2.0 PROJECT DESCRIPTION

2.1 Project Overview and Objectives

The initial phase of the proposed project includes phasing out MTBE from reformulated gasoline by December 31, 2002, to comply with the Governor's Executive Order. Subsequent phases of the project are designed to allow ARCO to produce reformulated gasoline that complies with CARB Phase 3 fuel specifications, also included in the Governor's Executive Order, and provide for distribution of this gasoline to markets in California.

To meet the oxygenate requirements of the CARB Phase 3 gasoline without MTBE, ARCO proposes to blend ethanol into the gasoline. While the Federal government is reviewing California's oxygenate waiver request (which would allow sale of gasoline containing neither MTBE nor ethanol), the proposed project is being developed with the assumption that the oxygenate requirements will remain. For the most part ethanol is not produced in southern California and would be imported by marine vessel. (Note that large amounts of MTBE are currently imported by marine vessel from the Gulf Coast.)

MTBE and ethanol have different physical and chemical properties. One key difference is that ethanol has a higher affinity for water. MTBE is currently blended into gasoline at the refinery and the blended gasoline transported via pipeline to the distribution terminals. For ethanol, it is necessary that the gasoline and ethanol be separately transported to distribution terminals via existing pipelines and trucks, respectively, and blended only at the point of shipment that immediately precedes delivery to the retail gasoline stations. This distribution and blending process will minimize the potential contact of ethanol and water that would likely occur during pipeline transport. The gasoline and ethanol would be blended at the five ARCO distribution terminals referred to as Carson, Colton, East Hynes, Vinvale, and Hathaway.

Replacing MTBE with ethanol in gasoline presents additional refining challenges because when blended with gasoline, ethanol increases the Reid Vapor Pressure (RVP) of the resulting blend by about one pound per square inch (psi). To meet the summertime RVP limit of 7.0 psi, a refinery must produce a base fuel with a RVP less than 6.0 psi. This requires butanes and pentanes in the gasoline to be removed from the base fuel during the summer months. Consequently, a portion of the project is related to removing butanes and pentanes from the gasoline.

Table 2.1-1 presents a comparison of the previous CARB Phase 2 (California Reformulated Gasoline 2 – CaRFG2) gasoline specifications and the CARB Phase 3 (California Reformulated Gasoline 3 - CaRFG3) gasoline specifications. The phase out of MTBE and these associated changes in California's reformulated gasoline specifications represent the driving forces for the proposed project.

Table 2.1-1
Existing CaRFG2 and New CaRFG3 Gasoline Specifications

Property	Flat Limits		Averaging Limits		Cap Limits	
	CaRFG2	CaRFG3	CaRFG2	CaRFG3	CaRFG2	CaRFG3
RVP, psi max	7.0	7.0(1)	NA(2)	No change	7.0	6.4 – 7.2
Benzene, vol. % max	1.0	0.8	0.8	0.7	1.2	1.1
Sulfur, ppmw, max	40.0	20.0	30.0	15.0	80.0	60.0/30.0(3)
Aromatic HC, vol. %, max	25.0	No change	22.0	No change	30.0	35.0
Olefins, vol. %, max	6.0	No change	4.0	No change	10.0	No change
Oxygen, wt. %	1.8 to 2.2	No change	NA(2)	No change	1.8-3.5 winter areas	1.8-3.7(4) winter areas
					0 - 3.5	0-3.7(4)
T50 °F, max(5)	210	213	200	203	220	No change
T90 °F, max(6)	300	305	290	295	330	No Change

1 – Equal to 6.9 psi if using the evaporation element of the Predictive Model
2 – Not applicable
3 – 60 ppmw will apply December 31, 2002; 30 ppmw will apply December 31, 2004
4 – If the gasoline contains more than 3.5 percent by weight oxygen but no more than 10 volume percent, the maximum oxygen content cap is 3.7 percent by weight.
5 – Temperature at which 50 percent of the hydrocarbons will distill in a standard laboratory test.
6 – Temperature at which 90 percent of the hydrocarbons will distill in a standard laboratory test.

ARCO's proposed project will consist of modifications and additions to existing refinery process units, construction of new equipment, and construction of railcar storage facilities within existing LAR boundaries, as well as modifications and additions at the terminals to blend and store ethanol. There are a number of engineering evaluations underway to determine the optimal design to meet the CARB Phase 3 specifications. Although these evaluations could result in minor modifications to the proposed project, the impact of these minor modifications is expected to be within the scope of the project-specific or alternatives analyses.

2.2 Locations

The locations of the LAR and distribution and marine terminals are shown in Figure 2.1-1.

The LAR is located at 1801 East Sepulveda Boulevard in the City of Carson, California. LAR occupies an irregularly shaped parcel of land between Wilmington Avenue on the west, 223rd Avenue on the north, Alameda Avenue on the east, and Sepulveda Boulevard on the south. The area of the refinery is approximately 680 acres. The Dominguez Channel, which originates in the

area southeast of the Los Angeles International Airport, traverses LAR property, and eventually flows into the East Channel of the Los Angeles Harbor. The proposed additions and modifications to the existing refinery as a result of the proposed project will occur within the boundaries of LAR.

The Carson Products Terminal (Carson Terminal) is located at 2149 E. Sepulveda Boulevard, southeast of the LAR in the City of Carson. The Carson Terminal occupies an irregularly shaped parcel of land between Alameda Avenue on the west, the Dominguez Channel on the east, and Sepulveda Boulevard on the south. To the north of the Carson Terminal is a coke storage facility, beyond which are a sulfur recovery plant and the Watson Intermodel Container Transfer Facility (ICTF).

The East Hynes Terminal is located at 5905 Paramount Boulevard in the northern portion of the City of Long Beach. The East Hynes Terminal is a rectangular shaped parcel of land, between the Union Pacific Railroad tracks on the west and Paramount Boulevard on the east. North of the terminal is a construction yard and south of the terminal are automobile repair facilities, a self-storage facility, light industrial and industrial businesses.

The Marine Terminal 2 is located at 1300 Pier B Street within the Port of Long Beach. The site is an irregularly shaped parcel, located between Pier B Street on the north, Inner Harbor Channel No. 2 on the east and south, and industrial businesses on the west.

The Hathaway Terminal is located at 2350 Hathaway Avenue in the City of Signal Hill, approximately one mile south of the Long Beach Municipal Airport. The terminal site is a rectangular shaped parcel of land oriented northeast to southwest on the north side of Hathaway Avenue. Land to the north and northeast of the site is used for commercial purposes, while land to the east and southeast is occupied by an Equilon terminal. On the south side of Hathaway Avenue, the Bixby Ridge housing development is under construction. Adjacent to the terminal's northwest boundary are a mixture of commercial and industrial facilities.

The Vinvale Terminal is located at 8601 South Garfield Avenue in the City of South Gate, immediately west of the 710 freeway. The site is a rectangular shaped parcel of land between Union Pacific Railroad tracks to the north, the 710 freeway on the east, Firestone Place on the south, and Garfield Avenue on the west.

The Colton Terminal is located at 2395 South Riverside Avenue in the City of Rialto, County of San Bernardino, approximately one mile south of Interstate 10. The site is a rectangular shaped parcel of land located on the east side of Riverside Avenue, in an industrial area of the City.

2.3 Overview of Current Operations

This section presents an overview of current refinery and terminal operations and a discussion of how the proposed project relates to these operations. In addition, a section that describes key terms (Table 2.3-1) that are used throughout the project description section has been included for clarification.

Figure 2.3-1 is a simplified block flow diagram of the existing LAR operations. The refinery processes crude oil into a variety of products including gasoline, jet fuel, diesel fuel, petroleum gases, petroleum coke, residual fuel, sulfur and various unfinished intermediate feedstocks to maintain a balanced refinery operation. Figure 2.3-1 also lists chemicals/materials and utilities needed to process the crude oil into the petroleum products and some of the key processing units/operations at the refinery.

There are 34 key processing units/operations at LAR. Seven of these (approximately 20%) would be modified as part of the proposed project.

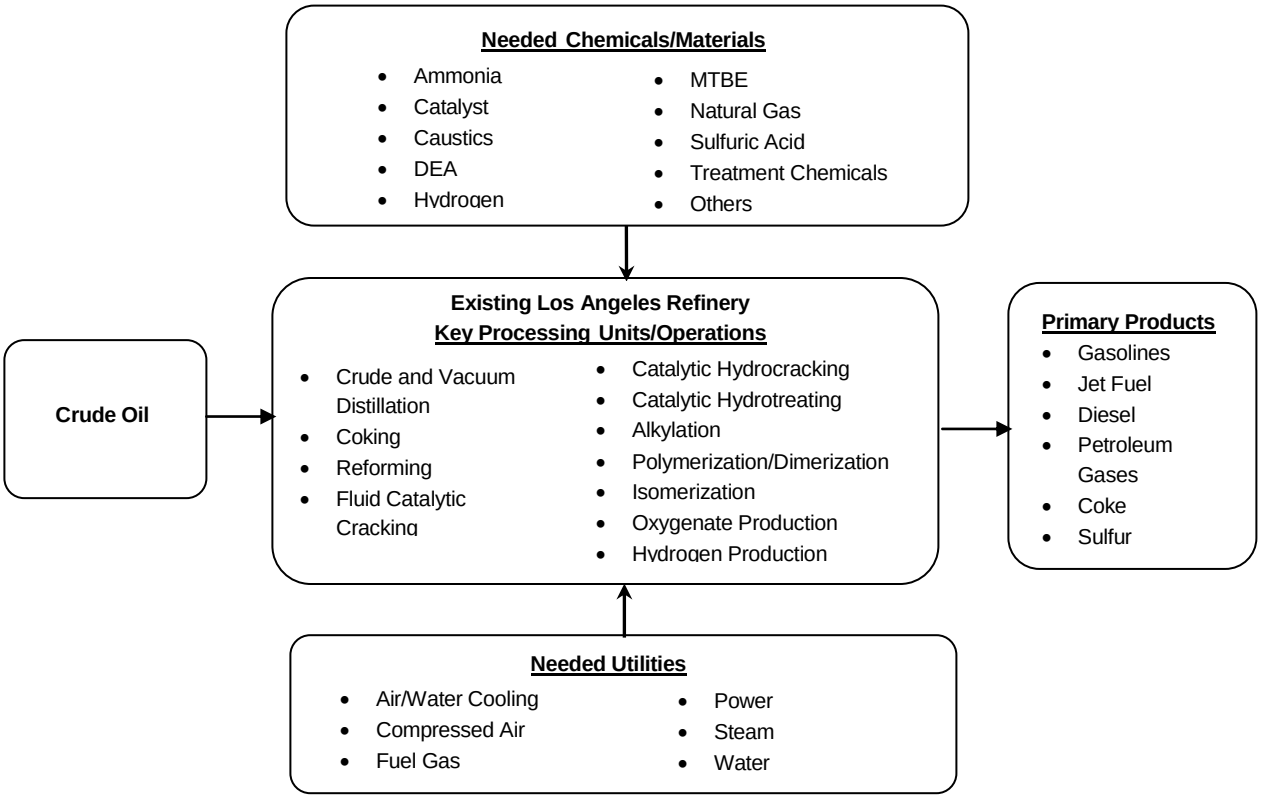


Figure 2.3-1 Simplified Block Diagram – ARCO Los Angeles Refinery

2.3.1 Key Terms

Refineries and terminals have complex operations and use a variety of technical terms to describe the operations. For clarification purposes, this section contains definitions of various refinery terminology. Table 2.3-1 presents a compilation of definitions of key terms used throughout the project description, and where appropriate, how the terms apply to the project. The terms are used in regards to the gasoline specifications, certain refinery hydrocarbon streams, and refinery and terminal operations.

Table 2.3-1
Descriptions of Key Terms

Term	Definition
Alkylation	A polymerization process uniting olefins and isoparaffins; particularly the reaction of butylene and isobutane using sulfuric acid as a catalyst to produce a high-octane, low-sensitivity blending agent for gasoline.
Aromatics	Hydrocarbons that contain one or more benzene rings. Their presence in gasoline has been connected with the formation of volatile organic compounds (VOCs), toxics (benzene), oxides of nitrogen (NO_x) and CO in exhaust emissions.
Benzene	A type of aromatic hydrocarbon containing six carbon and six hydrogen atoms; benzene is identified as a carcinogen and is present in gasoline; benzene reduction in gasoline is part of the new reformulated gasoline specifications.
Blending	One of the final operations in refining, in which two or more different components are mixed together to obtain the desired range of properties in the finished product. Ethanol will be blended into gasoline.
Bottoms	In general, the higher-boiling residues that are removed from the bottom of a fractionating column.
Butane	Either of two saturated hydrocarbons, or alkanes, containing four carbon and ten hydrogen atoms; butane is the most volatile portion of gasoline and occurs in natural gas, petroleum, and refinery gases; butanes will be removed from the ARCO gasoline in order meet the summer RVP requirements.
Cracking	The process of breaking down higher molecular weight hydrocarbons to components with smaller molecular weights by the application of heat; cracking in the presence of a suitable catalyst produces an improvement in product yield and quality over simple thermal cracking.

Table 2.3-2 (Cont.)
Descriptions of Key Terms

Term	Definition
Cx	The petroleum industry uses a shorthand method of listing hydrocarbon compounds that denotes the number of carbon atoms in the molecule (i.e., Cx); for example, butane is a compound that is comprised of four molecules of carbon and is denoted as C4; generally, the lower the carbon atom number, the lower the boiling point of the product; during the refinery process, the lighter products (which have the lower boiling points) are collected at the higher points or overheads of distillation towers, while the heavy ends are collected at the bottoms of these units.
DEA	Diethanol Amine
Dimerization	Process of combining two molecules of the same chemical composition into a larger molecule.
Distribution terminal	Terminal used to receive products from the refinery (such as gasoline), and distribute, generally by truck, to service stations and other terminals.
Fractionation	Process of separating or isolating components of a mixture.
Heat exchanger	Refinery equipment used to transfer heat from one medium to another.
Hydrogenation	Any reaction of hydrogen with an organic compound.
Hydrotreating	The process of stabilizing petroleum products and/or removing objectionable elements from products or feedstocks by using hydrogen in the presence of catalyst.
Marine terminal	Terminal located near the sea that can receive or ship products over water.
MTBE	Methyl tertiary butyl ether; used in gasoline blending to meet the reformulated gasoline specifications for oxygen content; MTBE also raises the octane number of gasoline.
Olefins	A group of hydrocarbons which contain at least two carbons joined by double bonds; olefins generally do not naturally occur in crude oils, but are formed during processing. Olefins have a high ozone reactivity potential and contribute to the reactivity of evaporative emissions.

Table 2.3-2 (Cont.)
Descriptions of Key Terms

Term	Definition
Oxygen content	Refers to one of the reformulated gasoline specifications which increase the oxygen content of gasoline to promote more complete gasoline combustion and less emissions of carbon monoxide.
Pentane	A saturated hydrocarbon, or alkane, containing five carbon and 12 hydrogen atoms; pentanes will be removed from the ARCO gasoline in order meet the summer RVP requirements.
Reactor	Refinery vessels in which desired reactions take place.
Reid vapor pressure (RVP)	The vapor pressure of a product determined in a volume of air four times greater than the liquid volume at 100°F. Evaporative emissions of VOCs from gasoline have been reduced significantly by limiting the RVP of motor gasoline during the summer ozone season.
Sulfur	Refinery product generated by conversion of H_2S to elemental sulfur; normally sold for sulfuric acid production or as a fertilizer component. Studies have demonstrated that sulfur, even in small amounts, causes deactivation of motor vehicle catalysts, resulting in increases in emission of CO, VOCs, and NOx.
T50 distillation	Temperature at which 50 percent of the hydrocarbons will distill in a standard lab test.
T90 distillation	Temperature at which 90 percent of the hydrocarbons will distill in a standard lab test.

2.4 Proposed Project

To meet the CARB Phase 3 specifications, ARCO has developed an overall strategy which consists of a series of modifications at the LAR and the marine and distribution terminals. The strategy and each of the proposed modifications are discussed in this section.

2.4.1 Strategy

To meet the CARB Phase 3 specifications, ARCO will replace MTBE with ethanol and implement a number of related modifications at the refinery to reduce the sulfur content of gasolines, meet the RVP specifications, and maintain gasoline production volumes.

In the past, MTBE has been added to gasoline at the refinery and the blended gasoline transported via pipeline to the terminals. Due to ethanol's affinity for water, ARCO will blend the ethanol into the gasoline at the terminals. This approach minimizes the potential for ethanol to

come in contact with water. Blending ethanol into gasoline at the terminals requires a number of modifications at the terminals.

2.4.2 LAR Modifications

The proposed project at the LAR consists almost entirely of modifications to existing processing units. However, there is also some new equipment associated with these modifications to existing units. Figure 2.4-1 identifies the general locations of the proposed refinery additions and modifications. Table 2.4-1 presents the proposed modifications and new equipment. The first 10 modifications and new equipment take place on existing refinery processing units. The last few are modifications and new equipment outside the refinery processing units, but inside the refinery property. These modifications are needed to support the changes to the refinery units and are termed LAR Support Facilities. Each of the proposed modifications is discussed separately.

Light Hydro Unit (LHU)

The existing LHU would be modified to enable additional sulfur removal from the refinery Fluid Catalytic Cracking Unit (FCCU) Rerun Bottom stream. This modification would be related to meeting the CARB Phase 3 reduced sulfur specification. Hydrogen is used to remove sulfur from the FCCU Rerun Bottom stream. The hydrogen will be supplied through a commercially available source. The resulting hydrogen sulfide would be routed to the refinery's existing sulfur recovery plant for conversion to elemental sulfur. Other related planned modifications to the LHU include adding new heat exchangers, piping, and pumps. Modifications to some existing heat exchangers and replacement of some existing control systems would also be required. No sulfur removal modifications are planned at the Merox, Amine Units of Sulfur Plant since there is existing available sulfur removal capacity.

ISO SIV Unit

The existing ISO SIV unit was originally designed to separate iso-hexane from normal-hexane for gasoline and jet fuel blending. However, since the current gasoline/jet fuel blends do not require isohexane to be separated from normal hexane, the ISO SIV unit is currently idled. Mixed hexane is blended into fuel products without separation.

Due to the need to reduce sulfur in gasoline, the ISO SIV unit would be converted to a hydrotreater. As a hydrotreater, it would use hydrogen to remove sulfur from the FCCU Rerun Bottom stream. The hydrogen will be supplied through a commercially available source. The proposed modifications would include adding new reactors, exchangers, and pumps; along with upgraded control system/instrumentation, and miscellaneous modifications to existing heat exchangers and additional piping.

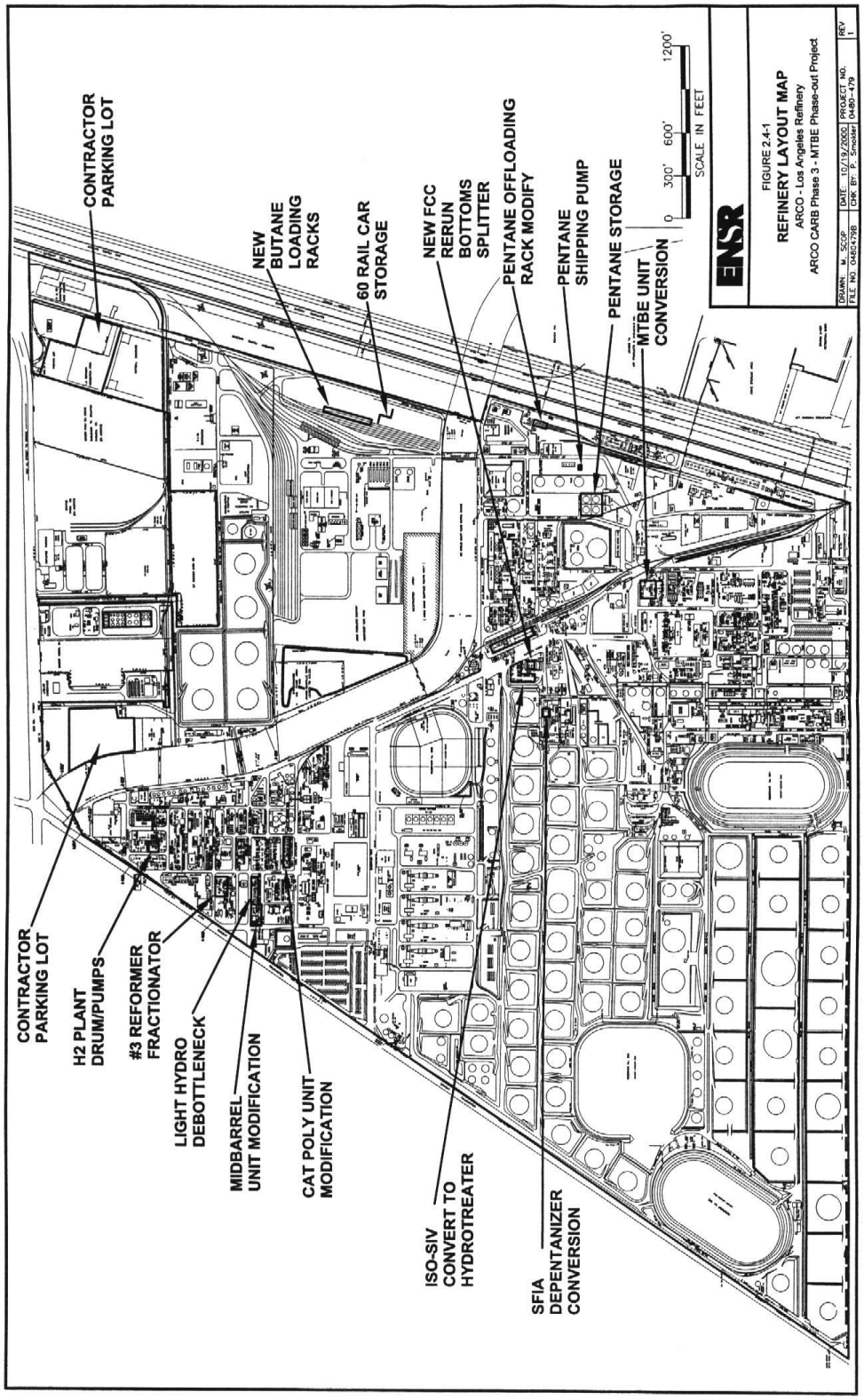

CONTRACTOR PARKING LOT
NEW BUTANE LOADING RACKS
60 RAIL CAR STORAGE
NEW FCC RERUN BOTTOMS SPLITTER
PENTANE OFFLOADING RACK MODIFY
PENTANE SHIPPING PUMP
PENTANE STORAGE
MTBE UNIT CONVERSION
0 300' 600' 1200'
SCALE IN FEET
ENSR
FIGURE 2.4-1
REFINERY LAYOUT MAP
ARCO - Los Angeles Refinery
ARCO CARB Phase 3 - MTBE Phase-out Project
DRAWN: M. SCOP
FILE NO: 0480-479B
DATE: 10/19/2000
CHK BY: P. Smolder
PROJECT NO. 0480-479
REV 1
2-9
CONTRACTOR PARKING LOT
H2 PLANT DRUM/PUMPS
#3 REFORMER FRACTIONATOR
LIGHT HYDRO DEBOTTLENECK
MIDBARREL UNIT MODIFICATION
CAT POLY UNIT MODIFICATION
ISO-SIV CONVERT TO HYDROTREATER
SFIA DEPENTANIZER CONVERSION

Table 2.4-1
Proposed LAR Modifications and New Equipment

	Equipment/Process	Nature of Change	Primary Driving Force		
			Sulfur Reduction	RVP Control	MTBE Phase Out
1.	Light hydro unit (LHU) – heat exchangers	Modifications	√		
	Exchangers, piping, pumps, and control systems	New Equipment			
2.	Conversion of Isomerization Sieve (ISO SIV) unit to a hydrotreater – heat exchangers, piping, and control systems	Modifications	√		
	Reactor, exchangers, pumps, and control systems	New Equipment			
3.	No. 3 Reformer Fractionator and overhead condenser, piping, and control systems	Modifications		√	
	Pumps	New Equipment			
4.	SFIA Debutanizer modifications (No. 1 Naphtha Splitter, SFIA Depentanizer, heat exchangers, pumps, and control systems)	Modifications		√	
5.	FCCU rerun bottoms splitter (splitter tower, heat exchangers, etc.)	New Unit	√		
6.	North hydrogen plant (use pentanes as an alternate feedstock)	New Equipment		√	
	Feed drum, pump, and vaporizer				
7.	Convert MTBE unit into ISO Octene Unit – heat exchangers, piping, and control systems	Modifications			√
	Reactor, Steam heater, heat exchangers	New Equipment			
8.	Modification of existing Cat Poly Unit to a Dimerization Unit	Modifications		√	
	Hydrotreater reactor system – piping and control systems Pumps, heat exchangers, vessels, piping, and control systems	New Equipment			

Table 2.4-1 (Cont.)
Proposed LAR Modifications and New Equipment

	Equipment/Process	Nature of Change	Primary Driving Force		
			Sulfur Reduction	RVP Control	MTBE Phase Out
9.	Modification of Mid-Barrel Unit to Gasoline Hydrotreater - feed and product piping, hydrogen supply system, and heat exchanger, controls systems	Modifications	√		
10.	Piping modification in tank farm	Modifications			√
11.	Facilities and equipment for pentane off-loading at existing railcar pentane loading facility Repressurizing vaporizer system and two railcar spots	Modifications New Equipment		√	
12.	Piping modification and substation upgrades to ship pentane by pipeline Pump	Modifications New Equipment		√	
13.	Facilities and equipment for butane loading and off-loading at existing railcar propylene loading facility at Northeast Property	Modifications		√	

No. 3 Reformer Fractionator

The existing No. 3 Reformer Fractionator would be modified to help meet the new RVP gasoline specifications. The removal of MTBE from gasoline and the use of ethanol as a substitute makes it more difficult to meet RVP specifications, especially during the summer months. The modifications to the No. 3 Reformer Fractionator and related equipment would result in the removal of butanes and pentanes, which would help to meet the RVP standard. Modifications to the overhead condenser and new pumps are also being proposed.

SFIA Debutanizer Modifications

The Super Fractionation Integrated Area (SFIA) Depentanizer and the No. 1 Naphtha Splitter are located in the existing SFIA Unit. The No. 1 Naphtha Splitter will be converted to a new Debutanizer and the SFIA Depentanizer will be converted to the new No. 1 Naphtha Splitter. These changes will help to meet the RVP specifications. Only minor pump modifications will be performed along with new piping and pipeline control valves.

FCCU Gasoline Fractionation

In order to concentrate sulfur in the FCCU Bottom Stream, which will make sulfur removal more efficient, a new FCCU Rerun Bottoms splitter will be constructed (see Figure 2.4-1). These changes will help meet the sulfur specifications. The new FCCU Rerun Bottoms splitter would

include a splitter tower, heat exchangers, reboiler, product cooler, overhead accumulator/reflux drum, piping, and control systems/instrumentation. The new FCCU bottoms splitter will not change the capacity of the FCCU.

North Hydrogen Plant

During the summer months when the excess pentanes would be in greatest supply, the pentanes may be used as an alternate feedstock to the North Hydrogen Plant. Pentanes would be fed to the steam hydrocarbon reformer for hydrogen production. These modifications help to meet the RVP specifications. This would require a new feed drum, additional pumps, a vaporizer, and new piping. The addition of pentanes to the North Hydrogen Plant would not result in an increase in firing rates of the existing heaters at the North Hydrogen Plant because the additional hydrogen needed will be imported.

Conversion of Existing MTBE Unit to ISO – Octene Unit

The existing MTBE reactor would be replaced with a new reactor. A new reactor feed heater using steam will replace the existing feed heater and additional feed exchangers will be added. Two methanol towers will be converted into a different service. Tertiary butyl alcohol recovered in the process will be recycled to another process unit for disposal. Some of the heat exchangers will either be modified or replaced. Some piping and control systems modifications will be required.

Modification of Existing Cat Poly Unit to a Dimerization Unit

The existing Cat Poly Unit would be modified into a pentanes Dimerization Unit. The modification allows ARCO to dimerize pentanes in order to remove pentanes from the gasoline pool due to the RVP restriction. The existing Cat Poly Unit would be utilized for pentanes olefin polymerization to produce a dimerate suitable for jet fuel or diesel. The dimerate would be hydrotreated. A new hydrotreater reactor system would be added, which would also require piping and instrument control modifications. These modifications will help meet RVP specifications by removing pentanes, and are related to a number of other changes including offsetting reduced gasoline volumes resulting from replacing MTBE with ethanol, meeting CARB Phase 3 gasoline specifications (e.g., increased distillation points and aromatic hydrocarbon caps), and optimizing the economic value of other refinery streams.

Modification of Mid-Barrel Unit to Gasoline Hydrotreater

The existing refinery Mid-barrel Unit would be modified to function as a gasoline hydrotreater to help meet gasoline sulfur specifications. Other modifications would be needed to the feed and product piping, the hydrogen system for supplemental hydrogen, the heat exchanger, and the associated instrument controls.

2.4.3 LAR Support Facilities

A number of refinery support facilities would be modified due to the need for additional blending components and the removal of pentanes and butanes from the gasoline stream.

Piping Modifications in Tank Farm

Replacing MTBE with ethanol requires importing additional blending components via existing pipeline systems. Existing MTBE storage tanks and existing finished product storage tanks would be used for gasoline blending components storage. Minor associated piping tie-ins to an existing gasoline blending system would be added.

Facilities and Equipment for Pentane Off-Loading at Existing Railcar Pentane Loading Facility

To comply with summer RVP specifications, LAR must remove pentanes from the gasoline components. The excess pentanes would then be either sent offsite for storage or sale outside of the Basin, or used as an alternate feedstock to the hydrogen plant for hydrogen production. However, during winter, the existing pentane railcar rack system would require modification to allow off-loading from railcars for importing and blending of pentanes, which could be blended into gasoline and still comply with winter RVP specifications. Unloading from railcars would be accomplished by adding a re-pressurizing vaporizer system. Two new railcar spots would be added to the existing rack.

Piping Modifications and Substation Upgrades to Transport Pentane Product by Pipeline

During the summer months, it would be necessary to remove and export pentanes to achieve the RVP specification. The pentanes may be exported via rail, or via marine vessel from Marine Terminal 2. For the latter, the pentanes would be pumped from LAR to a new storage tank at the marine terminal. Modifications would be required to transport the excess pentanes by pipeline to the marine terminal. These modifications would consist of a pump being added near the existing pentane spheres. To supply power to the new pump, modifications would also be required at the associated electrical substation.

Facilities and Equipment for Butane Loading and Off-Loading at Existing Railcar Propylene Loading Facility at Northeast Property

During the summer, LAR would need to remove butanes from the gasoline components in order to meet the RVP requirements. The excess butanes would then either be sent offsite or used onsite as a fuel. During the winter, the refinery currently imports butanes and would need additional capacity for butane imports. The existing propylene loading facility in the Northeast Property would be modified to allow butane loading and off-loading to and from railcars.

2.4.4 Terminal Modifications

Table 2.4-2 presents an overview of the various modifications and additions that are required at the marine and five distribution terminals to enable ethanol blending at the terminals and other related modifications to meet CARB Phase 3 fuel specifications.

Table 2.4-2
Proposed Terminal Changes

Terminal	Proposed Change and/or Addition
Marine Terminal	• Conversion of two existing tanks to store fuel ethanol • Modifications to existing tank piping and metering systems • Construction of new 100,000 barrels (BBL) refrigerated tank to store pentane prior to loading for export • Demolition of two existing tanks to provide space for the new pentane storage tank
East Hynes Terminal	• Conversion of one existing tank to store fuel ethanol • Modifications to piping and metering for loading/off-loading and blending ethanol at the loading racks • Addition of new pumps for ethanol blending
Vinvale Terminal	• Conversion of two existing tanks to store fuel ethanol • Modifications to piping and metering for off-loading and blending ethanol at the loading racks • Modification of existing loading rack systems for ethanol delivery and blending

Table 2.4-2 Cont.
Proposed Terminal Changes

Terminal	Proposed Change and/or Addition
Hathaway Terminal	• Conversion of seven existing tanks to store fuel ethanol • Modification to piping and metering systems for off-loading and blending ethanol at the loading racks • Modifications to truck loading racks
Colton Terminal	• Conversion of one existing tank to store fuel ethanol • Modification to piping and metering systems for off-loading and blending ethanol at the loading racks
Carson Terminal	• Conversion of one existing tank to store fuel ethanol • Modification to piping and metering systems for off-loading and blending ethanol at the loading rack

To meet the oxygenate requirements of the CARB Phase 3 gasoline without MTBE, fuel ethanol will be blended into the gasoline. However, because of the affinity of ethanol for water, blending activities will be conducted at the terminals. Fuel ethanol is not produced commercially in southern California, so it will be transported to the Los Angeles basin by marine vessel. (Note that currently large amounts of MTBE are also brought by marine vessel from the Gulf Coast).

Fuel ethanol will arrive via marine vessel to Marine Terminal 2 and pumped via existing pipeline to the East Hynes or Hathaway Terminals. From these terminals, ethanol would be transported via tanker truck and/or pipeline to the East Hynes, Vinvale, Carson and Colton Terminals, or outside the Basin.

During the summer months, it would be necessary to remove and export pentanes to achieve RVP specifications. The pentanes may be exported via rail directly from LAR or via pipeline from LAR to Marine Terminal 2 and then shipped from Marine Terminal 2. The following paragraphs provide the details of the modifications required at the each of the terminals to blend ethanol at these sites. Figures 2.4-2 and 2.4-3 are ethanol and pentane distribution diagrams for the terminals.

Marine Terminal 2

At this terminal, ethanol would be offloaded from marine vessels and surplus pentanes would be loaded for export. Ethanol would be received at Marine Terminal 2 by marine vessels or barge and off-loaded into existing tanks. These tanks would be converted from other hydrocarbon

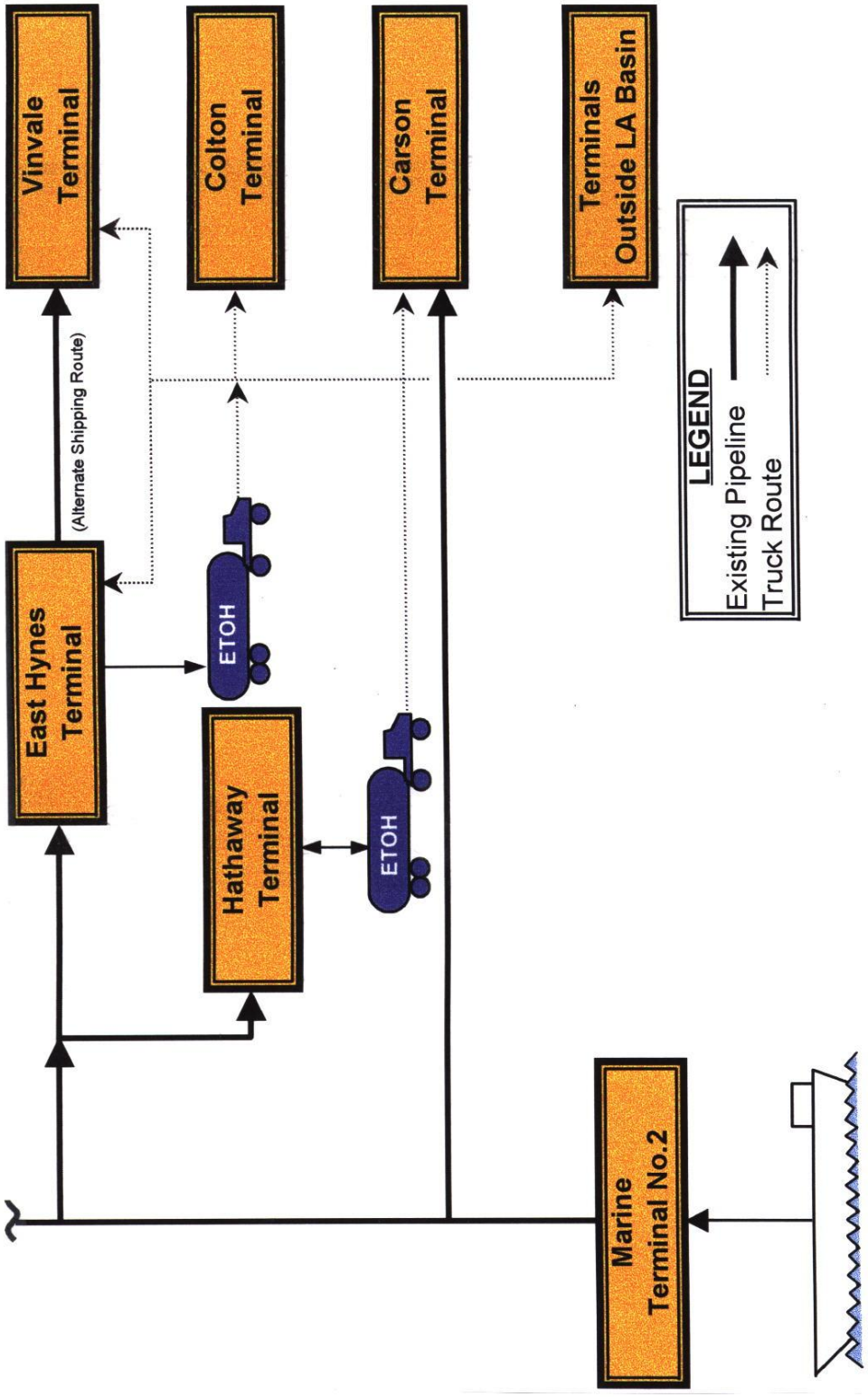
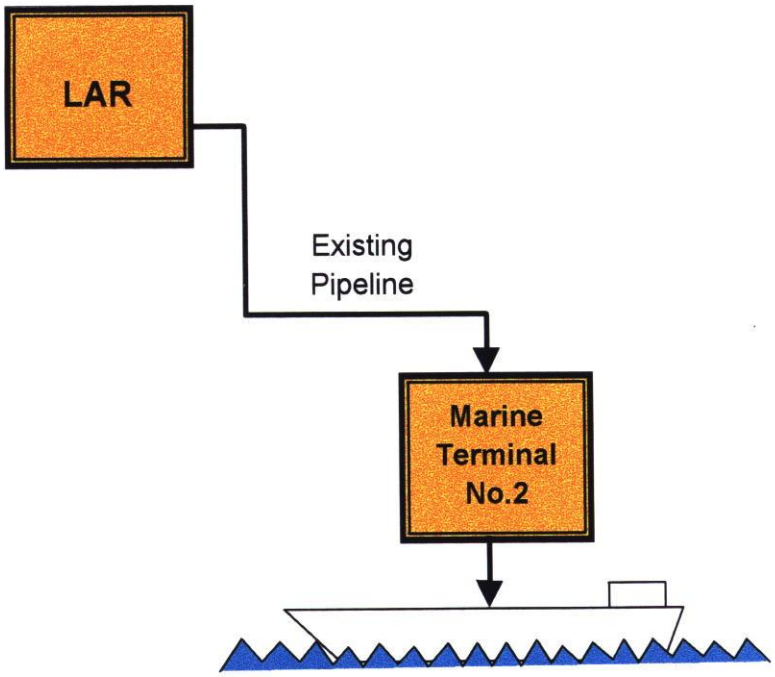


Figure 2.4-2 Proposed Ethanol (ETOH) Transfer Systems


LAR
Existing
Pipeline
Marine
Terminal
No.2

service to ethanol service. Included as part of the conversion would be tank cleaning, tank seal modifications (as necessary), and piping modifications.

Surplus pentanes would be pumped from LAR via existing pipelines to a new 100,000 BBL refrigerated pentane storage tank for accumulation and storage prior to loading for export. The existing pipelines have a Maximum Allowable Operating Pressure (MAOP) of 720 psig and will be hydro-tested according to the requirements of ASME B31.4. Pipeline that is above ground will be insulated to maintain its content temperature. As necessary, the operations manual for the Marine Terminal 2 will be modified to address the transfer of pentane from the refrigerated storage tank. Minor grading and filling activities are anticipated at this site for the installation of the new pentane storage tank. Tanks 233, and either one or both of tanks 224 and 225 would be demolished to allow for the new pentane storage tank.

There would be no appreciable increase in the usage of water or natural gas as a result of the proposed project at Marine Terminal 2. There would be an increased usage in electricity for existing pumps to handle pentane. An estimated 450,000 additional KWH/year would be required for pumping and 230,000 KWH/year would be required for refrigeration.

Figure 2.4-4 depicts the locations of proposed additions and modifications at the Marine Terminal 2 site.

East Hynes Terminal

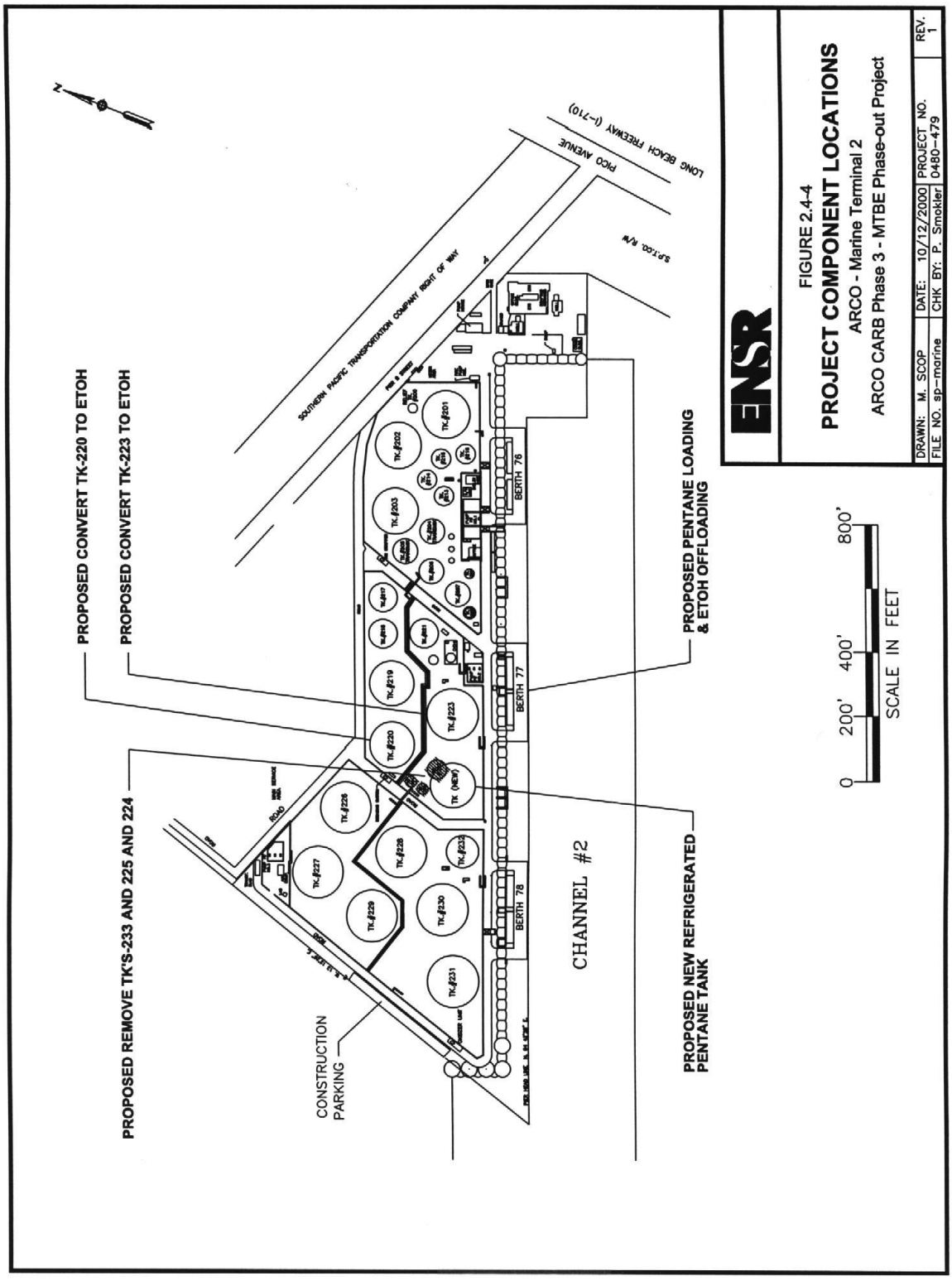
Ethanol would be piped via existing pipelines from Marine Terminal 2 and stored in an existing hydrocarbon storage tank converted to ethanol service. From East Hynes, the ethanol would be transported via tanker truck and/or pipeline to the Vinvale, Colton, and Carson terminals, or outside the Basin.

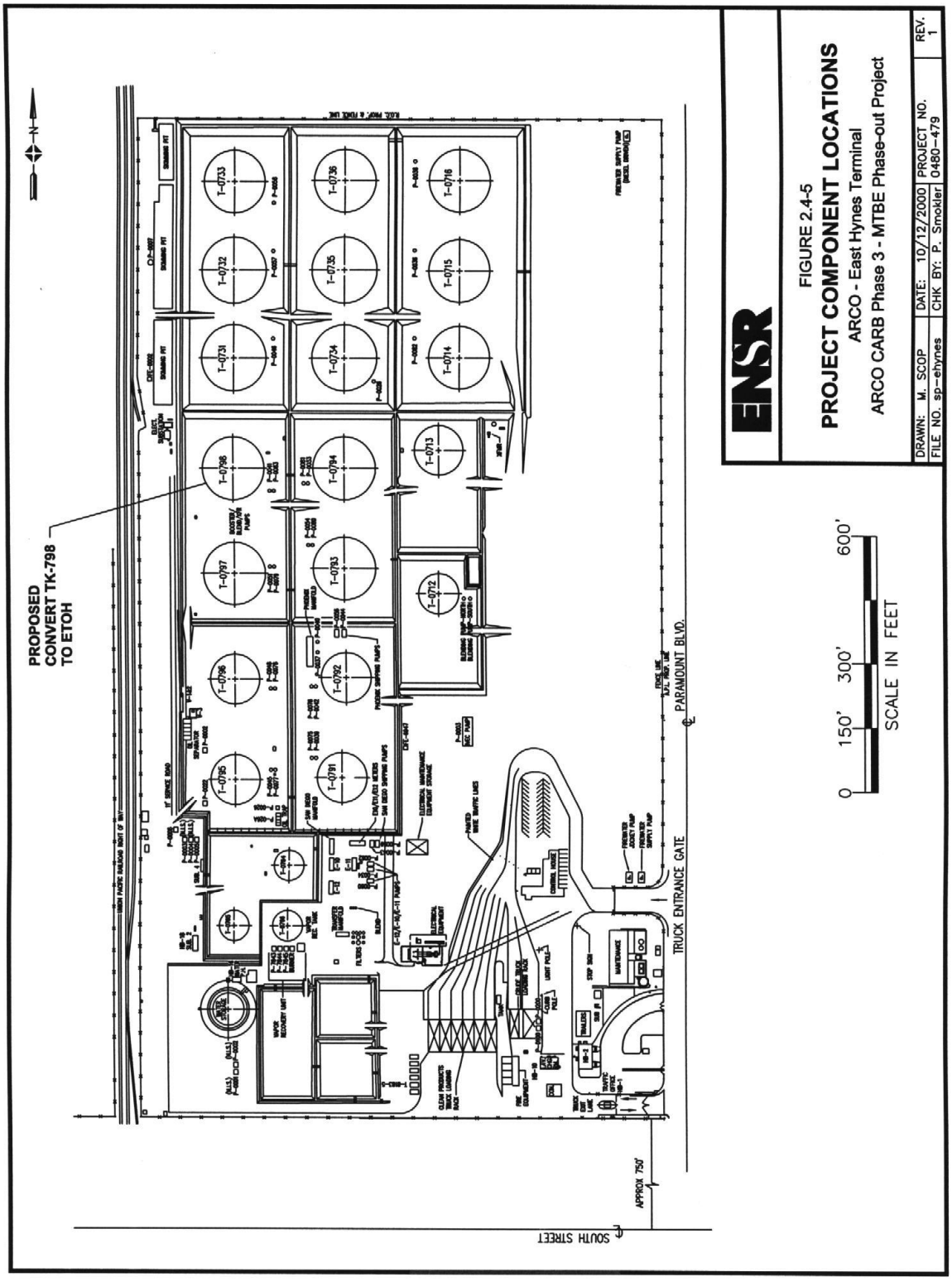
Converting the existing hydrocarbon storage tank to ethanol service would include cleaning the tank, tank seal modifications (as necessary), and piping modifications. Two new blending skids would be installed, including new meters, revised controls, and new auditing software.

There would be no appreciable increase in the usage of electricity, water, or natural gas as a result of the proposed modifications at the East Hynes Terminal. Figure 2.4-5 depicts the locations of proposed additions and modifications at the East Hynes Terminal.

Vinvale Terminal

Ethanol would be transported to this terminal via an existing pipeline or by tanker truck from the Hathaway or East Hynes Terminals. The ethanol would be delivered from the pipeline directly to


PROPOSED CONVERT TK-220 TO ETOH
PROPOSED CONVERT TK-223 TO ETOH
PROPOSED REMOVE TK'S-233 AND 225 AND 224
CONSTRUCTION PARKING
PROPOSED NEW REFRIGERATED PENTANE TANK
PROPOSED PENTANE LOADING & ETOH OFFLOADING
CHANNEL #2
BERTH 76
BERTH 77
BERTH 78
SOUTHERN PACIFIC TRANSPORTATION COMPANY RIGHT OF WAY
PICO AVENUE
LONG BEACH FREEWAY (I-710)
0 200' 400' 800'
SCALE IN FEET
ENSR
FIGURE 2.4-4
PROJECT COMPONENT LOCATIONS
ARCO - Marine Terminal 2
ARCO CARB Phase 3 - MTBE Phase-out Project
DRAWN: M. SCOP
DATE: 10/12/2000
PROJECT NO. 0480-479
FILE NO. sp-marine
CHK BY: P. Smokler
REV. 1


PROPOSED
CONVERT TK-798
TO ETOH
PARAMOUNT BLVD.
TRUCK ENTRANCE GATE
SOUTH STREET
APPROX 750'
0 150' 300' 600'
SCALE IN FEET
ENSR
FIGURE 2.4-5
PROJECT COMPONENT LOCATIONS
ARCO - East Hynes Terminal
ARCO CARB Phase 3 - MTBE Phase-out Project
DRAWN: M. SCOP
FILE NO. sp--ehynes
DATE: 10/12/2000
CHK BY: P. Smokler
PROJECT NO. 0480-479
REV. 1

tank 940 which would be converted from hydrocarbon use. An additional existing storage tank would also be converted to ethanol storage and used as backup storage.

To convert the two existing storage tanks, the tanks would be cleaned and tank seals and piping would be inspected and modified as necessary. Existing blending skids would be modified to handle ethanol, including adding new meters, revised controls, and new auditing software. New tanker truck off-loading pumps would be added to handle ethanol deliveries from tanker trucks.

There would be no appreciable increase in the usage of water or natural gas as a result of the proposed modifications at the Vinvale Terminal. Electricity usage would increase approximately 27,000 KWH/year if all of the ethanol were delivered to the terminal via tanker truck.

Figure 2.4-6 depicts the locations of proposed additions and modifications at the Vinvale Terminal.

Hathaway Terminal

Ethanol would be piped to the Hathaway Terminal via existing pipeline from Marine Terminal 2 and stored in existing tanks. From this terminal, ethanol would be loaded into tanker trucks and shipped to the Vinvale, Colton, and Carson Terminals, or outside the Basin. The Vinvale Terminal could receive ethanol via pipeline. To convert the existing storage tanks, the tanks would be cleaned, and tanks seals and piping would be inspected and modified as necessary.

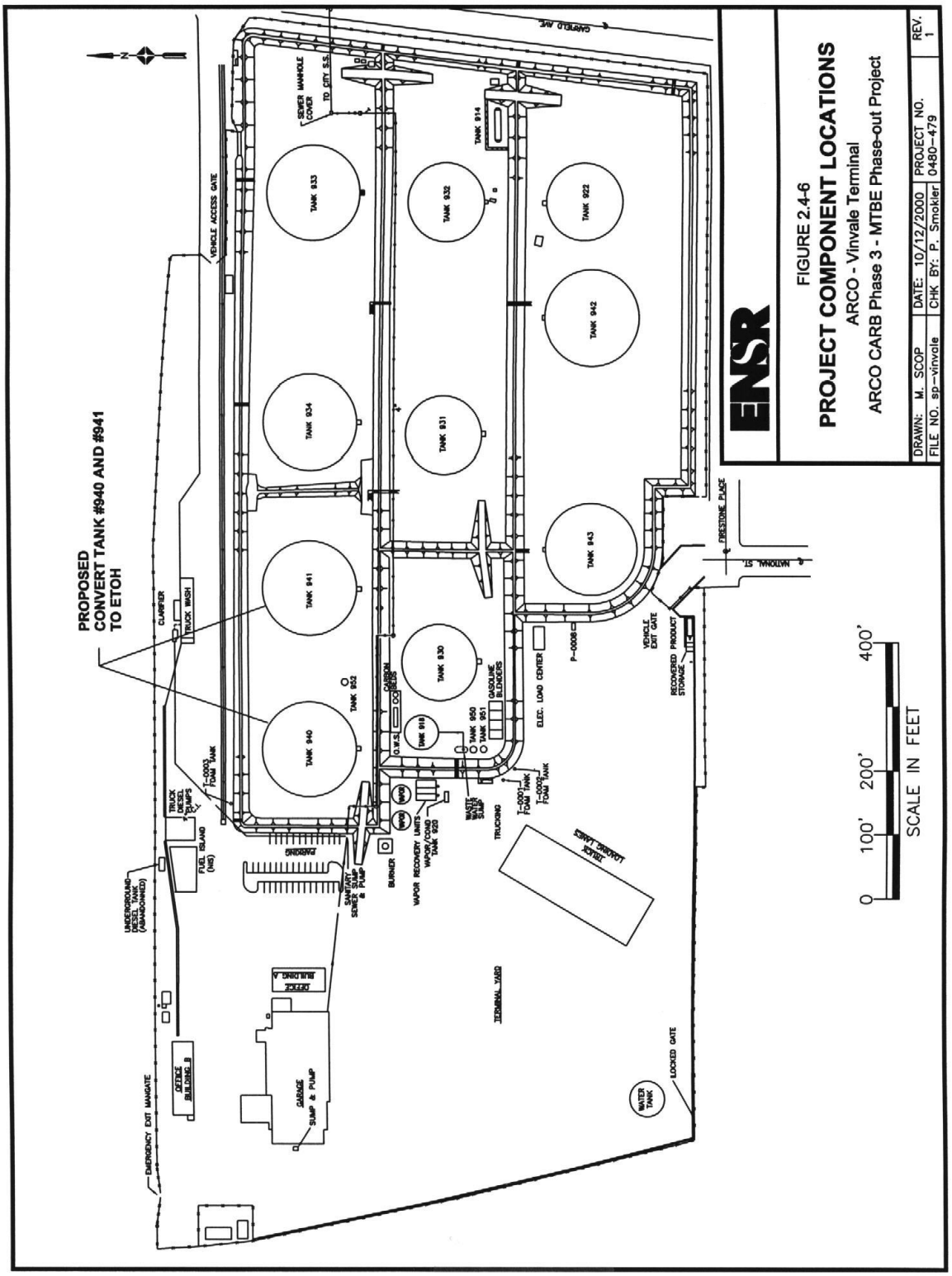
Existing blending skids would be modified to handle ethanol, including new meters, revised controls, and new auditing software.

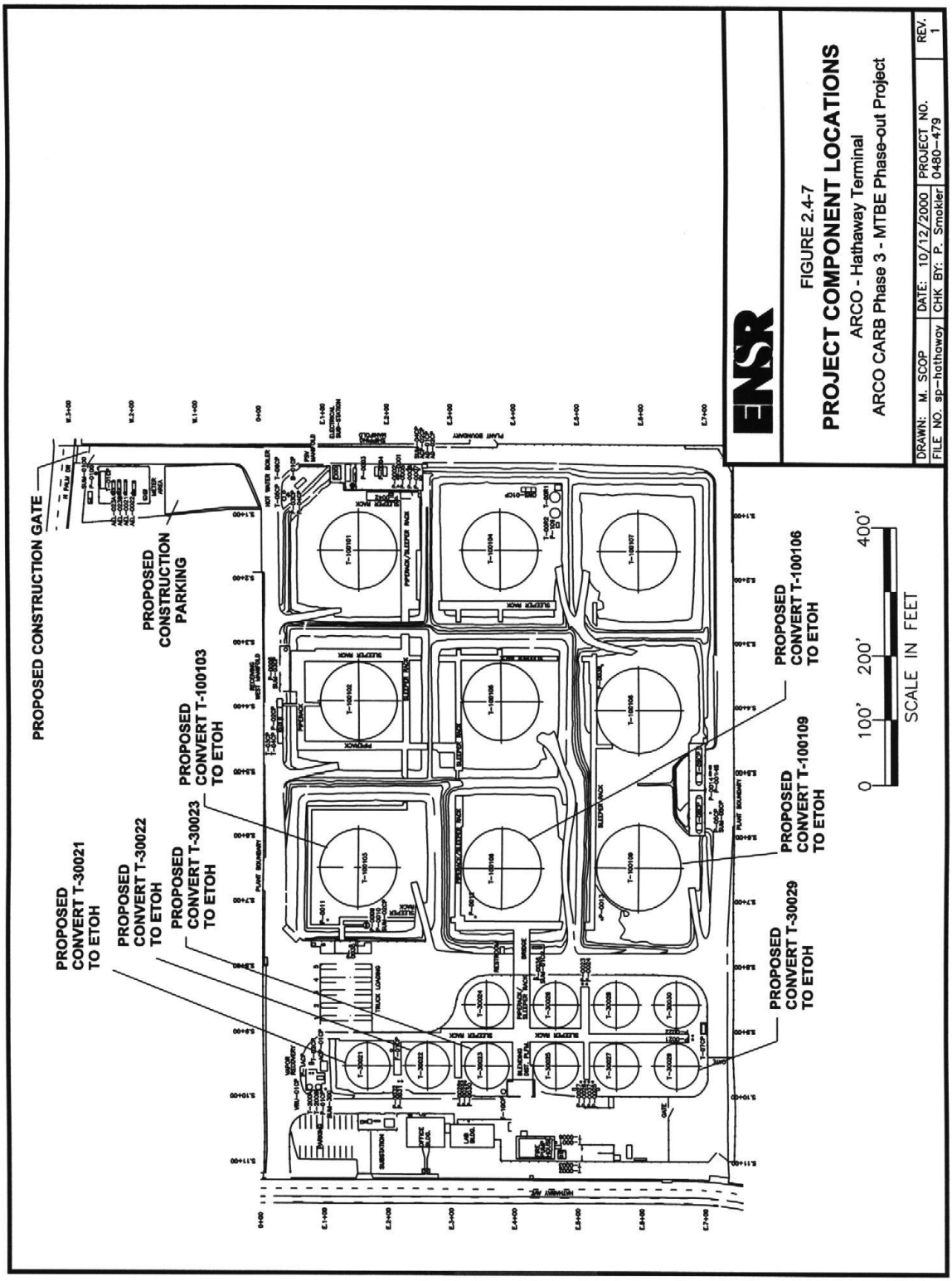
There would be no appreciable increase in the usage of electricity, water, or natural gas as a result of the proposed modifications at this location.

Figure 2.4-7 depicts the locations of proposed additions and modifications at the Hathaway Terminal.

Carson Terminal

Ethanol would be delivered to the Carson Terminal via tanker truck from the Hathaway or East Hynes Terminals and stored in existing tanks converted to ethanol use. Carson could also receive ethanol via pipeline from Marine Terminal 2. To convert the existing storage tanks, the tanks would be cleaned, and tanks seals and piping would be inspected and modified as necessary. Existing blending skids would be modified to handle ethanol, including new meters, revised controls, and new auditing software.


PROPOSED
CONVERT TANK #940 AND #941
TO ETOH
FIGURE 2.4-6
PROJECT COMPONENT LOCATIONS
ARCO - Vinvale Terminal
ARCO CARB Phase 3 - MTBE Phase-out Project
ENSR
DRAWN: M. SCOP
FILE NO. sp-vinvale
DATE: 10/12/2000
CHK BY: P. Smokler
PROJECT NO. 0480-479
REV. 1
SCALE IN FEET
0 100' 200' 400'
TANK 940
TANK 941
TANK 942
TANK 943
TANK 930
TANK 931
TANK 932
TANK 933
TANK 934
TANK 914
TANK 922
VEHICLE ACCESS GATE
SEWER MANHOLE COVER
TO CITY S.S.
CAMELO AVE
FIRESTONE PLACE
NATIONAL ST
VEHICLE EXIT GATE
RECOVERED PRODUCT STORAGE
ELEC. LOAD CENTER
GASOLINE BLENDERS
CARBON DRUMS
TRUCK WASH
CLARIFIER
TRUCK DIESEL PUMPS
FUEL ISLAND (NS)
UNDERGROUND DIESEL TANK (ABANDONED)
EMERGENCY EXIT MARQUEE
OFFICE BUILDING B
GARAGE SUMP & PUMP
OFFICE BUILDING A
PARKING
BURNER
VAPOR RECOVERY UNITS
WASTE WATER SUMP
TRUCKING
TERMINAL YARD
LOCKED GATE
WATER TANK


PROPOSED CONSTRUCTION GATE
PROPOSED CONSTRUCTION PARKING
PROPOSED CONVERT T-100103 TO ETOH
PROPOSED CONVERT T-30023 TO ETOH
PROPOSED CONVERT T-30022 TO ETOH
PROPOSED CONVERT T-30021 TO ETOH
PROPOSED CONVERT T-100106 TO ETOH
PROPOSED CONVERT T-100109 TO ETOH
PROPOSED CONVERT T-30029 TO ETOH
0 100' 200' 400'
SCALE IN FEET
ENSR
FIGURE 2.4-7
PROJECT COMPONENT LOCATIONS
ARCO - Hathaway Terminal
ARCO CARB Phase 3 - MTBE Phase-out Project
DRAWN: M. SCOP
DATE: 10/12/2000
PROJECT NO. 0480-479
REV. 1
FILE NO. sp-hathaway
CHK BY: P. Smokler

There would be no appreciable increase in the usage of electricity, water, or natural gas as a result of the proposed modifications at the Carson Terminal.

Figure 2.4-8 depicts the locations of proposed additions and modifications at the Carson Terminal.

Colton Terminal

Ethanol would be delivered to the Colton Terminal via tanker truck from the Hathaway or East Hynes Terminals and stored in existing tanks converted to ethanol use. To convert the existing storage tanks, the tanks would be cleaned, and tank seals and piping would be inspected and modified as necessary. Existing blending skids would be modified to handle ethanol, including new meters, revised controls, and new auditing software.

There would be no appreciable increase in the usage of electricity, water, or natural gas as a result of the proposed modifications at the Colton Terminal.

Figure 2.4-9 depicts the locations of proposed additions and modifications at the Colton Terminal.

2.5 Planned Modifications Not Required By CARB Phase 3 Regulations

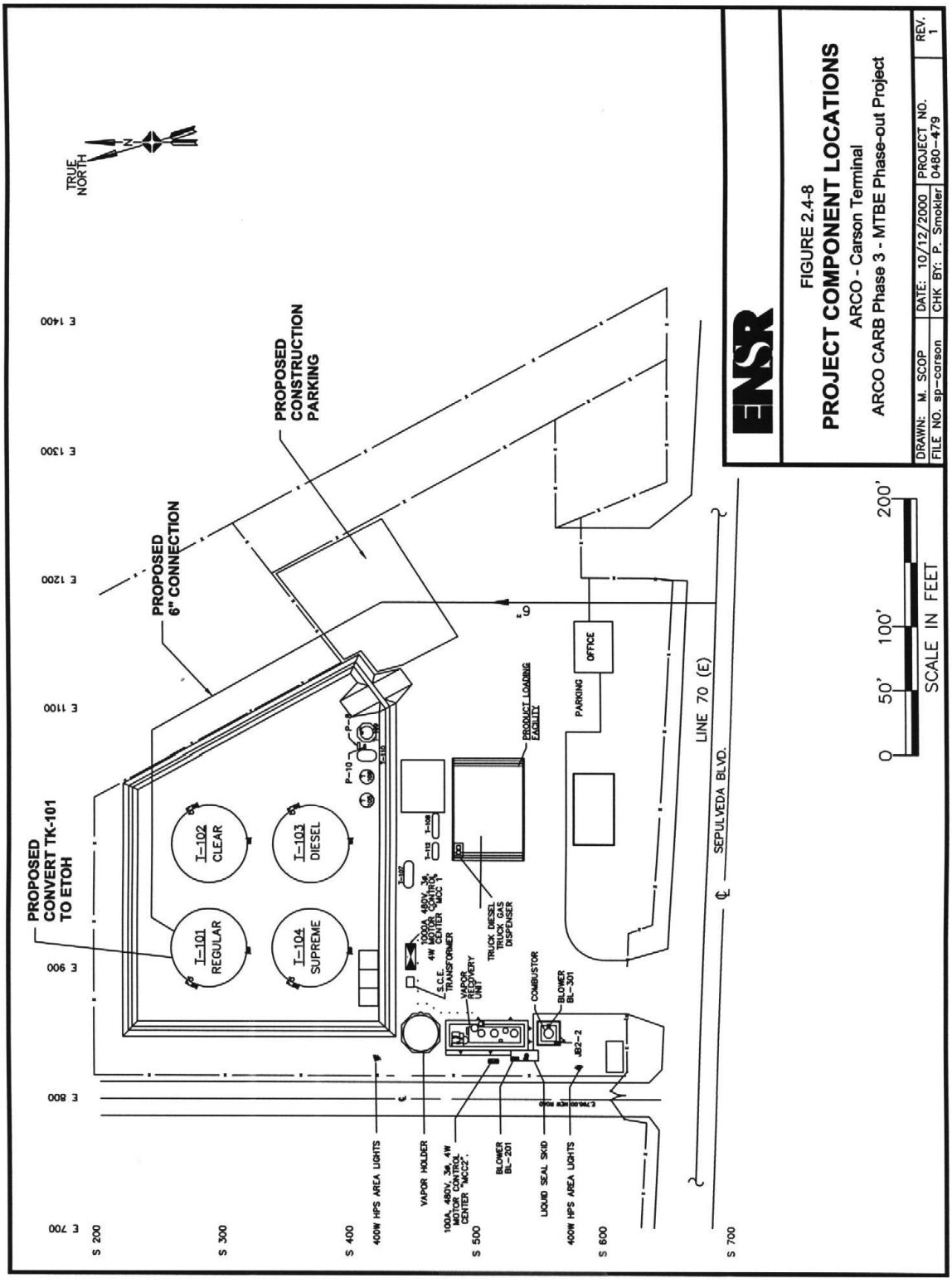
One proposed project component, the modification of the existing Cat Poly Unit to a Dimerization Unit at LAR, would produce a dimerate suitable for jet fuel or diesel fuel. Since these products are not part of the CARB Phase 3 regulations, this portion of the project is not strictly required by the regulations. However, the proposed modifications will also help to remove pentanes, which would help to meet the RVP specifications.

2.6 Construction

2.6.1 Schedule

Construction of the proposed project at LAR is scheduled to begin in February 2001 and be completed in December 2002 (Figure 2.6-1). Construction is anticipated to take place four days per week, Monday through Thursday, from 6:00 a.m. to 5:00 p.m. Occasional night, Friday, or weekend shifts may be required to maintain the construction schedule. For the most part the construction would occur during process turnarounds when the units would be undergoing scheduled maintenance.

The construction activities at the terminals would occur between June 2001 and December 2002 (Figure 2.6-1). The maximum duration for construction at an individual terminal would be 12 months. Construction activities would occur Monday through Thursday, from 6:00 a.m. to 5:00


TRUE NORTH
PROPOSED CONSTRUCTION PARKING
PROPOSED 6" CONNECTION
PROPOSED CONVERT TK-101 TO ETOH
I-101 REGULAR
I-102 CLEAR
I-103 DIESEL
I-104 SUPREME
PROJECT LOADING FACILITY
TRUCK DIESEL TRUCK GAS DISPENSER
VAPOR RECOVERY UNIT
COMBUSTOR
BLOWER BL-301
OFFICE
PARKING
LINE 70 (E)
SEPULVEDA BLVD.
VAPOR HOLDER
400W HPS AREA LIGHTS
LIQUID SEAL SKID
SCALE IN FEET
0 50' 100' 200'
ENSR
FIGURE 2.4-8
PROJECT COMPONENT LOCATIONS
ARCO - Carson Terminal
ARCO CARB Phase 3 - MTBE Phase-out Project
DRAWN: M. SCOP
FILE NO. sp-carson
DATE: 10/12/2000
CHK BY: P. Smokler
PROJECT NO. 0480-479
REV. 1

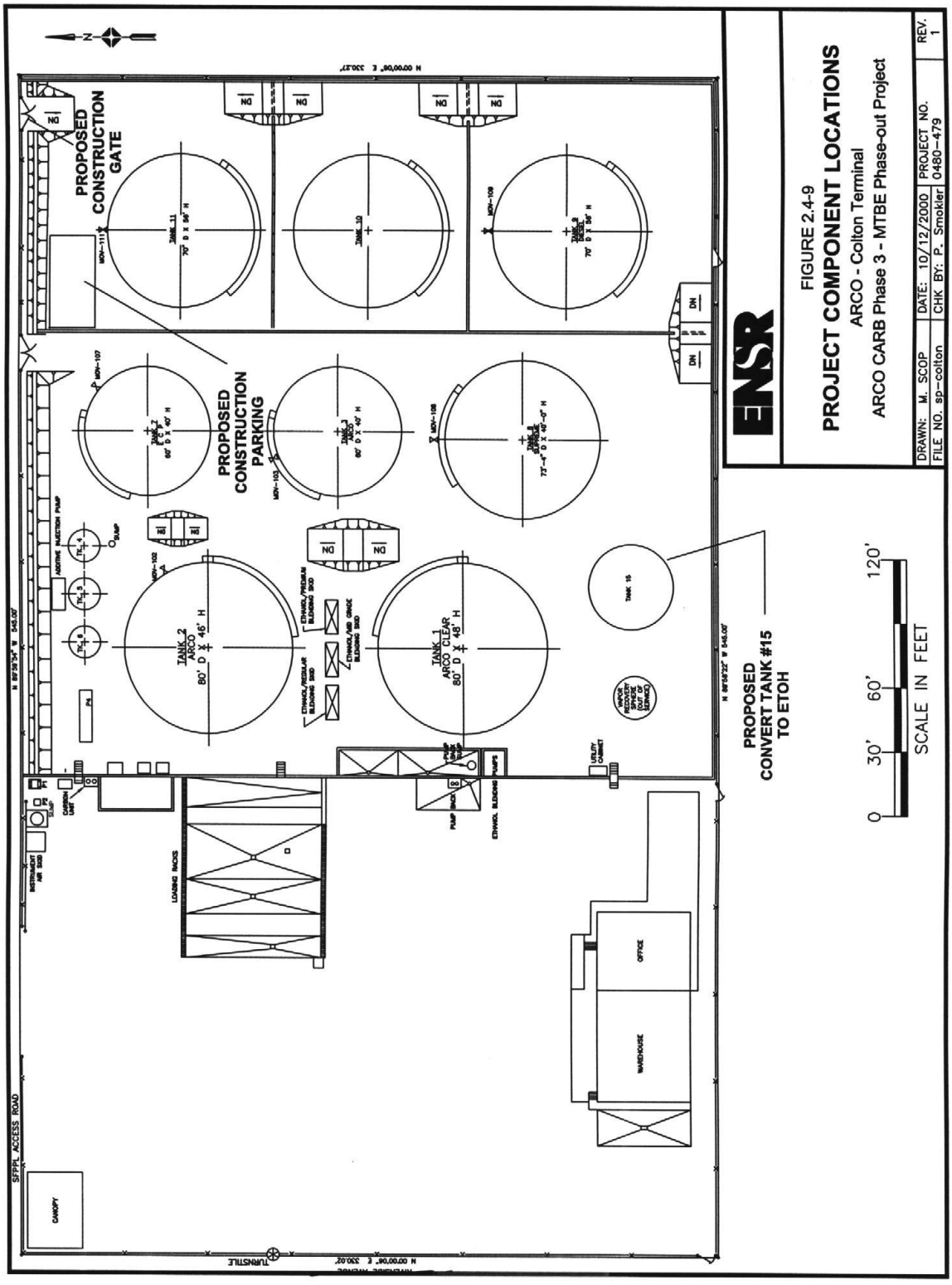
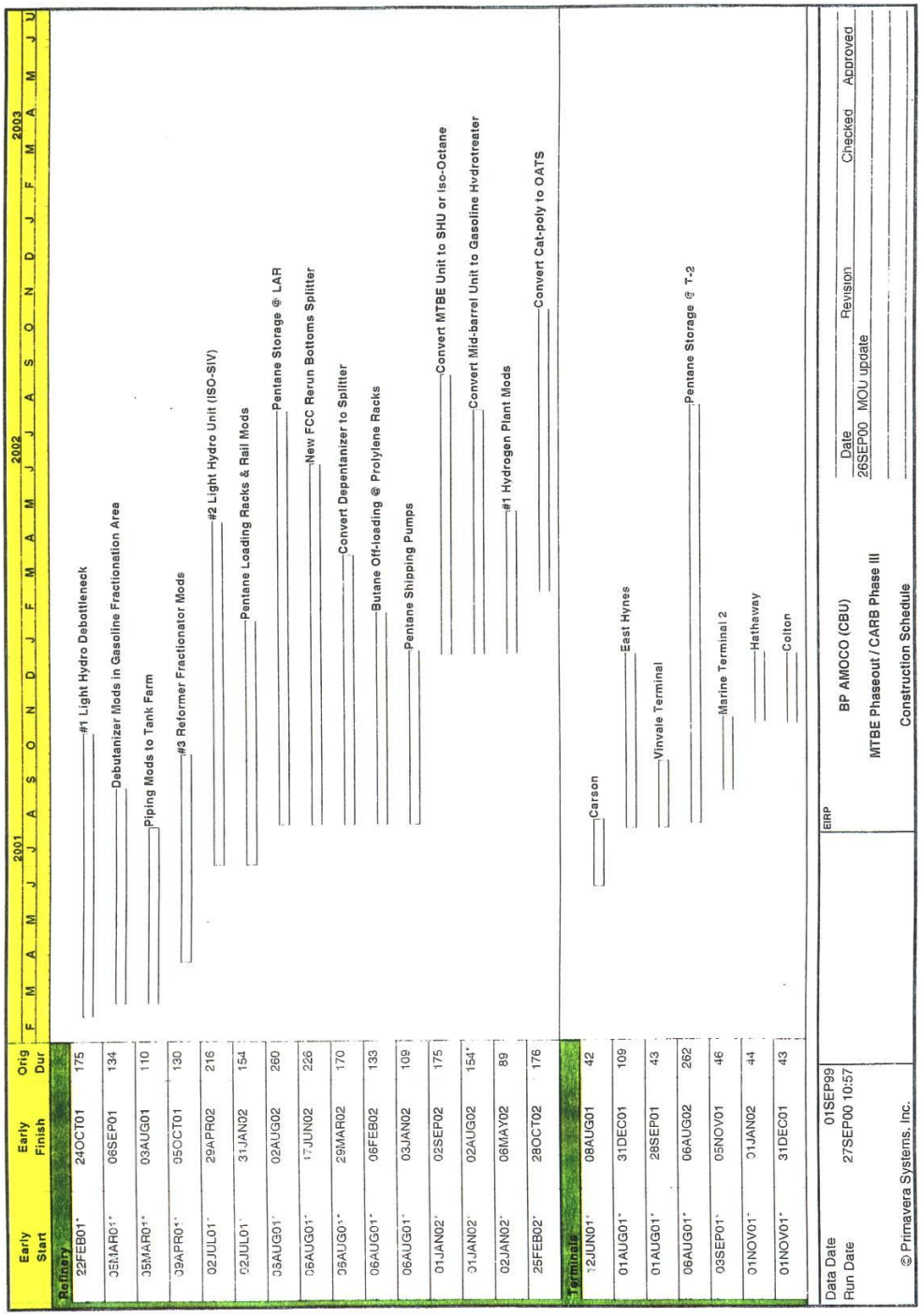

PROPOSED CONSTRUCTION GATE
PROPOSED CONSTRUCTION PARKING
TANK 2 ARCO 80' D X 46' H
TANK 1 ARCO CLEAR 80' D X 48' H
TANK 15
PROPOSED CONVERT TANK #15 TO ETOH
SFPPL ACCESS ROAD
OFFICE
WAREHOUSE
CANOPY
LOADING RACKS
0 30' 60' 120'
SCALE IN FEET
FIGURE 2.4-9
PROJECT COMPONENT LOCATIONS
ARCO - Colton Terminal
ARCO CARB Phase 3 - MTBE Phase-out Project
DRAWN: M. SCOP
DATE: 10/12/2000
PROJECT NO. 0480-479
FILE NO. sp-colton
CHK BY: P. Smokler
REV. 1

Figure 2.6-1

Construction Schedule



p.m. Occasional night, Friday, or weekend shifts may be required to maintain the construction schedule.

2.6.2 Labor Force

Construction activities at LAR would require an average of 200 workers for the length of the project, with a peak workforce of as many as 310 between July and September 2001. The construction activities at the terminals would require between five and 10 workers at each terminal during the length of construction, with the exception of Marine Terminal 2, which would require approximately 40 construction workers for the pentane storage tank addition.

2.6.3 Construction Plan

Prior to initiating construction, a detailed construction plan would be developed to identify necessary resources and to define the construction supervisory and technical field organization and staffing levels required for the project. The methods and procedures for sequencing and implementing construction operations would also be detailed in the construction plan. A quality control plan and procedures would be developed simultaneously with project requirements, and a project safety program would be developed consistent with federal and state requirements.

Initial construction operations would include the mobilization of construction forces, and determination of the location of necessary support facilities required within the LAR boundaries. Construction laydown and personnel parking at each of the terminal locations would be staged from contractor service areas located within terminal boundaries. Construction equipment would include earthmovers, backhoes, light and heavy cranes, portable welding equipment and air compressors, trucks, and pumps.

To provide a stable foundation for the new FCCU Rerun Bottoms Splitter, and additional railcar loading facilities at LAR, ~~and the new pentane storage tank at Marine Terminal 2,~~ the areas in which this equipment will be located must be excavated and graded. These areas would be cleared and excavated to five feet below the existing grade. These areas would be backfilled to the surrounding grade elevation. Subsequent to a geotechnical assessment of the area, the 100,000-barrel pentane tank foundation will be constructed on piles and will be designed to account for potential liquid sloshing. The tank will have a back-up power source to employ in the event of refrigeration loss during a seismic event. Tank construction design will conform to the current API, OCIMF, ASME B31.4, UBC, and UFC requirements. The installation of underground piping and electrical systems would be sequenced with the excavation and placement of the foundations as appropriate. In addition, it is anticipated that some minor ground preparation would be required at LAR and the terminals sites in those areas where new pumps, feed drums, or heat exchangers would be placed. Excavation for the railcar loading improvements would occur at the Northeast Property, which is the site of the former Johns-Manville facility.

Due to past activities at the Johns-Manville facility, asbestos materials may remain in the soil on portions of the Northeast Property. To reduce the potential for release of asbestos-containing

materials, a site specific Soils Handling Plan has been developed. The Soils Handling Plan provides procedures to prevent airborne release of asbestos fibers and management of asbestos-containing materials should the material be encountered during site activities. See Section 4.8.2 for more information regarding the Soils Handling Plan.

2.6.4 Materials and Services

Construction materials furnished in bulk quantities, such as concrete and steel, would be procured locally when possible. Consumable materials such as construction equipment fuel would be procured locally when possible and stored in the designated contractor service areas at LAR and the terminals. Appropriate measures would be taken when storing, dispensing, and using fuels, solvents, and other flammable materials to prevent fires and accidental releases.

2.7 Operation of Project

2.7.1 Labor Force

The proposed project will necessitate an additional 10 employees for operation and maintenance at LAR and the terminals. Employees would be hired from the local labor force to the maximum extent feasible.

2.7.2 Chemical Usage

The proposed project is expected to introduce some new chemicals into the refinery and terminals. As a result of the project, there would be a decreased usage of MTBE and an increased usage of ethanol. Additionally, replacing MTBE with ethanol requires additional blending components, including alkylate and isomerate. Due to the need to remove butanes and pentanes from the gasoline stream, there would be increased handling, storage and transport of these materials.

2.7.3 Project Termination and Decommissioning

The estimated lifetime of the proposed project additions and modifications to the LAR and terminals is over 40 years. The appropriate equipment may then be shut down and/or decommissioned, modified, and/or expanded in accordance with the applicable regulations and market conditions prevailing at the time of termination. The form of decommissioning would likely involve a combination of salvage or disposal at an approved landfill, as well as site restoration.

2.8 Permits and Approvals

The proposed project will require a number of permits and approvals before construction and operation can commence. Table 2.8-1 outlines the federal, state, and local agencies, with approval authority over the project, and the various permits and approvals specific to each agency. The table also includes a listing of regulations and requirements that must be met during construction and/or operation.

Table 2.8-1
List of Federal, State, and Local Agency Permits, Approvals, and Other Requirements

Agency Permit or Approval	Requirement	Applicability to Project
Federal		
Environmental Protection Agency (EPA)	New Source Performance Standards (NSPS) 40 CFR Part 60 General Provisions (Subpart A)	Requires facilities subject to an NSPS to provide notification, maintain and submit records, and in some cases undertake performance tests
	NSPS for VOC equipment leaks in Synthetic Organic Chemicals Manufacturing Industry, 40 CFR Part 60 Subpart GGG/VV	Contains performance standards for equipment leaks from fugitive components
	Accidental Release Prevention Risk Management Program, 40 CFR 68 (and California Accidental Release Program, Title 19, Div. 2, Chapter 4.5)	Offsite consequence analysis required for pentane, ethanol, and butane
	Protection of Stratospheric Ozone, 40 CFR 82 Subpart F	Requires use of certified servicing equipment and personnel and recordkeeping for equipment containing ozone depleting refrigerants
	Benzene Waste NESHAPS 40 CFR, Subpart FF 61	Reporting and recordkeeping
	*M*ACT 40 CFR 63 Subpart CC	Requires a startup, shutdown, and malfunction plan for process vents, onsite gas loading, and marine vessel loading
	MACT 40 CFR 63 Subpart RR	Gasoline Distribution
	Superfund Amendment and Reauthorization Act (SARA) Title III	Requires reporting offsite releases of hazardous materials
	Emergency Planning and Community Right-to-Know (EPCRA), Section 302	Requires disclosure of hazardous substances being used
	40 CFR 414	Standards for wastewater discharges

Table 2.8-1 (Cont.)
List of Federal, State, and Local Agency Permits, Approvals, and Other Requirements

Agency Permit or Approval	Requirement	Applicability to Project
Environmental Protection Agency (continued)	NPDES	Requires compliance with Clean Water Act standards for discharges to Dominguez Channel

	Toxic Substances Control Act	Requires premanufacturing notification (if necessary)
United States Coast Guard	Approval of changes associated with the operation of the marine terminal	
Occupational Safety and Health Administration	Process Safety Management OSHA 29 CFR 1910	Worker process safety standards
State		
California State Lands Commission, Marine Facilities Division.	2 CCR Articles 5, 5.3, 5.4, 5.5 Marine Terminal 2 design changes will be reviewed by the CSLC for compliance with appropriate API and OCIMF standards, guidelines, and recommended practices.	CLSC has jurisdiction over marine oil terminals per the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 (as amended) and Public Resources Code Section 89755.
Caltrans	Transportation permit	Application to transport overweight, oversize, and wide loads on state highways
Health and Safety Code Chapter 6.95	California Business Plans	Modify/updated plan to reflect changes to quantities/types of hazardous materials
Cal-OSHA	Construction-related permits	Excavation, construction, demolition, and tower and crane erection permit
Office of Environmental Health Hazard Assessment	Proposition 65 warnings for known exposures to listed chemicals	Required if significant risk identified exceeds regulatory limit
Local		
Regional Water Quality Control Board (RWQCB)	NPDES permit for stormwater runoff and point source associated with construction activities in addition to new stormwater outfalls Remedial action plan	Required for stormwater runoff from construction activities involving 5 acres or more Required if contaminated soil is found and remediated

Table 2.8-1 (Cont.)
List of Federal, State, and Local Agency Permits, Approvals, and Other Requirements

Agency Permit or Approval	Requirement	Applicability to Project
South Coast Air Quality Management District (AQMD)	CEQA Review/EIR	AQMD is the lead agency for certification of the proposed project EIR

	AB2588: Air Toxics Hot Spots Information and Assessment Act reporting	Periodic updating of air toxic emissions inventories and health risk assessment
	AQMD Rule 201: Permit to Construct	Applications are required to construct or modify stationary emissions sources
	AQMD Rule 203: Permit to Operate	Applications are required to operate stationary emissions sources
	AQMD Rule 212: Standards for Approving Permits	Requires public notification for a "significant project"
	AQMD Rule 401: Visible Emissions	Provides limitations to visible emissions from single emission sources
	AQMD Rule 402: Nuisance	Discharges which cause a nuisance to the public are prohibited
	AQMD Rule 403: Fugitive Dust	Contains control requirements for operations or activities that cause or allow emission of fugitive dust
	AQMD Rule 442: Use of Solvents	Limits use of solvents based on photochemical reactivity unless emissions reduced by 85 percent
	AQMD Rule 462: Organic Liquid Loading	Requires vapor recovery systems for loading of organic liquids
	AQMD Rule 463: Storage of Organic Liquids	Provides design requirements for tanks storing organic liquids
	AQMD Rule 1113: Architectural Coatings	Specifies allowable VOC content of coatings for structures
	AQMD Rule 1123: Refinery Process Turnarounds	An approved VOC control plan must be implemented during refinery process turnarounds
	AQMD Rule 1142: Marine Tank Vessel Operations – Requires emissions controls, limits emissions	Ethanol unloaded from ships and pentane loading
	AQMD Rule 1149: Storage Tank Cleaning and Degassing	Requires certain methods be used for degassing tanks. Tanks converted for other use will require cleaning
	AQMD Rule 1150: Excavation of Landfill Sites	Requires compliance with Soils Handling Plan for work in Northeast Property

Table 2.8-1 (Cont.)
List of Federal, State, and Local Agency Permits, Approvals, and Other Requirements

Agency Permit or Approval	Requirement	Applicability to Project

South Coast Air Quality Management District (AQMD) (Continued)	AQMD Rule 1158: Storage, Handling, and Transport of Coke, Coal, and Sulfur	Places requirements on handling of solid sulfur to control dust
	AQMD Rule 1166: Excavation of VOC Contaminated Soils	Required if soils to be excavated are impacted by hydrocarbons
	AQMD Rule 1173: Fugitive Emissions of VOC	Contains requirements for inspection and maintenance of fugitive VOC emitting components
	AQMD Rule 1176: Sumps and Wastewater Separators	A compliance plan is required for VOC control from wastewater systems
	AQMD Rule 1189. Emissions from Hydrogen Plant Process Vents.	Limits VOC emissions, requires source testing. Project involves "North Hydrogen Plant"
	AQMD Rule 1401: NSR of Toxic Air Contaminants	New or modified permit units must apply T-BACT if over maximum allowed risk levels
	Rule 1415: Reduction of Refrigerant Emissions from Stationary Refrigera-tion and air conditioning Systems.	Certain requirements for installation operation of refrigerant systems. Refrigerated pentane storage tank
	AQMD Regulation XX, Rule 2005	New source review requirements for FCCU modification, including BACT and allocation and credits
	AQMD Regulation XXX: Title V Operating Permits	Title V air pollution control permit system implemented to comply with the federal Clean Air Act as amended in 1990
Los Angeles County Sanitation District	Industrial wastewater discharge permit	Required when discharging into county sewer
Los Angeles County Dept. of Public Works	Industrial wastewater discharge approval	Required when discharging into sewer
County of Los Angeles, Petro/Chemical Division, Fire Planning and Prevention Division	Permit for aboveground storage tanks (AST) and storage of flammable materials; business disclosure form, building plan check	Required for ASTs and areas where storage of flammable materials occur; required for storage of hazardous materials; required to review plans for construction
	Risk Management and Prevention Program (RMPP) revision approval	Required to revise the RMPP (combined with federal RMP)

Table 2.8-1 (Cont.)
List of Federal, State, and Local Agency Permits, Approvals, and Other Requirements

Agency Permit or Approval	Requirement	Applicability to Project

City of Carson	Site Plan and Design Review	Required for new facilities built on Northeast Property and Carson Terminal
Cities of Carson, Long Beach, Signal Hill, Rialto, and South Gate	Sewer connection permit	Required only if new connections are necessary
	Building permit	Required for foundations, buildings, etc.
	Grading permit	Required prior to grading land
	Plumbing permit	General construction permit
	Electrical permit	General construction permit
Port of Long Beach	Harbor Development Permit	Permit must be issued prior to construction.
	Application Summary Report	Under the Port Risk Management Plan and the California Coastal Act the installation of a new tank at the terminal requires the submission of an Application Summary Report to examine the change in risk at the terminal.