

**PROCESS WATER POND (PWP)  
CONOCOPHILLIPS LOS ANGELES REFINERY CARSON PLANT  
AMENDED POST CLOSURE PERMIT APPLICATION**

I. PART A APPLICATION: 66270.10(d), 66270.11(a), 66270.13

**Refer to Part A**

II. FACILITY DESCRIPTION AND POST-CLOSURE CONTACT

(A) a. General Description: 66270.14(a), (b)(1)(13)

Provide a brief description of the facility, including the nature of the business and surrounding area.

**The ConocoPhillips Refinery Carson Plant (LARC) is located at 1520 East Sepulveda Boulevard, Carson, Los Angeles County, California, 90745, latitude 33° 48' 016", longitude 118° 14' 06". The refinery consists of a 245-acre parcel on which refinery operations have been conducted since 1923. LARC is a crude oil refining facility which receives crude oil by pipeline, rail and ship for conversion to fuel products. Intermediate feed stocks are produced and transported by pipeline to the ConocoPhillips Wilmington Plant (LARW) for processing into finished fuel products.**

**The refinery property is roughly rectangular in shape and is located on the south side of East Sepulveda Boulevard in a heavily industrialized area. The northern portion of the refinery borders the BP Refinery, a light industrial complex consisting of warehouses, East Sepulveda Boulevard, BOC Gases facility and Shippers Express Truck yard. The eastern part of LARC borders the Alameda corridor (property owned by various railroad companies). The southern portion of the refinery borders the Lomita Rail Terminal and associated tracks and ethanol unloading terminal. The western part of the refinery borders the Shell Pipeline Lomita Manifold and property, the Lomita Rail Terminal and the BP Carson Crude Terminal.**

**The refinery's property is defined by the Los Angeles County Assessor's parcel numbers 7315-1-20, 7315-1-21 and 7315-2-1. A Plot Plan of the refinery is presented in Figure 1 and a surveyor's legal description of the property is presented in Appendix A.**

**This revised RCRA Part B permit application is for the post closure of the former Process Water Pond (PWP), and has been prepared to address the information requests received from the Department of Toxic Substances Control (DTSC) in their letter of February 24, 2006 (included in Appendix B). The PWP was formerly located in the east-central portion of the refinery in an area designated as Unit DR. The pond was roughly rectangular in shape with maximum surface dimensions of approximately 246 feet long by 97 feet wide and a depth at the deepest point of 15 feet.**

**A Closure Plan dated April 1995, with revisions dated September and November 1995, was submitted and approved by DTSC on April 11, 1996. The PWP was subsequently filled with clean clay soil and capped with asphalt (see Closure Plan for specifications). A Closure Certification Report was submitted November 8, 1996 and approved by DTSC on April 26, 1999. Copies of the DTSC approval letters are included in Appendix B. Photos showing the current condition of the closed PWP are shown in Figures 2A and 2B.**

**The PWP previously stored both process water and oil/water sludge, as described below:**

b. Post-Closure Contact: 66264.118(b)(3).

Provide the name, address, and phone number of the person(s) or office to contact about the facility during the post-closure period.

**Superintendent, Environmental Services  
1660 West Anaheim Street  
Wilmington, CA 90744  
(310) 952-6120 or (310) 952-6000**

c. Process Water

**RCRA regulated wastes contained in the PWP's water and sludge included both listed and characteristic waste. The PWP water contained benzene, a RCRA characteristic waste (D018), above the toxicity characteristic limit of 0.5 mg/l. The sludge, defined as primary oil/water/solids separation sludge, was a RCRA listed waste (FO37).**

**A waste analysis program was developed to document the waste characteristics, and maintain a record of the materials handled at the facility. The quarterly samples taken from the pond and the ongoing sample program for the treated waste water provided necessary process and safety information for handling the waste. The parameters selected included constituents listed in the Toxicity Characteristics (TC) regulations published in the Federal Register on March 19, 1990 (pg. 11798). Constituents not listed in the TC regulations but listed in CCR Title 22, Article 11, were also**

**included. For constituents listed in both sources, the TC procedures were followed.**

**Analyses were conducted in accordance with EPA methods in "Test Methods for Evaluating Solid Waste", EPA SW-846, September 1986, and the latest updates published in the Federal Register. If an analyte was reported as nondetected, the detection limit for the analysis was required to be at or below the corresponding regulatory limit. The analyses were performed by a California Department of Health Services Certified Hazardous Waste laboratory. Following the analyses, the laboratory results were returned to the Unocal laboratory where they are kept on file. The analytical results for the former PWP contents are included in Appendix C.**

**d. Oil/Water Sludge**

**The sludge in the bottom of the pond, as described above, was a primary oil/water/solids separation sludge, and as such, was a RCRA listed waste (FO37).**

**The sludge was considered hazardous due to physical properties and chemical characteristics. The hazardous characteristics exhibited by the sludge included toxicity due to leachable benzene content (D018), ignitability (D001) and reactivity due to sulfide content (D003).**

**The sludge was not land disposed. It was first sent to a sludge thickener and then recycled to the coker for recovery.**

**(B) Topographic Map**

**(1) General Requirements: 66270.14(18) (19)**

**Submit a topographic map which shows the facility and a distance of 1,000 feet around it, at a scale of 1 inch equal to not more than 200 feet. The map must include: contours sufficient to show surface water flow around facility, map date, 100-year floodplain area, surface waters, surrounding land uses, a wind rose, map orientation, and legal boundaries of facility site. The map must also indicate the location of access control, injection and withdrawal wells, buildings, structures, sewers, loading and unloading areas used during operations, flood control or drainage barriers, run-off control systems, and existing hazardous waste management units and proposed new and existing solid waste management units. Note: Multiple maps may be submitted, but all must be at a scale of 1-inch equal to not more than 200 feet.**

**See Figures 3, 5, and 8. Topography presented at 1 inch = 400 feet (illegible at 200 feet). The major surface drain in the area**

is the Dominguez Channel, located apparently 2,000 feet east of the site.

- (2) Additional Requirements for Land Disposal Facilities: 66270.14(c)(3) and (4) (A-B)

The topographic map also must indicate the waste management area boundaries, the property boundaries, the proposed point of compliance, the proposed groundwater monitoring well locations, the locations of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility (including flow direction and rate), and if present, the extent of the plume of contamination that has entered the groundwater from, a regulated or solid waste management units. Note: Multiple maps may be submitted, but all must be at a scale of 1-inch equal to not more than 200 feet.

**Not Applicable - Not a Land Disposal Facility**

- (C) Seismic Standard: 66270.14(11)(A)

Show that no faults which have had displacement in Holocene time are present, or no lineations which suggest the presence of faults (which have displacement in Holocene time) within 3,000 feet of the facility are present.

**No active faults with Holocene displacement are located within 3,000 feet of the facility based on *Preliminary Fault Activity Map of California* prepared by the Division of Mines and Geology, Open-file Report 92-03 (1992).**

- (D) Floodplain Standard: 66270.14(b)(11)(B), (C)

Document whether or not the closed facility is located within a 100-year floodplain, and include the source of data (Federal Insurance Administration Map or equivalent maps and calculations).

**The entire city of Carson, California is zoned as Flood Zone C and is located in Community Number 060107A. A Flood Insurance Administration (FIA) Flood Zone Map is not currently printed for Carson because the entire community is not within a flood zone (John Huang, Los Angeles County Department of Public Works, telephone conversation, October 1990). A letter from the Los Angeles Department of Public Works is included in Appendix A documenting that the facility is not located within a flood zone.**

- (1) Flood Proofing and Flood Protection Measures: 66270.14 (b)(11)(D)

Provide a structural or other engineering study showing how the design of the closed hazardous waste units and the flood proofing and protection devices at the closed sites will prevent washout.

For facilities located within the 100-year floodplain that do not comply with the floodplain standard, show how and when the facility will be brought into compliance.

**Not Applicable**

- (2) Waiver for Land Storage and Disposal Facilities: 66270.18(b)(1)

If a waiver from the Floodplain Standard was requested, the owner or operator must demonstrate that there will be no adverse effects on human health or the environment if washout occurs. The following factors must be considered in this demonstration: the volume, physical and chemical characteristics of the waste, the concentration of hazardous constituents that would potentially affect surface waters; the impact of such concentrations on the current or potential uses of the affected surface waters and water quality standards established for the affected surface waters, and the impact of hazardous constituents on the sediments of affected surface waters or the soils of the 100-year floodplain.

**Not Applicable**

**III. WASTE CHARACTERISTICS**

- (A) Chemical and Physical Analyses: 66270.14(b)(2), 66265.13(a)

For each hazardous waste stored, treated or disposed at the facility, describe the waste, the hazard characteristics, the basis for hazard designation, and provide a laboratory report detailing the chemical and physical analyses of representative samples.

**The LARC is a crude oil refining facility which receives crude oil by pipeline, rail and ship for conversion to fuel products. The PWP, which was an integral part of the oil recovery/process water handling system, was used to temporarily store effluent overflow or off-specification wastewater from the ConocoPhillips Carson Plant oil recovery system. The water from the pond was transferred back to the API Separator for additional oil recovery prior to the discharge to the Los Angeles County Sanitation District (LACSD) sewers.**

**RCRA regulated wastes contained in the process pond (surface impoundment) include both listed and characteristic wastes. The PWP may have contained benzene, a RCRA characteristic waste (D018), in**

concentrations above the toxicity characteristic limit of 0.5 mg/l, and primary oil/water/solids separation sludge, a RCRA listed waste (F037).

**EPA Hazardous Waste number/CA Waste Code**

The following table identifies the Federal Waste Codes, the RCRA Characteristic Waste Numbers and the California Waste Codes applicable for the waste previously stored in the PWP.

TABLE 1

HAZARDOUS WASTES FORMERLY HANDLED AT THE PROCESS WATER POND

Waste Description	Federal Waste Code	RCRA Characteristic Waste Number	California Waste Code
Wastewater in Process Water Pond	—	D018	222
Process Water Pond Sludge	F037	D001, D003 & D018	222

**Analytical results for the former contents of the Process Water Pond are provided in Appendix C.**

(B) Waste Analysis Plan: 66270.14(b)(3), 66265.13(b) and (c)

Provide a copy of the waste analysis plan that describes the methodologies used for conducting the analyses required to properly treat, store, or dispose of hazardous wastes. List the parameters that were chosen for analysis and explain the rationale for their selection. Describe the test methods that were used to test for parameters chosen. List the sampling methods that were used to obtain a representative sample of each waste to be analyzed. Describe the frequency at which analyses were repeated. Describe the procedures that were used to inspect and/or analyze wastes generated off-site, including procedures to determine their identity and sampling method used. Describe the methods that were used to meet additional waste analysis requirements necessary for treating, storing or disposing of ignitable, reactive or incompatible wastes.

**A Waste Analysis Plan is neither applicable nor required because closure activities have been completed. The closure activities included: 1) permanently removing all wastes from the PWP, 2) filing the PWP with clean clay soil, and 3) capping the PWP with an asphalt cover. Copies of the Closure Plan and Closure Certification approval letters from DTSC are provided in Appendix B.**

**Analytical results for the former contents of the Process Water Pond are provided in Appendix C.**

IV. SURFACE IMPOUNDMENT

(A) List of Wastes; 66270.17(a)

Provide a list of all hazardous wastes placed in the surface impoundment. If any waste treatment was accomplished in the surface impoundment during its active life, describe the nature and quantity of the wastes remaining in the impoundment after treatment was completed.

**Refer to Section III, (A). No hazardous wastes are currently in the PWP. After receipt of final wastes, the PWP was cleaned in Third Quarter of 1996. Since that time, there has been no placement of hazardous wastes into the PWP. No waste treatment was ever conducted in the PWP.**

(B) Liner System Description: 66270.17(b)(1), 66265.221(a)

Provide a description of the liner system, including the type of liner, its material and thickness, USCS-type data for soil liners and, for synthetics, the manufacturer and the product's name. Show the limits of the liner coverage.

(1) Liner System Foundation Description: 66270.17(b)(1), 66265.221(a)

Describe the foundation for the liner system, including the foundation design and material of construction, and a brief description of the procedures used to prepare the foundation before the installation of the liner system.

**The single concrete liner is 3 to 4 inches thick, and has an unconfined compressive strength of 3,000 psi. The liner is resistant to weather conditions and the waste it used to contain. The concrete liner underlies the entire footprint of the impoundment, and prevented the native soils from contacting the wastewater formerly stored in the PWP.**

**The original grading plan and construction drawings for the liner are provided in Figures 4A, 4B and 4C.**

- (2) Leachate Collection/Detection System Operation and Design:  
66270.17(b)(1), 66265.221(a)

Describe, including drawings, the design features of the leachate collection/detection system and how the system functions to detect any leakage through the liner system in a timely manner. Describe how liquid will be removed from the leachate detection system.

**Not applicable. The PWP has been closed, and was not equipped with a leachate collection/detection system other than the existing network of onsite monitoring wells.**

V. GROUNDWATER MONITORING: 66265.90 - 66265.97

- (A) Interim Status Period Groundwater Monitoring Data: 66270.14,  
66265.90, 66265.97

Existing facilities must provide a summary of the groundwater monitoring data obtained during the interim status period, including:

- (1) A copy of the topographic map provided for Section 66270.14(b) on which the location and identification of each interim status monitoring well is indicated.

**RCRA interim status wells were never installed specifically for the PWP. The refinery facility on which the PWP is located had an extensive groundwater monitoring and remediation system throughout the interim status period. This groundwater monitoring and remediation system is ongoing in accordance with RWQCB Cleanup and Abatement Order No. 94-139. The location and identification of monitoring wells used for the entire facility are shown in Figure 5.**

- (2) An indication of which wells are downgradient of the disposal area, and which are upgradient.

**Groundwater elevation contours for the water table within the Bellflower Aquitard hydrogeological unit are shown in Figure 6 (from the *Fall 2005 Semi-Annual Groundwater Monitoring Report; TRC, January 2006*). Groundwater monitoring wells upgradient of the Process Water Pond (PWP) include monitoring wells 2, 21, 22, 24, and 35. Groundwater**

**monitoring wells downgradient of the PWP include wells 17, 20, 31, 38 and 59. Upgradient well 2 and downgradient wells 17, 38 and 59 have been previously designated as the Point of Compliance (POC) wells for Appendix IX monitoring. Other site monitoring wells are also located downgradient, but are greater than 1,000 feet from the PWP.**

- (3) Details of the design and construction of each interim status monitoring well (e.g. depths of screen and casing, depths at which water was encountered, filter pack and sealing materials placement, dates of construction, boring logs, etc.).

**Available drilling logs, soil descriptions, tabulated completion information and recent gauging data (Fall 2005) for the site monitoring wells are provided in Appendix D.**

- (4) Copies of each quarterly (from first year) water analysis results for each well, and copies of any subsequent (annual or semi-annual) water analysis reports to date. Include copies of any notifications of significant change in water analysis parameter values made to the Department pursuant to 66265.93. All interim status period monitoring results must be provided, regardless of any changes made to the facility's groundwater monitoring system after initiation of the monitoring program. Groundwater surface elevation measurements must also be provided.

**As discussed above in Section V (A) (1), no RCRA monitoring wells were provided specifically for the PWP during its period of operation, although a site-wide monitoring program was in progress. However, Appendix E contains all groundwater monitoring data in the vicinity of the PWP that is available from May 1990 through October 2005, and includes the two rounds of annual monitoring for Appendix IX constituents for the recently-designated POC wells that have been completed to date. The information below is excerpted from the *Fall 2005 Semi-Annual Groundwater Monitoring Report, ConocoPhillips Los Angeles Refinery* (TRC; January 2006),**

**The semi-annual monitoring reports present the results of the site-wide ground water monitoring program conducted in compliance with Cleanup and Abatement Order (CAO) 94-139. Figures from the Fall 2005 report summarizing the current groundwater quality with respect to the key constituents are included herein as Figures 7A through 7G for reference. It is evident that the shallow groundwater**

below the refinery residing in the Bellflower Aquitard hydrogeologic unit has been impacted with petroleum free product (LNAPL) of various compositions and sources (Figures 7A and 7B), and dissolved hydrocarbons, namely benzene, toluene, ethylbenzene and xylenes (BTEX) and the oxygenates DIPE, TBA and MTBE (Figures 7C through 7F). These impacts occur at various locations throughout the refinery site, and elevated benzene in particular is present in areas both upgradient and downgradient of the PWP (see Figure 7C) and cannot be linked to former operation of the PWP itself based on available monitoring data (see also Section V (A) (6) and Section V (E) below). A few volatile organic compounds (VOCs) have been detected at relatively low concentrations along the southern property boundary, and are likely related to the landfill located adjacent to that property boundary (Figure 7G). Additional Appendix IX constituents have been monitored in the POC wells since 2004, and do not indicate additional constituents of environmental significance (see Tables 2A and 2B). Most of the regulated constituents were non-detect, and no metals or organic constituents were detected at levels that would be considered hazardous.

- (5) A copy of the facility's groundwater sampling and analysis plan (required under 66263.92(a)) that includes the procedures used and the protocol followed in sample collections, sample preservation and shipment, analytical procedures, and chain of custody control.

**The Water Quality Sampling and Analysis Plan from the Master Work Plan (TRC; updated February 2007) is included in Appendix F for reference. This sampling and analysis plan was generated in compliance with CAO 94-139, and will be used during the post-closure period of the PWP.**

- (6) Calculation of the initial background arithmetic mean and variance for each indicator parameter based on replicate measurements from upgradient well during the first year.

**Not Applicable. Analytical data are not available for the background period. Refer to the Compliance Monitoring Program, Section V (E), for statistical analysis of available data.**

- (7) A description of the statistical procedures used (if applicable) in processing the data submitted (as in the use of a Student's t-test and the level of significance used), and result of statistical comparisons between upgradient and downgradient well sampling

results and first year background values for each indicator parameter.

**Not Applicable. Analytical data are not available for the background period. Refer to the Compliance Monitoring Program, Section V (E), for statistical analysis of available data.**

- (8) If required, based on statistical comparison results, the specific plan for a groundwater quality assessment program in addition to The results of implementing such a plan. Where required, include results of the following determinations made under the groundwater quality assessment, based at a minimum on hazardous constituents listed in section 66264.801, Appendix IX:

**Refer to Section V, (A) (4).**

- (a) Whether hazardous waste or hazardous waste constituents have entered the groundwater,

**Refer to Section V, (A) (4).**

- (b) The rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater, or

**Refer to Section V, (A) (4).**

- (c) The concentrations of hazardous waste or hazardous waste constituents in the groundwater.

**Refer to Section V, (A) (4).**

- (9) Results of the annual evaluations of groundwater, surface elevations, and descriptions of the response to those evaluations, where applicable.

**Refer to Section V, (A) (4).**

- (B) Aquifer Identifications: 66270.14(c)(2)

Identify the uppermost aquifer and any hydraulically interconnected underlying aquifers (i.e., all likely subsurface flowpaths for hazardous constituents, which may leak from the facility), and describe their

hydrogeologic properties (e.g., hydraulic gradient, groundwater flow, rate and direction); provide the supporting data used to identify this information (i.e. the information obtained from hydrogeologic investigations of the facility area). This identification must include a report written by a qualified hydrogeologist on the hydrogeologic characteristics of the facility property supported by at least the drilling logs of onsite borings and wells, and the available professional literature. Include a description of the regional geologic and hydrogeologic setting. In addition, include the following site-specific data:

- (1) An analysis of topographic or geomorphic features that might influence the groundwater flow system.
- (2) A classification and description of the hydrogeologic properties (hydraulic conductivity, porosity, texture, thickness, etc.) of all of the hydrogeologic units found at the site (i.e., the aquifers and any intervening saturated and unsaturated units.
- (3) Using the 66270.14(b)(19) topographic map as a base, isopach and structural contour maps and /or geologic cross sections showing the extent of the hydrologic units contained in the uppermost aquifer, and any intervening aquitards or other units within the facility boundary.
- (4) A description of water level or fluid pressure monitoring, including (a) water level contour maps or vertical sections, (b) well or piezometer hydrographs, and (c) an interpretation of the flow system including the vertical and horizontal components of flow.
- (5) A description of the field methods used in the study, and a summary of which data were collected by each method.

### **TOPOGRAPHIC MAPS**

**The location of the LARC straddles two United States Geological Survey (USGS) 1:24,000 scale topographic maps, the Torrance and Long Beach Quadrangles. Figure 8 shows the location of the refinery on a combined USGS map. This figure also outlines the area that extends one mile beyond the facility's boundary.**

**Figure 8 also shows the location of the closest surface water body to the site, which is the Dominguez Channel. The channel runs in a northwesterly direction east of the LARC.**

**Existing wells within a one mile radius of the PWP are also identified on Figure 8. Tables 3A and 3B below identify the owners of the 36 water supply wells and three oil and gas wells located outside of the LARC within a one mile radius of the facility. Many of these wells have been abandoned for many years. Most of the rest are used to either supply industrial water to oil refineries or are used for groundwater observation.**

**Four deep wells, WW-1, WW-2, WW-3 and WW-4, ranging in depth from about 700 to 900 feet and completed in the Silverado Aquifer, exist at the LARC. One well is currently utilized for process water, two wells are utilized periodically for process water, and the last well is not utilized.**

**In addition to the water supply wells, ConocoPhillips has 51 ground water monitoring wells, a 24 well recovery system and a 48 well interceptor recovery system along the western boundary of the LARC (Figure 5). Shell Oil Company also has six monitoring wells on the Ethyl property, adjacent to the southwest corner of the LARC. A complete discussion of the groundwater monitoring system is presented in the semi-annual monitoring reports submitted to the RWQCB and DTSC.**

**Approximately two-thirds of a mile east of the LARC the Los Angeles County Department of Public Works Hydraulic Water Conservation Division operates a series of water injection wells, located along the Dominguez Channel, as part of the Dominguez GAP Barrier Project (DGBP). The DGBP is designed to impede sea water intrusion into the aquifers in the area.**

**No springs or public water supply systems (such as reservoirs, aqueducts, etc.,) are known to be within one mile of the LARC. Also, no injection wells, additional surface water bodies, springs, or public water supply systems are known to be within one mile of the LARC.**

**Post Closure Plan - Process Water Pond**  
 ConocoPhillips Los Angeles Refinery, Carson Plant  
 May 2006

**TABLE 3A**

**IDENTIFICATION OF EXISTING WATER SUPPLY WELLS  
 WITHIN ONE-MILE RADIUS OF THE PROCESS WATER POND**

<b>WELL NO.</b>	<b>OWNER</b>	<b>USE</b>
839A	Southern California Edison	Capped Industrial
839B	M. E. Gaskill	Abandoned - 1947
839C	John Holbauch, A. S. Johnson Corporation	Abandoned - 1964
849	Mat Watson	Abandoned - 1972
858	Atlantic Richfield Oil Company	Industrial
858C	Atlantic Richfield Oil Company	Industrial
858D	Atlantic Richfield Oil Company	Industrial
859	P. J. Watson	Abandoned
859A	Shell Oil Company	Abandoned
859B	Shell Oil Company	Industrial
859C	Los Angeles County Department of Public Works	Groundwater Observation
859D	Los Angeles Department of Public Works	Groundwater Observation
868A	Atlantic Richfield Oil Company	Industrial
868AC	Atlantic Richfield Oil Company	Industrial
868H	Atlantic Richfield Oil Company	Industrial
868HH	Los Angeles County Department of Public Works	Groundwater Observation
868J	John-Manville Products Inc.	Industrial
868JJ	Los Angeles County Department of Public Works	Groundwater Observation
868R	Unknown	Unknown
869	Tidewater Association Oil Co.	Unknown
869A	Los Angeles County Department of Public Works	Groundwater Observation
869B	Los Angeles County Department of Public Works	Groundwater Observation
877H	Mr. Vaughn	Industrial
878H	Watson Ranch, Irwin & J. H. Dresser	Abandoned - 1942
878L	Hancock Chemical Co.	Industrial
878Q	Los Angeles County Harbor Department	Abandoned - 1985

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**ConocoPhillips Los Angeles Refinery, Carson Plant**  
**May 2006**

WELL NO.	OWNER	USE
879AB	Los Angeles County Department of Public Works	Groundwater Observation
879BB	Los Angeles County Department of Public Works	Groundwater Observation
879L	Los Angeles County Department of Public Works	Groundwater Observation
879N	Los Angeles County Department of Public Works	Groundwater Observation
879PP	Los Angeles County Department of Public Works	Groundwater Observation
879QQ	Los Angeles County Harbor Department	Abandoned - 1972
879SS	Los Angeles County Department of Public Works	Groundwater Observation
879VV	Los Angeles County Department of Public Works	Groundwater Observation
879WW	Los Angeles County Department of Public Works	Groundwater Observation
879XX	Atlantic Richfield Oil Company	Industrial

**TABLE 3B**

**IDENTIFICATION OF EXISTING OIL AND GAS WELLS  
 WITHIN A ONE MILE RADIUS OF THE PROCESS WATER POND**

Well No.	Owner	Year drilled	Total Depth (feet)	Use
1	Selbar Oil Co. (Watson)	1944	5665	Plugged & Abandoned
2	Airway Petroleum Co.	1950	8335	Plugged & Abandoned
3	Neeves Petroleum Division (Watson)	1954	4273	Plugged & Abandoned

**HYDROGEOLOGIC CONDITIONS**

**1) Regional Geologic Setting**

**The Los Angeles Refinery, Carson Plant (LARC) is located in the Torrance Plain area of the Coastal Plain of Los Angeles County. Based on geologic and surface features, the coastal plain is divided into four groundwater basins. The LARC is located in the south-central portion of the West Coast Basin (Figure 9). This basin is bounded to the north by the Santa Monica Mountains and to the northeast by a series of low hills formed of folds and faults associated with the Newport-Inglewood structural zone. The southern boundary is the Palos**

**Verdes Hills, and the southwestern boundary is the Santa Monica Bay. The Dominguez Channel is located east of the LARC, running northwest-southeast. The Los Angeles River is roughly 2 miles east of the LARC.**

**Some physiographic features can be observed on the geologic map of the area (Figure 10). The Dominguez Hill and Signal Hill are part of the Newport-Inglewood structural belt located north and east of the Plant. The axis of the Wilmington anticline is at the south end of the LARC and trends west northwesterly. The axis of the Gardena syncline is located roughly at the northern edge of the Shell Oil Company Dominguez Site and trends northwesterly. The Richfield Fault is a minor structural feature located between the Wilmington anticline and Gardena syncline north of the Plant, and trends northwest. Movement is upward on the north side of the fault.**

## **2) Regional Geologic Structure**

**The Coastal Plain is underlain by up to 20,000 feet of Miocene and younger unconsolidated and semi-consolidated marine and nonmarine alluvial sediments. There are five named aquifers in the regional area of the LARC as shown in Table 4 below. The Lynwood and Silverado Aquifers are the only two aquifers used extensively for drinking water. The other aquifers (Semiperched Aquifer, Gage Aquifer, and the Gaspur Aquifer) are not extensively used, primarily because of low yield and/or generally poor quality. Although the Gaspur Aquifer, included in Table 4, is found in the ancestral Los Angeles River deposits approximately 1 mile east of the site, it does not exist beneath the LARC. The aquifers are separated in some areas by aquicludes.**

**Each formation is divided into aquifers and aquicludes, summarized in Table 4. The formations are discussed individually below, from the oldest to the youngest. A regional cross section is shown in Figure 11. A schematic block diagram of the hydrogeology immediately below the refinery is shown in Figure 12.**

**Pico Formation.** The oldest formation of interest underlying the LARC site is the Upper Pliocene Pico Formation which conformably overlies older strata. The Pico formation is composed of marine sand, silt, and clay with interbedded gravels. The upper member of the Pico Formation is a potential aquifer, although it has not been extensively used to date. The lowest of the upper Pico sand members roughly defines the base of fresh groundwater in the region. This base occurs at about 1,800 to 1,900 feet below mean sea level (MSL) beneath the LARC.

TABLE 4  
 GENERALIZED STRATIGRAPHY BENEATH THE LARC

Geologic System	Time Series	Formation	Aquifers and Aquicludes
Quaternary	Recent	Alluvium	Semiperched Aquifer Gaspur Aquifer <sup>1</sup>
	Upper Pleistocene	Lakewood	Semiperched Aquifer Bellflower Aquiclude/Aquitard Gage Aquifer (200 ft sand)
	Lower Pleistocene	San Pedro	Unnamed Aquiclude <sup>1</sup> Lynwood Aquifer (400 ft gravel) Unnamed Aquiclude Silverado aquifer
Tertiary	Upper Pliocene	Pico	Upper member

<sup>1</sup> Absent beneath the LARC

**San Pedro Formation.** Unconformably overlying the Pico Formation is the lower Pleistocene San Pedro Formation, composed of marine gravel, sand, sandy silt, silt, and clay. The finer materials are most abundant and extensive in the upper part of the formation (Poland and Piper, 1959). The provenance for the sands and gravels is the San Gabriel Mountains, as indicated by their granitic composition (CDWR, 1961). Zielbauer, et al (1962), describe the San Pedro Formation as deltaic deposits which become coarser to the north.

Beneath the LARC, the San Pedro contains two aquifers and two aquicludes. The lowest San Pedro unit, the Silverado Aquifer, consists of highly permeable, fine to coarse grained, blue gray marine sands and gravels. Discontinuous layers of sandy silt, silt, and clay are

interbedded in some of the Silverado Aquifer. Deposits of the Silverado Aquifer are continuous over most of the West Coast Basin and reach a maximum depth of 1,200 feet below sea level. This aquifer is clearly folded by the Gardena syncline, as shown on Figure 11. The Silverado Aquifer is an important groundwater producer within the San Pedro Formation, yielding up to 4,700 gallons per minute (CDWG, 1961). It is recharged from the north in the area of Whittier Narrows, Los Angeles Forebay, Coyote and Baldwin Hills, and Ballona Gap (CDWR, 1961).

An unnamed aquiclude overlies the Silverado Aquifer and extends throughout part of the West Coast Basin. The lithology varies between clay, silt, and sandy silt, all of marine origin. This aquiclude is not present in the western portion of the West Coast Basin, where the Silverado and Lynwood Aquifers are in direct contact. Zielbauer, et al (1962) report that this aquiclude is absent north of the Pacific Coast Highway in the area west of the LARC.

The Lynwood Aquifer overlies the unnamed aquiclude, or the Silverado Aquifer where the aquiclude is absent. This aquifer, also known as the 400-foot gravel, is primarily composed of marine sand and gravel which may be locally cemented. Blue, gray, and black silts and clays of marine origin are known to exist in some areas and may be found beneath the LARC. The Lynwood Aquifer is an important groundwater producer, yielding 500 to 600 gallons per minute.

Another unnamed aquiclude overlies the Lynwood Aquifer and consists of clays, silts, and sandy silts and clays. The aquiclude is absent in some areas, as depicted on the cross-section of Figure 11 where the Lynwood Aquifer and the overlying Gage Aquifer are in direct contact. Borings beneath the LARC indicate this unnamed aquiclude is present beneath the refinery.

Both of the unnamed Lower Pleistocene aquicludes are thought to be absent southwest of the Dominguez Site and west of the LARC, as shown on the cross-section of Figure 11. The absence of these aquicludes results in the merger of the Silverado, Lynwood, and Gage Aquifers.

**Lakewood Formation.** The Upper Pleistocene Lakewood Formation rests unconformably on the San Pedro Formation. The Lakewood varies from 0 to 700 feet in thickness, and is dominated by fine grained flood plain deposits. The Gage Aquifer, also known as the 200-foot sand, is the lower unit of the Lakewood Formation. It consists of fine to medium grained sands with some gravel and discontinuous thin beds of

**silt and clay. Its depositional environment is mixed continental and marine. It is confined under most of the West Coast Basin by the Bellflower Aquiclude but is in hydraulic connection with the overlying Gaspur Aquifer east of the LARC. As previously mentioned, the Gage and Lynwood Aquifers are thought to be merged west of the LARC. The Gage Aquifer is less permeable than other aquifers in the West Coast Basin and is not extensively utilized as a water resource (CDWR, 1961).**

**The Bellflower Aquitard overlies and confines the Gage Aquifer in most places but not regionally continuous. This aquitard is part of the Lakewood Formation. It consists of a heterogeneous mix of continental and marine clays and silty clays over about one-third of the coastal plain. However, sandy and gravelly clays have been reported over the rest of the region, including beneath part of the LARC. The sand and gravel content may increase the permeability of the Bellflower Aquitard, thereby allowing restricted vertical migration of groundwater. The ground water table below the refinery occurs within this hydrogeologic unit.**

**The Semiperched Aquifer is found in the upper Lakewood Formation above the Bellflower Aquitard as well as in the Recent deposits. This aquifer occurs in irregular patches throughout the coastal plain (CDWR, 1961). The water quality is generally poor and yields are low, making the Semiperched Aquifer of little importance as a groundwater resource (CDWR, 1981).**

**Recent Deposits. Recent deposits overlie the Bellflower Aquitard, resting unconformably on the erosional surface that existed toward the end of the last glacial stage. These deposits vary from zero to 100 feet thick and consist of layered fine sand, silt, and clay floodplain deposits and coarse grained channel deposits.**

**The Gaspur Aquifer unconformably overlies the Lakewood formation and occurs locally in the lower alluvial deposits of Dominguez Gap east of the LARC site. It occupies the ancestral Los Angeles River trench and formed during the period of 'gap cutting'. The Gaspur Aquifer begins at about 90 feet and is very permeable, producing up to 6,000 gallons per day per square foot (CDWR, 1961). The Gaspur is in hydraulic conductivity with San Pedro Bay, and is of very poor water quality. The Recent portion of the Semiperched Aquifer occurs in sand, silty sand, silt, and clay deposits of the Dominguez Gap (CDWR, 1961). As previously mentioned, the Semiperched Aquifer is also found in the**

**upper Lakewood Formation and is not generally used as a water resource because of its poor water quality and low yields.**

**4) Groundwater Occurrence**

**Groundwater at the LARC occurs as shallow, unconfined groundwater within the Bellflower Aquitard, and as deeper confined groundwater within the underlying Gage and deeper San Pedro Formation aquifers (Figure 12). The soil is composed primarily of silt, fine grained sand and silty sand to a depth of about 105 feet below grade. A clay and silt layer has been identified at about 105 feet, and fine-grained material extends to about 120 to 140 feet below grade. This corresponds to the top of the Gage Aquifer.**

**The groundwater is encountered at approximately 80 feet below grade within the Bellflower Aquitard, and the flow direction is to the west (Figure 6). Perched water is also present at several locations at approximately 60 feet below the ground surface.**

**(C) Contaminant Plume Descriptions 66270.14(c)(4), Chapter 11, Appendix IX**

For existing facilities suspected of contaminating groundwater, provide a description of any plume of contamination that has entered the groundwater from a regulated unit at the time the application is submitted that:

**No known unauthorized releases have occurred from the PWP. Consequently, the PWP is not suspected of contaminating groundwater. Groundwater contamination and plumes underlying the refinery are referenced in Section V(A)(4) and discussed in detail in the semi-annual groundwater monitoring reports regularly submitted to the RWQCB and DTSC.**

- (1) Delineates the extent of the plume on the topographic map of 66270.14(b)(19).

**Not applicable (see Section V (A) (4) and Figures 7A through 7G for a summary of existing water quality)**

- (2) Identifies the concentration of each constituent listed in Appendix IX of section 66264.801 throughout the plume or identifies the maximum concentrations of each Appendix IX constituent in the

plumes. This requirement is applicable to all existing facilities where interim status monitoring shows the presence of hazardous constituents downgradient from the regulated units, unless it can be proven that such constituents are coming from another source. In addition, this requirement may be applied to other existing facilities where interim status monitoring data are non-existent or deficient if these facilities are suspected of contaminating groundwater, or if the Department determines that a facility's interim status monitoring program is incapable of determining whether hazardous constituents have entered the groundwater from a regulated unit. (Note: In some cases, contaminant plumes may be defined under groundwater quality assessment programs carried out during the interim status period as required by section 66265.93(d). Normally, such assessment programs do not address the complete list of Appendix IX constituents as required under section 66270.14(c)(4). Additional monitoring will be required to identify the concentration of each Appendix IX constituent in the plume.)

**Appendix IX monitoring data for the POC wells are summarized in Tables 2A and 2B. The results do not indicate issues of significant concern given the existing site conditions; most of the regulated constituents were non-detect and no metals or organic constituent were detected at levels that would be considered hazardous.**

- (D) Detection Monitoring Program: 66270.14(c)(6), 66264.98

Provide sufficient information, supporting data, and analyses documenting the absence of hazardous constituents in the groundwater to support the implementation of a detection monitoring program at the present time.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (1) Indicator Parameters, Waste constituent, and Reaction Product to be Monitored: 66270.14(c)(6)(i), 66264.90(a)

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

Supply a list of indicator parameters, waste constituents, or reaction products that can provide a reliable indication of the presence of hazardous constituents in the groundwater.

- (a) Hazardous Waste Characterizations: 66264.98(a)

Identify the type, quantity and concentrations of constituents in wastes managed at the regulated unit(s).

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (b) Behavior of Constituents: 66264.98

Provide a description of the expected mobility, stability, and persistence of waste constituents or their reaction product, in the unsaturated zone beneath the waste management area.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (c) Detectability: 66264.98

Specify the detectability of indicator parameters, waste constituents, or their reaction products in the groundwater.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (2) Groundwater Monitoring Program: 66270.14(c), 66264.97, 66264.98(b)

Describe in detail the individual elements of the monitoring system to be used during detection monitoring.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program, and Section V, (A) (4) above for a summary of the existing monitoring network and current groundwater quality. Detailed descriptions of the monitoring program may be found in the Semi-Annual Groundwater Monitoring Reports routinely submitted in accordance with CAO 64-139.**

- (a) Description of Wells: 66264.97(a) and (c)

Identify the number, location and depth of each well.  
Describe the well construction materials.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program, and Appendix D for available drilling logs and well construction details.**

- (b) Representative Samples: 66264.97(a), (b)

Provide details supporting the representative nature of the groundwater quality at (1) background monitoring points and (2) the compliance monitoring points.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program and Section V, (A) (4) above for a summary of the current groundwater quality.**

- (c) Locations of Background Groundwater Monitoring Wells that are not Upgradient: 66264.97(b)(2)

For wells that are not located upgradient from the waste management area, demonstrate that either the hydrogeologic conditions do not allow determination that the wells are upgradient, or that sampling at other wells will provide an indication of background groundwater quality that is as representative, or more representative than that provided by the upgradient wells.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (3) Background Values: 66270.14(c)(6)(c), 66264.98(c)

Submit background values for each proposed monitoring parameter or constituents or procedure to calculate such values. Submit the information identified in section V-3a or V-3b.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

(a) Data Currently Available: 66264.98(c)

- (i) Background Groundwater Quality Data:  
66264.98(a)(4), 66264.98(c).

Specify the concentrations and coefficients of variation for each of the proposed monitoring parameters or constituents in the background groundwater quality.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (ii) Sampling Frequency: 66264.97(g)(1)

Demonstrate that background groundwater quality for each parameter or constituent is based on data obtained through quarterly sampling of wells.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (iii) Sampling Quantity: 66264.97(g)(4)

Demonstrate that a minimum of one sample from each well and a minimum of four samples from the entire system taken each time the system is sampled.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (iv) Background value: 66264.98(c)(2)

Show that the background values for each monitoring parameter or constituent will be expressed in the form necessary to determine statistically significant increases.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (b) Plan for Establishing Groundwater Quality Data:  
66270.14(c)(6), 66264.98(c)

Submit a plan for establishing background values. The plan must address the following items:

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (i) Well Locations: 66264.98(c)

Indicate the wells to be used to collect the background groundwater quality data.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (ii) Sampling Frequency: 66264.98(f), (g), 66264.97(e)

Demonstrate that background groundwater quality for each parameter or constituent is based on data obtained through quarterly sampling of wells.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (iii) Sampling Quantity: 66264.98(c)(2)

Demonstrate that a minimum of one sample from each well and a minimum of four samples from the entire system is taken each time the system is sampled.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (iv) Background Value: 66264.98(c)(2)

Show that the background values for each monitoring parameter or constituent will be expressed in the form necessary to determine statistically significant increases.

**Not Applicable - Refer to Section V, (E)  
Compliance Monitoring Program**

- (4) Sampling, Analysis, and Statistical Procedures: 66270.14(c)(6), 66264.97(e), 66264.98(d), (f) and (g)

Submit a proposed sampling and analysis plan that includes procedures for sample collection, sample preservation and shipment, analytical methods, and chain of custody controls. The plan must also describe the statistical comparison procedure(s) to be used.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program. The existing Water Quality Sampling and Analysis Plan implemented at the site as part of CAO activities and which will be used during the post-closure period is included in Appendix F.**

- (a) Sample Collection: 66264.97(e)(9), (10)

Describe the procedures and techniques for sample collection.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program. The existing Water Quality Sampling and Analysis Plan implemented at the site as part of CAO activities and which will be used during the post-closure period is included in Appendix F.**

- (b) Sample Preservation and Shipment: 66264.97(d)(2)

Describe the procedure and techniques for sample preservation and shipment.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program. The existing Water Quality Sampling and Analysis Plan implemented at the site as part of CAO activities and which will be used during the post-closure period is included in Appendix F.**

- (c) Analytical Procedures: 66264.97(d)(3)

Describe the analytical procedure that will be used for each monitoring parameter. (The method specified in the most

recent edition of "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846) must be used).

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program. The existing Water Quality Sampling and Analysis Plan implemented at the site as part of CAO activities and which will be used during the post-closure period is included in Appendix F.**

- (d) Chain of Custody: 66264.97(d)(4)

Describe the procedures for chain of custody control for all samples collected.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program. The existing Water Quality Sampling and Analysis Plan implemented at the site as part of CAO activities and which will be used during the post-closure period is included in Appendix F.**

- (e) Additional Requirements for Monitoring: 66264.98(d)

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program. The existing Water Quality Sampling and Analysis Plan implemented at the site as part of CAO activities and which will be used during the post-closure period is included in Appendix F.**

- (i) Sampling Frequency: 66264.90(d)

Demonstrate that sampling of each monitoring well at the compliance point will be performed semi-annually during the active live of a regulated unit.

- (ii) Compliance Point Groundwater Quality Value: 66264.98(d)

Show that the groundwater quality values will be expressed in the form necessary to determine statistically significant increases.

- (f) Annual Determinations: 66264.98(4)

Specify the procedure for the annual determination of the uppermost aquifer flow rate and direction.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (g) Statistical Determinations: 66264.98(g)

Specify the procedures to be used to determine whether there has been a statistically significant increase over background values for each parameter or constituent monitored at the compliance point.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (i) Statistical Procedures: 66264.98(g)(1), 66264.97(h)

Specify the statistical comparison procedures which will be used to evaluate whether there has been a statistically significant increase over background values for each parameter or constituent monitored at the compliance point.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (ii) Results: 66264.(g)(2)

Provide an estimate of the time period, subsequent to sampling completion, within which the results of the statistical analysis will be available.

**Not Applicable - Refer to Section V, (E) Compliance Monitoring Program**

- (E) Compliance Monitoring Programs: 66270.14(c)(7)

If the presence of hazardous constituents has been detected in the groundwater at the point of compliance at the time of permit application, submit the following information:

(1) Waste Description: 66270.14(c)(7)

A description of the wastes previously handled at the facility. This description must include historical records of volumes, types (including EPA ID number, if applicable), and chemical composition of wastes placed in units in the waste management area;

**See Section II (A) for a description of wastes formerly stored in the PWP.**

- (a) The results of any direct sampling of the waste (see "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", SW-846);

**See Section III (A) for analytical results from the former contents of the PWP.**

- (b) A list of constituents that are reasonably expected to be in or derived from the waste; and

**Refer to Section III (A).**

- (c) Identification of the dominant constituents expected to be present and their relative abundance.

If it is expected that some constituents may form a separate, immiscible fluid, the composition of this fluid and its viscosity and density must be included in the application.

**Refer to Section III (A).**

(2) Characterization of Contaminated Groundwater: 66270.14(c)(7)

Provide a characterization of the contaminated groundwater including the concentration of identified hazardous constituents. For each well at the point of compliance, and for each background well, provide the following information:

- (a) Concentrations of each constituent in Appendix IX, 66264.801

**Refer to Section V, (A) (4) and Tables 2A, 2B. Detailed descriptions of individual elements of the monitoring**

system may be found in the Semi-Annual Groundwater Monitoring Reports, which meet the requirements of CAO 64-139. Appendix IX constituents in POC wells will be monitored until baseline conditions have been established (minimum four annual events), at which point ConocoPhillips plans to streamline the extensive list of constituents analyzed under this regulation.

- (b) Concentrations of major anions and cations, and

Refer to Section V, (A) (4) and Appendix E. Detailed descriptions of individual elements of the monitoring system may be found in the Semi-Annual Groundwater Monitoring Reports, which meet the requirements of CAO 64-139.

- (c) Concentrations of the constituents listed in 66264.94, if not already determined by the above.

Refer to Section V, (A) (4), Tables 2A and 2B and Appendix E for water quality data. Recent benzene data are also shown in Figure 7C. Detailed descriptions of individual elements of the monitoring system may be found in the Semi-Annual Groundwater Monitoring Reports, which meet the requirements of CAO 64-139.

- (3) Hazardous Constituents to be Monitored: 66270.14(c)(7),  
66264.93

Specify the hazardous constituents which you propose to monitor and present a rationale for selecting these constituents.

Refer to the Water Quality Sampling and Analysis Plan included in Appendix F. The constituents specified in the CAO 94-139 and Appendix IX constituents will be monitored according to the Plan. The constituents in the Plan were selected to monitor potential impacts to groundwater on a plant-wide basis from past and current refinery operations. This monitoring program will continue through the PWP post-closure period. Appendix IX constituents in POC wells will be monitored annually until baseline conditions have been established (minimum of four annual events), at which point ConocoPhillips plans to streamline the extensive list of

constituents analyzed under this regulation. Benzene is currently the only constituent routinely detected at hazardous levels and is present at locations both upgradient and downgradient of the PWP (Figure 7C). The POC wells do not indicate any constituents that routinely exceed the Maximum Concentration limits in Table 1 of CCR 66264.94 (see following section). To implement the Post-Closure Permit, Appendix IX sampling (as indicated on Table 2-2B of Appendix F, Water Quality and Sampling Plan) shall be conducted once every 5 years during the post-closure compliance period beginning with the issuance of the Post-Closure permit.

- (4) Concentration Limits: 66270.14(c)(7), 66264.99(a)(2), 66264.94(a)

Specify proposed concentration limits for each hazardous constituent. (The proposed concentration limit must not exceed the present background level of that constituent in the groundwater nor may it exceed the value of that constituent, if listed in 66264.94, entitled Maximum Concentrations of Constituents for Groundwater Protection.

**This requirement is intended to provide for protection of groundwater from potential discharges from regulated units which are planned or are operational. The PWP was closed in 1996, and both upgradient and downgradient water quality has been impacted by historic refinery operations not associated with the PWP. The available data in the PWP vicinity, which date to 1990 at the earliest, do not extend to the pre-PWP operational period so it is not possible to determine if groundwater conditions are potentially associated with former PWP operation. However, site-side corrective actions have been implemented and any potential monitoring and remediation requirements are administered by the RWQCB pursuant to CAO 94-139. Due to the existing impacts, development of alternate concentration limits would be appropriate once statistically-based baseline conditions have been established for the POC wells. In the interim, the concentration limits will be the Table 1 CCR Title 22, Section 66264.94 standards, or for constituents not listed in Table 1, the Maximum Contaminant Levels (MCLs) identified in the 1994 Basin Plan (Tables 3-5 and 3-7). These standards are included in Appendix H.**

**Two rounds of annual Appendix IX monitoring data for the POC wells have been obtained to date and are summarized in Tables 2A and 2B. This is insufficient for meaningful statistical analysis - a minimum two more rounds of sampling would need to be conducted to establish baseline conditions for, say, developing appropriate control limits in applying an intrawell statistical analysis**

approach for determining changes in water quality. It is apparent, however, that most regulated organic constituents and metals are non-detect and/or below levels that would be considered hazardous, including the Maximum Concentration levels in Table 1 of CCR Title 22, 66264.94 (Appendix H). The only Table 1 constituents that exceeded slightly by arsenic, detected at a maximum of 110 ug/L in downgradient POC well 59, but arsenic was also detected above the Table 1 standard of 50 ug/L in *upgradient* POC well 2 (79 ug/L). Lead was detected above the 50 ug/L maximum concentration standard in Fall 2004, at a maximum of 190 ug/L in downgradient POC well 59, but was below the standard in 2005 (Tables 2A and 2B).

Based on existing data, the Table 1 standards do appear to be reasonable interim concentration limits for most constituents until there are sufficient data to determine baseline conditions. The only constituents that could ultimately require alternate concentrations limits based on exceeding Table 1 standards would likely be arsenic and lead.

For hazardous constituents not listed in Table 1, such as benzene, interim concentration limits will be the MCLs identified in the 1994 Basin Plan (Appendix H). However, alternate concentration limits may be needed for many of these constituents due to the pre-existing impacts at the site. Sufficient data will first be required to establish statistical control limits for establishing these limits and for tracking changes against baseline values. As noted earlier in V (E) (3), benzene is the only hazardous constituent which has been routinely detected at concentrations exceeding toxicity standards, and would therefore require alternate concentration limits based on statistical control limits. Historical BTEX, as well as TPH and oxygenates data for upgradient POC well 2 and available data for downgradient POC wells 17, 38 and 59, are summarized in Figures 13A and 13B. It is apparent that there is only limited data for the downgradient POC wells, as well as for other designated wells upgradient and downgradient of the PWP. This is due to the fact that wells containing LNAPL are not routinely sampled in accordance with the Water Quality Sampling and Analysis Plan (Appendix F), and the downgradient POC wells typically contain LNAPL. The sampling plan in Appendix F has been revised to indicate that the POC wells will be analyzed for all routine constituents of concern once LNAPL has been removed from the wells.

Regardless, there is limited utility in using an inter-well type approach in comparing the concentrations in upgradient well 2 to those in downgradient wells, such as wells 17, 38 and 59, as the latter have already been affected by LNAPL from non-PWP sources. In some cases the constituents in downgradient wells (MW-59 in particular), such as benzene and some oxygenates, already exceed the corresponding concentrations

in upgradient well 2, including both the 95% Upper Confidence Level (UCL) of the mean and the higher 99% UCL based on the maximum concentration (see Figures 13A, 13B). In other cases, the concentrations in well 2 exceed the downgradient well concentrations. An intra-well approach could be implemented to track future changes in an individual well with respect to a statistically-based control/concentration limit representing baseline conditions, but these changes would not be indicative of impacts associated with the PWP.

If you wish to petition the Department to establish alternate concentration limits other than those specified above you must supply the information identified in comment V(E)(5).

- (5) Alternate Concentration Limits: 66270.14(c)(7), 66264.99(a), 66264.94(b)

Provide a justification for establishing alternate concentration limits. This justification must address each of the following factors.

**Refer to Section V (E) (4) above. Establishment of alternate concentration limits for ground water will ultimately be necessary due to the existing nonPWP-related impacts at this site. Once baseline conditions in the POC wells have been established, requirements for ground water monitoring and any potential remediation will be administered by the RWQCB pursuant to CAO 94-139.**

- (a) Adverse Effects On Groundwater Quality: 66264.94

The potential adverse effects on groundwater quality, considering:

**Not Applicable. Refer to Section V, (E) (4) above. The PWP is closed, and groundwater at the site has been impacted from non-PWP sources.**

- (i) The physical and chemical characteristic of the waste in the regulated unit, including its potential for migration;
- (ii) The hydrogeological characteristics of the facility and surrounding land;

- (iii) The quality of groundwater and the direction of groundwater flow;
- (iv) The proximity and withdrawal rates of groundwater users;
- (v) The current and future uses of groundwater in the area;
- (vi) The existing quality of groundwater including other sources of contamination and the cumulative impact on the groundwater quality;
- (vii) The potential for health risks caused by human exposure to waste constituents;
- (viii) The potential damage to wildlife, crops, vegetation and physical structures caused by exposure to waste constituents; and
- (ix) The persistence and permanence of the potential adverse effects.

(b) Potential Adverse Effects: 66264.94(b)(2)

The potential adverse effects on hydraulically-connected surface water quality, considering:

**Not Applicable. Refer to Section V, (E) (4) above. The PWP is closed, and groundwater at the site has been impacted from non-PWP sources.**

- (i) The volume and physical and chemical characteristic of the waste in the regulated unit;
- (ii) The hydrogeological characteristics of the facility and surrounding land;
- (iii) The quality and quantity of groundwater, and the direction of groundwater flow;
- (iv) The pattern of rainfall in the region;

- (v) The proximity of the regulated unit to surface waters;
  - (vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;
- (6) Groundwater Monitoring System: 66270.14(c)(7), 66264.97, 66264.99

Describe in detail the individual elements of the monitoring system to be used during compliance monitoring.

**Monitoring wells and constituents specified in the CAO 94-139 Water Quality Sampling and Analysis Plan will be monitored as specified in Appendix F. The constituents in the Plan were selected to monitor potential impacts to groundwater on a plant-wide basis from past and current refinery operations. This monitoring system will continue to monitor constituents of concern associated with the PWP. In addition, designated POC wells for the PWP will be analyzed for Appendix IX constituents for a minimum of four events to establish baseline conditions.**

- (a) Description of Wells: 66264.97(a), and (c)

Identify the number, location and depth of each well.  
Describe the well construction materials.

**Refer to Section V, (A) (4). Detailed descriptions of individual elements of the monitoring system may be found in the Semi-Annual Groundwater Monitoring Report, which meets the requirements of CAO 94-139.**

- (b) Representative Samples: 66264.97(a) (1) and (2)

Provide details supporting the representative nature of the groundwater quality at (1) background monitoring points and (2) the compliance monitoring point.

**Refer to Section V, (A) (4) for a description of existing water quality. Detailed descriptions of individual elements of the monitoring system may be found in the Semi-Annual Groundwater Monitoring Reports, which**

**meet the requirements of CAO 94-139. Also refer to Appendix F. Compliance wells have been established for Appendix IX monitoring.**

- (c) Locations of Background Groundwater Monitoring Wells that are not Upgradient: 66264.97(g)(3)

For wells that are not located upgradient from the waste management area, provide information in the following two sections:

**Not Applicable. Refer to Section V, (A) (4) for a description of existing water quality. Detailed descriptions of individual elements of the monitoring system may be found in the Semi-Annual Groundwater Monitoring Reports, which meet the requirements of CAO 94-139.**

- (i) Inability to Determine Upgradient: 66264.97(g)(3)

Demonstrate that the hydrogeologic conditions do not allow determination that the wells are upgradient.

- (ii) Representative Samples of Background Groundwater Quality: 66264.97(g)(3)  
Demonstrate that sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells.

- (7) Background Values: 66270.14(c)(8), 66264.97(g)

Submit background values for each proposed monitoring parameter or constituent, or procedures to calculate such values. Submit the information related to 66264.97 (d) (1), (2).

**Not Applicable. Refer to Section V, (E) (4), V (A) 4) and Appendix E. Establishing background values for groundwater is not warranted because the PWP is closed and groundwater upgradient and downgradient of the facility has been impacted from other sources. An intra-well statistical analyses to track water quality changes in POC wells could be implemented,**

although there is currently insufficient baseline data for establishing statistical control limits for most constituents in the POC wells. Even if established, future comparisons of water quality against the baseline control limits would be of limited use in detecting or evaluating effects associated with the PWP. The site is undergoing corrective action in accordance with CAO 64-139. Detailed descriptions of individual elements of the monitoring system may be found in the Semi-Annual Groundwater Monitoring Report, which meets the requirements of CAO 64-139.

- (a) Background Groundwater Quality Data Available:  
66270.14(c)

**Not Applicable. Refer to Section V, (E)(7) above.**

- (i) Background Groundwater Quality Data:  
66264.97(g)(2), 66264.99(c)

Specify the concentrations and coefficients of variation for each of the proposed monitoring parameters or constituents. Document that the background groundwater quality is based on data from upgradient wells that account for measurement errors in sampling and analysis and accounts, to the extent feasible, for seasonal fluctuation in background groundwater quality if such fluctuations are expected to effect the concentration of the hazardous constituent.

**Not Applicable. Refer to Section V, (E)(7) above.**

- (ii) Sampling Frequency: 66264.97(g)(2),  
66264.99(c)(3).

Describe the sampling frequency used in developing the data base used to determine a background value for each parameter or constituent for each well.

**Not Applicable. Refer to Section V, (E)(7) above.**

(iii) Sampling Quality: 66264.97(g)(4)

Demonstrate that a minimum of one sample from each well and a minimum of four samples from the entire system is taken each time the system is sampled.

**Not Applicable. Refer to Section V, (E)(7) above.**

(iv) Background Values: 66264.99(c)(3)

Show that the background values for each monitoring parameter or constituent will be expressed in the form necessary to determine statistically significant increases.

**Not Applicable. Refer to Section V, (E)(7) above.**

(b) Plan for Establishing Groundwater Quality Data:  
66264.99(c), 66264.97(g)

Submit a plan for establishing background groundwater quality values. The plan must address the following items:

**Not Applicable. Refer to Section V, (E)(7) above.**

(i) Background Data: 66264.97(g)(2)

Document that the background groundwater quality will be used on data from upgradient wells which will be available before the permit is issued; that the data accounts for measurement errors in sampling and analysis and accounts, to the extent feasible, for seasonal fluctuations in background groundwater quality if such fluctuations are expected to effect the concentration of the hazardous constituent.

**Not Applicable. Refer to Section V, (E) (7) above.**

- (ii) Well Location: 66264.99(c)

Indicate the wells to be used to collect the data.

**Not Applicable. Refer to Section V, (E) (7) above.**

- (iii) Sampling Frequency: 66264.97(g)(2),  
66264.99(c)(3).

Describe the sampling frequency used in developing the data base used to determine a background value for each parameter or constituent for each well.

**Not Applicable. Refer to Section V, (E) (7) above.**

- (iv) Sampling Quality: 66264.97(g)(4)

Demonstrate that a minimum of one sample from each well and a minimum of four samples from the entire system is taken each time the system is sampled.

**Not Applicable. Refer to Section V, (E) (7) above.**

- (v) Background Values: 66264.99(c)(3)

Show that the background values for each monitoring parameter or constituent will be expressed in the form necessary to determine statistically significant increases.

**Not Applicable. Refer to Section V, (E) (7) above**

- (8) Sampling, Analysis, and Statistical Procedures: 66270.14(c)(7),  
66264.97(d), (e) and (h), 66264.98(d), and (e)

Submit a proposed sampling and analysis plan that includes procedures for sample collection, sample preservation and shipment, analytical methods, and chain of custody controls. The plan must also describe the statistical comparison procedure(s) to be used.

**Refer to Appendix F and Section V (E) (4) and V (E) (7) above. Sample collection, sample preservation and shipment, analytical procedures, chain of custody controls, sampling frequencies, and annual determinations of the uppermost aquifer flow rate and direction will be performed as specified in the CAO 94-139 Water Quality Sampling and Analysis Plan (Appendix F). Testing for Appendix IX hazardous constituents will also be performed in accordance with the Plan. Requirements for ground water monitoring and any potential remedial action will be administered by the RWQCB pursuant to CAO 94-139.**

- (a) Sample Collection: 66264.97(d)(1)

Describe the procedures and techniques for sample collection.

**Refer to Section V, (E) (8) above.**

- (b) Sample Preservation and Shipment: 66264.97(d)(2)

Describe the procedure and techniques for sample preservation and shipment.

**Refer to Section V, (E)(8) above.**

- (c) Analytical Procedures: 66264.97(d)(3)

Describe the analytical procedure that will be used for each monitoring parameter. (The method specified in the most recent edition of "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846) must be used).

**Refer to Section V, (E) (8) above.**

- (d) Chain of Custody: 66264.97(d)(4)

Describe the procedures for chain of custody control for all samples collected.

**Refer to Section V, (E) (8)**

(e) Additional Requirements for Compliance Point Monitoring: 66264.99(d), 66265.97

(i) Sampling Frequency: 66264.99(d)

Demonstrate that sampling of each monitoring well at the compliance point will be performed semi-annually during the active live of a regulated unit.

**Refer to Section V, (E) (8) above.**

(ii) Testing for Appendix IX Hazardous Constituents: 66264.97(f)

Specify the procedure for the annual testing of all monitoring wells at the compliance point for all constituents contained in Appendix IX of section 66264.801.

**Refer to Section V, (E) (8) above.**

(iii) Compliance Point Groundwater Quality Value: 66264.99(d), 66265.97

Show that the groundwater quality values will be expressed in the form necessary to determine statistically significant increases.

**Refer to Section V, (E) (8) above.**

(f) Annual Determinations: 66264.99(e)

Specify the procedure for the annual determination of the uppermost aquifer flow rate and direction.

**Refer to Section V, (E) (8) above.**

(g) Statistical Determinations: 66264.99(h)

Specify the procedures to be used to determine whether there has been a statistically significant increase over background values for each parameter or constituent monitored at the compliance point.

**Refer to Sections V, (E) (4), (7) and (8) above. Neither interwell nor intrawell statistical comparison methods would provide meaningful indications of impacts associated with the PWP.**

- (i) Statistical Procedures: 66264.97(h), 66264.99(h)(1)

Specify the statistical comparison procedures which will be used to evaluate whether there has been a statistically significant increase over background values for each parameter or constituent monitored at the compliance point.

**Refer to Section V, (E) (4), (7) and (8) above.**

- (ii) Results: 66264.99(h)(2)

Provide an estimate of the time period, subsequent to sampling completion, within which the results of the statistical analysis will be available.

**Refer to Section V, (E) (4) above.**

- (F) Corrective Action Program: 66270.14(c)(8), 66264.100, 66264.99

If hazardous constituents have been measured in the groundwater which exceed the concentration limits established under 66264.94, Table 1, or if groundwater monitoring conducted at the time of permit application at the waste boundary indicates the presence of hazardous constituents from the facility in groundwater over background concentrations, the owner or operator must submit sufficient information, supporting data, and analyses, to establish a corrective action program which meets the requirements of 66264.100. (However, an owner or operator is not required to submit information to establish a corrective action program if he demonstrates to the Department that alternate concentration limits will protect human health and the environment after considering the criteria listed in 66264.94(b)).

**This entire section (Section V, (F)) is addressed as follows:**

**All known solid waste management units at LARC have been identified pursuant to the Cleanup and Abatement Order 94-139 (CAO 94-139). Pursuant to CAO 94-139, a *Master Work Plan* (TRC; updated June 2005) was prepared and approved by the RWQCB**

**which details the descriptions, characterizations, and cleanup time lines for all the known solid waste management units at ConocoPhillips' Los Angeles Refinery in Carson, and includes the PWP. The *Master Work Plan* was also submitted to Mr. Norburto Pautassi of the DTSC on June 12, 1995.**

**Refer to Section V, (A) (4) and Appendices E and F for details covering the groundwater program.**

Submit the following information to establish a corrective action program:

- (1) Characterization of Contaminated Groundwater: 66270.14(c)(8)

Provide a characterization of the contaminated groundwater including the concentration of identified hazardous constituents. For each well at the point of compliance, and for each background well, provide the following information:

**Refer to Section V, (F)**

- (a) Concentrations of each constituent in 66261.
  - (b) Concentrations of major anions and cations, and
  - (c) Concentrations of the constituents listed in 66264.94, if not already determined by the above.
- (2) Concentration Limits: 66270.14(c)(8)(B), 66264.99(a)(2), 66264.94(a)

Specify proposed concentration limits for each hazardous constituent. (The proposed concentration limit must not exceed the present background level of that constituent in the groundwater nor may it exceed the value of that constituent, if listed in 66264.94, entitled Maximum Concentrations of Constituents for Groundwater Protection.

**Refer to Section V, (F)**

If you wish to petition the Department to establish alternate concentration limits other than those specified above you must supply the information identified in comment V(F)(3) (a,b).

- (3) Alternate Concentration Limits: 66270.14(c)(8)(B),  
66264.99(a)(2), 66264.94(b)

Provide a justification for establishing alternate concentration limits. This justification must address each of the following factors.

**Refer to Section V, (F)**

- (a) Adverse Effects On Groundwater Quality: 66264.94(b)(1)

The potential adverse effects on groundwater quality, considering:

**Refer to Section V, (F)**

- (i) The physical and chemical characteristic of the waste in the regulated unit, including its potential for migration;
- (ii) The hydrogeological characteristics of the facility and surrounding land;
- (iii) The quality of groundwater and the direction of groundwater flow;
- (iv) The proximity and withdrawal rates of groundwater users;
- (v) The current and future uses of groundwater in the area;
- (vi) The existing quality of groundwater including other sources of contamination and the cumulative impact on the groundwater quality;
- (vii) The potential for health risks caused by human exposure to waste constituents;
- (viii) The potential damage to wildlife, crops, vegetation and physical structures caused by exposure to waste constituents; and

(ix) The persistence and permanence of the potential adverse effects.

(b) Potential Adverse Effects: 66264.94(b)(2)

The potential adverse effects on hydraulically-connected surface water quality, considering:

**Refer to Section V, (F)**

- (i) The volume and physical and chemical characteristic of the waste in the regulated unit;
- (ii) The hydrogeological characteristics of the facility and surrounding land;
- (iii) The quality and quantity of groundwater, and the direction of groundwater flow;
- (iv) The pattern of rainfall in the region;
- (v) The proximity of the regulated unit to surface waters;
- (vi) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;
- (vii) The existing quality of surface water, including other sources of contamination and cumulative impact on surface water quality;
- (viii) The potential for health risks caused by human exposure to waste constituents;
- (ix) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and
- (x) The persistence and permanence of the potential adverse effects.

(4) Corrective Action Plan: 66270.14(c)(8)(C), 66264.100(b)

The applicant must submit detailed plans and an engineering report on the corrective actions proposed for the facility. This information must include:

**Refer to Section V, (F)**

(a) Location: 66270.14(c)(8)(C), 66264.100(b)

Maps showing the location of engineered barriers, caps, drains, and wells, etc.(use the topographic map in Section B-1).

(b) Construction Details: 66270.14(c)(8)(C), 66264.100(b)

Descriptions and engineering drawings of construction details and specifications of engineered barriers, caps, drains, wells, etc.

(c) Plans for Removing Wastes: 66270.14(c)(8)(C), 66264.100(b)

If proposed, plans for removing and handling of any hazardous wastes.

(d) Treatment Technologies: 66270.14(c)(8)(C), 66264.100(b)

A description of the treatment technologies to be used for contaminated groundwater that is pumped or drained from the zone of contamination.

(e) Effectiveness of Correction Program: 66270.14(c)(8)(D), 66270.14(c)(8)(C), 66264.100(b)

A prediction and sensitivity analysis on the effectiveness of corrective actions. (For example, anticipated drain flow rates, assuming a range of hydrologic properties).

(f) ReInjection System: 66270.14(c)(8)(iii), 66264.100(b)

If treated ground or surface water is to be reinjected at the site, the concentration levels of all hazardous constituents to be reinjected.

- (g) Additional Hydrogeologic Data: 66270.14(c)(8)(iii),  
66264.100(b)

A description and summary of any additional hydrogeologic data collected for use in designing the corrective action.

- (h) Operation and Maintenance: 66270.14(c)(8)(C),  
66264.100(b)

Operation and maintenance plans for the corrective action measures.

- (i) Closure and Post-Closure Plan: 66270.14(c)(8)(C),  
66264.100(b)

If applicable, closure and post-closure care plans for the materials used to handle hazardous wastes as part of the corrective action.

- (5) Groundwater Monitoring Program: 66270.14(c)(8)(D),  
66264.100(d)

Description of the groundwater monitoring program used to assess the effectiveness of the corrective action measure. Water quality monitoring must be conducted over the onsite extent of the contaminated groundwater. Submit the following information:

**Refer to Section V, (F)**

- (a) Description of Wells: 66264.97(a), and (c)

Identify the number, location and depth of each well. Describe the well construction materials.

- (b) Representative Samples: 66264.97(a)(1) and (2)

Provide details supporting the representative nature of the groundwater quality at (1) background monitoring points and (2) the compliance monitoring point.

- (c) Locations of Background Groundwater Monitoring Wells that are not Upgradient: 66264.97(g)(3)

For wells that are not located upgradient from the waste management area, demonstrate either that the hydrogeologic conditions do not allow determination that the wells are upgradient, or that sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells.

(6) Background Values: 66264.99(c)

Submit background values for each proposed monitoring parameter or constituent, or procedures to calculate such values. Submit the information identified in Section V(F)(6)(a,b).

**Refer to Section V, (F)**

(a) Data Currently Available: 66264.99(c)

(i) Background Groundwater Quality Data:  
66264.97(g)(2), 66264.99(c)

Specify the concentrations and coefficients of variation for each of the proposed monitoring parameters or constituents. Document that the background groundwater quality is based on data from upgradient wells that account for measurement errors in sampling and analysis and accounts, to the extent feasible, for seasonal fluctuation in background groundwater quality if such fluctuations are expected to effect the concentration of the hazardous constituent.

(ii) Sampling Frequency: 66264.97(g)(2),  
66264.99(c)(3)(A).

Describe the sampling frequency used in developing the data base used to determine a background value for each parameter or constituent for each well.

(iii) Sampling Quality: 66264.97(g)(4)

Demonstrate that a minimum of one sample from each well and a minimum of four samples from the

entire system is taken each time the system is sampled.

- (iv) Background Values: 66264.99(c)(3)(B)

Show that the background values for each monitoring parameter or constituent will be expressed in the form necessary to determine statistically significant increases.

- (b) Plan for Establishing Groundwater Quality Data:  
66264.99(c), 66264.97(g)

Submit a plan for establishing background groundwater quality values. The plan must address the following items:

- (i) Background Data: 66264.97(g)(2)

Document that the background groundwater quality will be used on data from upgradient wells which will be available before the permit is issued; that the data accounts for measurement errors in sampling and analysis and accounts, to the extent feasible, for seasonal fluctuations in background groundwater quality if such fluctuations are expected to effect the concentration of the hazardous constituent.

- (ii) Well Location: 66264.99(c)

Indicate the wells to be used to collect the data.

- (iii) Sampling Frequency: 66264.97(g)(2),  
66264.99(c)(3).

Describe the sampling frequency used in developing the data base used to determine a background value for each parameter or constituent for each well.

- (iv) Sampling Quality: 66264.97(g)(2)

Demonstrate that a minimum of one sample from each well and a minimum of four samples from the

entire system is taken each time the system is sampled.

- (v) Background Values: 66264.99(c)(3)(B)

Show that the background values for each monitoring parameter or constituent will be expressed in the form necessary to determine statistically significant increases.

- (7) Sampling, Analysis, and Statistical Procedures: 66270.14(c)(7)(E) and (F), 66264.97(d), (e) and (h), 66264.98(d), (e), (f), (g).

Submit a proposed sampling and analysis plan that includes procedures for sample collection, sample preservation and shipment, analytical methods, and chain of custody controls. The plan must also describe the statistical comparison procedure(s) to be used.

**Refer to Section V, (F)**

- (a) Sample Collections: 66264.97(d)(1)

Describe the procedures and techniques for sample collection.

- (b) Sample Preservation and Shipment: 66264.97(d)(2)

Describe the procedure and techniques for sample preservation and shipment.

- (c) Analytical Procedures: 66264.97(d)(3)

Describe the analytical procedure that will be used for each monitoring parameter. (The method specified in the most recent edition of "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (SW-846) must be used).

- (d) Chain of Custody: 66264.97(d)(4)

Describe the procedures for chain of custody control for all samples collected.

(e) Additional Requirements for Compliance Point  
Monitoring: 66264.99(d)

(i) Sampling Frequency: 66264.99(d)

Demonstrate that sampling of each monitoring well at the compliance point will be performed semi-annually during the active live of a regulated unit.

(ii) Testing for Appendix IX Hazardous Constituents:  
66264.801

Specify the procedure for the annual testing of all monitoring wells at the compliance point for all constituents contained in Appendix IX of section 66264.801.

(iii) Compliance Point Groundwater Quality Value:  
66264.99(d),

Show that the groundwater quality values will be expressed in the form necessary to determine statistically significant increases.

(f) Annual Determinations: 66264.99(e)

Specify the procedure for the annual determination of the uppermost aquifer flow rate and direction.

(g) Statistical Determinations: 66264.99(h)

Specify the procedures to be used to determine whether there has been a statistically significant increase over background values for each parameter or constituent monitored at the compliance point.

(i) Statistical Procedures: 66264.97(h), 66264.99(h)(1)

Specify the statistical comparison procedures which will be used to evaluate whether there has been a statistically significant increase over background values for each parameter or constituent monitored at the compliance point.

(ii) Results: 66264.99(h)(2)

Provide an estimate of the time period, subsequent to sampling completion, within which the results of the statistical analysis will be available.

VI. POST-CLOSURE CONTACT: 66264.118(b)(3)

Provide the name, address, and phone number of the person(s) or office to contact about the facility during the post-closure period.

**Superintendent, Environmental Services**  
**1660 West Anaheim Street**  
**Wilmington, CA 90744**  
**(310) 952-6120 or (310) 952-6000**

(A) Post-Closure Security and Emergency Preparedness: 66264.117(b)(1) and (2); 66270.14(a)(b); 66264.32(c)(d); 66264.33; 66264.37

(1) Post-Closure Security

**Security measures used at the refinery include the following:**

**Access roads to the Carson Plant include three secured entrances on Sepulveda Boulevard along the northern property boundary, and two gates on 6<sup>th</sup> Street along the southern property boundary. In addition, access to the facility via railroad exists through one gate at the southeast corner of the property and through two gates along the eastern property boundary.**

**Four traffic signals are located along Sepulveda Boulevard adjacent to the Carson Plant, including one at the main entrance to the facility.**

**The Carson Plant has a 24-hour security system to guard against vandalism, sabotage and unauthorized entries.**

**All the gates are manned with uniformed security officers or with TV cameras monitored by security officers who check everyone for proper identification. Visitors must identify the ConocoPhillips personnel they are contacting, and telephone calls are made to the ConocoPhillips personnel to verify that the visitor has legitimate business at the refinery. Temporary identification badges and maps, if appropriate, are issued to the visitors. Normally, the visitors are**

escorted to the desired location by ConocoPhillips personnel. The access gates are kept closed during off-business hours, although a security officer is available for access, if necessary.

For vehicle entry, each vehicle is logged in by driver name, license number, and designation as to whether he or she is a ConocoPhillips employee, service contractor, or visitor. As appropriate, bills of lading are examined and time-date stamped. Escorts are furnished when required.

The refinery is surrounded by a 6-foot chain link fence that has three barbed-wire strands and a top guard. NO TRESPASSING signs are posted in accordance with the California Penal Code. Marked and unmarked vehicles equipped with two-way radios are used to patrol the perimeter of the complex and areas within the complex. Spot checks of vehicles leaving the complex are made to ensure that only properly authorized property is leaving the complex.

Access to the PWP area has to be authorized and granted by the Carson Plant Bulk Operations office.

(2) Emergency Preparedness

Provide an Emergency Preparedness and Prevention Plan:

ConocoPhillips uses an "Integrated Contingency Plan" (also known as "One Plan") that satisfies the requirements of 40CFR112, 49CFR194, 33CFR154 Subpart F, 29CFR1910.120, 40CFR264 Subpart D, 40CFR265 Subpart D, and 40CFR279.52, Title 14, Div. 1 Subdiv. 4 Chapters 2 and 3, and Title 23 Div 3 Chapter 16 Articles 2 and 5. This plan has been reviewed by DTSC Inspectors during all site inspections at the Carson Plant and has been accepted as the Facility (Emergency) Response Plan by DTSC.

(B) System Design Description: 66264.118(a)

(1) Leachate Collection/Detection System: 66264.118(a)

Provide a design description, including drawings, of the leachate collection/detection system (if different from that provided in Section IV). If the system includes container or tank storage of the collected leachate, and storage onsite extends for greater than 90 days, a permit must be obtained in order to operate these container(s) or tank(s) as hazardous waste storage units. In

addition, if the system includes surface impoundment storage, an operating permit also must be obtained.

**Not Applicable. No leachate system exists because the PWP has been closed, filled with clay and capped in accordance with the DTSC-approved Closure Plan (see Appendix B).**

- (2) Gas Venting System: 66264.110(a)

Provide a design description, including drawings, of the gas venting system.

**Not Applicable - No gas venting system is provided for the closed facility.**

- (C) Inspection Plan: 66264.118(a), 66264.228(b), 66264.228(c)(1)(B), 66264.258(b), 66264.258(c)(1)(B), 66264.310(b)

Describe the inspections to be conducted during the post-closure care period, their frequency, the inspection procedure, and the logs to be kept. The following items, as applicable, should be included in the inspection plan:

**The closed condition of the PWP consists of an asphalt cap above a compacted clay layer above the original concrete liner. Given the static nature of this facility, inspections consist of remote visual inspections conducted by the Bulk Operations personnel. Bulk Operations personnel work in the vicinity of the PWP on a daily basis. Should any cracks form in the asphalt cover, or should precipitation runoff not occur appropriately, Bulk Operations will inform the Environmental Services department through the existing, refinery-wide incident reporting procedures.**

- (1) Security control device

**If, during the visual inspections, any security system surrounding the PWP is found to require maintenance, a maintenance work order will be immediately submitted to the refinery's Maintenance Department. Temporary signs or barriers will be erected until permanent repairs are effected.**

- (2) Erosion damage

**Not Applicable**

- (3) Cover settlement, subsidence and displacement

**If, during the visual inspections, and settlement, subsidence, or displacement is observed, Bulk Operations will inform the Environmental Services Department immediately in order to design and implement appropriate retrofits to the system. Temporary signs or barriers will be erected until permanent repairs are effected.**

- (4) Vegetative cover condition

**Not Applicable**

- (5) Integrity of run-on and run-off control measures

**Not Applicable.**

- (6) Cover drainage system functioning

**Not Applicable.**

- (7) Leachate collection/detection and removal system

**Not Applicable.**

- (8) Gas venting system

**Not Applicable.**

- (9) Well condition

**Refer to Appendix F. Monitoring wells are inspected prior to sampling.**

- (10) Benchmark integrity

**Refer to Section V (E) – Compliance Monitoring Program**

The rationale for determining the length of time between inspections should be provided.

**Refer to Chapter 8 of the *Master Work Plan* (TRC; June 2005)**

- (D) Monitoring Plan: 66264.228(b), 66264.228(c)(1)(B), 66264.258(b), 66264.258(c)(1)(B), 66264.310(b)

Describe the monitoring to be conducted during the post-closure care period, including, as applicable, the procedures for conducting the following operations and evaluating the data gathered:

- (1) Groundwater monitoring

**Refer to Appendix F**

- (2) Leachate collection/detection and removal

**Not Applicable**

- (E) Maintenance Plan: 66264.228(b), 66264.228(c)(1)(B), 66264.258(b), 66264.258(c)(1)(B), 66264.310(b)

Describe the preventative and corrective maintenance procedures, equipment requirements and material needs. Include the following items in the maintenance plan, as applicable:

- (1) Repair of security control devices

**Fence, warning signs and gates maintenance**

**If, during the daily inspection, any security system surrounding the PWP is found to require maintenance, a maintenance work order will be immediately submitted to the refinery's maintenance department. Temporary signs or barriers will be erected until permanent repairs are effected.**

**Refer to Section VI (A) for a complete description of the security system.**

- (2) Erosion damage repair

**Not Applicable**

- (3) Correction of settlement subsidence and displacement

**If, during the visual inspections, and settlement, subsidence, or displacement is observed, Bulk Operations will inform the Environmental Services Department immediately in order to**

**design and implement appropriate retrofits to the system. Temporary signs or barriers will be erected until permanent repairs are effected.**

- (4) Mowing, fertilization and other vegetative cover maintenance

**Not Applicable.**

- (5) Repair of run-on and run-off control structures

**Not Applicable.**

- (6) Leachate collection/detection systems maintenance

**Not Applicable.**

- (7) Well replacement

**Well replacement would occur as needed under direction of the RWQCB.**

Describe the rationale to be used to determine the need for corrective maintenance activities.

**Refer to Chapter 8 of the *Master Work Plan* (TRC; June 2005)**

- (F) Special Waste Management Plan: 66270.17(i), 66270.21(J), 66270.20(i)

Provide a waste management plan describing how the closed unit containing chlorinated dioxin, dibenzofurans and phenols will be maintained in order to protect human health and the environment. The plan must address the following factors:

**Not Applicable. The PWP has not historically contained chlorinated dioxin, dibenzofurans and phenols. Refer to Section III (A).**

- (1) Waste Description: 66270.17(i)(2), 66270.21(j)(1), 66270.20(i)(1)

Identify the volume, physical, and chemical characteristics of the wastes including their potential to migrate through the soil or volatilize or escape into the atmosphere.

**Not Applicable.**

- (2) Soil Description: 66270.17(i)(2), 66270.21(j)(2), 66270.20(i)(2)

Describe the attenuative properties of underlying and surrounding soils or other materials.

**Not Applicable.**

- (3) Mobilizing Properties: 66270.17(i)(3), 66270.21(j)(3),  
66270.20(i)(3)

Describe the mobilizing properties of other materials co-disposed with these wastes.

**Not Applicable.**

- (4) Additional Monitoring Techniques: 66270.17(i)(4), 66270.21(j)(4),  
66270.20(i)(4)

Discuss any monitoring techniques used to protect human health and environment.

**Not Applicable: Refer to Section V, (A) (4)**

- (G) Personnel Training: 66270.14(b)(12)

Describe how the owner/operator will assure that personnel responsible for operation, inspection, monitoring and maintenance programs are qualified to perform those functions throughout the post-closure period.

- (1) **Operation**

**There are no operations training procedures required specifically for the PWP, because all the moving parts have been removed and the basin has been filled with clay and capped with an asphalt cover. However, hazardous waste training topics for personnel working at the Carson Plant's hazardous waste facilities include:**

- \* **Purpose of regulations**
- \* **Responsibilities in the field**
- \* **Role of the Environmental Services Department**
- \* **Civil and criminal liabilities**
- \* **Recognizing potential wastes**
- \* **Shipping containers**

- \* **Storage requirements**
- \* **Labeling requirements.**

**(2) Inspection and Visual Monitoring**

**Inspection and visual monitoring of the PWP will continue to be the responsibility of the Oil Recovery Unit operator. Training has been designed to ensure the operator's ability to recognize cracks and other potential migration pathways at the surface of the asphalt cap. Training has also occurred that defines appropriate precipitation runoff pathways along the surface of the asphalt cap.**

**(3) Groundwater Monitoring**

**Groundwater monitoring will be conducted in accordance with the Water Quality Sampling and Analysis Plan, Appendix F. Monitoring is conducted by qualified environmental consultants under direction and supervision of ConocoPhillips Remediation Personnel. These consultants are required, at a minimum, to be certified via 40-hour HAZWOPER training and annual refresher certifications. Monitoring is performed as per RWQCB guidance in the CAO 94-139 and the associated *Master Work Plan*.**

**(4) Maintenance**

**Any required maintenance for the PWP will continue to be the responsibility of the LARC Maintenance Department who, in the event of any damage to the PWP cover, will access appropriately trained geotechnical and grading contractors to rectify the damage.**

**(H) Notice Local Land Authority: 66264.119**

**Provide a copy of the survey plat, prepared and certified by a professional land surveyor, required to be filed with the local zoning authority, indicating the location and dimensions of landfill cells or other disposal areas within respect to permanently surveyed benchmarks. The plat must contain a note prominently displayed, which states the owner/operator's obligation to restrict disturbance of the site as specified in 66264.117(c).**

**The former PWP was never used as a landfill cell or for disposal of hazardous wastes. Post-closure permitting is required only because**

**the groundwater beneath the former PWP is impacted from sources other than the PWP, as indicated by numerous investigations and assessment reports that have been conducted at the refinery. The investigations are summarized in Table 3-1 of the *Master Work Plan* (TRC; June 2005). The environmental issues identified by these investigations are being addressed under RWQCB CAO 94-139.**

- (I) Notice in Deed: 66270.14(b)(14), 66264.120, 66264.117(c), 66264.119

Provide a copy of the notice or notation recorded in the deed to the facility property, or on some other instrument which is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that (1) the land has been used to manage hazardous waste: (2) its use is restricted: and (3) the survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility has been filed with the local zoning authority or the authority with jurisdiction over local land use and with the Department of Toxic Substances Control.

**Not Applicable. Refer to Section VI (H).**

- (J) Post-Closure Cost Estimate: 66270.14(b)(16), 66264.144

Provide a copy of the up-to-date post-closure cost estimate, calculated to cover the cost in current dollars, of post-closure monitoring and maintenance of the facility, in accordance with the applicable post-closure plan.

**Post closure costs associated with the PWP are based on the estimates provided in the original 1993 Part B permit and more recent 1999 permit, adjusted for inflation to 2006 dollars (assume 3% annual rate) and modified as deemed appropriate to represent current post-closure conditions/needs. The costs developed by ConocoPhillips are as follows:**

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Item	Annual Cost	Cost/Project Life (30 years)
Groundwater Monitoring and Reporting (pro-rated from current site-wide costs to include 4 POC wells only, approx. 10% of total effort)	\$6,000	\$180,000
Cap Maintenance and Improvements	\$50,000/5 years	\$300,000
Stormwater Collection and Pumping	\$11,500	\$345,000
Annual Owner's Status Report	\$5,800	\$174,000
Post-Closure Certification	--	\$21,375
Post-Closure Notice	--	\$7,550
	<b>Total Cost</b>	<b>\$1,027,925</b>

DTSC has subsequently developed a revised cost estimate using the CostPro 5.0 program, and calculated a post closure cost of \$2,200,000 (December 13, 2006; included in Appendix I). ConocoPhillips does not agree with this estimate, but will accept it provided DTSC will accept ConocoPhillips' Corporate Guarantee for the closure/post closure costs. Financial assurance is addressed under Section VI (K)(5) of this permit application.

- (K) Financial Assurance Mechanism for Post-Closure Care: 66270.14(b)(16), 66264.145

Provide a copy of the established financial assurance mechanism for post-closure care of the facility. The mechanism must be one of the following:

- (1) Post-Closure Trust Funds: 66264.145(a), 66264.151(a)(1)

Provide a copy of the post-closure trust fund agreement with the wording required by 66264.151(a)(1) and submit a formal certification of acknowledgment.

**Not Applicable**

- (2) Surety Bond: 66264.145(b) and (c), 66264.151(b) and (c)

- (a) Surety Bond Guaranteeing Payment Into a Post-Closure Trust Fund; 66264.145(b), 66264.151(b)

Provide a copy of the surety bond with the wording required by 66264.151(b) and a copy of the standby trust

agreement. The bond must guarantee that the owner or operator will fund the standby trust fund in an amount equal to the penal sum of the bond before the beginning of final closure of the facility, or fund the standby trust fund in an amount equal to the penal sum within 15 days of an order to begin closure, or provide alternate financial assurance if the bond is canceled.

**Not Applicable**

- (b) Surety Bond Guaranteeing Performance of Post-Closure Care: 66264.145(c), 66264.151(c)

Provide a copy of the surety bond with the wording required by Section 66264.151(c), guaranteeing that the owner or operator will perform post-closure care according to the post-closure plan and the requirements of Subpart G.

**Not Applicable**

- (3) Post-Closure Letter of Credit: 66264.145(d), 66264.151(d)

Provide a copy of the irrevocable letter of credit with wording required by Section 66264.151(f) and a copy of the standby trust agreement. The letter of credit must be issued for a period of at least one year and be for the amount of estimated post-closure costs.

**Not Applicable**

- (4) Post-Closure Insurance: 66264.145(d), 66264.151(d)

Provide a copy of the certificate of insurance with the wording required in Section 66264.151(e).

**Not Applicable**

- (5) Financial Test and Corporate Guarantee for Post-Closure Care: 66264.145(1), 66264.151

Submit a letter signed by the owner's or operator's chief financial officer and worded as specified by 66264.151(f), a copy of the independent certified public accountant's report on examination of the applicant's financial statements for the latest fiscal year, and a

special report from the certified public accountant. If a parent corporation is guaranteeing post-closure care for a subsidiary facility, the corporate guarantee must accompany the preceding items.

**Demonstrated through the financial test. Refer to Appendix G for all applicable documents, including proof of delivery and receipt, concerning the RCRA financial responsibility filing made by ConocoPhillips Corporation pursuant to CCR Title 22, Sections 67001 through 67033.**

- (6) Use of Multiple Financial Mechanism: 66264.145(g)

Provide a copy of a combination of trust fund agreements, surety bond guaranteeing payment into a post-closure trust fund, letters of credit, and insurance, together which provide financial assurance for the amount of post-closure care.

**Not Applicable**

- (7) Use of Financial Mechanism for Multiple Facilities: 66264.143(h)

Provide a copy of a financial assurance mechanism for more than one facility showing, for each facility, the EPA ID number, name, address and amount of post-closure funds assured by the mechanism. The amount of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been established and maintained for each facility.

**Not Applicable**

- (L) Liability requirements: 66270.14(b)(17), 66265.147

For facilities which have not yet been released from the liability requirements of 66265.147, provide copies of the required item documenting compliance with applicable liability requirements for sudden and nonsudden accidental occurrences.

**Not Applicable**

- (1) Coverage for Sudden Accidental Occurrences: 66264.147(a)

Liability coverage must be maintained for sudden accidental occurrences in the amount of at least \$1 million per occurrence with an annual aggregate of at least \$2 million. Liability coverage may be demonstrated in one of three ways:

- (a) Endorsement or Certification: 66264.147(a)(1)

Submit a signed duplicate original of the Hazardous Waste Facility Liability Endorsement, with the wording specified by 66264.151(i), or of a Certificate of Liability Insurance, with the wording specified by 66264.151(j).

**Not Applicable**

- (b) Financial Test for Liability Coverage: 66264.147(a)(2), 66264.147 (f)

Submit a letter signed by the owner's or operator's chief financial officer and worded as specified by 66264.151(g), a copy of the independent certified public accountant's report on examination of the applicant's financial statements for the latest fiscal year, and a special report from the certified public accountant. If the applicant is using the financial test to demonstrate both assurance for closure or post-closure care and liability coverage, the letter specified in 66264.151(g) must be submitted to cover both forms of financial responsibility. Under these circumstances, a separate letter as specified by 66264.151(f) is not required.

**Demonstrated through the financial test. Refer to Appendix G for all applicable documents, including proof of delivery and receipt, concerning the RCRA financial responsibility filing made by ConocoPhillips Corporation pursuant to CCR Title 22, Sections 67001 through 67033.**

- (c) Use of Multiple Insurance Mechanism: 66264.147.(a)(3)

Submit items demonstrating required liability coverage through a combination of endorsement or certification and financial test as these mechanisms are specified in this section [V(1)M(1)(a,b)]. The amounts of coverage

demonstrated must total at least the minimum amounts required by 66264.147(a).

**Not Applicable**

- (2) Coverage for Nonsudden Accidental Occurrences: 66264.147(b)

Liability coverage must be maintained for non-sudden accidental occurrences in the amount of at least \$3 million per occurrence with an annual aggregate of at least \$6 million. Coverage may be demonstrated in one of three ways:

- (a) Endorsement or Certification: 66264.147(a)(1)

Submit a signed duplicate original of the Hazardous Waste Facility Liability Endorsement, with the wording specified by 66264.151(i), or of a Certificate of Liability Insurance, with the wording specified by 66264.151(j).

**Not Applicable**

- (b) Financial Test for Liability Coverage: 66264.147(a)(2), 66264.147 (f)

**Demonstrated through the financial test. Refer to Appendix G for all applicable documents, including proof of delivery and receipt, concerning the RCRA financial responsibility filing made by ConocoPhillips Corporation pursuant to CCR Title 22, Sections 67001 through 67033.**

Submit a letter signed by the owner's or operator's chief financial officer and worded as specified by 66264.151(g), a copy of the independent certified public accountant's report on examination of the applicant's financial statements for the latest fiscal year, and a special report from the certified public accountant. If the applicant is using the financial test to demonstrate both assurance for closure or post-closure care and liability coverage, the letter specified in 66264.151(g) must be submitted to cover both forms of financial responsibility. Under these circumstances, a separate letter as specified by 66264.151(f) is not required.

(3) Request for Variance: 66264.147(c)

Request for an adjusted level of required liability coverage must be accompanied by supporting information to demonstrate that established levels of financial responsibility specified in 66264.147(a) or (b) are not consistent with the degree and duration of risk associated with treatment, storage, or disposal at the applicant's facility or group of facilities.

**Not Applicable**

(M) Use of State Required Mechanism: 66270.149(b), 66264.150

Where a state has hazardous waste regulations with equivalent or greater liability requirements for financial assurance for closure and post-closure care, provide a copy of the state-required financial mechanisms, including the facility EPA ID number, name, address, and amounts of coverage and a letter requesting that the state mechanism be considered acceptable.

**Not Applicable**

(1) State Assumption of Responsibility: 66270.14(b)(18), 66264.150

If a state assumes legal responsibility for compliance with closure, post-closure, or liability requirements, or the state assures that state funds are available to cover those requirements, submit a copy of a letter from the state describing the state assumption of responsibility and including the facility EPA ID number, name, address and amount of liability coverage of funds for closure or post-closure care that are assured by the state, together with a letter requesting that the state's assumption of responsibility be considered acceptable.

**Not Applicable**

VII. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS:  
66270.14(b)(18), 66264.150

- (A) Solid Waste Management Unit: 66264.101  
Identify all solid waste management units at the facility, including inactive units, if known. A solid waste management unit may include any of the following:

- (1) Landfill
- (2) Surface Impoundment
- (3) Waste Pile
- (4) Land Treatment Unit
- (5) Tank (including 90-day accumulation tank)
- (6) Injection well
- (7) Incinerator
- (8) Wastewater treatment tank
- (9) Container storage area
- (10) Waste handling area
- (11) Transfer station
- (12) Waste recycling operation

**All known solid waste management units at LARC have been identified pursuant to the Cleanup and Abatement Order 94-139 (CAO 94-139). Pursuant to CAO 94-139, a *Master Work Plan* (TRC; updated June 2005) was prepared and approved by the RWQCB which details the descriptions, characterizations, and cleanup time lines for all the known solid waste management units at ConocoPhillips' Los Angeles Refinery in Carson, and includes the PWP. The *Master Work Plan* was also submitted to Mr. Norburto Pautassi of the DTSC on June 12, 1995.**

- (a) Characterize the Solid Waste Management Unit: 66264.101. For each solid waste management unit, submit the following information:

**Refer to Sections III (A), VII, (A)**

- (i) Type of each unit

- (ii) Location of each existing or closed unit on the topographic map
- (iii) Engineering drawings for each unit, if available
- (iv) Dimensions and materials of construction of each unit
- (v) Dates when the unit was in operation
- (vi) Description of the wastes placed in each unit
- (vii) Quantity of volume of waste, if known

(b) No Solid Waste Management Units: 66264.101

Describe the methodology used to determine that no existing or former solid waste management units exist at the facility (e.g., review of old solid waste permits, blueprints).

**Refer to Section VII, (A)**

(B) Releases: 66264.101

Provide all information available, including releases reported under CERCLA section 103, on whether or not any releases have occurred from any of the solid waste management units at the facility.

Reasonable efforts to identify releases must be made even if releases have not been verified. (A release may include: spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment. It does not include releases otherwise permitted or authorized under law or discharges into the injection zone of a UIC permitted Class I injection well).

**Refer to Section VII, (A)**

(1) Characterize Releases: 66264.101

Information on releases must include the following types of available information concerning prior or current releases:

- (a) Date of the release

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May 2006

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- (b) Type of waste or constituent released
  - (c) Quantity or volume released
  - (d) Nature of the release
    - (i) Spill
    - (ii) Overflow
    - (iii) Ruptured pipe or tank
    - (iv) Result of the unit's construction (e.g. unlined surface impoundment, leaky tank)
    - (v) Other
  - (e) Groundwater monitoring and other analytical data available to describe nature and extent of release. If other than groundwater monitoring data, please describe.
  - (f) Physical evidence of distressed vegetation or soil contamination
  - (g) Historical evidence of releases such as tanker truck accidents
  - (h) Any state, local or federal enforcement actions which may address releases
  - (i) Any public-citizen complaints about the facility which could indicate a release
  - (j) Any information showing the migration of the release
- (2) No Releases: 66264.101

Describe the methodology used to determine that releases from solid waste management units are not present (e.g., review of groundwater monitoring data).

VIII. OTHER FEDERAL LAWS: 66270(b)(20), 66270.3

Demonstrate compliance with the requirements of applicable Federal laws such as the Wild and Scenic Rivers Act, National Historic Preservation Act of 1966, Endangered Species Act, Coastal Zone Management Act and Fish and Wildlife Coordination Act.

**Not Applicable. ConocoPhillips does not believe the Federal Acts mentioned above are applicable to the PWP.**

IX. PART B CERTIFICATION; 66270.11

Applications must be accompanied by a certification letter as specified in 66270.11(d). The required signatures are as follows: (1) for a corporation, a principal executive officer, at least at the level of vice-president (2) for a partnership or sole proprietorship, a general partner or the proprietor, respectively (3) for a municipal state, federal, or other public agency, either a principal executive officer or ranking elected official.

**Refer to Part A**

- (A) Groundwater Monitoring: 66264.90, 66265.90, 66264.118(b), 66265.118(b), 66264.310, 66265.310

**Refer to Section V, (A) (4)**

- (1) Number, location and depth of wells
- (2) Frequency of sampling
- (3) Types of analyses to be conducted
- (4) Procedures for sampling and analyses (including party responsible)

- (B) Soil Monitoring: 66264.118(b)(1), 66265.118(b)(1), 66264.280(d)(1), 66265.280(d)(1)

**Refer to Section VII (A)**

- (1) Number and frequency of samples
- (2) Type of analysis to be conducted
- (3) Procedure for sampling (including party responsible)

(C) Leachate Monitoring and Removal:

**Not Applicable. There is no leachate collection system for the closed PWP.**

- (1) Monitoring procedures and frequency of monitoring
- (2) Estimated frequency of leachate
- (3) Procedures for collecting and removing leachate
- (4) Procedure for treatment and disposal:
  - (a) Onsite
  - (b) Off-site
- (5) Party responsible

(D) Inspections: 66264.118(b)(2), 66264.118(b)(2)

**Refer to Section VI (C)**

- (1) List of structures and facilities to be inspected
- (2) Frequency of inspections
- (3) Party responsible

(E) Maintenance Activities: 66264.118(b)(2), 66265.118(b)(2), 66264.310(b), 66265.310(b)

**Refer to Section VI (E)**

- (1) Maintenance of final cover
- (2) Mowing and fertilizing
- (3) Replacing lost soil and reseeded
- (4) Maintaining drainage channels and culverts
- (5) Controlling rodents and insects

- (6) Contingency plans for damage caused by severe storms or natural events
- (7) Maintenance of monitoring systems:
  - (a) Monitoring well replacement/redrilling
  - (b) Sampling pump replacement
  - (c) Other equipment maintenance
- (8) Maintenance of security systems: 66264.117(c), 66265.117(c)  
Fencing, warning signs, and gate maintenance
- (9) Responsible party
- (F) Post-Closure Notices: 66264.119, 66265.119
  - (1) Record of waste:
    - (a) Sources of information

**Sources of information relating to wastes formerly within the PWP can be found in the manifest files and the following documents:**

**(i) *Semi-Annual Groundwater Monitoring Reports* routinely submitted to the RWQCB (e.g. TRC; January 2006)**

**(ii) Laboratory reports provided in Appendix C of the permit application**

**(iii) *Report of Soil Sampling Activities, Former Process Water Pond* (Alton Geoscience, August 9 1994)**

**All of these reports and documents are maintained at the ConocoPhillips Los Angeles Refinery, Carson and Wilmington Plants.**

- (b) Types of information to be included

**The information included in the above referenced reports and documents include records of any wastes shipped from the PWP, profiles of the water collected in the basin, analyses of groundwater taken from the LARC wells and characterizations of the soil adjacent to and surrounding PWP.**

- (2) Notation in Deed:

**Not Applicable. Refer to Section VI (H).**

(a) Schedule for filing notice

(b) Location of filing

- (3) Name, address, and phone number of contact person

**Superintendent, Environmental Services  
P.O. Box 758, Wilmington, CA 90748  
(310) 952-6120 or (310) 952-6000**

- (G) Post-Closure Certification: 66264.120, 66265.120

- (1) Estimated number of inspections

**Remote visual inspections of the PWP cover will be performed daily.**

- (2) Testing and analysis to be performed

**Tests and analyses will be those conducted as part of the existing Water Quality Sampling and Analysis Plan included in Appendix F and discussed extensively in Section V of this permit application.**

- (3) Types of documentation

**All PWP inspections will be documented and retained in the files of the Bulk Operations Department. Any repairs to the cover system will be documented using the maintenance work order system and additional forms and figures that may be required at that time.**

**The information included in the above referenced reports and documents include records of any wastes shipped from the PWP, profiles of the water collected in the basin, analyses of groundwater taken from the LARC wells and characterizations of the soil adjacent to and surrounding PWP.**

- (2) Notation in Deed:

**Not Applicable. Refer to Section VI (H).**

- (a) Schedule for filing notice  
(b) Location of filing
- (3) Name, address, and phone number of contact person

**Miles T. Heller  
Superintendent, Environmental Services  
P.O. Box 758, Wilmington, CA 90748  
(310) 952-6120 or (310) 952-6000**

- (G) Post-Closure Certification: 66264.120, 66265.120

- (1) Estimated number of inspections

**Remote visual inspections of the PWP cover will be performed daily.**

- (2) Testing and analysis to be performed

**Tests and analyses will be those conducted as part of the existing Water Quality Sampling and Analysis Plan included in Appendix F and discussed extensively in Section V of this permit application.**

- (3) Types of documentation

**All PWP inspections will be documented and retained in the files of the Bulk Operations Department. Any repairs to the cover system will be documented using the maintenance work order system and additional forms and figures that may be required at that time.**