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STAFF REPORT
COASTAL DEVELOPMENT PERMIT APPLICATION

Application File No.:	**E-04-006**
Applicant:	**Ultramar/Valero Wilmington Refinery**
Project Location:	Wilmington District, City of Los Angeles
Project Description:	Improvements to Alkylation Unit and other support facilities to install ReVAP and incorporate alkylation efficiency improvements and capacity enhancements. Proposed improvements include the installation of a new steam boiler, a new hot oil heater, a new cooling tower, a new emergency flare, and new storage tanks for butane, propane, and aqueous ammonia.
Substantive File Documents:	See Appendix A

SYNOPSIS

In February 2003, the Ultramar/Valero Wilmington Refinery (Ultramar) entered into a Memorandum of Understanding (MOU) with the South Coast Air Quality Management District (SCAQMD) requiring the termination of the transport, storage and use of concentrated hydrofluoric acid (HF) at the Wilmington Refinery. HF is a colorless, corrosive inorganic acid that will vaporize at normal outdoor temperatures and pressures. HF is a toxic air contaminant and an accidental release of HF could create a toxic gas cloud. Exposure to low concentrations of HF can cause irritation and inflammation of skin, eyes, and respiratory tract. Exposure to high concentrations of HF can harm the heart, skin, and lungs and cause death.

Ultramar proposes to modify and upgrade certain units and systems of the Wilmington Refinery in order to adopt a proprietary process, called "ReVAP," that will significantly reduce adverse

impacts in the case of an accidental HF release. As part of the ReVAP process, a proprietary vapor pressure suppression additive is blended with the HF acid catalyst; the proprietary additive is a non-volatile, non-odorous, low toxicity material. The modified HF catalyst reduces acid vapor pressure sufficiently to suppress the usual vaporization of hydrofluoric acid, causing most of the acid to fall to the ground as a more easily controlled liquid. The ReVAP process will replace the current process, and adoption of ReVAP meets the SCAQMD's objectives with respect to elimination of concentrated HF.

All elements of the proposed project will take place within the existing footprint of the Wilmington refinery. Incorporation of ReVAP will require substantial improvements to the Alkylation Unit and related units and systems. In addition, State requirements related to reformulated gasoline and the elimination of MTBE can result in the loss of gasoline production. The proposed project will incorporate alkylation efficiency improvements and design capacity enhancements to help offset such losses. Although the proposed project will increase alkylate production capacity, the improvements will not increase annual crude throughput through the refinery. Coastal Act policies related to the project involve hazard prevention, water quality and air quality.

The objectives of the proposed project are to: 1) implement SCAQMD Environmental Justice Program Enhancements that eliminate the transport, storage and use of concentrated HF at the Wilmington Refinery, and 2) incorporate alkylation efficiency improvements and design capacity enhancements to help offset losses associated with the installation of the ReVAP process and CARB Phase 3 requirements including the elimination of MTBE.

Staff recommends that the Commission approve the proposed project, as conditioned. Staff has determined that the proposal, as conditioned, will comply with Coastal Act sections 30253(1) and 30253(2) (hazard prevention), 30231 (water quality), and 30253(3) (air quality).

1.0 STAFF RECOMMENDATION

The staff recommends conditional approval of the permit application.

Motion:

I move that the Commission approve Coastal Development Permit E-04-006 subject to conditions set forth in the staff recommendation specified below.

Staff recommends a YES vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of Commissioners present.

Resolution:

The Commission hereby approves the Coastal Development Permit for the proposed project and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation

measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

2.0 STANDARD CONDITIONS

1. **Notice of Receipt and Acknowledgment**. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration**. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation**. Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment**. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land**. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

3.0 SPECIAL CONDITIONS

This permit is subject to the following special conditions:

1. **Geotechnical Report.** Prior to issuance of this coastal development permit, the applicant shall submit to the Executive Director of the Coastal Commission (hereinafter "Executive Director") for review and approval a project-specific geotechnical report that incorporates all the recommendations contained in Section 12 of the December 2001 Global Geo-Engineering, Inc. *Supplemental Geotechnical Investigation Report.*

2. **Emergency Response Plan**: Prior to commencement of construction activities, the applicant shall submit to the Executive Director for review and approval a revised Emergency Response Plan (ERP) that includes tsunamis and flooding as specific events triggering the ERP. No construction activities shall begin until the applicant has received written notification from the Executive Director that the revised ERP has been approved.

3. **Stormwater Pollution Prevention Plan for Construction**: Prior to issuance of this coastal development permit, the applicant shall submit to the Executive Director for review and approval a final Stormwater Pollution Prevention Plan for Construction that includes all stormwater best management practices (BMPs) described in the attachment

to the letter dated July 15, 2004 from Jason Lee of Ultramar to Audrey McCombs, Coastal Commission staff.

4.0 FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

4.1 Project Background[1]

On September 13, 2002 the South Coast Air Quality Management District (SCAQMD) approved the Implementation of Environmental Justice Program Enhancements for fiscal year 2002-03. The proposed environmental justice program enhancements called for an enforceable mechanism, such as a Memorandum of Understanding and associated permit restrictions, that require the use of modified hydrofluoric acid (HF) or alternative processes that eliminate the use of concentrated HF.

HF is a colorless, corrosive inorganic acid. Concentrated HF can volatize in the event of an accidental release and is a toxic air contaminant. Exposure to low concentrations of HF can cause irritation and inflammation of skin, eyes, and respiratory tract. Exposure to high concentrations of HF can harm the heart, skin, and lungs and cause death.

Due to the high vapor pressure and low boiling point of HF, a release of liquid HF into the atmosphere will volatize into the gas phase at typical outdoor ambient temperatures and pressures. A newly released cloud of HF has a vapor density approximately twice that of air and tends to spread as a ground-hugging cloud. Thus, an accidental release of HF would create a dense plume that would move with the prevailing winds in both direction and speed. An accidental release of HF could migrate off the refinery property and expose individuals in the surrounding community.

Due to the hazardous nature of HF, as part of the environmental justice program enhancements SCAQMD proposes using a modified HF process with a volatility suppressant, or an alternative process that eliminates the use of concentrated HF. On February 13, 2003, Ultramar and the SCAQMD entered into a Memorandum of Understanding (MOU) requiring the termination of the transport, storage and use of concentrated hydrofluoric acid at the Wilmington Refinery.

Concentrated hydrofluoric acid is a catalyst for the production of alkylate, a high octane blend stock important to the production of State and federally mandated reformulated gasoline. The proposed project involves changes to the Alkylation Unit at the Wilmington Refinery to eliminate the use of concentrated hydrofluoric acid as a catalyst for the production of alkylate. Ultramar proposes to adopt a proprietary process, called "ReVAP," that will significantly reduce adverse impacts in the case of an accidental HF release. ReVAP is similar to conventional HF alkylation except the process is modified so that a proprietary vapor pressure suppression additive is blended with the HF acid catalyst.

The proprietary additive is a non-volatile, non-odorous, low toxicity material that mixes with the HF acid catalyst. The modified HF catalyst reduces acid vapor pressure sufficiently to suppress the usual flash atomization process of hydrofluoric acid, causing most of the acid to fall to the

[1] Unless otherwise noted, information in this staff report is taken from the Final EIR.

ground as a more easily controlled liquid and reduces the potential for off-site consequences of an accidental HF release. The use of ReVAP meets the SCAQMD's objectives with respect to elimination of concentrated HF.

Incorporation of ReVAP requires substantial improvements to the Alkylation Unit and related units and systems of the refinery. The MOU recognizes that these improvements must be viewed in light of the objectives of both the California's Phase 3 Reformulated Gasoline (RFG 3) requirements and the Governor's executive order directing elimination of methyl tertiary butyl ether (MTBE) as an oxygenate and octane enhancer in California gasoline. Both these actions can result in the loss of gasoline production. The proposed project will incorporate alkylation efficiency improvements and design capacity enhancements to help offset any such losses. Although the proposed project will increase alkylate production capacity, the improvements will not increase annual crude throughput of the refinery.

The objectives of the proposed project are:

1) Implement SCAQMD Environmental Justice Program Enhancements that eliminate the transport, storage and use of concentrated HF at the Wilmington Refinery, and

2) Incorporate alkylation efficiency improvements and design capacity enhancements to help offset losses associated with the installation of the ReVAP process and CARB Phase 3 requirements including the elimination of MTBE.

4.2 Project Location

Exhibit 1 shows the project site and surrounding area. The site of the proposed project is located at the Wilmington Refinery at 2402 East Anaheim Street, in the Wilmington District of the City of Los Angeles, in the southern portion of Los Angeles County. The proposed modifications will be located entirely within the confines of the existing facility.

The closest residential area is about one-half mile northwest of the refinery in Wilmington. Two waterways lie near the refinery: the Dominguez Channel, which borders the refinery to the west, and the Cerritos Channel, which is approximately one-half mile to the south. These channels empty to the Ports of Los Angeles and Long Beach and then into the Pacific Ocean. The two waterways are separated from the land area by large, stone dikes. The Dominguez Channel dike is approximately 15 feet above grade where it runs closest to the refinery.

The refinery is bounded to the north by Anaheim Street and industrial uses, including another major refinery complex. The refinery is bounded on the south by an area used previously for oil field production facilities, and which now is developed for marine cargo transport, storage facilities and other Port of Long Beach related uses. A hydrogen plant is located adjacent to and immediately west of the refinery (west of the Dominguez Channel) on Henry Ford Avenue. To the west of Henry Ford Avenue are additional industrial and commercial uses, and the Port of Los Angeles. To the east are automobile storage yards, a cogeneration plant and a petroleum coke calcinating plant. The Terminal Island Freeway (State Route 103) runs through the refinery boundaries.

4.3 Existing Refinery Configuration and Operation

Crude oils and distillates (both of which are referred to as "feedstocks"), used to produce gasoline and other petroleum products, are delivered to marine terminals in the Port of Los Angeles/Port of Long Beach by ship. Feedstocks are delivered to the refinery by pipelines.

Crude oil is processed in the crude unit where it is heated and distilled into components, most of which are processed in downstream refinery units. The heavy residual oil leaving the crude unit is further distilled in the vacuum unit to yield additional, lighter hydrocarbon products and the vacuum residuum. The lighter hydrocarbon components from the crude unit and vacuum unit are fed to other refinery units for further processing, primarily the Fluid Catalytic Cracking Unit, gas oil hydrotreater, the Unibon, and the naphtha hydrotreater unit. The feedstocks are refined into the major refinery products which include unleaded gasoline, diesel, jet fuels, low sulfur distillates, other distillate fuels, petroleum coke, and sulfur. Elemental sulfur and petroleum coke are produced as by-products of the refining process. Major processing units at the refinery include the crude and vacuum distillation, delayed coking, catalytic reforming, hydrotreating, fluid catalytic cracking, alkylation, sulfur recovery, and auxiliary systems. Under existing refinery configuration, about 78,000 barrels per day (bpd) of crude oil, and 50,000 bpd of distillates are purchased and processed.

4.4 Project Description

The proposed project involves modifications and improvements to the Alkylation Unit and other support facilities to install ReVAP, and incorporate alkylation efficiency improvements and capacity enhancements. Modifications are proposed to the Alkylation Unit, the Butamer Unit, the LPG Metrox Treating Unit, the Light Ends Recovery Unit, and the Naptha Hydrotreater Unit, to install ReVAP and enhance alkylation production capacity. Additions and modifications to support facilities are also proposed, including the installation of a new steam boiler, a new hot oil heater, a new cooling tower, a new emergency flare, and new storage tanks for butane, propane, and aqueous ammonia. All elements of the proposed project will occur within the existing refinery footprint, and the proposed project will not increase crude oil throughput capacity at the refinery. The locations of the proposed new units and modified units are shown in Exhibit 2.

Table 1 below summarizes proposed modifications to the refinery. A description of the proposed changes is included in Appendix B.

Table 1: Summary of Proposed Modifications to the Wilmington Refinery

Item	Unit	Capacity		Purpose
		Pre-Modification	Post-Modification	
1.	Alkylation Unit 68	14,500 bpd	20,000 bpd	Install ReVAP; Enhance alkylate production capacity
2.	Butamer Unit 69	10,000 bpd	17,000 bpd	Increase capacity to provide sufficient isobutane feed to enhance the alkylation unit with the ReVAP.
3.	LPG Merox Treating Unit 64	6,500 bpd	10,000 bpd	Increase capacity to provide additional desulfurized butane feed to the Butamer unit
4.	Light Ends Recovery Unit 43	1,000 bpd	5,000 bpd	Increase butane recovery for Butamer unit feed
5.	Naphtha Hydrotreater Unit 56	29,000 bpd	29,000 bpd	Enhance unit to separate the butane and light straight runs (hydrocarbons)
6.	Fuel Gas Treating Unit 88	0	18 mmdcfd	Reduce the sulfur content (hydrogen sulfide, carbonyl sulfide, and mercaptans) of the refinery fuel gas to be consumed by the combustion equipments, such as the new and modified units (boiler, 86-B-9003; hot oil heater, 68-H-2; hot oil heater, 56-H-2)

Item	Unit	Capacity		Purpose
		Pre-Modification	Post-Modification	
7.	Boiler Unit 86	0	245 mmBtu/hr	Provide steam (200,000 lbs per hour) for modified alkylation unit, Butamer unit, and new flare
8.	SCR Unit 86	n/a	n/a	Control NOx from new boiler
9.	Hot Oil Heater Unit 68	0	350 mmBtu/hr	Provide heat source to reboil the isostripper tower in the alkylation unit and the fractionation column in the Butamer unit.
10.	SCR Unit 68	n/a	n/a	Control NOx from new heater
11.	Heater Unit 56	200 mmBtu/hr	260 mmBtu/hr	Provide additional process heat to a circulating stream of desulfurized gas oil in the Naphtha Hydrotreater unit
12.	SCR Serving Unit 56	n/a	n/a	Control NOx from modified heater Unit 56
13.	Cooling Tower	0	5,000 gpm	Provide additional cooling water for modified Alkylation and Butamer Units
14.	Cooling Tower Unit 90-CY-9002	8,000 gpm	13,000 gpm	Provide additional cooling water for modified Alkylation and Butamer Units
15.	Flare Unit 75	0	250 lbs/hr	Provide additional relief capacity (250 lbs per hour) for all the units affected by the alkylation improvement project
16.	Vapor Recovery Unit 93	123.8 mscfh	124.5 mscfh	Recover light hydrocarbons discharged into the plant flare header
17.	Butane Storage Tank Unit 82	0	5,000 bbls	Provide additional butane storage with the increased flow of normal butane feed to the Butamer unit Facility total throughput increase: 1.2 mmbbl/year Pre-modification: 2.3 mmbbl/year Post-modification: 3.5 mmbbl/year
18.	Propane Storage Tank Unit 81	0	4,000 bbls	Provide additional propane storage with the increased production of propane product due the increased alkylation capacity Facility total throughput increase: 0.2 mmbbl/year Pre-modification: 0.9 mmbbl/year Post-modification: 1.1 mmbbl/year
19.	Ammonia Storage Tank Unit 86	0	15,000 gal	Store ammonia for two new SCRs Units 86 and 68
20.	Slop Oil Storage Tanks	Three 10,000 bbl tanks	0	Store emulsified oil, sour water and wet slop oil.

4.5 Other Permits, Approvals, and Authorizations

The proposed project is subject to discretionary review by the South Coast Air Quality Management District (SCAQMD), for a Permit to Construct and for modifications to the refinery's Permit to Operate. On December 16, 2004, the SCAQMD, serving as CEQA lead agency, certified an EIR and issued a Notice of Determination for this project. The SCAQMD issued a Permit to Construct on June 17, 2004, amended December 15, 2004, and approved the revised Permit to Operate on December 16, 2004.

4.6 Coastal Act Issues

4.6.1 Hazards

Coastal Act section 30253 states, in relevant part:

> *New development shall:*
>
> (1) *Minimize the risks to life and property in areas of high geologic, flood and fire hazard.*
>
> (2) *Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...*

Geologic Hazards

Ground Shaking and Liquefaction[2]

The project site is located on the southwestern portion of the Peninsular Ranges Geomorphic Province of California. Locally, the project site is underlain by 75 feet of unconsolidated alluvial materials, underlain by about 200 feet of Older Alluvium comprised of sand and gravel. Underlying the Older Alluvium is the San Pedro Formation, comprised of dense, well-cemented silty sand, about 1,500 feet thick.

Groundwater levels at the refinery range from four to seven feet below existing grade.

The project site is not located within an Alquist-Priolo Special Studies Zone, however during historic times a number of major earthquakes have occurred along active faults in Southern California. The closest active fault is the Newport-Inglewood Fault, located at a distance of about 3.7 miles north of the project site. Other active faults include the Whittier Fault and the Santa Monica-Hollywood Fault, located at a distance of about 19 miles and 23 miles, respectively, from the project site. Because the closest fault is some distance away from the project site, ground rupture is not a significant hazard for this project.

Liquefaction is the phenomenon where saturated soils develop high pore water pressures during seismic shaking, and therefore behave like a fluid. This phenomenon generally occurs in coastal areas of high seismicity, where groundwater is shallow and loose granular soils or hydraulic fill soils are present. Liquefaction requires both the presence of loose granular soils below the water table as well as the occurrence of seismic shaking, and can cause extreme settling or tilting of existing structures. At the project site, because groundwater is shallow, and because the site is located on loose granular soils and is close to active earthquake faults, soils within the upper 40 feet of the surface are subject to liquefaction. Soils below 40 feet have a low liquefaction potential, because they are relatively dense.

In December 2001, Global Geo-Engineering, Inc. produced a Geotechnical Investigation Report for a project at the refinery involving the construction of a new storage tank and warehouse

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[2] Information in this section taken from *Supplemental Geotechnical Investigation Report.* December 12, 2001. Prepared by Global Geo-Engineering, Inc. for Ultramar Diamond Shamrock.

building.[3] This report contains specific engineering recommendations for the liquefiable soil at the project site. Specifically, the report recommends (among other things):

- Heavily-loaded and settlement sensitive structures shall be supported on deep foundations of precast concrete driven piles, specifically, 14-inch and 16-inch square pre-stressed pre-cast concrete piles. Drilled and cast-in-place piers shall not be used.
- Center-to-center pile spacing shall be no less than three times the maximum pile dimension.
- The pile hammer shall be of variable energy type to avoid damage to the piles by tensile stresses if the piles encounter low driving resistance.
- Piles shall be driven from the center of a group outward.
- Piles shall be 50 feet long below the pile cap.
- Shallow spread and mat foundations may be considered for lightly-loaded and non-settlement-sensitive structures. Minimum footing width shall be 18 inches. All footings and mats shall be supported on compacted fill consisting of a minimum of 36 inches of on-site or imported soils. Footings shall be adequately reinforced to minimize effects due to potential differential settling.
- Retaining walls shall be designed to resist lateral earth pressures imposed by the surrounding soils and surcharge loads. For static loading conditions, freestanding walls which are not fixed at the top shall be designed to resist a lateral equivalent fluid pressure of 40 pounds per square foot (psf) per foot of depth. Restrained retaining walls (supported at the top and bottom) shall be designed to resist a lateral equivalent fluid pressure of 60 psf per foot of depth. Adequate drainage shall be provided to prevent the build-up of hydrostatic pressure. In the case of submergence, the above pressures for free-standing and restrained retaining walls shall be increased by 42 and 32 psf per foot of depth, respectively.

Special Condition No. 1 requires the applicant, prior to issuance of this permit, to submit to the Executive Director for review and approval a project-specific geotechnical report that incorporates all the recommendations contained in Section 12 of the December 2001 Global Geo-Engineering, Inc. *Supplemental Geotechnical Investigation Report.*

Tsunami

All low-lying areas along the California coast are subject to potentially hazardous tsunamis. Tsunamis are long period waves generated by offshore earthquakes, landslides, or volcanic eruptions. The magnitude of the potential hazard is a function of the coast configuration, sea floor topography, individual wave characteristics, and distance and direction from the source. There is no mapping or other data available that predicts the extent or level of inundation that could be expected in the vicinity of the refinery in the event of a tsunami. The refinery is separated from the open sea by breakwaters and channel dikes, and the facilities of the Ports of Los Angeles and Long Beach. While these facilities and structures might mitigate somewhat the effects of a tsunami, some inundation of the refinery could still be expected in a severe tsunami event.

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[3] *Ibid.*

The refinery's existing Emergency Response Plan (ERP) provides emergency response procedures applicable to a tsunami event. The ERP applies both to emergencies resulting from events within the refinery, and to natural disasters which occur outside the refinery and impact the facility. However, at this time, neither tsunamis nor flooding are specifically named as events triggering the implementation of the ERP. **Special Condition No. 2** requires the applicant, prior to commencement of construction activities, to submit to the Executive Director for review and approval a revised Emergency Response Plan (ERP) that includes tsunamis and flooding as specific events triggering the ERP. No construction activities shall begin until the applicant has received written notification from the Executive Director that the revised ERP has been approved.

The following are the principal emergency provisions of the ERP that will be implemented in the event of a tsunami:

- Activation of the Emergency Operations Center (EOC). The ERP provides for three degrees of emergency. A major tsunami represents a third degree (most severe) emergency, as it is uncontrollable, likely to require management and emergency units, and likely to require some degree of evacuation. The EOC is activated when the tsunami warning is received, or, if there is a severe earthquake immediately offshore, immediately after the earthquake. All key refinery management and personnel are on 24-hour call and can be activated immediately if necessary to deal with an emergency.

  The Refinery General Manager or, in his or her absence, the next most senior supervisor present, is commander of the EOC. The EOC Commander decides whether to shut down refinery operations, and whether to evacuate the facility. The EOC Commander's two primary concerns are the protection of human life and the prevention of environmental damage.

- Operations Process Control and Shutdown. The ERP provides that if an incident exposes a process unit to risk or potential damage, actions will be taken to shut down or isolate the unit. These actions can be performed from a remote location, and the refinery can be shut down and each refinery process unit isolated in approximately 30 minutes. During isolation or shut down, hydrocarbon transfer and processing is terminated, and with very small exceptions, all hydrocarbons are effectively contained and in tanks, piping and vessels. The materials are thus isolated from exposure to floodwaters. In the event a component, for example a pipeline, is damaged, any hydrocarbon release is limited to the materials in the particular component.

- Evacuation. The ERP establishes refinery procedures for evacuation of the refinery if required in an emergency. The EOC Commander, in consultation with the Incident Commander, decides whether and to what extent evacuation is necessary. Mandatory safety training for refinery employees and contractors educates personnel about evacuation procedures, including assembly points and evacuation routes.

- Post-Disaster Procedures. Post-disaster procedures include:

  - Establishing communications, providing emergency medical care and rescue, suppressing fires and Hazmat releases, and assembling and distributing emergency supplies.

  - Visually inspecting refinery areas, checking for leaks in active pipelines, and inspecting all tanks and vessels for leaks or damage.

- Inspecting all buildings, shops and operating areas to confirm and report on structural integrity.
- After all emergency situations are controlled, assessing and reporting all damage that would affect restart of the refinery. If damage precludes restart, initiating the repair process.

The ERP and related documents address in detail the items summarized above, and provide a thorough and regularly updated system for the protection of human life and coastal environmental resources in the event of an emergency.

Other Hazards[4]

The potential hazards associated with the Wilmington Refinery, both existing processes and proposed modifications, are common to most refineries worldwide. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and the process conditions. For the Wilmington Refinery, hazards include:

- Toxic gas clouds (toxic concentrations of hydrogen fluoride or hydrogen sulfide)
- Torch, pool and flash fires
- Vapor cloud explosions
- BLEVEs (major failures of liquefied gas storage tanks)

A worst-case consequence analysis was performed for the proposed project.[5] The purpose of the analysis was to define the maximum credible hazard scenario for each unit. The analysis defined the maximum hazard zone for each scenario, and compared pre-project hazard zones to post-project hazard zones. A summary of the type of hazards to be found in each area of the refinery is presented in Table 2 below:

[4] Information in this section is taken from *Worst-Case Consequence Analysis for Ultramar's Wilmington Refinery Alkylation Improvement Project.* Appendix C of the *Final EIR.* Prepared by Quest Consultants, Inc. for Environmental Audit, Inc. January 12, 2004.

[5] *Ibid.*

Table 2: Summary of Hazards

Area Description	Type of Hazards to be Found in Area
Process Areas: Naphtha Hydrotreater Unit Light Ends Recovery Unit Merox Unit Alkylation Unit Fuel Gas Treating Unit Butamer Unit	Breach of liquid line or vessel: Pool fire Breach of flashing liquid line or vessel Flash fire Vapor cloud explosion Pool fire Torch fire Toxic cloud (hydrogen fluoride, hydrogen sulfide) Breach of vapor line or vessel Torch fire Vapor cloud explosion Toxic cloud (hydrogen fluoride, hydrogen sulfide)
Storage Atmospheric Storage Tank LPG Tank Aqueous Ammonia Tank	Breach of atmospheric storage: Tank fire Impounding area fire Toxic cloud (ammonia) Breach of flashing liquid line or vessel: Flash fire Vapor cloud explosion Pool fire Torch fire BLEVE of pressurized storage vessel
Auxiliary systems Hot oil heater Steam boiler	Breach of low pressure piping: Pool fire Breach of vapor line: Torch fire

Most of the proposed modifications do not affect the equipment location where the largest potential release originates. That is, the potential release which would result in the largest hazard zones are already in place in many of the units. For example, in the Naphtha Hydrotreating Unit (NHT), a rupture of the liquid line leaving the splitter column overhead accumulator results in the largest potential hazard zone (i.e., a toxic H_2S cloud.) The modifications proposed for the NHT do not result in release scenarios that would create hazard zones larger than those from the splitter column overhead accumulator.

The worst-case consequence analysis defines the maximum hazard zone for every possible release, then compares pre-project hazard zones to post-project hazard zones. The results fall into three categories, as described below:

- Units with no potential pre- or post-project off-site impacts (i.e., hazards are contained on-site):
    - Hot Oil Heater
    - Steam Boiler
    - Fuel Gas Treating Unit
    - Atmospheric Storage Tanks
    - Aqueous Ammonia Storage Tank

- Units with potential pre- or post-project off-site impacts, but post-project impacts are no larger than pre-project impacts:
    - Alkylation Unit
- Units with potential off-site impacts. Post-project impacts are larger than pre-project impacts:
    - Light Ends Recovery Units 1 and 2
    - Naphtha Hydrotreater Unit
    - LPG Merox Unit
    - Butamer Unit
    - Butane Sphere
    - Propane Sphere

For those units where post-project off-site impacts are larger than pre-project off-site impacts, none of the increased hazard zones reach a residential area. All are confined to the industrial area near the refinery complex. Furthermore, the worst-case comparison is only valid for the maximum impact distances. All other potential releases are smaller, and in many cases, there is not difference between the pre- and post-project impacts.

The potential impacts of the Alkylation Unit are significantly reduced with the use of the ReVAP process, however there is still the potential for a release to extend off-site into residential areas. The implementation of the ReVAP process, with its use of the vapor pressure suppression additive, results in an 18.5 percent reduction in the maximum hazard distance. Similar reductions in the downwind travel of HF-bearing clouds will be found for all potential acid releases in the modified Alkylation Unit.

For the worst-case scenario to occur following a release from the Alkylation Unit, the following conditions must be met:

- A full rupture of the line occurs,
- The release does not ignite within minutes of the rupture,
- The wind speed is low (less than 3mph), and
- The atmosphere is calm.

This sequence of events is possible, but highly unlikely.

There are a number of rules and regulations that the applicant must comply with that serve to minimize the potential impacts associated with hazards at the facility. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a Process Safety Management (PSM) Program.[6] The California Health and Safety Code and the federal Clean Air Act require Risk Management Plans (RMPs).[7]

A PSM that meets the requirements of the regulations and is appropriately implemented is intended to prevent or minimize the consequences of a release involving a toxic, reactive, flammable, or explosive chemical. The primary components of a PSM include: 1) performance of a process safety analysis, 2) development of and training in operating procedures that provide clear instructions for safely conducting activities involved in the process, and 3) a pre-start up

[6] 29 CFR Part 1910, Section 119, and Title 8 of the California Code of Regulations, Section 5189
[7] California Health and Safety Code Section 25534 and 40 CFR Part 68, and Title 1 §112(r)(7), by the Clean Air Act

safety review for new and modified facilities. A PSM review conducted internally by Ultramar management, engineers and safety staff is required as part of the proposed project. The applicant is responsible for preparing the PSM review and OSHA has inspection authority under the PSM requirements.

An RMP is required for certain chemicals at the refinery. The RMP consists of a hazard assessment that includes an off-site consequence analysis, five-year accident history, prevention program, and emergency response program. The refinery's existing RMP will need to be reviewed and revised to include the proposed project modifications, including the modifications to the Alkylation Unit, Naphtha Hydrotreater, the Light Ends Recovery Unit No. 2, the Merox Unit, the Butamer Unit, the Butane Storage Sphere, and the Propane Storage Sphere. The revised RMP will be submitted to the Los Angeles City Fire Department for review and approval.

In addition to the implementation of PSM program and an RMP, the refinery has instituted control systems and safety measures to prevent and/or control a potentially harmful HF release. These systems include: 1) a detection system capable of identifying and providing notification of an HF release, 2) a water deluge system that is capable of covering the Alkylation Unit area with water to prevent the release of HF from the immediate vicinity of the unit, and 3) an HF isolation and evacuation system which reduces the amount of acid exposed to the environment. These measures are currently in place, and will remain in place as part of the proposed project.

Conclusion
The Commission finds that the proposed project, as conditioned, will minimize risks to life and property and will assure stability and structural integrity of the structures proposed by the project, and is therefore consistent with section 30253(1) and (2) of the Coastal Act.

4.6.2 Water Quality

Coastal Act section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas, that protect riparian habitats, and minimizing alteration of natural streams.*

Stormwater Pollution Prevention and Wastewater Treatment – Operations[8]
Two waterways lie near the refinery: the Dominguez Channel, which borders the refinery to the west, and the Cerritos Channel, which is approximately one-half mile to the south. These channels empty to the Ports of Los Angeles and Long Beach and then into the Pacific Ocean. The two waterways are separated from the land area by large, stone dikes. The Dominguez Channel dike is approximately 15 feet above grade where it runs closest to the refinery.

[8] Information in this section is taken from the *Stormwater Pollution Prevention Plan*. February 2002, revised July 2004. Valero Wilmington Refinery.

There is no natural stormwater drainage from the refinery to the surrounding waterways because the dikes and the low elevation of the terrain preclude natural stormwater drainage to the channels. Much of the stormwater runoff within the refinery drains by gravity flow within the refinery's sewer system, however, in the southwest area of the refinery a stormwater lift station is used to collect and move a substantial portion of the stormwater falling on the property. Other pumps are also used to move stormwater, both within the refinery and then offsite for discharge.

The refinery manages stormwater runoff through two separate, segregated systems: the Oily Water Sewer System, and the Stormwater Control System, described below. These systems discharge stormwater and wastewater at two separate discharge points.

The Oily Water Sewer System (OWSS)

The OWSS collects stormwater from the petroleum processing areas of the refinery, as well as oily and non-oily effluent water from all refinery processing units. Drainage to the OWSS is via surface drains in each area served by the system. OWSS wastewater streams, including stormwater falling on process areas, are sent to a central collection point before being routed to the oily water treating facilities. The wastewater is treated primarily in oil-water separators and an induced gas flotation unit for removal of oil, solids, and other contaminants. The treated wastewater is sent to a sump and then discharged to the Los Angeles County Sanitation District (LACSD) sewer system, subject to discharge standards established by the LACSD. The LACSD applies final treatment and discharges subject to its discharge permit. Discharges from the OWSS are not managed under the General Permit or the SWPPP; rather, discharges are regulated by an industrial waste discharge permit granted by the LACSD in accordance with the LACSD's 5-year NPDES permit granted by the State Water Resources Control Board.

The Stormwater Control System (SWCS)

Stormwater that falls on the non-process areas of the refinery is managed through a Stormwater Pollution Prevention Plan (SWPPP), prepared in accordance with the Industrial Activities Stormwater General Permit adopted by the California State Water Resources Control Board. A series of gutters, culverts, and sewers drain non-process stormwater management areas of the refinery to either the north stormwater basin or the south stormwater basin. The north basin flows to the south basin via a mainline sewer. From the south basin, the stormwater is sent to the Port of Long Beach stormwater collection and discharge system immediately south of the refinery. The SWPPP includes BMP's and effluent guidelines for discharges into the Port of Long Beach system.

The applicant updated the refinery's SWPPP most recently in July 2004. At that time, staff from the Regional Water Quality Control Board (RWQCB) reviewed the revised plan and determined it to be appropriate. During the review process, RWQCB staff conducted a site inspection verifying that all measures included in the SWPPP have been implemented on the refinery grounds.[9] In addition to RWQCB review, Coastal Commission water quality staff has reviewed the refinery's SWPPP, and has determined that it is adequate to preserve water quality relating to stormwater and wastewater discharges during normal refinery operations.

Stormwater Pollution Prevention – Construction

Ultramar is in the process of preparing a Stormwater Pollution Protection Plan: Construction (SWPPP: Construction) in compliance with the State Water Resources Control Board Waste

[9] January 12, 2005. Ivar Ridgeway, personal communication.

Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity. The SWPPP: Construction will include the following elements[10]:

- In the area of the Alkylation Unit, new curbing and drains will be installed and connected to the OWSS. If stormwater control becomes necessary before the curbs and drains are installed, stormwater runoff onto and off of the site will be minimized, and stormwater will be directed to the existing drainage system, through the use of earthen berms, sand bags, and other controls.
- Soils will be placed on plastic sheeting, and sandbags or berms will be installed as necessary to minimize stormwater runoff from any soils that are excavated and stored off the immediate construction site. During the rainy season, stockpiled soils will be covered with plastic sheeting to direct rainwater toward the existing drainage system.
- Prior to temporary relocation and ultimate disposal, piping and other components that are removed during unit modification will be cleaned to remove hydrocarbons. "Lay-down areas," where components are stored temporarily before disposal, will be protected to control runoff.
- Soils that are disturbed during construction will be tested under SCAQMD Rule 1166 for the possible presence of volatile organic compounds (VOC), and will be visually inspected for the presence of hydrocarbons. Soils which contain VOC levels in excess of 50 parts per million (ppm) at a distance of up to three inches from the surface, or which otherwise appear contaminated, will be segregated and stockpiled for further analysis. Potentially contaminated soils will be managed in accordance with Ultramar's Los Angeles Regional Water Quality Control Board interim waste discharge permit for soils management in connection with excavation. This permit includes requirements for soil testing, monitoring and reporting.
- Minimal site grading is required for the proposed project, and there is very low potential for erosion. However, if necessary, mulching or other soil applications will be used to prevent erosion and sedimentation of runoff.
- The proposed project will require the use and storage of metals, paints, aggregate, asphalt, concrete, and cable and wiring. Paints will be kept in the original waterproof containers, and will be stored in an enclosed area with overhead coverage. Aggregate and concrete will be brought to the site as needed, and will not be stored on the refinery premises. Asphalt will be stored on site for short periods immediately prior to use. Metal materials, including vessels and piping, will be stored temporarily in lay-down areas, prior to final assembly. An existing lay-down area is located in the southwest section of the refinery, and a new temporary lay-down area will be set up immediately adjacent to the construction site. All lay-down areas will be protected to control runoff.
- Construction equipment will be stored and cleaned on the construction site or within the existing boundaries of the refinery. Runoff from these areas is controlled by the OWSS.
- Trucks carrying fill material that enter and leave the construction site will use existing paved access roads. Any sediment carried by these vehicles will be deposited on roads within the refinery, prior to reaching public roadways. Refinery access roads will be swept regularly to minimize fugitive dust.

[10] April 23, 2004. Letter from Mr. Jason Lee, Ultramar/Valero Wilmington Refinery, to Mr. Tom Luster, California Coastal Commission, regarding the content of the SWPPP: Construction.

- The site will be compacted as grading occurs, minimizing erosion and fugitive dust caused by the wind. The construction site will be watered as needed to minimize fugitive dust.
- Controlling fugitive dust will be the primary use of water at construction areas. Water will be applied in a manner and in quantities to minimize runoff. Water may also be used to clean or hydrotest piping. While the applicant does not expect this water to become contaminated, it will be managed by the OWSS. No other liquids will be intentionally discharged during construction activities.
- Stormdrain inlet protection will be installed that traps sediment before it enters the storm sewer system. Protection will be provided for all stormdrain inlets within the non-process areas. This barrier will consist of filter fabric, gravel, or sand bags; straw bales will not be used for this purpose.
- Vehicle and equipment fueling, maintenance, and washing areas will be established away from all drainage courses. These areas will be designed to control runoff.

The Commission believes that with these measures in place, water quality will be protected. **Special Condition No. 3** requires the applicant, prior to the issuance of this permit, to submit to the Executive Director for review and approval a completed SWPPP: Construction. The SWPPP: Construction must contain all the measures listed above.

Groundwater Resources

The refinery has an on-going groundwater monitoring program within the existing refinery designed to detect hydrocarbon contamination. The monitoring program requires quarterly monitoring, sampling, and laboratory analysis for total petroleum hydrocarbons (as diesel and as gasoline), benzene, toluene, ethylbenzene, and total xylenes, MTBE, pH, electrical conductivity, and total dissolved solids. There are currently 20 groundwater monitoring wells at the refinery. Based on the results of recent monitoring, nine of the wells contain free hydrocarbon product. The areas containing free hydrocarbon product are primarily in locations with historic oil field trenches, sumps, and/or spreading grounds. The proposed project is not expected to introduce contaminates into local groundwater.

The refinery purchases water from the Los Angeles Department of Water and Power (LADWP). Water is used in various refinery processes including crude desalting, cooling towers, and steam generation. Ultramar estimates that its current water consumption is about 650 gallons per minute, or about 936,000 gallons per day (341,640,000 gallons per year.) The proposed project is expected to increase the water demand at the site by about 434 gallons per minute, or about 625,000 gallons per day (an increase of about 40%). The additional water will be used for boiler make-up water, cooling tower make-up, and steam.

Together with local groundwater sources, the City operates the Los Angeles-Owens River Aqueduct and purchases water from the Metropolitan Water District of Southern California. The water requirement for any project that is consistent with the City's General Plan has been taken into account in the planned growth in water demand. The proposed project is consistent with the

City's General Plan, and the LADWP has enough capacity to supply the expected increase in water consumption.[11]

Conclusion
The Commission finds that the proposed project, as conditioned, will protect the quality of coastal waters, and is therefore consistent with section 30231 of the Coastal Act.

4.6.3 Air Resources

Coastal Act section 30253 states, in relevant part:

> *New development shall:*
>
> *...(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.*

The proposed project falls with in the jurisdiction of the South Coast Air Quality Management District (SCAQMD), which has review authority over both the ongoing operation of the refinery, and the construction activities associated with the proposed project. The SCAQMD issued a Permit to Construct on June 17, 2004, subsequently amended on December 15, 2004. A revised Permit to Operate incorporating the modifications associated with the proposed project was approved on December 16, 2004.

Construction Emissions
Construction emissions of carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NOx), and particulate matter less than ten microns in diameter (PM_{10}) will exceed SCAQMD significance thresholds during the period of maximum construction activity - approximately one month. The applicant has incorporated mitigation measures, as described below, into the project to reduce air quality impacts from construction activities. Though these measures will not reduce construction emissions to levels below the SCAQMD significance thresholds, according to SCAQMD no other feasible mitigation measures or project alternatives are available. The construction emission calculations were based on very conservative data and assumptions, and likely overestimate actual emissions. Construction emissions will be temporary, and emissions over SCAQMD thresholds will cease at the end of the peak construction phase (approximately one month).

As part of the CEQA process, the applicant developed a Mitigation Monitoring Plan (MMP) in cooperation with the SCAQMD, to reduce air quality impacts during construction. The MMP requires the applicant to develop and submit a Construction Emission Management Plan (CEMP) to the SCAQMD for approval. The CEMP will incorporate measures to reduce emissions during the construction phase of the project, including limiting truck idling during deliveries, prohibiting the use of gas or diesel welders and gasoline generators in areas of the refinery served by electricity, selecting equipment with the minimum required engine size, and evaluating the use of electricity and alternate fuels for on-site mobile construction equipment. The MMP also requires the applicant to develop and submit to the SCAQMD for approval a fugitive dust emission control plan prior to beginning construction activities.

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[11] December 1, 2003. Letter from Charles Halloway, Los Angeles Department of Water and Power, to James Koizumi, South Coast Air Quality Management District. Letter regarding comments on Draft EIR. Letter contained in Final EIR, Appendix A: Notice of Preparation.

Ultramar will be required to submit quarterly reports to the SCAQMD during the construction phase that describe the progress of construction activities, include all required logs, inspection reports, and monitoring reports, identify any problems, and provide solutions to problems, as necessary. The SCAQMD and Ultramar will evaluate the effectiveness of this monitoring program during both the construction period and normal facility operations. If the monitoring program or the mitigation measures is deemed inadequate, the SCAQMD may require Ultramar to employ additional or modified monitoring measures and/or measures to effectively mitigate air quality impacts.

Operation Emissions

Operational emissions caused by the proposed project will exceed emissions standards established by the SCAQMD for volatile organic compounds (VOC) and particulates less than ten micrometers in size (PM_{10}).

Fugitive components, such as pumps, valves, drains, and flanges are the major source of VOC emissions. VOC emissions are controlled through the use of Best Available Control Technology (BACT), which is, by definition, the cleanest commercially available control equipment or technique. The proposed project uses BACT, and therefore controls emissions to the greatest extent feasible for the new and modified emissions sources. In addition, the fugitive components will be required to be included in an inspection and maintenance program as required by SCAQMD Rule 1173, to ensure that the equipment is properly maintained. Additional VOC emission reductions from fugitive components associated with the proposed project is not feasible.

PM_{10} emissions are generated from additional combustion sources, such as heaters and boilers. BACT for PM_{10} control from heaters and boilers is the use of natural gas or refinery fuel gas. The refinery will use natural gas or refinery fuel gas in the new and modified heaters and boilers. No other feasible control measures have been identified.

Offsets are not required for projects whose purpose is to comply with State or federal regulations, provided there is no increase in crude oil throughput at the refinery[12]. The proposed project involves modifications to the Alkylation Unit designed to implement SCAQMD Environmental Justice Program Enhancements that eliminate the transport, storage and use of concentrated HF at the Wilmington Refinery. The proposed project is undertaken pursuant to an MOU with the SCAQMD to comply with these regulations and State reformulated fuels requirements. The proposed project will not increase the crude oil throughput of the refinery. Therefore, offsets are not required by the SCAQMD and will not be provided for the emission increases associated with the proposed project.

Conclusion

The Commission finds that the project is consistent with SCAQMD regulations, and therefore is consistent with section 30253(3) of the Coastal Act.

[12] SCAQMD Rule 1304(c)(4)

5.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits approval of a proposed development if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant impacts that the activity may have on the environment. The project as conditioned herein incorporates measures necessary to avoid any significant environmental effects under the Coastal Act, and there are no less environmentally damaging feasible alternatives or mitigation measures. Therefore, the proposed project is consistent with CEQA.

APPENDIX A
Substantive File Documents

Documents

Ultramar Inc.- Valero Wilmington Refinery Alkylation Improvement Project Final Environmental Impact Report. June 2004. Prepared by Environmental Audit, Inc. for the South Coast Air Quality Management District. State Clearing House Number 20030536.

Mitigation Monitoring Plan. From the Final EIR, Attachment I: Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan. December 2004.

Stormwater Pollution Prevention Plan. February 2002, revised July 2004. Valero Wilmington Refinery.

Emergency Response Manual. Valero Wilmington Refinery. 2004 version, revised annually in July/August.

Permit to Construct, including *Engineering & Compliance Application Processing and Calculations.* June 17, 2004, amended December 15, 2004. South Coast Air Quality Management District. Application Number 416622.

Permit to Operate. Revised December 16, 2004. South Coast Air Quality Management District. Facility Number 800026, Revision Number 25.

Boring Logs: Geological Hazard Evaluation. November 18, 2004. Prepared by Global Geo-Engineering, Inc. for Ultramar/Valero Wilmington Refinery.

Geological Hazard Evaluation Report. September 13, 2004. Prepared by Global Geo-Engineering, Inc. for Ultramar/Valero Wilmington Refinery.

Supplemental Geotechnical Investigation Report. December 12, 2001. Prepared by Global Geo-Engineering, Inc. for Ultramar Diamond Shamrock.

Correspondence

November 2, 2004. Letter from Jason Lee to Audrey McCombs. Regarding Notice of Incomplete Application dated October 21, 2004.

September 30, 2004. Letter from Jason Lee to Audrey McCombs. Regarding change in project description.

July 15, 2004. Letter from Jason Lee to Audrey McCombs. Regarding letter of June 10, 2004.

April 23, 2004. Letter from Jason Lee to Tom Luster. Regarding the content of the SWPPP: Construction.

APPENDIX B
Refinery Improvements

The proposed project involves modifications and improvements to the Alkylation Unit and other support facilities to install ReVAP, and incorporate alkylation efficiency improvements and capacity enhancements. Modifications are proposed to the Alkylation Unit, the Butamer Unit, the LPG Metrox Treating Unit, the Light Ends Recovery Unit, and the Naptha Hydrotreater Unit, to install ReVAP and enhance alkylation production capacity. Additions and modifications to support facilities are also proposed, including the installation of a new steam boiler, a new hot oil heater, a new cooling tower, a new emergency flare, and new storage tanks for butane, propane, and aqueous ammonia. Specific elements of the project are summarized below.

Modifications to the existing Alkylation Unit

In order to incorporate ReVAP into the existing Alkylation Unit and to enhance the alkylate production capacity to 20,000 bpd, modifications are required to the individual sections of the unit as discussed below. Alkylate production will continue to follow the basic process flow with changes to the process and equipment described in the following paragraphs.

Modifications to the HF Acid Storage, Replenishment and Injection Section

The existing acid storage drum will be used to store the modified HF. A new recycle additive surge tank will provide sufficient surge volume for rapid additive concentration control in the reactor system acid. The new recycle additive surge tank will also serve as a storage vessel for the modified HF at times when the Alkylation Units is shut down for maintenance.

Modifications to the Reaction and Settling Section

The ReVAP process requires larger reactors and a higher circulation rate than the present process. Two new alkylation reactors will be installed to operate in combination with the two existing alkylaton reactors. The existing two acid circulation pumps will be replaced with two new larger capacity pumps.

Modifications to the Product Separation (Fractionation) Section

A recontactor will be added to reduce the fluoride content of the feed to the Fractionation Section and to remove excessive acid from the feed to the fractionators. After separation of acid and hydrocarbon phases in the recontactor, the hydrocarbon phase enters the Fractionation Section and excess is pumped back to the reactor acid pump section.

The narrower top section of the depropanizer will be replaced with one having a larger diameter to handle incrementally larger amounts of propane in the Alkylation Unit feed.

Modifications to the HF Stripping Section

The existing butane alumina treaters and propane alumina treaters will be replaced with new treaters, and a new propane potassium hydroxide (KOH) treater will be installed and operated with the existing propane KOH treater to meet the enhanced Alkylation Unit operation requirements.

New water wash column and evaporator column

Trace amounts of ReVAP additive in the isostripper alkylate product will be removed by a water wash extraction process in a new water wash column. The dilute additive/water stream from the water wash column bottoms is fed to the new evaporator column, which is mounted on the

evaporator column kettle reboiler. The evaporator column concentrates the additive in the bottoms product.

Modifications to the HF Regeneration Section

The existing acid regeneration system is undersized for the ASO that will be produced at the new alkylate production rates and will be replaced. A new rerun column will produce both a side draw stream for water removal and a bottoms product for ASO removal.

Modifications to the existing Butamer Unit

In order to provide sufficient isobutane for enhanced alkylate, Ultramar proposes to upgrade the capacity of the Butamer Unit from 10,000 bpd to 17,000 bpd. To accomplish this will require a combination of new components and increasing the size of the deisobutanizer (DIB) column and related equipment.

The principal changes will be in the DIB (fractionation) column. The DIB column is both a tall and large-diameter column. Fractionation of isobutane from normal butane requires a relatively large number of fractionation stages due to the narrow boiling point difference between the light and heavy components. In its current configuration, the DIB has two reboilers, one heated with process waste heat and the second heated with steam. For the enhancement project, a new steam reboiler operating in parallel with the existing boiler is proposed as a replacement for the waste heat reboiler, which will be used as a feed preheater. Other changes are proposed to improve the energy efficiency (steam requirements) of the unit.

Modifications to the existing LPG Merox Treating Unit

Mercaptan sulfur and traces of hydrogen sulfide from butanes, which could poison the Butamer Unit catalyst and affect the alkylation product, are removed in LPG Merox Unit (Unit 64) by caustic wash. The LPG Merox Unit capacity must be increased from its current capacity of 6,500 bpd of field butanes to treat 10,000 bpd. The only modification required is replacement of existing caustic prewash drum with a new larger vessel.

Modifications to the existing Light Ends Recovery Unit

The Light Ends Recovery Unit processes naphtha and by-product gasses from various units. Minor modifications to this unit will allow more butane to be desulfurized in the naphtha hydrotreater for feed to the Butamer Unit. Principal modifications include a new depropanizer feed drum and feed pumps, replacement of depropanizer tower trays, vessel and reboiler tube replacement, and new heat exchangers.

Modifications to the existing Naphtha Hydrotreater Unit

The Naphtha Hydrotreater Unit removes organic sulfur, oxygen, nitrogen, metals and other compounds from hydrocarbon fractions. Minor modifications will be made to provide sufficient LPG feed for the modified alkylation process. Principal modifications include a new debutanizer complex and modifications to heat exchangers and pumps. The new debutanizer separates the butane and light straight runs. The butane will be routed to the Light End Recovery Unit 43 for the recovery of butane for the Butamer Unit.

New Fuel Gas Treating System

Ultramar will install a new fuel gas treating system to reduce the sulfur content of the additional fuel gas to be consumed as a result of the Alkylation Unit improvements. The process uses a

fiber contactor system to treat fuel gas with a circulating stream of amine and caustic to remove hydrogen sulfide, carbonyl sulfide, and mercaptans.

Modifications to utilities and auxiliary functions
The proposed conversion to ReVAP and enhanced operation of the Alkylation Unit will require additional steam, cooling, and flaring capability, and additional butane storage capacity.

New steam boiler
The refinery steam demand is expected to increase by approximately 200,000 pounds per hour due to the Alkylation Unit modifications. A new 245 million British thermal unit per hour (Btu/hour) boiler will be installed to produce 300 pounds per square inch steam. The boiler will be equipped with SCR control equipment in accordance with SCAQMD requirements.

New hot oil heater
A new 350 million Btu/hour hot oil heater system will be installed to provide the heat source required to reboil the isostripper tower and the DIB in the Butamer Unit. An SCR will be installed on the new heater for nitrogen oxide (NOx) control.

Modification to existing heaters
Ultramar proposes to modify an existing fired heater, 56-H-2, to provide additional process heat for the Alkylation ReVAP modifications. This heater is currently rated at 200 million Btu/hour (high heating value) heat release and is used to heat a circulating stream of desulfurized gasoil to provide process heat to the Naphtha Hydrotreater Unit. It shares an SCR system (for NOx emission control), induced draft fan, and exhaust stack with another fired heater, 56-H-1. The proposed modification will increase the rated capacity of 56-H-2 from 200 to 260 million Btu/hour, with the incremental heat being used for refinery processes to support the ReVAP modifications and Alkylation Unit expansion. No changes are proposed for 56-H-1.

New and modified cooling towers
A new 5,000 gallons per minute (gpm) recirculating cooling tower is proposed to provide cooled water to the Alkylation Unit and to absorb the increased heat in the Reaction Section. The cooling water will then return to the cooling tower where it is distributed across the cooling tower and contacted with air to remove the absorbed heat by evaporative cooling. An existing cooling tower will be modified to increase the existing circulation rate of 9,500 gpm by 5,000 gpm for a total of 14,500 gpm to supply the necessary cooling water.

New emergency flare
A new 250,000 lb/hr flare will be installed to safely depressurize process equipment during emergency situations. The new flare will operate in parallel with the existing flares, and will use the existing flare vapor recovery system. Emergency releases to the new flare system will flow into a new liquid blowdown drum to recover liquids. The vapors leaving the liquid blowdown drum will be routed to the existing flare vapor recovery system. Gases that cannot be recovered in the vapor recovery system will flow into a new knock-out drum to recover any remaining liquids and then to the flare for combustion. The flare will be elevated, with a height of about 250 feet.

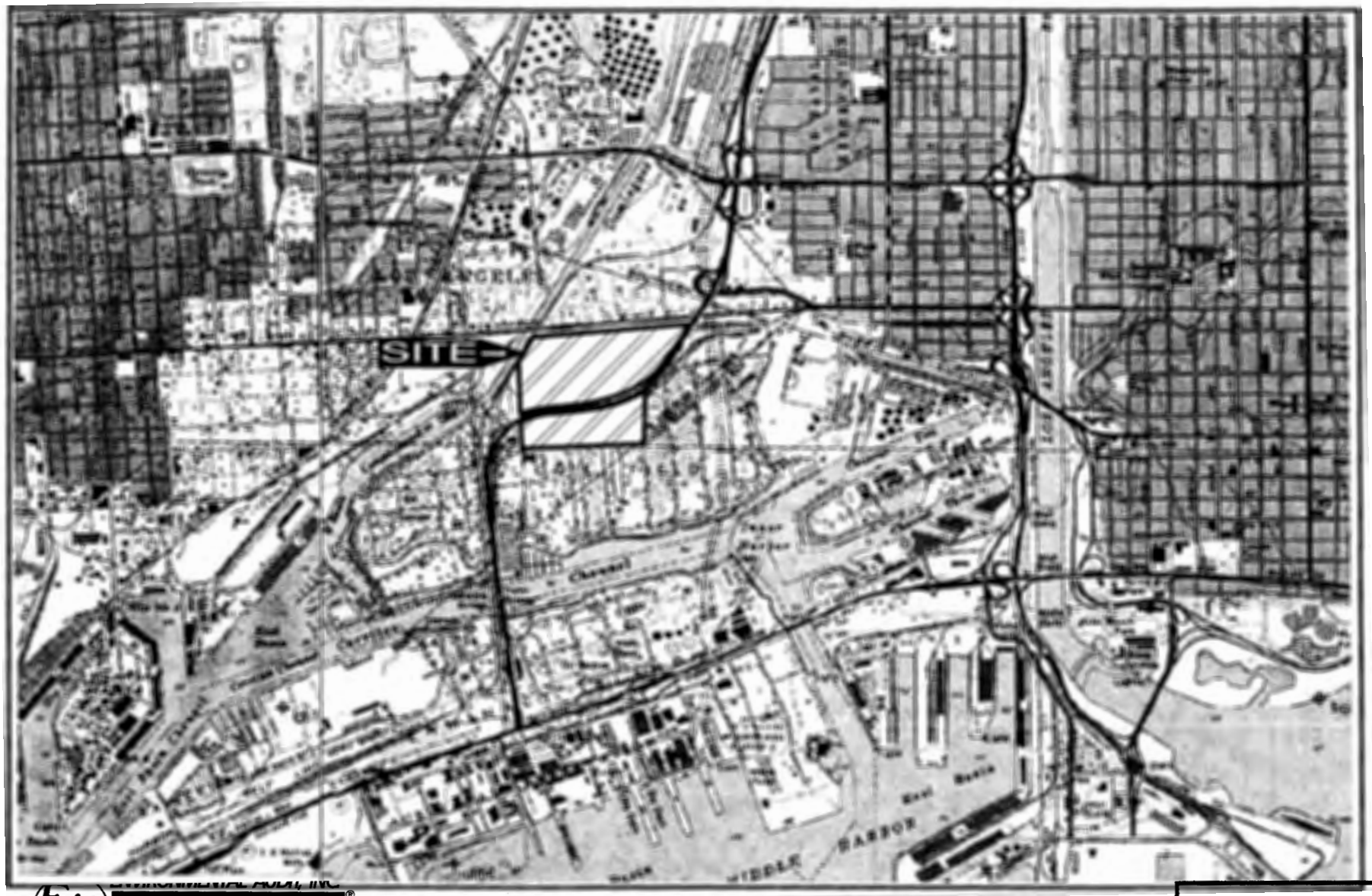
New butane storage sphere
The increased flow of normal butane feed for the Butamer Unit will require a new 5,000-barrel pressurized butane storage sphere. Butanes from the refinery as well as purchased butanes will

be stored in the new butane storage sphere. New butane transfer pumps will pump butane from this sphere to the Butamer Unit.

New propane storage bullet
The modified Alkylation Unit will increase the production of propane product due to the increase in alkylation capacity. This will require a new 4,000-barrel pressurized propane storage bullet to store the added product. New propane transfer pumps will pump propane from this propane storage bullet to the existing truck loading facility.

New aqueous ammonia tank
A new 15,000-gallon storage tank is proposed to store aqueous ammonia associated with the SCR Unit for the new boiler.

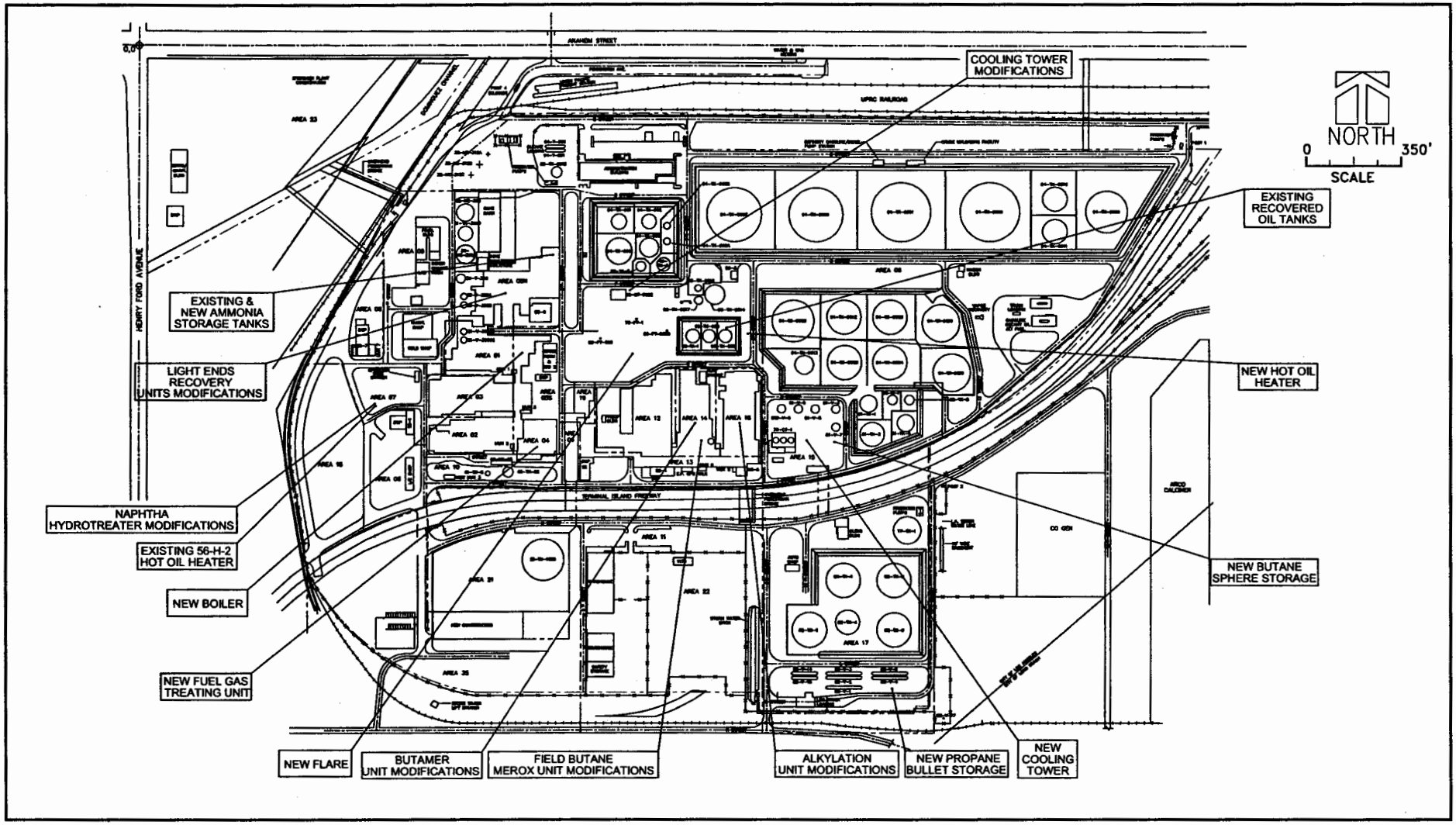
Storage tank removal
Three 10,000 bbl storage tanks, located immediately north of the Alkylation Unit and the Butamer Unit, store emulsified oil, sour water, and wet slop oil. These tanks will be demolished to make room for Alkylation Unit improvements. Emulsified oil, sour water, and wet slop oil will be stored in other existing storage tanks on the refinery site after these three are demolished.



SOURCE: USGS 7.5 MINUTE
TOPOGRAPHIC QUADRANGLE, LONG
BEACH AND TORRANCE, CA

Project Location

EXHIBIT NO. 1
APPLICATION NO.
E-04-006



ENVIRONMENTAL AUDIT, INC.®

Locations of Proposed New Units and Modified Units

EXHIBIT NO. 2
APPLICATION NO.
E-04-006

July 15, 2004 via Fax and US Mail

Ms. Audrey McCombs
Analyst
Energy and Ocean Resources Unit
California Coastal Commission
45 Fremont, Suite 2000
San Francisco, CA 94105-2219

Reference: Coastal Development Permit Application E-04-006, Alkylation Improvement Project, Letter Dated June 10, 2004

Dear Ms. McCombs:

Our thanks to you, Alison Dettmer, and Mark Johnson for taking the time to meet with us on July 13 to assist in clarifying additional information requirements for our pending application. As agreed, Ultramar prepared this letter to respond above referenced letter. In addition, this letter is prepared to summarize our understanding of follow-up actions from the meeting in efforts to resolve the issues noted under "Hazards" in above referenced letter.

Air Emissions
No further action required from Ultramar. A copy of Notice of Intent to Issue Permit was received from the South Coast Air Quality Management District.

Hazards

1. There is no wave action at the Refinery as it is about 2 miles inland from the nearest coastal water (port of Long Beach piers) and about 4 miles from the breakwater protecting the ports. We have no records of significant flooding at the Refinery from either storm events or sea action in over 30 years of operations. The vicinity of the Refinery is protected by major flood control measures, including dikes on both the Dominguez Channel and the Los Cerritos Channel. These serve to protect the Refinery from both very high tidal action and stormwater flows from inland locations. The Refinery Stormwater Control System (See SWPPP, pp. 12-17) drains the Refinery in the event of heavy storm events.

EXHIBIT NO. 3
APPLICATION NO.
E-04-006

2. As discussed at our meeting, elevating refinery structures or relocation to other locations are not options for the proposed project. Because of the nature and weight of most elements of refinery process units, towers, structures and storage tanks, these must be located at ground level for the necessary support. The project involves modifications to existing refinery units which are integral to those units.

3. Ultramar will review available records of tsunamis as discussed at the meeting.

4. Based on the evaluation, Ultramar evaluate the feasibility of protective measures commensurate with the risk of a tsunami impacting the refinery. In addition, Ultramar will consider whether modifications are necessary to the Refinery Emergency Response Plan (which currently provides for full emergency shutdown and evacuation of the Refinery) to accommodate the possibility of and any unique circumstances associated with, a Tsunami.

5. Ultramar appreciates your clarification of your request for additional information related to geologic and seismic conditions at the Refinery. Ultramar agreed in order to satisfy this request, a report will be prepared by an independent certified geologist or geological engineer which validates and confirms the geologic conditions underlying the Refinery are essentially uniform under the entire Refinery property for purposes of establishing project design and construction standards to comply with the Uniform Building Code. The report may include:

    a. A verification of the uniform geologic conditions underlying the Refinery and a list of project design and construction standards to comply with the Uniform Building Code.

    b. An evaluation of potential seismic hazards at the Refinery site, including the potential for ground surface rupture and a deterministic seismic hazard analysis.

    c. An assessment of ground water conditions.

    d. An evaluation of the liquefaction potential and the probability of liquefaction.

    e. An evaluation of the risk that a tsunami could impact the Refinery, including an analysis of available tsunami hazard maps and past tsunami history.

    f. A review of subsidence in the Refinery locale.

Water Quality and Modifications to SWPPP

As requested, Ultramar provided Coastal Commission a final Refinery Stormwater Pollution Protection Plan (SWPPP) for the operations at the Wilmington Refinery, dated July 2004. In regard to the SWPPP for construction the proposed project, Ultramar is committing in writing to the Best Management Practices (BMPs) for the SWPPP (Construction) set out in our letter of

April 23, 2004, including the two additional BMPs in your June 10 letter. We have attached these BMPs to this letter, and will include these in the SWPPP (Construction).

Please let us know if this is not consistent with your understanding of what we agreed to provide. We will have this report prepared as soon as possible, and will advise you of the approximate timing of submission.

Thank you again for taking the time to meet with us. If you have any questions or require any clarifications, please give me a call at (562) 491-6608.

Sincerely yours,

Jason Lee
Environmental Manager for Special Projects

Attachment

BEST MANAGEMENT PRACTICES FOR SWPPP (CONSTRUCTION) FOR ALKYLATION UNIT IMPROVEMENT PROJECT

The SWPPP-Construction will include at least the following BMPs specifically related to construction activities in addition to those in the Refinery SWPPP (Industrial Activities Operations).

- *Site Preparation.* In the area of the Alkylation Unit, new curbing and drains will be installed and connected to the Oily Water Sewer System (OWSS) to function as discussed below under "Project Operation". In the event that storm water control becomes necessary prior to this, storm water runoff onto and off of the site will be minimized by the use of earthen berms, sand bags and other controls to direct runoff to the existing drainage system.

- *Soil Storage.* Storm water runoff from any soils which are excavated and stored off the immediate construction site will be minimized by placing the soils on plastic sheeting and sandbagging or berming if necessary. Additionally, during the wet season the piles may be covered with plastic sheeting to direct rainwater toward the drainage system.

- *Disassembled equipment.* Piping and other components that are disassembled during unit modification will be cleaned to remove hydrocarbons prior to temporary relocation to lay down areas for ultimate disposition. Lay down areas will be protected to control stormwater runoff.

- *Fill Material.* Any fill material used at the site will be tested and certified to be in compliance with standards.

- *Soil Remediation.* Soils that are disturbed during site preparation will be first evaluated under SCAQMD Rule 1166 plan for detection of volatile organic compounds and by visual inspection for detection of hydrocarbons. Soil which demonstrates a VOC level in excess of 50 ppm or greater at a distance of up to three inches from the surface, or which otherwise appears contaminated, will be segregated and stockpiled for further analysis. Soils will then be managed in accordance with Ultramar's Los Angeles Regional Water Quality Control Board interim waste discharge permit for soils management in connection with excavation (File No. 88-57-270(93)). This permit includes requirements for soil testing, monitoring and reporting. Soils which exceed the standards specified in the permit will be segregated and managed as contaminated soil.

- *Erosion control.* Minimal site grading is required for the project and there is very low potential for erosion. However, if control is necessary to prevent erosion and possible sedimentation in the runoff, mulching or other soil applications will be used.

- *Materials Storage.* During site preparation and construction of the project, metals, paints, aggregate, asphalt, concrete, cable and wiring will be stored and/or used on site in some manner. Paints will be kept in their original waterproof containers until needed and will be stored with overhead coverage in an enclosed area. Aggregate and concrete will not be stored on site in open stock piles, but will be brought to the site as needed for construction. Metal materials, including, vessels and piping will be stored temporarily on site in lay down areas prior to final assembly. This will take place in the existing refinery lay down area in the southwest part of the Refinery or immediately adjacent to the construction site. Asphalt storage will be limited to periods just prior to use.

- *Equipment and Machinery storage, maintenance and fueling.* Equipment used in construction will be stored in the immediate area of the construction site or within existing refinery process unit boundaries. Vehicle and equipment cleaning and maintenance will be done in either in established Refinery vehicle maintenance facilities or in an area designed and established for this projected which is away from stormwater drains, with protection to preclude runoff from the location where cleaning and maintenance is taking place. All residue from clean and maintenance will be immediately cleaned up and disposed of per standard Refinery practices for contaminated materials.

- *Vehicle Fueling.* Vehicle fueling will be done to the extent possible at the existing Refinery fueling station. For vehicles which must be fueled in the field, contractors will be required to use drip pans or other protection to preclude fuel contact with the ground.

- *Vehicles.* Trucks entering and leaving the refinery carrying fill material or other materials to the construction site will enter via the existing refinery access ways on paved roads. Any sediment carried by these vehicles will be deposited primarily on roads within the refinery prior to reaching public roads. Roads will be swept regularly for dust control. This will minimize the possibility of trucks carrying sediments off site.

- *Wind erosion.* Wind erosion will be controlled by compaction of the site as grading occurs. The fill area will be highly compacted to meet geotechnical standards. Wind erosion is not a problem on the remainder of the site. To further prevent wind erosion and dusting, the site will be watered on a regular basis as required by Mitigation Measure A-13. (See DEIR p. 4-21)

- *Storm Drain Inlet Protection.* Storm drain inlet protection will be installed in drains in the vicinity of construction activities involving surface disturbance to trap sediments before these enter the Refinery stormwater control system. Use of either fabric or other filters, sandbags, or gravel will be evaluated and the nest alternative implemented.

- *Non-stormwater Management.* During the site preparation and construction phase water use at construction locations will be limited primarily to dust control. Water will be applied in a manner and in quantities which minimizes the possibility of runoff. At certain times, water may be used for pipe hydrotesting or cleaning. While this water is not

expected to be contaminated, to the extent feasible it will be managed in the OWSS. No other liquids will be used or discharged in significant quantities.

- *Monitoring and Reporting.* The SWPPP-Construction will have an inspection and monitoring program, and provide for compliance reporting.