CHAPTER 2.0

PROJECT DESCRIPTION

PROJECT OBJECTIVES

The proposed project includes modifications to the Equilon Los Angeles Refinery (Refinery) and related terminals that will improve the air quality in the South Coast Air Basin (Basin) by producing cleaner-burning reformulated gasoline for use in motor vehicles. Cleaner-burning gasoline will reduce emissions of criteria and toxic air pollutants, and thereby, help to achieve and maintain federal and state ambient air quality standards in the Basin. The objectives of the proposed project are to phase out the use of MTBE and replace it with ethanol to comply with federal oxygenate requirements and comply with California's Phase 3 Reformulated Fuels requirements while minimizing the loss in the volume of gasoline produced by the Refinery or at the terminals. The proposed project is not expected to increase the gasoline produced by the Equilon Refinery or terminals.

A. REGULATORY BACKGROUND

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. In December 1999, the California Air Resources Board (CARB) developed additional regulations that effect the quality of gasoline used in California. In order to meet these additional regulations, Equilon Enterprises LLC (Equilon) will require modifications to its Los Angeles Refinery.

In 1990, the amendments to the federal Clean Air Act (CAA) conditionally required states to implement programs in federal non-attainment areas for CO to require gasoline to contain a minimum oxygen content in the winter beginning in November 1992. In response to the federal CAA requirements to reduce CO emissions, California established a wintertime oxygenate gasoline program requiring between 1.8 and 2.2 weight percent oxygen content in gasoline.

In addition, the CAA directed the U.S. Environmental Protection Agency (U.S. EPA) to adopt federal reformulated fuel gasoline (RFG Phase 1) regulations applicable starting January 1995 in nine major metropolitan areas of the country including the Basin, with the worst ozone pollution. The federal CAA required that RFG Phase 1 contain at least 2.0 percent by weight of oxygen year-round. In addition to the federal RFG Phase 1 requirements, California adopted regulations for reformulated gasoline in 1991 (RFG Phase 2). Because of the federal requirements for oxygen content in RFG Phase 1, an oxygen content specification was incorporated in the RFG Phase 2 California reformulated gasoline regulations. The RFG Phase 2 requirements became effective in March 1996. A summary of the statewide air quality benefits from the RFG Phase 2

requirements is shown in Table 2-1. The RFG Phase 2 specifications are shown in Table 2-2.

TABLE 2-1

STATEWIDE EMISSION BENEFITS ASSOCIATED WITH RFG PHASE 2 REGULATIONS*

POLLUTANT	Reduction Tons per Day	Reduction Percent
Hydrocarbons	190	17
Nitrogen Oxides	110	11
Carbon Monoxide	1,300	11
Sulfur Oxides	30	80
Potency-weighted sum of toxic species	--	40

*Source: CARB, 1999.

TABLE 2-2

RFG PHASE 2 AND 3 REQUIREMENTS(1)

PROPERTY	RFG Phase 2 Requirements	RFG Phase 3 Requirements
RVP (psi)	7.0	6.9(2)
Benzene (vol. %)	1.00	0.80
Sulfur (ppmw)	40	20
Aromatic Hydrocarbons (vol. %)	25	25
Olefins (vol. %).	6.0	6.0
Oxygen (wt. %)	1.8 to 2.2	1.8 to 2.2
T50 ^{o}F(3)	210	213
T90 ^{o}F(3)	300	305

Source: CARB, 1999.

(1) Based on the flat limit standard for producers, there are "average" and "cap" limits for all gasoline sold throughout the distribution system.

(2) The listed RVP limit applies when the Evaporative Model is activated within the Predictive Model. If the Evaporative Model is not activated the flat limit for RVP is 7 psi.

(3) T50 and T90 are the temperatures at which 50 and 90 percent, respectively, of gasoline is distilled.

Neither RFG Phase 1 or 2 regulations specified the type of oxygenate required. While there are several oxygenates that can be used to meet the oxygenate requirement for gasoline, methyl tertiary butyl ether (MTBE) and ethanol are used most frequently. In

1996, over 95 percent of the gasoline used in California was blended with MTBE (CARB, 1999).

In California and other parts of the U.S., the use of MTBE and other ether-based oxygenates in gasoline raised environmental and health concerns. Recent legislation in California (SB 521, The MTBE Public Health and Environmental Protection Act of 1997) directed the University of California to conduct a study of the health and environmental risks and benefits of MTBE in gasoline compared to other oxygenates. SB 521 also required the Governor to take appropriate action based on the findings of the report and information from public hearings.

In consideration of this study, public testimony, and other relevant information, California's Governor Davis found that, "on balance, there is significant risk to the environment from using MTBE in gasoline in California." In response to this finding, on March 25, 1999, the Governor issued Executive Order D-5-99 which directed, among other things, that California phase out the use of MTBE in gasoline by December 31, 2002. As part of the Executive Order, on December 9, 1999, CARB adopted new gasoline specifications which are known as California Reformulated Gasoline Phase 3 (RFG Phase 3) requirements. A summary of RFG Phase 3 requirements is shown in Table 2-2.

The RFG Phase 3 requirements prohibit the use of MTBE by December 31, 2002, while establishing more stringent standards for sulfur and benzene to preserve current emission benefits and to gain additional hydrocarbon, nitrogen oxide and toxic air pollutant emissions reductions. Sulfur is the only fuel parameter that simultaneously reduces emissions of hydrocarbons, NOx, and toxics. Therefore, lowering sulfur content provides additional NOx reductions (CARB, 1999). The two distillation standards (T50 and T90) are being relaxed (see Table 2-2). In addition, the RFG Phase 3 requirements provide flexibility in meeting the Reid vapor pressure (RVP) standard.

CARB estimates that the RFG Phase 3 requirements will reduce statewide mobile source hydrocarbon emissions by 0.5 tons per day, NOx emissions by 19 tons per day, and will eliminate MTBE concentrations. Toxic emissions are 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 RFG Phase 3 fuel. The RFG Phase 3 requirements are expected to preserve and enhance the motor vehicle emission reduction benefits of the current program and will further aid in meeting the emission reductions required by the California State Implementation Plan (SIP) (CARB, 1999).

In order to comply with RFG Phase 3 requirements, and produce equivalent quantities of products, Equilon is proposing modifications to its existing Refinery and terminals.

B. NEED FOR EMISSION REDUCTIONS

VOC/NOx: Most of the state of California does not meet state or federal standards for ozone. California's plan for achieving the federal ozone standard is contained in the SIP that was approved by the CARB in 1994. A significant part of the emission reductions in the SIP are from regulating vehicle emissions and vehicle fuel specifications. Table 2-3 shows the VOC and NOx statewide contribution from motor vehicles and stationary sources. Mobile source emissions account for approximately 70 percent of ozone precursors statewide. The SIP also calls for additional motor vehicle emission reductions in the Basin of about 75 tons per day of VOC and NOx, but it does not specify how the reductions are to be achieved.

TABLE 2-3

OZONE PRECURSOR CONTRIBUTION FROM MOTOR VEHICLES
1995 Statewide Emissions (tons/day)

	VOC	NOx	VOC + NOx	Percent
On-Road Gasoline Vehicles	1588	1574	3162	45
On-Road Diesel Vehicles	64	507	571	8
Other Mobile Sources	321	695	1016	14
Stationary Sources	735	633	1368	20
Area-Wide Sources	779	95	874	13
Total	3487	3504	6991	100

Source: CARB, 1999

CO: The state and national CO ambient air quality standards are now attained in most areas of California. The requirements for cleaner vehicles and fuels have been primarily responsible for the reduction in ambient CO concentrations despite significant increases in population and the number of vehicle miles traveled each day. While the Basin is designated as non-attainment, violations of the state and national CO ambient air quality standards are now limited to only a small portion of Los Angeles County. No violations have occurred in the other three counties of the Basin (Orange, Riverside, and San Bernardino) since 1992. California RFG Phase 2 requirements helped bring the rest of the state into CO attainment. Additional emission reductions will be needed in the future to keep pace with the increases in population and vehicle usage.

PM10: The majority of California, including the Basin, is designated as non-attainment for the state PM10 ambient air quality standards.

C. PROJECT LOCATION AND LAND USE

The proposed project includes modifications to the Refinery and various terminals in Wilmington, Signal Hill, Carson, Van Nuys, Colton, and Rialto (see Figure 2-1). Modifications are also required to the Mormon Island Marine Terminal. The locations of the Refinery and the related terminals are shown in Figure 2-1.

The proposed project includes modifications to the Equilon Refinery which is located at 2101 East Pacific Coast Highway in the Wilmington district of the City of Los Angeles. The Wilmington Terminal is located adjacent to the southwestern portion of the Refinery at 1926 East Pacific Coast Highway. Figure 2-2 shows the location of the Refinery and Wilmington Truck Terminal. The Refinery occupies about 300 acres of land; the larger portion of which is located within the jurisdiction of the City of Los Angeles, and the smaller portion of which is located within the City of Carson. The Refinery is bounded to the north by Sepulveda Boulevard, to the west by Alameda Street, to the south by the Southern Pacific Railroad tracks, and to the east by the Dominguez Channel. The Refinery is bisected by Pacific Coast Highway, with the larger portion of the Refinery to the north of Pacific Coast Highway and the smaller portion to the south. The Refinery and all adjacent areas are zoned for heavy industrial use. The closest residential area is about one-half mile east of the Refinery in the City of Long Beach (see Figure 2-2).

The Refinery and Wilmington Terminal are zoned for heavy industrial uses (M3-1). The land use in the vicinity of the Refinery and terminal includes oil production and refineries, hydrogen plants, coke handling facilities, automobile wrecking/dismantling facilities, and other industrial facilities. The main operating portions of the Refinery and terminal are located within the Wilmington-Harbor City Planning Area (City of Los Angeles), which permits heavy industrial uses including petroleum refining on the Equilon property (City of Los Angeles, 1999). A conditional use permit is thus not required for this proposed project. The Wilmington-Harbor City Plan places no additional restrictions on refineries, and specifically allows for construction without regard to height limitations.

A portion of the Refinery's tank farm and its Sulfur Recovery Plant are located within the City of Carson. This portion of the Refinery is located in the City of Carson's MH zone according to the City of Carson's Land Use element of its General Plan. Adjacent land uses also are heavy industrial and include other refineries, a hydrogen plant, undeveloped lots and container storage areas.

Figure 2-1 goes here

Figure 2-2 goes here

The proposed project also will require changes to distribution terminals in the southern California area. The Signal Hill Terminal is located at 2457 Redondo Avenue in Signal Hill (see Figure 2-3). The terminal is located just south of the I-405 Freeway and south of Willow Street. The Signal Hill Terminal is located in a commercial industrial area (C1). The land use in the vicinity of the terminal also includes light and general industrial. Residential land uses are located about one-quarter mile south of the terminal.

The Carson Terminal is located at 20945 South Wilmington Avenue, Carson (the former location of the Shell Oil Refinery) (see Figure 2-4). The terminal is located in an industrial area and surrounded primarily by industrial and commercial land uses on the east, west, and north. Residential land uses are located adjacent to and south of the terminal.

The Van Nuys Terminal is located at 8100 Haskell Boulevard in Van Nuys (see Figure 2-5). The terminal is located immediately west of the I-405 Freeway and south of Roscoe Boulevard and is primarily surrounded by heavy industrial land uses. The Van Nuys Terminal is located in a heavy industrial zone (M2-1). The land use in the immediate vicinity of the terminal is primarily zoned heavy industrial. Residential land uses are located north and north east of the terminal. The closest residents are located about 1,300 feet north of the terminal.

The Colton and Rialto Terminals are located at 2237 and 2307 South Riverside Avenue in the City of Rialto (see Figure 2-6). Although these terminals have separate addresses, they are physically located adjacent to each other so that the environmental issues (e.g., environmental setting) associated with the two terminals are the same. The terminals are located south of Slover Avenue, east of Willow Avenue, to the north of Santa Ana Avenue and are primarily surrounded by heavy industrial land uses. The Colton and Rialto Terminals and surrounding land uses in the immediate vicinity of the terminals are primarily zoned for heavy industrial. Residential land uses are located about 600 feet north and northeast of the terminals.

The Marine Terminal is located in Mormon Island within the Port of Los Angeles. The Marine Terminal is located at Berths 167-169 and is surrounded by other heavy industrial port-related uses including the GATX marine terminal and the U.S. Borax facility. The closest residential land uses are located about one mile north of the terminal.

D. EXISTING EQUILON OPERATIONS

Crude oils, used to produce gasoline and other petroleum products, are delivered to marine terminals in the Ports of Los Angeles and Long Beach by ship. Crude oil also is delivered to the Refinery by pipelines and trucks. Crude oil is processed in the crude unit and the delayed coking unit where it is heated and distilled into components, most of which are processed in downstream Refinery units. Most of the products leaving the crude unit and delayed coking units are hydrotreated to remove sulfur compounds prior to further processing in the fluid catalytic cracking unit, the hydrocracking unit, the

Figure 2-3 goes here

Figure 2-4 goes here

Figure 2-5 goes here

Figure 2-6 goes here

alkylation unit, and the catalytic reforming units. The crude oil, along with the intermediate products, are refined into the major Refinery products which include unleaded gasoline, diesel, aviation jet fuel, other distillate fuels, petroleum coke, and sulfur. Elemental sulfur and petroleum coke are produced as a by-product of the refining process. Major processing units at the Refinery include the crude, delayed coking, catalytic reforming, hydrotreating, fluid catalytic cracking, alkylation, benzene saturation, hydrogen generation, sulfur recovery, cogeneration, and auxiliary systems. Figure 2-7 provides the existing Refinery flow diagram. Finished products are distributed to the various terminals primarily via pipelines and trucks.

E. PROPOSED PROJECT

In order to produce gasoline that complies with RFG Phase 3 requirements, Equilon is proposing to make a number of changes to the configuration of the Refinery by modifying existing process operating units, constructing and installing new units, modifying storage tanks, providing additional ancillary facilities, and modifying the Refinery utility systems (steam, air, power, water, fuel gas, etc.) as required to support the new and modified units. In addition, modifications to Equilon terminals also are proposed to receive, store, and distribute ethanol to its own bulk plants and the bulk plants of others. The modifications proposed by Equilon to comply with the Phase 3 Reformulated Fuels requirements are outlined below. Figure 2-8 shows the revised Refinery flow diagram following completion of the proposed project. The proposed project is not expected to increase the crude throughput at the Refinery. Table 2-4 summarizes the proposed project modifications. A plot plan that shows the location of the various Refinery units is found in Figure 2-9.

Modifications to Refinery Existing Units

Hydrotreater Unit No. 2 (HTU2): As part of the CARB RFG Phase 3 project, HTU2 will be modified. HTU2 removes sulfur and nitrogen compounds from naphtha streams produced in the delayed coking and fluid catalytic cracking units. Modifications will include the installation of a new olefins saturation reactor in series with a new pretreat reactor, new charge pumps, new heat exchangers, replacement of the active tray area, replacement of the stripper reboiler, new control valves, and piping modifications. Modifications also will be required to the HTU2 charge heater, which will be retubed.

C4 Isomerization Unit: Equilon is proposing to convert an existing idle reformer unit into a C4 Isomerization Unit in order to provide additional isobutane for feed to the Alkylation Unit. The C4 Isomerization Unit will convert normal butane to isobutane for feed to the Alkylation Unit. This unit supports the expansion of the Alkylation Unit as described below and eliminates existing truck traffic across Equilon's LPG loading rack that currently supports the export of normal butane and import of isobutane for the Alkylation process. The C4 Isomerization Unit will use existing equipment including vessels, reactors, exhangers, and pumps. Equilon also is proposing to use an existing zinc oxide treater in the BenSat Unit in the C4 Isomerization Unit. New equipment in the unit

Figure 2-7 goes here

Figure 2-8 goes here

Figure 2-9 goes here

will include some additional exchangers, a stabilizer, a new gas scrubber, driers, vessels, pumps, and piping.

Catalytic Reforming Unit (CRU2): Modifications to CRU2 are being proposed to process the feeds from the Feed Prep Tower and the Hydrocracker Unit (HCU) fractionator. CRU2 upgrades low octane naphthas to high octane gasoline blending stocks. These changes include a new reactor that uses a nickel oxide catalyst to remove additional quantities of sulfur from CRU2 feed and a retray of the Debutanizer tower.

Alkylation Unit: The Alkylation Unit processes the hydrocarbon feeds from the Fluid Catalytic Cracking Unit, Delayed Cracking Unit, and Hydrocracking Unit operations to produce propane, normal butane, alkylate, and fuel gas (ethane). Alkylate provides a high quality clean burning gasoline blendstock that contains little to no sulfur, aromatics, or olefins. Equilon is proposing to expand the sulfuric acid Alkylation Unit from 8,500 barrels per day (bpd) to 12,000 bpd. The major components of this expansion include addition of alkylate effluent treating vessels, a new contactor and settler, a refrigeration unit, modifications to an existing cooling tower, new exchangers, and pumps. These Alkylation unit modifications will require additional steam that will be supplied by improvements to the Refinery's existing steam production facilities, which are taken to include low NOx burners.

Hydrotreating Unit No. 4 (HTU4): HTU4 stabilizes and purifies the gas oil to produce low sulfur and nitrogen heavy oil feedstock for the FCCU. Equilon is proposing to modify HTU4 to remove additional quantities of sulfur from hydrocarbon streams. Modifications include changes to the main reactor, addition of a diesel side stripper, addition of a new feed steam preheater, additional heat exchangers and piping modifications.

Fractionator Changes: Equilon is proposing changes in a number of fractionator columns as part of the proposed project in order to provide RVP control, increase high octane reformate production, and produce additional alkylate. Fractionators generally are used to heat petroleum so that various components can be separated by boiling points. These changes are required to replace octane loss from the elimination of MTBE and for RVP control when ethanol is used as a replacement for MTBE. Hardware revisions are required to the HCU Main Fractionator, Fluid Catalytic Cracking Unit (FCCU) Debutanizer, Feed Prep Tower, Depentanizer, Alky Deisobutanizer, Alky Debutanizer, and the C4 Isomerization Deisobutanizer (an existing column to be revamped to support the new C4 Isomerization Unit). Changes to the columns generally involve tray modifications and revisions to the stream cutpoints. The existing Platformate Splitter in the Catalytic Reforming Unit (CRU-3) will be isolated from the rest of the CRU-3 process and a new Debutanizer bottoms product cooler will be installed. The existing Platformate Splitter will be converted to a Depentanizer that will separate a mixed pentane/hexane stream into separate pentane overhead and hexane bottoms products. The pentane overhead product will be blended into gasoline and the

TABLE 2-4

PROPOSED PROJECT MODIFICATIONS

Process Change/Equipment Description	Nature of Change
Reid Vapor Pressure Control	
Alkylation Unit –	
Contactor and Settler	New
Refrigeration Unit	New
Cooling Tower	Modifications
Exchangers/Pumps	New
C4 Isomerization Unit –	
Vessels	New/Modifications
Reactors	Modifications
Exchangers	New/Modifications
Pumps/Piping	New/Modifications
Zinc Oxide Treater	Modifications
Stabilizer	New
Gas Scrubber	New
Drier	New
Fractionator Changes	
HCU Main Fractionator	Modifications
FCCU Debutanizer	Modifications
Feed Prep Tower	Modifications
Depentanizer	Modifications
Alky Deisobutanizer	Modifications
Alky Debutanizer	Modifications
C4 Isomerization Deisobutanizer	Modifications
Pentane Sphere	New
Reduce Sulfur Content of Gasoline	
Alkylation Unit –	
Effluent Treating Vessels	New/Modifications
Hydrotreater Unit No. 2 –	
Olefins Saturation Reactor	New
Pretreat Reactor	New
Charge Pumps	New
Heat Exchangers	New
Trays	Replacement
Stripper Reboiler	Replacement
Control Valves	New
Piping	Modifications
Merox Unit	
Control Valve	New

TABLE 2-4 (cont.)

Process Change/Equipment Description	Nature of Change
RVP Control	
Hydrotreater Unit No. 4 –	
Main Reactor	Modifications
Diesel Side Stripper	New
Feed Steam Preheater	New
Heat Exchangers	New
Piping	Modifications
Hydrotreater Unit No. 1	Modifications
Octane Optimization	
Alkylation Unit –	
Contactor and Settler	New
Refrigeration Unit	New
Cooling Tower	Modifications
Exchangers/Pumps	New
C4 Isomerization Unit –	
Vessels	New/Modifications
Reactors	Modifications
Exchangers	New/Modifications
Pumps/Piping	New/Modifications
Zinc Oxide Treater	Modifications
Stabilizer	New
Gas Scrubber	New
Drier	New
Fractionator Changes	
HCU Main Fractionator	Modifications
FCCU Debutanizer	Modifications
Feed Prep Tower	Modifications
Depentanizer	Modifications
Alky Deisobutanizer	Modifications
Alky Debutanizer	Modifications
C4 Isomerization Deisobutanizer	Modifications
HCU Depropanizer	Modifications
Catalytic Reforming Unit No. 2	
Sulfur Guard Reactor	New
Debutanizer Tower	Modifications
Utilities	
Flare	Modifications
Vapor Recovery Systems	Modifications
Steam Production Systems	Modifications

TABLE 2-4 (concluded)

Process Change/Equipment Description	Nature of Change
Elimination of MTBE	
Storage Tank – Refinery	Modifications
Storage Tanks – Carson Terminal	Modifications
Piping, Valves, Flanges, and Loading Racks – Carson Terminal	Modifications
Storage Tanks – Signal Hill Terminal	New
Piping, Valves, Flanges, and Loading Racks – Signal Hill Terminal	Modifications
Storage Tanks – Colton and Rialto Terminals	New
Piping, Valves, Flanges, and Loading Racks – Colton and Rialto Terminals	Modifications
Storage Tank – Van Nuys Terminal	New
Piping, Valves, Flanges, and Loading Racks – Van Nuys Terminal	Modifications
Marine Terminal, Wilmington Terminal	Modifications

hexane bottoms product will be fed to the Benzene Saturation Unit. In addition, operational revisions will be required to the HCU Depropanizer and the CRU2 Splitter.

Merox Unit: Light naphtha from the FCCU is presently sent to storage tanks and is used as a gasoline blendstock. The sulfur content of the FCCU light naphtha can be lowered by processing through an idle Coker Merox Unit. Therefore, in order to help comply with the reduced sulfur content limitations in gasoline, the light naphtha from the FCCU will be processed through the idle Merox Unit. The only change required is the installation of a control valve in the FCCU light naphtha rundown line to divert the flow to the Merox Unit (instead of to storage). No other changes are required to the Merox Unit and no permit modifications are required for this change.

New Units

Pentane Sphere: A new 50,000 barrel pentane (C5) sphere is proposed to be installed in the north area of the Refinery. The pentane sphere will be used to store pentane allowing the Refinery to better control the RVP of gasoline blending stocks. Pentane blending and loading pumps, in addition to new piping, valves and fittings, will be required as part of the new sphere (see Figure 2-9).

Auxiliary Systems

Storage Tank Modifications: The service on several storage tanks will be modified. MTBE currently is stored in a tank at the Refinery. MTBE will no longer be blended into gasoline or delivered to the Refinery, therefore, all tanks currently in MTBE service will be changed and the throughput of the tanks also is expected to change. The throughput on some tanks in petroleum service is also expected to change.

Flare and Vapor Recovery Systems: Modifications to the Refinery's existing flare and vapor recovery systems will be required as part of the project to incorporate the proposed modifications and new units.

Steam Production System Modifications: The CARB Phase 3 project will require an additional 122,000 pounds of steam per hour, which will be provided by efficiency improvements to the existing steam utility system, which includes the following units:

- Boiler House Units 7, 8, 9, and 10
- CO Boiler (BO-1)
- HGU-2 (H-43)
- Sulfur Recovery Plant

These efficiency improvements will include installation of new, efficient low NOx burners. There will be no increase in the maximum rated capacity of these units.

Terminal Modifications

The proposed project includes the removal of MTBE, an oxygenate that is currently blended into gasoline at the Refinery. Instead, Equilon will use ethanol as an oxygenate. Because ethanol absorbs water easily, it must be blended into gasoline at the Terminals to minimize the potential for contamination with water in the distribution system. A summary of terminal changes is provided in Table 2-5.

Carson Terminal: Equilon plans to receive denatured ethanol at its Carson Terminal by rail car and pipeline from the Mormon Island Marine Terminal. A plot plan of the Carson facility is shown in Figure 2-10.

A new rail car off-loading rack will be used to unload denatured ethanol and transfer it to the storage tanks. Equilon estimates that about 35-40 rail cars per day would be received at the Carson Terminal. An existing pipeline will also be used to transfer denatured ethanol from the Mormon Island Marine Terminal to the Carson Terminal.

Denatured ethanol received at the Carson Terminal will be transferred to and stored in five existing above-ground storage tanks. The denatured ethanol will then be transferred to tank trucks, for distribution to the Wilmington, Signal Hill, Van Nuys, Colton, and Rialto terminals for subsequent storage and blending into gasoline. A new truck loading rack and vapor processor will be installed at the Carson Terminal. A new loading pump and piping will be installed to pump ethanol from the storage tanks to the truck loading rack. The truck loading rack will be designed to load about 30,000 barrels per day of denatured ethanol. The loading rack will consist of three lanes, with each lane expected to load a maximum of 50 trucks per day, operating 24-hours per day, seven days

Figure 2-10 goes here

TABLE 2-5
PROPOSED TERMINAL CHANGES

Terminal	Proposed Change and/or Addition
Carson	• Construction of a new three lane truck loading rack for ethanol with vapor control • Construction of new rail car off-loading rack for ethanol • Modifications to 5 existing above ground storage tanks to handle ethanol instead of gasoline and/or MTBE
Mormon Island	• Modification of two existing above ground storage tanks to handle ethanol • Replacement of one pump with a larger capacity pump • Piping modifications to place blind flanges on some pipelines
Wilmington	• Construction of one new 12,800 bbl internal floating roof aboveground storage tank equipped with primary and secondary seals for storage of denatured ethanol • Modifications to existing tank piping and metering systems • Modification of existing loading rack systems for ethanol delivery and blending • Addition of new pumps for ethanol blending • Construction of a truck off-loading facility
Signal Hill	• Construction of one new 30,000 bbl internal floating roof aboveground storage tank equipped with primary and secondary seals for storage of alkylate • Change of service and construction of a dome on an existing 7,600 bbl storage tank from alkylate to ethanol • Modifications to existing tank piping and metering systems • Modification of existing loading rack systems for ethanol delivery and blending • Addition of new pumps for ethanol blending • Construction of a truck off-loading facility
Van Nuys	• Construction of one new 7,400 bbl internal floating roof aboveground storage tank equipped with primary and secondary seals for storage of denatured ethanol • Modifications to existing tank piping and metering systems • Modification of existing loading rack systems for ethanol delivery and blending • Addition of new pumps for ethanol blending • Construction of a truck off-loading facility

TABLE 2-5 (cont.)

Terminal	Proposed Change and/or Addition
Colton	• Construction of one new 7,150 bbl internal floating roof aboveground storage tank equipped with primary and secondary seals for storage of denatured ethanol • Change of service of an existing aboveground 11,900 bbl diesel tank to gasoline service • Modifications to existing tank piping and metering systems • Modification of existing loading rack systems for ethanol delivery and blending • Addition of new pumps for ethanol blending • Construction of a truck off-loading facility
Rialto	• Construction of one new 7,150 bbl internal floating roof aboveground storage tank equipped with primary and secondary seals for storage of denatured ethanol • Modifications to existing tank piping and metering systems • Modification of existing loading rack systems for ethanol delivery and blending • Addition of new pumps for ethanol blending • Construction of a truck off-loading facility

per week. Emissions from the truck loading rack will be captured by a vapor collection system, transferred to a gasholder or bladder tank for surge control, and combusted on-site in a thermal oxidizer.

Mormon Island: Some ethanol will be received at the Equilon Mormon Island Marine Terminal. A plot plan of the Mormon Island Terminal is included in Figure 2-11. *Equilon expects most ethanol received will be denatured.* However, Equilon will denature neat ethanol received at Mormon Island by immediately blending it *in-line* with approximately five percent gasoline, then transfer the denatured ethanol via an existing pipeline directly to the storage tanks at the Carson Terminal (see Figure 2-4).

Two tanks at Mormon Island will also be available for storage of denatured ethanol in the event that additional storage capacity is needed. These tanks are currently in MTBE or gasoline service and are external floating roof tanks. Dome roofs will be added to these tanks to prevent contamination of the denatured ethanol with rainwater. Shipment of MTBE to the marine terminal will be eliminated following completion of the proposed project. It is expected that the increase in ethanol transport of about two vessels per month will be offset by a decrease in MTBE to the Terminal by about two vessels per month. In addition, the proposed project is expected to result in an increased use of alkylate at the Refinery. The increased alkylate is expected to be delivered via marine vessel, resulting in an increase of about six ships per year.

Figure 2-11 goes here

The modifications required to the Mormon Island Terminal include the modification of two existing above ground storage tanks to handle ethanol, replacement of one pump with a larger capacity pump, and piping modifications to place blind flanges on some pipelines.

Wilmington Terminal: The Wilmington Terminal will require the construction of a new approximately 12,800 bbl internal floating roof tank, a truck unloading pad and various pipeline metering and blending changes at the bottom loading truck rack (see Figure 2-12). Ethanol blending equipment will be required which will inject a pre-set ratio of ethanol into the gasoline being loaded into the tanker trucks at the loading rack. Miscellaneous new piping, valves, pumps, connectors and other fittings will be added as a result of the proposed project.

Signal Hill Terminal: The Signal Hill Terminal will require the construction of a new approximately 30,000 bbl internal floating roof tank, the conversion of one existing tank to store ethanol, the construction of a truck off-loading facility, and various pipeline metering and blending changes at the existing truck loading rack (see Figure 2-13). Ethanol blending equipment will be required which will inject a pre-set ratio of ethanol into the gasoline being loaded into the tanker trucks at the loading rack. Miscellaneous new piping, valves, pumps, connectors and other fittings will be added as a result of the proposed project.

Van Nuys Terminal: The Van Nuys Terminal will require the construction of a new approximately 7,400 bbl internal floating roof tank, a truck unloading facility, and various pipeline metering and blending changes at the existing truck loading rack (see Figure 2-14). Ethanol blending equipment will be required which will inject a pre-set ratio of ethanol into the gasoline being loaded into the tanker trucks at the loading rack. Miscellaneous new piping, valves, pumps, connectors and other fittings will be added as a result of the proposed project.

Colton Terminal: The Colton Terminal will require the construction of a new approximately 7,150 bbl internal floating roof tank, change of service of an existing aboveground 11,900 bbl Storage Tank 24 from diesel to gasoline, a truck unloading facility, and various pipeline metering and blending changes at the existing truck loading rack (see Figure 2-15). Ethanol blending equipment will be required which will inject a pre-set ratio of ethanol into the gasoline being loaded into the tanker trucks at the loading rack.

Miscellaneous new piping, valves, pumps, connectors and other fittings will be added as a result of the proposed project.

Rialto Terminal: The Rialto Terminal will require the construction of a new approximately 7,150 bbl internal floating roof tank, a truck unloading facility, and various pipeline metering and blending changes at the existing truck loading rack (see

Figure 2-12 goes here.

Figure 2-13 goes here.

Figure 2-14 goes here.

Figure 2-15 goes here.

Figure 2-16 goes here.

Figure 2-16). Ethanol blending equipment will be required which will inject a pre-set ratio of ethanol into the gasoline being loaded into the tanker trucks at the loading rack. Miscellaneous new piping, valves, pumps, connectors and other fittings will be added as a result of the proposed project.

The NOP/IS completed for this project (SCAQMD, 2000a) indicated that the proposed project would include a new CD Tech Unit. After further review of the proposed project needs, it was determined that a CD Tech Unit was not needed and it has been removed from the proposed project.

F. CONSTRUCTION OF THE PROPOSED PROJECT

The construction schedule for the proposed project at the Equilon Refinery is expected to begin in September 2001 and be completed by December 2002 (see Figure 2-17). The construction of the proposed project is expected to take place from approximately 6:30 a.m. to 5:30 p.m, Monday through Friday.

Construction of the proposed project at the Refinery is expected to employ a maximum of about 410 workers. Proposed parking for the construction workers will be provided for construction workers on or near the Refinery or terminal properties. The terminals have sufficient parking to handle the increased vehicles during construction within the existing sites. No additional parking will be needed after construction because the work force at the Refinery and the terminals, except the Carson Terminal, is not expected to increase as a result of the proposed project. An increase of two permanent workers is expected at the Carson Terminal.

Construction at the Carson Terminal is expected to employ a maximum of 50 workers. Construction is expected to begin in September 2001 and end by November 2001. Parking for the construction workers will be provided within the terminal properties.

Construction at the Mormon Island Terminal is expected to be minimal and require a maximum of about six workers for one month to complete as the physical construction activities are limited to a pump replacement and piping modifications.

Construction at the Signal Hill, Van Nuys, Colton and Rialto Terminals is expected to take about 34 weeks. The maximum number of construction workers at each of these sites is 12. Construction activities will be limited to daylight hours, Monday through Thursday. Fridays will be designated as a "catch up" day in the event of scheduling delays.

G. PERMITS AND APPROVALS

Equilon requires environmental permits to operate its facilities from a variety of federal state, and local agencies (see Table 2-6). Equilon has secured the appropriate permits to operate the existing Refinery and terminals. Equilon has applied for and must obtain air

Figure 2-17

quality permits related to the proposed project. The environmental permits generally required by Equilon are discussed below. Most of these permits have been issued but some may require modifications associated with the proposed project revisions. A summary of major permitting and regulatory compliance requirements is provided in Table 2-6.

Federal Approvals

Direct federal approvals for the proposed project are not expected. Many of the U.S. EPA regulations and requirements are implemented by state or local agencies. While the Spill Prevention Control and Countermeasure (SPCC) Plan will require modifications to assure that all new and modified Refinery units and storage tanks at the terminals are included in the Plan and the Refinery will have to comply with the applicable provisions of Title III and OHSA, no direct federal approval is expected to be required.

State Approvals

Construction-related permits may be required from the California Occupational Safety and Health Administration (CalOSHA) for demolition, construction, excavation, and tower and crane erection. Any transport of heavy construction equipment which requires the use of oversized transport vehicles on state highways will require a Caltrans transportation permit.

Local Approvals

The SCAQMD has responsibility as lead agency for the CEQA process and for certification of the EIR. Permits to Construct/Operate for various combustion sources such as new units and modifications to existing units will be required. Permits or plan approvals also may be required for construction, soil remediation, and demolition activities. The SCAQMD requires a permit for any equipment or process, which emits an air contaminant or controls the issuance of an air contaminant.

The project may require revisions to the National Pollutant Discharge Elimination System (NPDES) permit, including storm water runoff, from the Regional Water Quality Control Board (RWQCB).

The Los Angeles County Sanitation Districts (LACSD) has responsibility for issuance of industrial wastewater discharge permits which are required for sewer discharge.

The local city fire departments are responsible for issuing permits for storage tanks and for review and approval of Risk Management Plans which will be required as part of the proposed project. The Fire Department also is responsible for assuring that the City fire codes are implemented.

Building and grading permits for the proposed project will be required from the Cities of Los Angeles, Carson, Signal Hill, and Rialto to assure that the project complies with the Uniform Building Code.

TABLE 2-6

FEDERAL, STATE AND LOCAL AGENCY PERMITS AND APPLICATIONS

Agency Permit or approval	Requirement	Applicability to Project
Federal		
U.S. EPA	Spill Prevention Control and Countermeasure Plan (40 CFR Part 112)	Modifications to Refinery and terminal facilities that affect the potential for oil or flammable materials discharge into navigable waters.
	Title III of the federal Clean Air Act Amendments of 1990, including development of an Accidental Release Program	Modifications to Refinery and terminal facilities/operations involving use of listed regulated substances.
	Title III of the Superfund Amendments and Reauthorization Act of 1986, including §313 – Annual Release Reporting (Form R)	Modifications to Refinery and terminal facilities/operations involving use or storage of extremely hazardous substances (EHSs) or other regulated hazardous materials.
Occupational Safety and Health Administration (OSHA)	Compliance with 29 CFR 1920, including preparation of an Emergency Response Plan, a Fire Prevention Plan, Process Hazards Safety Review, and employee training	Modifications to Refinery and terminal facilities involving materials that are acutely toxic, flammable or explosive.
U.S. Department of Transportation (DOT)	Compliance with DOT regulations regarding transportation of hazardous substances (40 CFR Part 172)	Project-related transportation (import/export of hazardous substances).

TABLE 2-6 CONT'D

Agency Permit or approval	Requirement	Applicability to Project
State		
California Environmental Protection Agency, Dept. of Toxic Substances Control (DTSC)	On-site hazardous waste generation	Project-related modifications to applicable hazardous materials and hazardous waste generation handling at the Refinery and terminals.
	Proposition 65 – California's Safe Drinking Water and Toxic Enforcement Act of 1986	Project-related exposure of the public to listed carcinogens or reproductive toxins due to proposed modifications. Public notification is required under certain specified conditions.
Caltrans	Transportation Permit (CCR 21 Division 2, et.seq.)	Project-related application to transport overweight, oversize, and wide loads on state highway
CalOSHA	Process Safety Management (PSM) Program (40 CFR Part 1910)	PSM program may require updating due to project revisions including written process safety information, hazop analysis, development of operating procedures, training procedures, and pre-start safety review.
	Construction-related permits (CCR Title 8, Division 1, and crane Chapter 4)	Excavation, construction, demolition and tower erection permit.
	Written Hazard Communication Standard Compliance Program	Project-related modifications to Refinery and terminal facilities/operations involving hazardous materials (including needed modifications to employee training programs).

TABLE 2-6 CONT'D

Agency Permit or approval	Requirement	Applicability to Project
Local		
South Coast Air Quality Management District (SCAQMD)	Permits to Construct and Title V of the 1990 Clean Air Act	SCAQMD Rule 201 and Regulation XXX: Permit to construct and operate. Applications are required to construct, operate or modify stationary emission sources.
	Permits to Operate	SCAQMD Rule 203: Permit to Operate. Applications are required to operate stationary emissions sources.
	California Environmental Quality Act (CEQA) Review	The SCAQMD is the lead agency for preparation of the environmental document (CEQA Guidelines, Chapter 2.5, §21069).
	Prevention of Significant Deterioration (PSD)	SCAQMD Regulation XVII: Requirements for modifications to stationary sources in attainment areas. The Permit to Construct issued by the SCAQMD will be conditioned to ensure that maximum NOx and SOx actual emission increases will be less than PSD significance thresholds (i.e., 40 tons/year), thus assuring that PSD is not triggered.
	Standards for Approving Permits	SCAQMD Rule 212: Permits cannot be issued if air contaminants create a public nuisance or exceed capacity limits. Also requires public notification of significant project.

TABLE 2-6 Concluded

Agency Permit or approval	Requirement	Applicability to Project
Local Cont'd		
SCAQMD (cont.)	Best Available Control Technology (BACT) and Modeling	SCAQMD Rule 2005 and Regulation XIII, New Source Review (NSR): New or modified permit units must apply BACT, obtain offsets and perform modeling of new emissions increases.
	Toxics Best Available Control Technology (T-BACT) and Risk Assessment	SCAQMD Rule 1401: NSR of Carcinogenic Air Contaminants. New or modified permit units must comply with maximum allowed risk levels.
Regional Water Quality Control Board (RWQCB)	National Pollutant Discharge Elimination System (NPDES) Permit/Waste Discharge requirement.	Project-related modifications to applicable storm water runoff plans.
Cities of Los Angeles, Carson, Signal Hill and Rialto	Building Permit	Required for project-related foundations and buildings to assure compliance with UBC.
	Grading Permit	Required prior to grading.
	Plumbing and Electrical Permit	General construction permit.
	Hazardous Materials Business Plan	Storage of project-related hazardous materials.
Cities of Los Angeles, Carson, Signal Hill and Rialto Fire Departments	Acutely Hazardous Material Registration/Risk Management Plan	Project-related use/storage of acutely hazardous materials.
	Above Ground Storage of Hazardous/Flammable Materials (Uniform Fire Code, Article 80)	Project-related storage of regulated materials.
City of Los Angeles, Bureau of Sanitation	Industrial Wastewater Discharge Permit (California Health & Safety Code, Division 6, Chapter 4, Article 1, §6521)	Project-related modifications to the Refinery's and terminals industrial wastewater discharge to the sewer if it affects the quantity, quality or method of industrial wastewater disposal.