

State of California  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION

ORDER NO. 94-112

WASTE DISCHARGE REQUIREMENTS  
FOR  
SHELL OIL COMPANY  
1520 TO 1622 EAST SEPULVEDA BOULEVARD  
CARSON CALIFORNIA  
(CLOSURE OF TWO SURFACE IMPOUNDMENTS)

(File No. 85-19)

The California Regional Water Quality Control Board, Los Angeles Region, finds:

1. Shell Oil Company (the discharger) has filed a report of waste discharge for the closure of two surface impoundments, Reservoir One and Reservoir Two. These reservoirs are located at the Wilmington Section of the former Shell Wilmington Manufacturing Complex, at 1520 to 1622 East Sepulveda Boulevard in Carson, California. These reservoirs were built in the 1920s and were originally used to store crude oil originating from the Signal Hill Oil Field. The reservoirs were also used occasionally to store vacuum tower feed oil and coker feed oil which are heavier intermediates. In addition, Reservoir Two occasionally stored marine fuel oil. The reservoirs were in continuous use until December 1991, when they were drained and scheduled for shutdown and eventual dismantling after Unocal purchased the facility. Under the terms of the sale of the facility to Union Oil Company of California (dba Unocal Los Angeles Refinery-Carson Plant) in December 1991, Shell retained the responsibility for closure of the reservoirs.
2. The reservoir berms are about 18 feet above refinery grade and have approximate slopes of 1.5 to 1 on both the inside and outside walls. The bottoms of the reservoirs are about 15 feet below refinery grade. The top and outside walls were covered with asphalt and the inside walls and bottoms were lined with concrete.
3. On August 31, 1994, staff granted the discharger permission to remove and crush the concrete liner covering the interior berm walls and floor of each reservoir and to remove any soils under the liner that are saturated with hydrocarbons for disposal off-site at a licensed point of disposal. With the liner removed, a more accurate estimation of the volume of material requiring remediation can be determined.

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4. The proposed TPH soil cleanup levels detailed in the requirements section of this Order have been developed by staff from research conducted by the Western States Petroleum Association (WSPA). Staff have modified the application of these levels to reflect conservatism. The Technical Review Committee (TRC), formed to review soil cleanup criteria, is planning on recommending use of these levels in appropriate cases and we believe issuing this Order will allow a test case application at a real site. Since this Order applies to a smaller site cleanup within a larger area cleanup, staff believes this provides an excellent opportunity for collection of data to determine suitability of using levels higher than those previously used with little or no risk to the environment in an actual case.
5. Subsurface investigations in Reservoir One identified petroleum-hydrocarbon-contaminated soils, up to 71,000 mg/kg total recoverable petroleum hydrocarbons (TRPH), 16.5 feet below the reservoir bottom (brb). Petroleum-hydrocarbon-contamination (63 mg/kg TRPH) was identified as deep as 46.5 feet brb. Subsurface investigations in Reservoir Two identified petroleum-hydrocarbon-contaminated soils, up to 36,000 mg/kg TRPH, 26.5 feet brb. Petroleum-hydrocarbon-contamination (21 mg/kg TRPH) was identified as deep as 51.5 feet brb. Analyses of 30 soil samples from Reservoir One and 17 soil samples from Reservoir Two indicate that the ratio of asphaltenes to TRPH, in the soils underlying the reservoirs, range from a low of 1% to a high of 51% with an average of 15%. This indicates the soil contamination has a large percentage of petroleum-hydrocarbon contamination lighter and more mobile than asphaltenes.
6. Free-phase petroleum hydrocarbon has previously been identified on the ground water underlying the reservoirs. Subsurface investigations at the site indicate that this ground water pollution originated from on-site and off-site sources other than the reservoirs. Remediation and monitoring of this pollution is addressed under Cleanup and Abatement Order No. 88-69.
7. Cleanup and Abatement Order No. 88-69, adopted by this Regional Board on June 27, 1988, directed Shell Oil Company to cleanup and abate the ground water pollution caused by the uncontrolled release of hydrocarbons, including refined product, from their Wilmington Manufacturing Complex (WMC). Under the terms of the sale of the Shell Wilmington Section of the WMC to Unocal in December 1991, Unocal is responsible for

all provisions of Cleanup and Abatement Order No. 88-69, as they apply to the Wilmington Section.

8. The Regional Board adopted a revised Water Quality Control Plan for the Los Angeles River Basin (4B) on June 3, 1991. The plan contained water quality objectives for ground water within the Coastal Plain of Los Angeles County. The requirements contained in this Order, as they are met, will be in conformance with the goals of the Water Quality Control Plan.
9. Three basic aquifer units (Gage, Lynwood, and Silverado) are found beneath the site. The Gage aquifer is from about 40 feet bgs to about 200 feet bgs. The Lynwood aquifer is located from about 200 feet to about 400 feet bgs. Below and hydraulically connected through an unnamed aquiclude from about 350 feet to 400 feet below ground surface is the Silverado aquifer. The Dominguez Gap Barrier Project, which is designed to impede sewer intrusion into the Gaspar, Gage, and Lynwood aquifers, is located about two-thirds of a mile east of the site.
10. Ground water in the Coastal Plain is beneficially used for municipal and domestic supply, agricultural supply, and industrial service and process supply. Ground water in the first aquifer underlying this site is typically low in yield and high in salinity. Ground water in the Silverado aquifer is usually of the best quality and quantity.
11. Water levels beneath the facility vary from 60 feet bgs in five perched aquifers to about 80 feet bgs in the semi-perched aquifer. The ground water flow in the semi-perched aquifer is to the west in the eastern portion and to the northwest in the western portion. Ground water beneath the reservoirs is 73 feet bgs or 58 feet brb.
12. A January 1991 report by Brown and Caldwell identified the presence of TPH and toluene, xylene, and ethylbenzene in three deep (200 feet bgs) ground water monitoring wells screened in the Gage aquifer. These wells were also sampled in May 1990 and April/May 1991 identifying low concentration levels of phenolic compounds and benzene (only in WD-3 in May 1990). The water supply well WW-4 screened in the Silverado aquifer did not detect any contaminants above the detection limits when tested in May 1990 and April/May 1991.
13. A 72-well light nonaqueous phase liquid (LNAPL) hydrocarbon recovery system has been installed. The system consists of 48

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hydraulically downgradient LNAPL containment wells along the western property line and 24 wells located in the interior of the plant. The waste water disposal problem that has delayed operation of the recovery system has recently been resolved and start-up of this system is anticipated to begin by December 1994.

14. A grading and drainage plan for the engineered grading of 135,000 cubic yards of material, prepared by the Ralph M. Parsons Company, was approved on July 2, 1994, by the County of Los Angeles Department of Public Works Land Development Division.
15. This project involves an action taken for the protection of the environment and as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, commencing with Section 21100) in accordance with Section 15321, Chapter 3, Title 14, of the California Code of Regulations.

The Regional Board has notified the discharger and interested agencies and persons of its intent to adopt waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge and to the tentative requirements.

IT IS HEREBY ORDERED that Shell Oil Company (the discharger), in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Waste discharge requirements:

1. Any soils placed into or onto the reservoirs shall have contaminant concentrations less than the following discharge limits:

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<u>CONSTITUENT</u>	<u>LIMIT</u> (mg/kg)
<u>ORGANIC COMPOUNDS</u>	
Aromatic Volatile Organic Compounds	
benzene	0.1
ethylbenzene	2.9
toluene	4.2
xylene	1.7
Total Petroleum Hydrocarbons (EPA Method 8015)	
C <sub>4</sub> - C <sub>12</sub>	1,000
C <sub>13</sub> - C <sub>22</sub>	10,000
C <sub>23</sub> .	15,000
Polynuclear Aromatic Hydrocarbons in the Toxic Characteristic Leaching Potential (TCLP) extract (mg/l).	Non-detect <sup>1</sup>

2. Within 60 days of this Order the discharger shall submit for approval by the Executive Officer a plan for closure of the reservoirs in accordance with the requirements of Chapter 15, Title 23, California Code of Regulations (hereafter referred to as Chapter 15). The plan shall specify the placement of a cap or cover with a permeability of  $1 \times 10^{-6}$  cm/sec or less, precipitation and drainage controls, and post-closure maintenance including but not limited to Article 4, Article 8, and Article 9 - Section 2596 and Section 2597 of Chapter 15. In addition, the plan shall specify the removal of all soils which exhibit the presence of free-phase petroleum hydrocarbon.
3. Backfill material must be compacted to 90% compaction to ensure maximum cap protection and ensure maximum usefulness of the site.
4. The current ground water monitoring program, required under cleanup and abatement Order No. 88-69, may be used to show compliance with Section 2550.8 of the Code for this waste management unit.

<sup>1</sup> Non-detect in TCLP extract at the practical quantification limits of detection for each compound.

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5. Within 30 days of completing the closure of the reservoirs, in accordance with the above approved closure plan, the discharger shall submit a report documenting the closure.
6. Any off-site disposal of wastes shall be to a legal point of disposal. For the purpose of these requirements, a legal point of disposal is defined as one for which waste discharge requirements have been established by a California Regional Water Quality Control Board, and which is in full compliance therewith.
7. Any material handling shall be in such a manner as to prevent its reaching surface waters or water courses.

B. PROVISIONS

1. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel.
2. This Order includes "Standard Provisions Applicable to Waste Discharge Requirements". If there is any conflict between provisions stated herein and the "Standard Provisions Applicable to Waste Discharge Requirements", these provisions stated herein will prevail.
3. The enclosed Monitoring and Reporting Program is made a requirement of this Order.
4. Neither the disposal nor any handling of waste shall cause pollution or nuisance odor at the facility boundary.
5. The discharger must notify this Board by telephone within 24 hours, followed by written notification within one week, in the event they are unable to comply with any of the conditions of this Order due to:
  - a. Breakdown of waste treatment equipment,
  - b. Accidents caused by human error or negligence,
  - c. Other causes such as acts of nature, or
  - d. Facility operations.

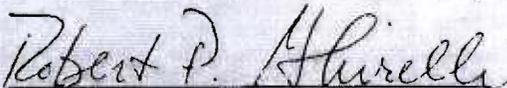
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6. This Order is not intended to permit or allow the discharger to cease any work required by any other Order issued by this Regional Board, nor shall it be used as a reason to stop or redirect any investigation or mitigation activities not required by this Order or any other agency.
7. These requirements do not exempt the discharger from compliance with any other laws, regulations, or ordinances which may be applicable, they do not legalize these waste treatment and disposal facilities and they leave unaffected any further restraints on those facilities which may be contained in other statutes or required by other agencies.
8. Compliance with this Order does not release the discharger from the responsibility for correcting any future problems that may arise during subsequent use of the land and result from contamination left in place at this time.

C. Expiration Date: This Order expires on October 31, 1995.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on October 31, 1994.

  
ROBERT P. GHIRELLI, D.Env.  
Executive Officer