due to the moderating effect of the marine influence. On average, August is the warmest month while January is the coolest month. Most of the annual rainfall in the District falls between November and April. Annual average rainfall varies from nine inches in Riverside to 14 inches in downtown Los Angeles.

3.2.3 WIND FLOW PATTERNS

Wind flow patterns play an important role in the transport of air pollutants in the District. The winds flow from offshore and blow eastward during the daytime hours. In summer, the sea breeze starts in mid-morning, peaks at 10-15 miles per hour, and subsides after sundown. There is a calm period until about midnight. At that time, the land breeze begins from the northwest, typically becoming calm again about sunrise. In winter, the same general wind flow patterns exist except that summer wind speeds average slightly higher than winter wind speeds. This pattern of low wind speeds is a major factor that allows the pollutants to accumulate in the District.

The normal wind patterns in the District are interrupted by the unstable air accompanying the passing storms during the winter and infrequent strong northeasterly Santa Ana wind flows from the mountains and deserts north of the District.

3.2.4 EXISTING AIR QUALITY

Local air quality in the District is monitored by the SCAQMD, which operates a network of monitoring stations throughout the District. CARB operates additional monitoring stations.

3.2.4.1 Criteria Pollutants

The sources of air contaminants in the District vary by pollutant but generally include on-road mobile sources (e.g., automobiles, trucks and buses), other off-road mobile sources (e.g., airplanes, ships, trains, construction equipment, etc.), residential/commercial sources, and industrial/manufacturing sources. Mobile sources are responsible for a large portion of the total District emissions of several pollutants.

Mobile sources, both on-road and off-road, continue to be the major contributors for each of the criteria pollutants monitored in the District. For example, mobile sources represent 64 percent of VOC emissions, 91 percent of NOx emissions, and 98 percent of CO emissions. For directly emitted PM2.5, mobile sources represent 39 percent of the emissions with another 20 percent due to vehicle-related entrained road dust (SCAQMD, 2007).

Criteria air pollutants are those pollutants for which the federal and state governments have established ambient air quality standards or criteria for outdoor concentrations in order to protect public health with a margin of safety (see Table 3-1). NAAQS were first authorized

TABLE 3-1

Federal and State Ambient Air Quality Standards

	STATE STANDARD	FEDERAL PRIMARY STANDARD	MOST RELEVANT EFFECTS
AIR POLLUTANT	CONCENTRATION/ AVERAGING TIME	CONCENTRATION/ AVERAGING TIME	
Ozone	0.09 ppm, 1-hr. avg. > 0.070 ppm, 8-hr	0.075 ppm, 8-hr avg>	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg.> 35 ppm, 1-hr avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.18 ppm, 1-hr avg. > 0.03 ppm, ann. avg. >[1]	0.053 ppm, ann. avg.>	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0.03 ppm, ann. avg.> 0.14 ppm, 24-hr avg.> 0.50, 3-hr avg.>	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	20 µg/m^3, ann. arithmetic mean > 50 µg/m^3, 24-hr average>	Annual standard revoked in 2006 arithmetic mean > 150 µg/m^3, 24-hr avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Fine Particulate Matter (PM2.5)	12 µg/m^3, ann. Arithmetic mean	15 µg/m^3, annual arithmetic mean> 35 µg/m^3, 24-hour average>[2]	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/m^3, 24-hr avg. >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m^3, 30-day avg. >=	1.5 µg/m^3, calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)		Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

[1] Revised March 29, 2008.

[2] The U.S. EPA lowered the PM2.5 24-hour average standard from 65 ug/m^3 to 35 ug/m^3 in September 2006.

by the federal Clean Air Act of 1970 and have been set by the U.S. EPA. California Ambient Air Quality Standards were authorized by the state legislature in 1967 and have been set by CARB. Air quality of a region is considered to be in attainment of the standards if the measured concentrations of air pollutants are continuously equal to or less than the air quality standards over the previous three-year period.

Health-based air quality standards have been established by the U.S. EPA and the CARB for ozone, CO, NOx, particulate matter less than 10 microns equivalent aerodynamic diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), SOx, and lead. The California standards are more stringent than the federal air quality standards. California also has established standards for sulfate, visibility, H_2S, and vinyl chloride. H_2S and vinyl chloride currently are not monitored in the District because they are not a regional air quality problem, but are generally associated with localized emission sources. The District is currently designated as non-attainment for PM10, PM2.5, and ozone for both state and federal standards. The District, including the project area, is classified as attainment for both the state and federal standards for CO, NOx, SOx, sulfates, and lead.

3.2.4.2 Regional Air Quality

The SCAQMD monitors levels of various criteria pollutants at approximately 30 monitoring stations. In 2007, the maximum ozone, PM10 and PM2.5 concentrations continued to exceed federal standards by wide margins. Maximum one-hour and eight-hour average ozone concentrations (0.171 parts per million (ppm) and 0.137 ppm, respectively recorded in the central San Bernardino Mountain area) were 143 and 171 percent of the federal standard, respectively. The central San Bernardino Mountain area has remained as the most affected area in terms of the number of days exceeding the eight-hour federal ozone standard in recent years, with 93 days in 2007, followed by the Perris Valley with 73 days in 2007 (SCAQMD, 2007). All monitored areas of the District exceeded the state eight-hour ozone standard and all monitored areas of the District exceeded the state one-hour standard except southwest and south coastal Los Angeles County and north coastal Orange County (SCAQMD, 2007a).

Maximum 24-hour average and annual average PM10 concentrations (146 micrograms per cubic meter (ug/m^3) recorded in the Coachella Valley area and 142 ug/m^3 recorded in the Mira Loma area in Riverside County) were 97 and 95 percent of the federal 24-hour and annual average standards, respectively. Maximum 24-hour average and annual average PM2.5 concentrations (82.9 ug/m^3 recorded in south coastal Los Angeles County area and 21 ug/m^3 recorded in the Mira Loma area) were 237 and 140 percent of the federal 24-hour and annual average standards, respectively (SCAQMD, 2007a).

CO concentrations did not exceed the standards in 2007. The highest eight-hour average carbon monoxide concentration recorded (8 ppm in south central Los Angeles County area) was 89 percent of the federal CO standard. The maximum annual average nitrogen dioxide (NO_2) concentration (0.0318 ppm recorded in the Pomona/Walnut Valley area) was 60 percent of the federal standard. Concentrations of other pollutants remained well below the federal standards (SCAQMD, 2007a).

In 2007, the federal standards for NO_2 and SO_2 were not exceeded. The state revised the one-hour NO_2 standard from 0.25 ppm to 0.18 ppm and established a new annual standard for NO_2 of 0.030 ppm effective March 20, 2008. The one-hour NO_2 standard was not exceeded but the new annual standard was exceeded in the Pomona/Walnut Valley area. Currently, the District is in attainment with the ambient air quality standards for CO, lead, SO_2, and NO_2. The 2007 data for lead and sulfate are not available (SCAQMD, 2007a). However, in 2006, the sulfate standard was exceeded in the San Gabriel valley on one day, or on 1.7 percent of the days sampled (SCAQMD, 2007a).

3.2.4.3 Local Air Quality

The project site is located within the SCAQMD's South Coastal Los Angeles County 1 monitoring area. Recent background air quality data for criteria pollutants for the South Coastal Los Angeles County 1 (Source Receptor Area 4) monitoring station are presented in Table 3-2.

The area has shown a general improvement in air quality with decreasing or consistent concentrations of most pollutants (see Table 3-2). Air quality in the South Coastal Los Angeles County 1 monitoring area complies with the state and federal ambient air quality standards for CO, NOx, SOx, sulfate and lead. Ozone concentrations in the area are also in compliance with the federal and state one-hour and state eight-hour ozone standards. PM10 concentrations in the area exceeded the state 24-hour and annual PM10 standard, and the state one-hour and annual average standards for ozone in 2007.

PM2.5 concentrations in the South Coastal Los Angeles County area exceeded the federal 24-hour PM2.5 standards on 3.6 percent of the days sampled. The air quality in this monitoring area also exceeds PM2.5 state annual average standards (SCAQMD, 2007a).

3.2.4.4 Refinery and SRP Criteria Pollutant Emissions

Operation of the existing Refinery and SRP results in the emissions of criteria pollutants. The reported emissions of criteria air pollutants from the Refinery and SRP for the last two-year period, based on the annual emission fee reports prepared for the SCAQMD, are shown in Table 3-3. The emissions in Table 3-3 are based on actual operations and not the maximum potential to emit. The Refinery and SRP are permitted for higher emissions than presented in Table 3-3.

TABLE 3-2

Ambient Air Quality South Coastal Los Angeles County 1 Monitoring Station (2003-2007) Maximum Observed Concentrations

CONSTITUENT		2003	2004	2005	2006	2007
Ozone:	1-Hour (ppm)	0.099	0.090	0.091	0.08	0.099
	Federal Standard	(0)	(0)	(0)	(0)	(0)
	State Standard	(1)	(0)	(0)	(0)	(1)
	8-Hour (ppm)	0.071	0.075	0.068	0.058	0.073
	Federal Standard	(0)	(0)	(0)	(0)	(0)
	State Standard	(--)	(0)	(0)	(0)	(1)
Carbon Monoxide:						
	1-Hour (ppm)	6	4	4	4	3
	8-Hour (ppm)	4.7	3.4	3.5	3.4	2.6
	Federal Standard	(0)	(0)	(0)	(--)	(0)
	State Standard	(0)	(0)	(0)	(--)	(0)
Nitrogen Dioxide:						
	1-Hour (ppm)	0.14*	0.12	0.14	0.10	0.11
	State Standard	(--)	(--)	(--)	(--)	(0)
	24-Hour (ppm)	--	--	--	0.05	--
	Annual (ppm)	0.0288*	0.0280	0.0241	0.0215	0.0207
PM10:	24-Hour (ug/m^3)	63	72	66	78	75
	Federal Standard	(0)	(0)	(0)	(0)	(0)
	State Standard	(6.6%)	(6.7%)	(8.5%)	(9.8%)	(9%)
	Annual (ug/m^3)					
	Geometric Mean	(--)	(--)	(--)	(--)	(--)
	Arithmetic Mean	32.8	33.1	29.6	31.1	30.2
PM2.5:	24-Hour (ug/m^3)	115.2	66.6	53.9	58.5*	82.9
	Federal Standard	(0.9%)	(0.3%)	(0%)	(1.7%*)	(3.6%)
	Annual Arithmetic Mean (ug/m^3)	18.0	17.6	16	14.2*	14.6
Sulfur Dioxide:						
	1-Hour (ppm)	0.03	0.04	0.04	0.03	0.11
	24-Hour (ppm)	0.008	0.012	0.010	0.010	0.011
	Annual Arithmetic Mean (ppm)	--	--	--	0.0012	0.0027
Lead:	30-Day (ug/m^3)	0.10	0.02	0.01	0.01	+
	Quarter (ug/m^3)	0.05	0.01	0.01	0.01	+
Sulfate:	24-Hour (ug/m^3)	17.8	15.9	16.8	17.8	+
	State Standard	(0%)	(0%)	(0%)	(0%)	+

Source: SCAQMD Air Quality Data Annual Summaries 2003-2007.

Notes: (18) = Number of days or percent of samples exceeding the state standard, (--) = Not monitored, ppm = parts per million, ug/m^3 = micrograms per cubic meter, * = Less than 12 full months of data, so data may not be representative; + = data not yet available; ppm = parts per million.

TABLE 3-3

Tesoro Refinery/Sulfur Recovery Plant
Reported Criteria Pollutant Emissions (Tons/Year)

Reporting Period	CO	VOC	NOx	SOx	PM10
Refinery					
2005-2006	220.3	260.9	781.9	424.5	327.3
2006-2007	205.7	220.6	855.4	351.7	396.7
Two-Year Average	213.0	240.8	818.7	388.1	362.0
Sulfur Recovery Plant					
2005-2006	123.6	27.8	77.7	28.8	33.2
2006-2007	130.4	30.1	90.3	56.9	33.8
Two-Year Average	127.0	29.0	84.0	42.9	33.5

3.2.4.5 Toxic Air Contaminants

The California Health and Safety Code (§39655) defines a TAC as an air pollutant which may cause or contribute to an increase in mortality, an increase in serious illness, or which may pose a present or potential hazard to human health. Under California's TAC program (Assembly Bill 1807, Health and Safety Code §39650 et seq.), CARB, with the participation of the local air pollution control districts, evaluates and develops any needed control measures for air toxics. The general goal of regulatory agencies is to limit exposure to TACs to the maximum extent feasible.

Monitoring for TACs is limited compared to monitoring for criteria pollutants because toxic pollutant impacts are typically more localized than criteria pollutant impacts. CARB conducts air monitoring for a number of TACs every 12 days at approximately 20 sites throughout California. The Refinery and SRP are located closest to the North Long Beach Monitoring station. The 2006 summary of data from the North Long Beach station for various TACs is considered to be an appropriate estimate of the TAC concentration in the vicinity of the Refinery (see Table 3-4).

The SCAQMD measured TAC concentrations as part of its Multiple Air Toxic Exposure Study, referred to as MATES. The purpose of the study is to provide an estimate of exposure to TACs to individuals within the District. In the second study, MATES-II, the SCAQMD conducted air sampling at about 24 different sites for over 30 different TACs between April 1998 and March 1999. The Final MATES-II Report from this study indicated the following: (1) cancer risk levels appear to be decreasing since 1990 by about 44 percent to 63 percent; (2) mobile source components dominate the cancer risk; (3) approximately 70 percent of all cancer risk is attributed to diesel particulate emissions; (4) about 20 percent of all cancer risk is attributed to other toxics associated with mobile sources; (5) about 10 percent of all risk is attributed to stationary sources; and (6) no local “hot spots” have been identified. According to the Final MATES III Report, the average carcinogenic risk in the District is about

TABLE 3-4

Ambient Air Quality Toxic Air Contaminants – North Long Beach
Maximum Concentration 2006

Pollutant	Annual average	Pollutant	Annual average
VOCs	**ppbv[1]**		**ppbv**
Acetaldehyde	3.8	Ethyl Benzene	0.7
Acetone	33	Formaldehyde	7.3
Acetonitrile	5.5	Methyl Bromide	0.08
Acrolein	1.3	Methyl Chloroform	0.23
Acrylonitrile	0.8	Methyl Ethyl Ketone	0.3
Benzene	1.8	Methyl tertiary - Butyl Ether	--
1,3 – Butadiene	0.57	Methylene Chloride	1.1
Carbon Disulfide	0.05	Perchloroethylene	0.28
Carbon Tetrachloride	--	Styrene	0.9
Chloroform	0.13	Toluene	15
o – Dichlorobenzene	0.15	Trichloroethylene	0.09
p – Dichlorobenzene	0.15	meta/para – Xylene	2.7
cis – 1,3 – Dichloropropene	0.05	Ortho – Xylene	1.0
trans – 1,3 – Dichloropropene	0.05		
PAHs[2]	**nanograms/m^3[3]**		**Nanograms/m^3**
Benzo(a)pyrene	0.61	Benzo(k)fluoranthene	0.019
Benzo(b)fluoranthene	0.51	Dibenz(a,h)anthracene	0.18
Benzo(g,h,i)perylene	1.7	Indeno(1,2,3-cd)pyrene	0.64
Inorganic compounds[4]	**nanograms/m^3**		**nanograms/m^3**
Aluminum	1700	Nickel	9
Antimony	3	Phosphorous	35
Barium	56	Potassium	890
Bromine	9	Rubidium	4
Calcium	2300	Selenium	1
Chlorine	2000	Silicon	5600
Chromium	6	Strontium	24
Cobalt	7.5	Sulfur	1300
Copper	36	Tin	2.5
Hexavalent Chromium [5]	0.11	Titanium	140
Iron	1600	Uranium	1.5
Lead	12	Vanadium	23
Manganese	33	Yttrium	2
Mercury	1.5	Zinc	110
Molybdenum	1	Zirconium	7

Source: CARB, 2006. Annual Toxics Summary by Monitoring Sites.

(1) ppbv = parts per billion by volume.
(2) The most recent data for PAHs is for 2004.
(3) nanograms/m3 = nanograms per cubic meter.
(4) The most recent data for inorganic compounds is from 2003.
(5) 2006 data.

1,400 per million people. This means that 1,400 people out of one million are susceptible to developing cancer from exposure to the known TACs over a 70-year period of time. The cumulative cancer risk averaged over the four counties (Los Angeles, Orange, Riverside and San Bernardino) is 980 in one million when diesel sources are included and is about 260 in one million when diesel sources are excluded. Of the monitoring sites in the MATES-II study, the Wilmington monitoring site is the closest site to the Tesoro Refinery. The cancer risk at the Wilmington monitoring site, based on monitoring data, was about 380 per million for stationary and mobile sources. The cancer risk from mobile sources (alone) was about 240 per million. The complete final report on the MATES-II study is available from the SCAQMD (SCAQMD, 2000).

The SCAQMD recently completed a third study, referred to as MATES-III, that includes monitoring for 21 TACs at ten fixed, and five temporary, sites within the District in neighborhoods near toxic emission sources or in areas where community members are concerned about health risks from air pollution. The initial scope of the monitoring was for a one-year period from April 2004 through March 2005. Due to heavy rains in the District in the fall and winter during this period, there was concern that the measurements may not be reflective of typical meteorology. The study was thus extended for a second year from April 2005 through March 2006. The MATES-III study estimates that 94 percent of the cancer risk is attributed to emissions associated with mobile sources, and about six percent of the risk is attributed to toxics emitted from stationary sources, which include industries, and businesses such as dry cleaners and chrome plating operations. The results indicate that diesel exhaust is a major contributor to air toxics risk, accounting for about 84 percent of the total risk. Compared to previous studies of air toxics in the District, the MATES-III study found a decreasing risk for air toxics exposure, with the population weighted risk down by eight percent from the analysis in MATES-II. The highest risks were near the port area, an area near central Los Angeles and near transportation corridors. The average carcinogenic risk in the District is about 1,200 per one million people. This means that 1,200 people out of one million are susceptible to developing cancer from exposure to the known TACs over a 70-year period of time.

Of the monitoring sites in the MATES-III study, the North Long Beach study site is the closest to the Tesoro Refinery and SRP. The results of the monitoring for the North Long Beach site indicate that regional emissions (e.g., mobile sources) overwhelm local influences (local stationary sources). The complete Draft Final Report on the MATES-III study is available online and can be accessed from the SCAQMD website at http://www.aqmd.gov/prdas/matesIII/MATESIIIDraftFinalReportJuly2008.html. Once the MATES-III study results are finalized and adopted by the SCAQMD Governing Board, they will supersede the MATES-II study results.

3.2.4.6 Greenhouse Gases (GHGs)

Global warming is the observed increase in average temperature of the earth's surface and atmosphere. An identified contributor to global warming is an increase of GHGs in the atmosphere. Due to the global nature of the concerns regarding greenhouse gases, the

environmental setting, and applicable impacts are primarily discussed in Chapter 5 – Cumulative Impacts.

3.2.5 REGULATORY BACKGROUND

Ambient air quality standards in California are the responsibility of, and have been established by, both the U.S. EPA and CARB. These standards have been set at concentrations, that provide margins of safety for the protection of public health and welfare. Federal and state air quality standards are presented in Table 3-1. The SCAQMD has established levels of episodic criteria and has indicated measures that must be initiated to immediately reduce contaminant emissions when these levels are reached or exceeded. The federal, state, and local air quality regulations are identified below in further detail.

3.2.5.1 Federal Regulations

The U.S. EPA is responsible for setting and enforcing the NAAQS for ozone, CO, NO_2, SO_2, PM10, PM2.5, and lead. The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside of state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of CARB.

Other federal regulations applicable to the proposed project include Title III of the Clean Air Act, which regulates toxic air contaminants. Title V of the Clean Air Act establishes a federal permit program. Tesoro has submitted Title V permit applications for both the Refinery and SRP and the proposed project will require modifications to the Title V applications and/or operating permits. The Title V program is implemented by the SCAQMD in the southern California area via SCAQMD Regulation XXX. The U.S. EPA also has authority over the PSD (prevention of significant deterioration) Program and PSD review will not be required for the proposed project since the proposed Refinery modifications will result in a decrease in NOx and SOx emissions.

3.2.5.2 California Regulations

CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act and federal Clean Air Act, and for regulating emissions from consumer products and motor vehicles. CARB has established California Ambient Air Quality Standards for all pollutants for which the federal government has NAAQS and also has established standards for sulfates, visibility, H_2S, and vinyl chloride. H_2S and vinyl chloride are not measured at any monitoring stations in the District because they are not considered to be a regional air quality problem. California standards are generally more stringent than the NAAQS. CARB has established emission standards for vehicles sold in California and for various types of equipment. Although CARB also sets fuel specifications to reduce vehicular emissions, it has no direct

regulatory approval authority over the proposed project. Federal and state air quality standards are presented in Table 3-1.

California gasoline specifications are governed by both state and federal agencies. During the past decade, federal and state agencies have imposed numerous requirements on the production and sale of gasoline in California. CARB adopted the Reformulated Gasoline Phase III regulations that required, among other things, that California phase out the use of MTBE in gasoline. CARB estimated that the Reformulated Gasoline Phase III requirements would reduce statewide mobile source hydrocarbon emissions by 0.5 tons per day, NOx emissions by 19 tons per day, and would eliminate MTBE concentrations. Toxic emissions were expected to decrease by about seven percent. These emission reductions were based on comparing the properties of the 1998 average fuel to the properties of a representative Reformulated Gasoline Phase III fuel (CARB, 1999).

As part of the Reformulated Gasoline Phase III regulatory process, CARB directed staff to investigate the potential emissions impact of adding ethanol to gasoline, specifically related to the increase in hydrocarbon emissions through permeation. Permeation refers to the diffusive process whereby fuel molecules are emitted into the air where they contribute to evaporative emissions from the vehicle (CARB, 2007).

On August 29, 2008, the amendments to the Reformulated Gasoline Phase III regulations (referred to herein as revised CARB Phase III) became effective. The revised CARB Phase III regulations address the permeation issue and emissions increases due ethanol. Available data indicated that ethanol may reduce the exhaust emissions of hydrocarbons and CO, but increase the evaporative emissions due to permeation. In addition, the use of ethanol may also increase NOx emissions. Based on very limited testing, CARB calculated that the net impact my have from little, if any, effect on increasing hydrocarbon emissions to about 20 tons per day and slightly increase NOx by about one to two tons per day (CARB, 2007).

The revised CARB Phase III regulations include:

- Amending the California Predictive Model to ensure that permeation emissions associated with ethanol use are mitigated and to incorporate new data;

- Adding an option to use an Alternative Emissions Reduction Plan (AERP) for a limited time period to help mitigate permeation emissions;

- Decreasing the sulfur cap limit from 30 ppm by weight (ppmw) to 20 ppmw to improve enforceability and facilitate new motor vehicle emissions control technology;

- Allowing emissions averaging for low level sulfur blends to provide additional flexibility for producers;

- Applying the 7.00 pounds per square inch (psi) Reid Vapor Pressure (RVP) limit to oxygenated gasoline and retain the 6.90 psi RVP limit for non-oxygenated gasoline;

- Allowing flexibility in setting oxygen content in the Predictive Model to account for variability in test methods;

- Increasing the maximum allowable amount of denaturant in ethanol to be consistent with new federal requirements;

- Updating the test method for oxygenate content of gasoline; and,

- Requiring producers to use the revised Predictive Model starting December 31, 2009, which allows for the use of alternative emissions mitigations, and requiring the production of revised CARB Phase III compliant gasoline with the revised Predictive Model by December 11, 2011.

The California Clean Air Act (AB2595) mandates achievement of the maximum degree of emission reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date.

California also has established a state air toxics program, California Toxic Air Contaminants Program (Tanner Bill) (AB1807), which was modified by the Revised Tanner Bill (AB2728). This program sets forth provisions to implement the national program for control of hazardous air pollutants.

The Air Toxic "Hot Spots" Information and Assessment Act (AB2588), as amended by Senate Bill 1731 (SB1731), requires operators of certain stationary sources to inventory air toxic emissions from their operations and, if directed to do so by the local air district, prepare a health risk assessment to determine the potential health impacts of such emissions. If the health impacts are determined to be "significant" (greater than 10 per one million exposures or non-cancer hazard index greater than 1.0), each facility operator must, upon approval of the health risk assessment, provide public notification to affected individuals.

3.2.5.3 Local Regulations

The District is under the jurisdiction of the SCAQMD, which has regulatory authority over stationary sources, air pollution control equipment, and limited authority over mobile sources. The SCAQMD is responsible for air quality planning in the District and development of the Air Quality Management Plan (AQMP). The AQMP establishes the strategies that will be used to achieve compliance with California Ambient Air Quality Standards in all areas within the SCAQMD's jurisdiction. The SCAQMD generally regulates stationary sources of air pollutants. There are a number of SCAQMD regulations that may apply to the proposed project including Regulation II – Permits, Regulation III – Fees, Regulation IV – Prohibitions, Regulation IX – New Source Performance Standards, Regulation X – National Emissions Standards for Hazardous Air Pollutants (NESHAPS),

Regulation XI – Source Specific Standards, Regulation XIII – New Source Review, Regulation XIV – New Source Review of Carcinogenic Air Contaminants (including Rule 1401 – New Source Review of Toxic Air Contaminants, and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities), Regulation XVII – PSD, Regulation XX – RECLAIM Program, and Regulation XXX – Title V Permits.

3.3 HAZARDS AND HAZARDOUS MATERIAL

3.3.1 TYPES OF ON-SITE HAZARDS

In general, hazard impacts are not a discipline with specific environmental characteristics that can be easily described or quantified. Instead, hazard incidents consist of accidental occurrences that may create adverse effects on human health or the environment.

This section describes features of the existing environment as they relate to the risk of a major accident occurring at the Refinery and SRP. Factors which are taken into consideration to determine the magnitude of an upset event are as follows:

- The probability of an event occurring;
- The consequences of an event (exposures);
- The types of materials potentially involved in an upset event; and
- The location of sensitive receptors e.g. residences, schools, and businesses.

Potential hazards at the Refinery and SRP may include exposure to toxic gases, fires, vapor cloud explosions, thermal radiation, and overpressure. These hazards are described below.

Toxic gas releases: Toxic gas releases (e.g., ammonia and H_2S) could migrate off-site and create adverse health impacts to exposed individuals. "Worst-case" conditions tend to arise when very low wind speeds coincide with an accidental release, which can allow the chemicals to accumulate rather than disperse.

Torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases): The rupture of a storage tank or vessels containing a flammable gaseous material (like propane), without immediate ignition, can result in a vapor cloud explosion. The "worst-case" upset occurs when a release occurs and produces a large aerosol cloud with flammable properties. If the flammable cloud does not ignite after dispersion, the cloud would simply dissipate. If the flammable cloud were to ignite during the release, a flash fire or vapor cloud explosion could occur. If the flammable cloud were to ignite immediately upon release, a torch fire would ensue.

Thermal Radiation: Thermal radiation is the heat generated by a fire and the potential impacts associated with exposure. Exposure to thermal radiation would result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual to the fire.

Explosion/Overpressure: Process vessels containing flammable explosive vapors and potential ignition sources are present at refineries. Explosions may occur if the flammable/explosive vapors came into contact with an ignition source. An explosion could cause impacts to individuals and structures in the area due to overpressure.

Based on a review of the existing Refinery and SRP operations and processes, the greatest potential for an upset condition to occur that would affect the public would result from the ignition of flammable material. The chemicals considered to pose the greatest public health risks are pressurized gases such as LPG, which is stored in large quantities at the Refinery. Both radiant heat and blast overpressures could result from ignition of an LPG release. Other events that could have offsite impacts are the release and ignition of LPG from a pipeline rupture and release of anhydrous ammonia from anhydrous ammonia storage facilities. These types of events are the most likely to occur in an industrial environment such as a refinery and establish the environmental setting.

Tesoro currently adheres to the following safety design and process standards:

- The California Health and Safety Code Fire Protection specifications.

- The design standards for petroleum refinery equipment established by American Petroleum Institute, American Society of Mechanical Engineers, the American Institute of Chemical Engineers, the American National Standards Institute, and the American Society of Testing and Materials.

- The applicable federal and California OSHA requirements.

Tesoro maintains its own emergency response capabilities, including onsite equipment and trained emergency response personnel who are available to respond to emergency situations anywhere within Refinery and SRP.

Tesoro has prepared a RMP for the butane, pentane, ammonia and other hazardous materials that are currently used at the Refinery and SRP. The City of Los Angeles Fire Department administers this program for the Refinery and the City of Carson Fire Department administers this program for the SRP. As indicated above, Tesoro has prepared an Emergency Response Manual to address RMP concerns. This manual describes the emergency response procedures that would be followed in the event of any of several release scenarios and the responsibilities for key response personnel. The scenarios include the release of the following:

- Ammonia stored in bulk tanks,
- H_2S as a component of various intermediate refinery streams,
- Natural gas or refinery fuel gas used throughout the Refinery involving both ignited and unignited vapors,
- LPG leaks involving both ignited and unignited vapors,
- Sulfuric acid used in the Alkylation Unit,
- Butane shipments from the facility, and
- Constituents of the petroleum tanks that are located throughout the Refinery.

Modifications under the RMP and CalARP are required for covered processes if changes to usage or the process can reasonably be expected to produce a change by a factor of two in the distance to the endpoint for the off-site consequences analysis. Modifications are also required if there is a major change to the process requiring a new process hazard analysis.

Ammonia

Ammonia is the third highest volume chemical produced in the U.S. At atmospheric temperature and pressure, ammonia is a colorless gas with a distinct irritating odor. It is very soluble in water, which makes water useful in suppressing gaseous ammonia releases. Although ammonia is lighter than air, pressurized liquid ammonia released to the atmosphere initially forms a dense, cold ammonia mist. Depending on the concentration of the released ammonia, its vapors can irritate mucous membranes. If inhaled in large amounts, ammonia may injure the lungs, with possibly fatal results. Although ammonia is a flammable gas, high concentrations are required for ignition, so flammability typically is not a concern. Tesoro currently stores anhydrous ammonia on-site for use in NOx control systems or SCR systems at the Refinery.

Anhydrous ammonia is a designated Acutely Hazardous Material (AHM). However, because aqueous ammonia is much less hazardous than anhydrous ammonia, aqueous ammonia will be used instead of anhydrous ammonia in the new SCR systems proposed at the Refinery.

Hydrogen Sulfide (H_2S), Hydrogen

H_2S occurs naturally in crude oil. H_2S is a colorless gas with a distinct "rotten egg" odor at atmospheric temperature and pressure. At low concentrations, exposure can cause eye irritation, sore throat, and cough. At high concentrations, exposure can cause death. H_2S is produced in the refining process and converted to elemental sulfur and water, but is not stored in substantial quantities on-site.

Hydrogen is an odorless, tasteless, flammable gas at atmospheric temperature and pressure. Hydrogen is produced and consumed during the refining processes. It is not stored in substantial quantities on-site.

Liquefied Petroleum Gas

LPG is the only pressurized chemical posing a risk of explosion at the Refinery. LPG (Propane and butane) is stored at the Refinery, and LPG is transported into and out of the Refinery on a regular basis via trucks and rail cars.

The most serious accidents likely to occur at the Refinery would involve: stored LPG in an unconfined vapor cloud explosion (UVCE) due to failure of two-inch or smaller piping or fittings, an instantaneous release from a full catastrophic rupture of a storage sphere, or a boiling liquid expanding vapor explosion (BLEVE) resulting from structural failure of a sphere. The instantaneous release would yield worst-case overpressures and the BLEVE would yield worst-case radiant heat fluxes.

The Refinery's LPG storage facilities comply with ANSI and API standards that require spheres with capacities greater than 12,500 barrels to be located at least 200 feet from the nearest property line and spaced at least three feet apart. The supporting legs of the spheres are fireproofed to provide fire resistance for a minimum of two hours. The spheres have internal water injection systems that would, in the event of a leak in the supply or discharge piping or bottom connections, fill the bottom portion of the tank and raise the LPG level above the point of leakage, so that water would leak instead of LPG.

Drainage around the tanks is designed to prevent pooling of liquids beneath the tanks, and to send released liquids to an impoundment area. Each tank is equipped with a fixed cooling water system to provide a water film on the upper, gas-phase portion of each tank, in case of a fire. In addition, each tank is equipped with monitors that provide a water spray to cool the lower portions of the tanks. The design water delivery rate is at least 0.25 gallon per minute per square foot.

3.3.2 TRANSPORTATION RISKS

Regulations for transporting hazardous materials by public highway are described in 49 CFR 173 and 177. Although the transport of hazardous materials is regulated for safety by the U.S. DOT, there is a possibility that a tanker truck could be involved in an accident that causes its contents to be spilled. The factors used for determining accident statistics include the vehicle distance traveled and the type of vehicle or transportation system. Factors affecting truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition of the truck, and driver training. A common reference frequently used in measuring probable risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of probable risk is the fact that some accidents can cause significant damage without injury or fatality.

Every time hazardous materials are moved from the site of generation, an accidental (unintentional) release could occur. A study conducted by the U.S. EPA indicates that the expected number of hazardous material spills per mile shipped ranges from one in one million to one in 100 million, depending on the type of road and transport vehicle used. The U.S. EPA analyzed accident and traffic volume data from New Jersey, California, and Texas, using the Resource Conservation and Recovery Act Risk/Cost Analysis Model and calculated the accident involvement rates presented in Table 3-5. The study concluded that the release rate for tank trucks is much lower than for any other container type (Los Angeles County, 1988). The data in Table 3-5 are for all types of trucks.

TABLE 3-5

Truck Accident Rates for Cargo on Highways

Highway Type	Accidents Per 1,000,000 miles
Interstate	0.13
U.S. and State Highways	0.45
Urban Roadways	0.73
Composite*	0.28

* Average number for transport on interstates, highways, and urban roadways.

3.3.3 REGULATORY BACKGROUND

There are many federal and state rules and regulations that refineries and petroleum storage facilities must comply with in order to minimize the potential impacts associated with hazards at these facilities. The most important and relevant regulations relative to hazards are summarized in the following paragraphs.

Under OSHA regulations [29 CFR Part 1910], facilities which use, store, manufacture, handle, process, or move highly hazardous materials must prepare a fire prevention plan. In addition, 29 CFR Part 1910.119, PSM of Highly Hazardous Chemicals, and Title 8 of the California Code of Regulations (CCR), General Industry Safety Order §5189, specify required prevention program elements to protect workers at facilities that handle toxic, flammable, reactive or explosive materials. Prevention program elements are aimed at preventing or minimizing the consequences of catastrophic releases of the chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan.

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 RMPs to prevent accidental releases of these substances. U.S. EPA regulations are set forth in 40 CFR Part 68. In California, the CalARP Program regulation (CCR Title 19, Division 2, Chapter 4.5) was issued by the Governor's

Office of Emergency Services (OES). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. RMPs for existing facilities were required to be submitted by June 21, 1999. Tesoro has complied with the RMP requirements and has submitted the appropriate reports. The City of Los Angeles Fire Department and the City of Carson Fire Department administer the CalARP program for the Refinery and SRP, respectively. Tesoro is also required to comply with the U.S. EPA's Emergency Planning and Community Right-to-Know Act (EPCRA), which requires annual reporting of releases from the Refinery and SRP and specific requirements in the event of an emergency release.

All Refinery facilities are required to have a SPCC Plan per the requirements of 40 CFR, Section 112. The SPCC 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. Additional spill equipment is available through commercial contracts with suppliers that specialize in spill cleanup. Commercial contractors that specialize in oil cleanup are employed to place any additional booms or other spill capture equipment, if necessary, and to remove oil from the water, if the oil is released into waterways.

The Hazardous Materials Transportation (HMT) Act is the federal legislation that regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. DOT, the Federal Highway Administration, and the Federal Railroad Administration. The HMT Act requires that carriers report accidental releases of hazardous materials to the U.S. DOT at the earliest practical moment (49 CFR Subchapter C). Incidents that must be reported involve deaths, injuries requiring hospitalization, and property damage exceeding $50,000. Caltrans sets standards for trucks in California, but the regulations are enforced by the California Highway Patrol.

California Assembly Bill 2185 requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The business plans must provide a description of the types of hazardous materials/waste on-site and the location of these materials. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

3.4 TRANSPORTATION AND TRAFFIC

The proposed project will occur at the Refinery and SRP. The proposed modifications are entirely within the confines of the existing facilities. The existing transportation and traffic conditions at both are discussed below.

3.4.1 REGIONAL CIRCULATION

The Refinery is located at 2101 East Pacific Coast Highway, City of Los Angeles, Wilmington District. The SRP is located at 23208 South Alameda Street in the City of Carson, north of the Refinery. Regional transportation facilities in the vicinity of the project provide the Refinery and SRP with accessibility to the entire southern California region. Regional access to the Refinery and SRP is provided by the Long Beach (I-710) Freeway, which is located approximately two miles east of the proposed project, and the Harbor (I-110) Freeway, located approximately three miles west of the Refinery and SRP. These freeways are major north and south highways, which extend from the Ports of Los Angeles and Long Beach through Los Angeles County. Pacific Coast Highway bisects the Refinery site, with the majority of the site located to the north of Pacific Coast Highway. Pacific Coast Highway, Sepulveda Boulevard, and Alameda Street are key arterials servicing the area. Other key roadways in the local area network include Anaheim Street, Wilmington Boulevard, and Santa Fe Avenue.

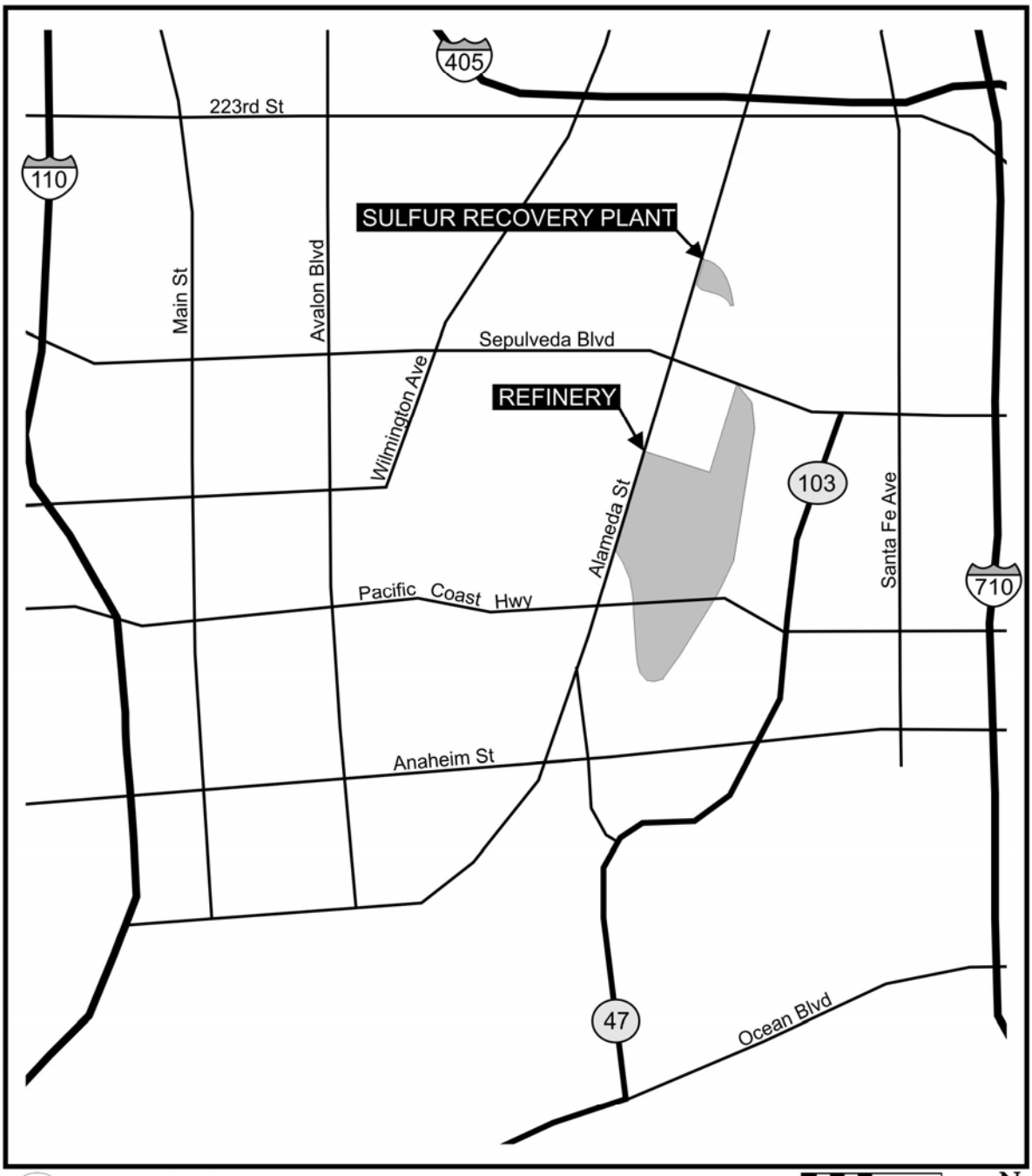
3.4.1.2 Freeways

Three major freeways provide access to the Refinery and SRP , the I-710 Freeway, the I-110 Freeway, and the San Diego (I-405) Freeway. The I-710 and I-110 Freeways are major north and south highways, which extend from the Ports of Los Angeles and Long Beach through Los Angeles County. The I-405 Freeway runs approximately 72 miles from I-5 near San Fernando in Los Angeles County to I-5 near El Toro in Orange County. The I-405 Freeway is less than four miles north of the proposed project and runs diagonally through the region. The I-405 Freeway supports a heavy travel demand between residential areas and employment centers from the San Fernando Valley, West Los Angeles, Los Angeles Airport, and into Orange County. In addition to supporting the daily commute trips, heavy evening and weekend traffic is caused by travel to and from county destinations both to the north and to the south via the I-405 Freeway.

In addition to the freeway system, railroad facilities service the Refinery and SRP providing an alternative mode of transportation for the distribution of goods and materials. The area is served by the Southern Pacific, Union Pacific, and Santa Fe, Pacific Electric and Harbor Belt Line railroads, with several main lines occurring near the Refinery and SRP. The Refinery and SRP are located near the Ports of Long Beach and Los Angeles, which provide a mode for transportation of goods and materials via marine vessels.

3.4.2 LOCAL CIRCULATION

The Refinery occupies an irregular shaped parcel of land which has segments bordered by Alameda Avenue to the west, Sepulveda Boulevard to the north, and is bisected by Pacific Coast Highway in the southern portion, and is paralleled by the Terminal Island Freeway to the east (see Figure 3-1). Access to the Refinery is primarily from Pacific Coast Highway. The SRP is located about one-half mile north of the Refinery and access is provided from Alameda Street.



TRAFFIC CIRCULATION

Project No. 2550
N:\2550\Traffic.cdr

Figure 3-1

The Wilmington/Carson area is served by an existing network of roadways. The existing street network is essentially a grid system of north/south and east/west roadways. The primary north/south roadways are Avalon Boulevard, Alameda Street, and Santa Fe Avenue. The primary east/west streets are Anaheim Street, Sepulveda Boulevard, and Pacific Coast Highway, which are major highways that function to connect traffic from collector streets to the major freeway systems, as well as to provide access to adjacent land uses. Major highways move large volumes of automobiles, trucks and buses, and link principal elements within the Wilmington/Carson area to other adjacent regions. The Terminal Island Freeway is a primary route for trucks and traffic between the Port of Los Angeles/Long Beach and the regional transportation system. State Route 47 becomes State Route 103 just north of Terminal Island.

The area surrounding the Refinery and SRP is accessible via public transit from most South Bay communities. While the private automobile remains the primary mode of transportation, bus service, the Metro Blue Line, light rail and paratransit services provide public transportation modes in the Wilmington area. The Los Angeles County Metropolitan Transportation Authority (MTA) provides several bus routes in the project vicinity that are routed throughout the city. Additionally, the Metro Blue Line operates through the project area, linking the Refinery and SRP area with the continually expanding regional rail system. The Los Angeles Department of Transportation (LADOT) and the Los Angeles County MTA also provide public transit services and commuter routes to and from the area surrounding the Refinery and SRP.

In addition to the vehicular system, the area surrounding the Refinery and SRP is serviced by a network of railroad facilities. This system provides an alternative mode of transportation for the distribution of goods and materials. The railroad network includes an extensive system of private railroads and several publicly-owned freight lines. The MTA operates commuter rail systems in the Los Angeles area. Additionally, Amtrak provides inter-city service, principally between San Diego and San Luis Obispo. The Los Angeles area is served by two main-line freight railroads, the Burlington Northern Santa Fe and the Union Pacific Railroad. These freight railroads connect southern California with other U.S. regions, Mexico, and Canada via their connections with other railroads.

3.4.3 EXISTING TRAFFIC CONDITIONS

The operating characteristics of an intersection are defined in terms of the LOS, which describes the quality of traffic flow based on variations in traffic volume and other variables such as the number of signal phases. Intersections rated at LOS A to C operate well. Level C normally is taken as the design level in urban areas outside a regional core. Level D typically is the level for which a metropolitan area street system is designed. Level E represents volumes at or near the capacity of the highway which will result in possible stoppages of momentary duration and fairly unstable traffic flow. Level F occurs when a street is overloaded and is characterized by stop-and-go (forced flow) traffic with stoppages of long duration.

Peak hour LOS analyses were developed for intersections in the vicinity of the Refinery and SRP (see Table 3-6). Traffic counts, including turn counts, were taken to determine the existing traffic in the Wilmington area. The LOS analysis indicates typical urban traffic conditions in the area surrounding the Refinery and SRP, with most intersections operating at LOS A during morning and evening peak hours. The LOS analysis indicates typical urban traffic conditions in the area surrounding the Refinery and SRP, with all intersections, except one, operating at Levels A to B during morning peak hours (7 am – 9 am). As shown in Table 3-6, one intersection currently operates at LOS C during morning peak hours, Santa Fe Street and Pacific Coast Highway. All other intersections operate at LOS A or B during the morning peak hour.

The evening peak hour conditions (4 pm – 6 pm) show that all intersections operate at LOS A except for two: The Alameda Street connector with 223rd Street operates at LOS C and the intersection of Santa Fe Street and Pacific Coast Highway operates at LOS D. LOS D represents the typical design level for a metropolitan area street system.

TABLE 3-6

Existing Traffic Conditions

Intersection	Existing AM Peak Hour		Existing PM Peak Hour	
	V/C Ratio	LOS	V/C Ratio	LOS
1. Alameda St. and I-405 NB Ramps	0.455	A	0.564	A
2. Alameda St and 223rd St. connector	0.418	A	0.514	A
3. ICTF entry/I-405 Ramps and Wardlow/223rd St.	0.521	A	0.497	A
4. Alameda connector and 223rd St.	0.433	A	0.737	C
5. Alameda St. and Sepulveda Blvd. connector	0.347	A	0.446	A
6. Alameda St. connector and Sepulveda Blvd.	0.429	A	0.582	A
7. Alamda St. connector and Pacific Coast Hwy.	0.433	A	0.550	A
8. Alameda St. and Pacific Coast Hwy. connector	0.196	A	0.234	A
9. Alameda St. and Anaheim St.	0.537	A	0.566	A
10. Wilmington Ave. and Sepulveda Blvd.	0.661	B	0.557	A
11. Santa Fe St. and Pacific Coast Hwy.	0.727	C	0.832	D

V/C ratios and associated LOS definitions are defined below)

V/C Ratio .00 - .60 = LOS A Free flow (very slight or no delay)
V/C Ratio .61 - .70 = LOS B Stable flow (slight delay)
V/C Ratio .71 - .80 = LOS C Stable flow (acceptable delay)
V/C Ratio .81 - .90 = LOS D Approaching unstable flow or operation (tolerable delay)
V/C Ratio .91 – 1.0 = LOS E Unstable flow (at maximum capacity; unacceptable delay)
V/C Ratio 1.0 or more = LOS F Forced flow (above maximum capacity; unacceptable delay)

3.4.4 REGULATORY BACKGROUND

In June 1990, California voters approved Proposition 111 to fund transportation-related improvements statewide. A Congestion Management Program (CMP) is required to be adopted for urbanized counties in California to be eligible for revenues associated with Proposition 111. In the County of Los Angeles, the Los Angeles County Metropolitan Transportation Authority (MTA) is the agency that prepares the CMP. The goal of the CMP is to promote a more coordinated approach to land use and transportation decisions by requiring traffic impact analyses for individual development projects of potential regional significance (add 50 or more trips during either the AM or PM peak hours to arterials within the CMP). There are no arterial stations in the City of Carson, but a number within the City of Los Angeles. The CMP also requires traffic studies to analyze CMP freeway monitoring locations where a project adds 150 or more trips during the AM or PM peak hours. The Artesia Freeway (SR-91), the Harbor Freeway (I-110), the San Diego Freeway (I-405) and the Long Beach Freeway (I-710) are freeways that are designated for monitoring in the CMP. Compliance with the CMP provisions include land use coordination through traffic impact analyses; implementation of Transportation Demand Management (TDM) strategies; maintenance of transit service standards; monitoring of CMP highway system levels of service; and development of level of service deficiency plans where needed.

Transportation planning for Los Angeles County is the responsibility of the Southern California Associated of Governments (SCAG). Under Federal law, SCAG must prepare a Regional Transportation Plan (RTP). The RTP demonstrates how the region will meet federal mandates associated with air quality requirements and must be approved in order to receive Federal transportation funds. The MTA is the state designated planning agency for Los Angeles County and submits recommended projects to SCAG for inclusion in the RTP. The MTA identifies the transportation needs and challenges that Los Angeles County will face over a 25 year period through the development of Long Range Transportation Plans. The adopted LRTP becomes the blueprint for implementing future transportation improvements in Los Angeles County. The LRTP seeks to maintain the existing transportation system, maximize system efficiency, increase system capacity and manage demand.

The City of Los Angeles prepared a Transportation Improvement and Mitigation Program (TIMP) for the Wilmington-Harbor City Community Plan through an analysis of the land use impacts on transportation. The TIMP establishes a program of specific measures that are recommended to be undertaken during the life of the Community Plan including transit improvements, transportation system management improvements, neighborhood traffic control plans, and transportation demand management program.

The Wilmington-Harbor City Community Plan provides specific objectives and goals for traffic in the area. It is the City of Los Angeles' objective that the traffic LOS on the street system in the community not exceed LOS E. Most of the Wilmington-Harbor City's major street intersections are in compliance with this policy. The City of Los Angeles has prepared a Transportation Demand Management (TDM) program for the Wilmington area that

includes the following goals: (1) encourage the formation of Transportation Management Associations in order to assist employers in creating and managing trip reduction programs; (2) participate in local and regional TDM programs; (3) continue implementing the Wilmington-Harbor City TDM which calls for several measures to be taken in developments to achieve trip reduction targets; (4) implement the Master Plan's recommendations for bikeways in the area; (5) encourage telecommuting to minimize traffic; (6) encouragement the development of pedestrian oriented areas; and (7) development of a parking management strategy (City of Los Angeles, 1999a).

TIMP and TDMs are not required for the City of Carson because no CMP regulated intersections are located within the City of Carson.