

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 93-131
SITE CLEANUP REQUIREMENTS FOR:

DEFENSE LOGISTICS AGENCY
U.S. DEPARTMENT OF DEFENSE
DEFENSE FUEL SUPPLY POINT OZOL FACILITY
700 CARQUINEZ SCENIC DRIVE
MARTINEZ, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Board) finds that:

1. **SITE DESCRIPTION.** The Defense Logistics Agency, U.S. Department of Defense (hereinafter referred to as the Discharger) owns and operates the Defense Fuel Supply Point Ozol Facility, (hereinafter referred to as the Site). The Site is located approximately 2 miles west of Martinez, CA (Figure 1). Two tank fields, containing twelve 3.5 million gallon underground jet fuel storage tanks, with a total capacity of 42 million gallons, are located on the top of two hills adjacent to the Carquinez Strait (Figures 2 and 3).

At the base of one hill is a terminal area and dock; fuel can be loaded on or off-loaded from ships, tank trucks, railroad tank cars and into a pipeline. The facility also maintains the following tanks: 1. one 126,840 gallon above-ground slop fuel tank; 2. two 650 gallon above-ground diesel fuel tanks; 3. one 650 gallon above-ground gasoline tank; 4. one 885 gallon underground slop fuel tank; 5. one 2000 gallon underground slop fuel tank; and 6. one above-ground water tank and two fire-suppressant concentrate tanks.
2. **SITE HISTORY.** The Site was constructed in 1959 by the Holly Corporation and subsequently leased to the federal government. The federal government purchased the Site in 1980 and the Discharger is now responsible for its operation. The facility was constructed as follows: 1. the tops of the two hills were removed; 2. concrete slabs, 120 feet in diameter, were cast on the flattened bedrock; 3. 1/4 inch thick steel plates were welded to the slab, and extended up forty feet to form the liner of the tank; 4. a 10 inch thick concrete wall was cast around each tank; 5. each concrete wall was post-tensioned by wrapping high strength steel wire around the outside of the tank under tension and then covered with sprayed concrete; 6. each tank was waterproofed with bitumastic. The material from the excavation was backfilled around and on top of the tanks. There are 5 tanks in the Lower Tank Field and 7 tanks in the Upper Tank Field (Figures 2 and 3).
Aviation gasoline and JP4 jet fuel have been stored on the Site; however, storage of aviation gasoline was discontinued in the early 1980's.
3. **FAULT.** The Site is built on steeply dipping geologic strata. Two geologic formations constitute the bedrock at the Site, the Tertiary Martinez Formation

and the Upper Cretaceous Panoche Formation. The Southampton Fault may pass between the two tank fields at the Site. Elevations on the Site range from sea level to more than 350 feet. Depth to shallow groundwater varies and is least in the areas of engineered fill which surround the tanks (8 to 20 feet). Surface runoff and shallow groundwater at the Site flow down three major drainages from the elevated portions of the Site. These drainages flow into the Carquinez Strait.

4. SOIL AND GROUNDWATER INVESTIGATIONS. Fuel has leaked and is leaking, or threatening to leak, from the tanks. Site investigations were initiated in 1982 in response to observations of seepage of fuel contaminants into roadside ditches below the Tank Farm. Discharger found soil contamination with concentrations greater than 10 ppm TPH at depths ranging from 2 to 60 feet.

To date, 38 monitoring wells have been installed. In two thirds of the wells, floating product or polluted groundwater has been found. In the most recent study (1989), more than 9 feet of free product was reported floating on the groundwater in one well. Pollutants up to the following concentrations were found in the groundwater: TPH, 87,000 ppb; (BTEX) benzene 38,000 ppb, toluene 20,000 ppb, ethylene benzene 7,000 ppb, xylene 71,000 ppb.

The extent of pollution in the soil, the engineered fill, and the groundwater has not been determined.

5. UNDERGROUND STORAGE TANK REGULATIONS. The Discharger is subject to Underground Tank Statutes and Regulations as contained in California Code of Regulations, Title 23, Chapter 16, and the California Health and Safety Code, Division 20, Chapter 6.7.
6. REPORTS SUBMITTED AND UNDER REVIEW. The Discharger has submitted several reports that are currently under review. Those reports address tasks associated with removal of free product at the Site, current methods of leak detection, facility compliance with State and federal Underground Tank Regulations, and the Spill Control and Countermeasures Plan for the facility.
7. STATE BOARD RESOLUTION 88-63. On March 30, 1989, the Regional Water Quality Control Board incorporated the State Board Policy of "Sources of Drinking Water" into this Regional Board's Basin Plan. The Regional Board's Policy provides for a Municipal and Domestic Supply Designation for all waters of the State that meet prescribed criteria. Two relevant requirements for this designation are: 1) the total dissolved solids in the groundwater must not exceed 3000 mg/l, and 2) the water source must have the capacity to produce an average of 200 gallons per day from a single well. The appropriateness of designating groundwater at the Site as a Municipal and Domestic Supply source will be determined by the Regional Board staff after the appropriate data is presented by the Discharger.
8. STATE BOARD RESOLUTION 68-16. On October 28, 1968, the State Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. The discharge of waste to the groundwater at this Site is in violation of this policy. Therefore, the groundwater quality needs to be

restored to its original quality to the extent reasonable. For the purpose of establishing cleanup objectives, if the groundwater at the Site is designated as a potential source of drinking water, protective levels shall be at least those levels which have been established as protective of drinking water.

9. STATE BOARD RESOLUTION 92-49. State Board Resolution 92-49 establishes policies and procedures for the oversight of investigations and cleanup and abatement activities resulting from discharges which affect or threaten water quality. The resolution states that Water Code Section 13304 authorizes Regional Water Boards "to require complete cleanup of all waste discharged and restoration of affected water to background conditions (i.e., the water quality that existed before the discharge)" to the extent feasible. The resolution requires actions for cleanup and abatement to conform to State Water Board Resolution 68-16 and State and Regional Water Board Water Quality Control Plans and Policies. Cleanup levels are not required to be more stringent than background. Cleanup levels and effluent discharge limitations need not be identical for the same site. Actions to cleanup and abate must also comply with applicable provisions of Title 23 CCR, Division 3, Chapter 15 to the extent feasible.
10. BASIN PLAN. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) dated September 16, 1992. The Basin Plan contains water quality objectives and beneficial uses for the seasonal drainages located on the Site, the Carquinez Strait and contiguous surface waters and groundwaters.
11. BENEFICIAL USES - SURFACE WATER. The existing and potential beneficial uses of the seasonal drainages located on the Site, the Carquinez Strait, and the contiguous surface waters include:
 - a. Contact and non-contact water recreation;
 - b. Wildlife habitat;
 - c. Fish migration and spawning;
 - d. Industrial service supply;
 - e. Navigation;
 - f. Commercial and sport fishing;
 - g. Preservation of areas of special biological significance;
 - h. Estuarine habitat;
 - i. Warm fresh water habitat; and
 - j. Agricultural supply.
12. BENEFICIAL USES - GROUNDWATER. The existing and potential beneficial uses of the groundwater in the vicinity of the site include:
 - a. Municipal and domestic water supply;
 - b. Industrial process water supply;
 - c. Industrial service water supply; and
 - d. Agricultural water supply.
13. The discharger has caused or permitted, and threatens to cause or permit, waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

14. California Environmental Quality Act (CEQA). This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321, Title 14 of the California Code of Regulations.
15. SCOPE OF THIS ORDER. This Order contains tasks for groundwater characterization at the Site; implementation and evaluation of the remedial actions for on-Site soil pollution and on-Site (and, if applicable, off-Site) groundwater pollution attributable to the Discharger; and evaluation and implementation of final cleanup actions. The tasks are necessary to alleviate the pollution and threatened pollution of surface water and groundwater posed by the migration of contaminants, and to provide a substantive technical basis for designing and evaluating the effectiveness of final remediation.
16. PUBLIC HEARING. The Board has notified the Discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

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

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the Defense Logistics Agency, U.S. Department of Defense, shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. DISCHARGE OF WASTE: The discharge of wastes or hazardous materials in a manner which will degrade, or threaten to degrade, water quality or adversely affect, or threaten to adversely affect, the beneficial uses of the waters of the State is prohibited.
2. POLLUTION MIGRATION THROUGH THE SUBSURFACE: Migration of pollutants through subsurface transport to waters of the State is prohibited.
3. POLLUTION MIGRATION CAUSED BY INVESTIGATIONS: Activities associated with the subsurface investigation and cleanup, that will cause adverse migration of pollutants, are prohibited.
4. NUISANCE: The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050 (m) of the California Water Code.

B. SPECIFICATIONS

1. UNDERGROUND TANK REGULATIONS: The discharger shall comply with the California Code of Regulations, Title 23, Division 3, Chapter 16 (Underground Tank Regulations) and Chapter 17 (Tank Tester Regulations); California Health and Safety Code, Division 20, Chapter

6.7 (Underground Storage of Hazardous Substances) Sections 25280 through 25299.77.

2. **POLLUTION ASSESSMENT:** The Discharger shall conduct the investigation necessary and define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution.
3. **CLEANUP GOALS - SOILS AND GROUNDWATER:** The cleanup goals for soils and groundwater shall be set consistent with State Board Resolutions 92-49 and 68-16.

C. PROVISIONS

1. The Discharger shall comply with all Prohibitions and Specifications, above, by completing the tasks outlined below in accordance with the following time schedule:

COMPLETION DATE/TASK:

- a. The Discharger shall submit a report that investigates the seismic stability, geology, groundwater aquifers, and extent of soil and groundwater pollution:

1. **TASK: EVALUATE THE GEOLOGY AND HYDROGEOLOGY:**

COMPLETION DATE: December 30, 1993. Submit a technical report, acceptable to the Executive Officer, that describes the geology and hydrology of the Site, including the identification of preferential pathways for contaminated groundwater flow. This report should include, but not be limited to:

- a. The location of the fault trace and the extent of any fractured zone and/or gouge zone associated with the fault(s) at the Site;
- b. The depth of the weathered bedrock zone throughout the Site and vicinity of the Site;
- c. The vertical and lateral extent of fracture porosity;
- d. A map showing fracture orientation, and a statistical assessment of the dominant fracture directions; and
- e. An assessment of the location and types of potential vertical conduits, both on-Site and in the vicinity of the Site, especially on-Site monitoring wells and on-Site and off-Site agricultural wells.

2. **TASK: EVALUATE THE SEISMIC STABILITY OF THE SITE:**

COMPLETION DATE: September 15, 1994. Submit a technical report, acceptable to the Executive Officer, that evaluates the seismic stability of the Site. This report should include, but not be limited to:

- a. A review of the previous seismic stability study of the site to clarify the loading scenarios considered and other assumptions made.

- b. A seismic modeling study that estimates the level of ground motions that could occur at the site during magnitude 4 to 8.2 earthquakes taking place at epicentral distances ranging from 1 to 20 miles. This information shall be presented in a matrix form that provides calculated horizontal ground accelerations for each of the magnitude and distance combinations listed above. Estimates of vertical ground motions as well as the duration of strong ground motion shall also be provided. These may be based on empirical relations. In addition, the seismic modeling study should identify the faults that could reasonably be expected to effect the site and provide an estimate of their maximum seismic potential. The corresponding cells in the matrix shall be identified for these maximum credible earthquake (MCE) scenarios.
- c. A study of the effects of the MCE accelerations on the slope stability at the site. This should include an assessment of the engineered fill and natural slopes.

3. TASK: DEVELOP WORKPLAN FOR DEFINING THE EXTENT OF SOIL AND GROUNDWATER POLLUTION.

COMPLETION DATE: December 31, 1993. Submit a workplan, acceptable to the Executive Officer, to complete the definition of the vertical and horizontal extent of pollution of soil, engineered fill, and groundwater at the Site. Such plan should include, but not be limited to: a. physical, chemical and biological assessments of the vertical and horizontal extent of soils and groundwater contamination and determination of background water quality; b. sampling plan and strategy for the follow-on investigation; c. analytical methods and detection limits, as appropriate; d. sampling and analysis quality assurance / quality control plan including data quality objectives; e. schedule for submission of additional Work Plans.

4. TASK: SUBMIT REPORT DEFINING THE EXTENT OF SOIL AND GROUNDWATER POLLUTION.

COMPLETION DATE: December 31, 1994. Submit a technical report, acceptable to the Executive Officer, which defines the vertical and horizontal extent of pollution of the soil and groundwater at the Site, including, as appropriate, investigations of soil and groundwater pollution on properties contiguous to the Site. Such report shall include, but not be limited to: a. data from existing monitoring wells; b. data generated from installation of additional soil borings and monitoring wells to determine the boundaries of the polluted groundwater plume; c. physical, chemical and biological findings and assessments of the vertical and horizontal extent of soils and groundwater with contamination and the background water quality; d. isoconcentration maps of contaminants contained in the groundwater and soils in the engineered fill and bedrock.

b. The Discharger shall take necessary actions to remediate pollution in soils beneath and adjacent to the tanks:

1. TASK: DEVELOP WORKPLAN TO EVALUATE REMEDIAL ACTION ALTERNATIVES FOR SOURCE

CONTROL AND REDUCTION OF POLLUTION IN THE ENGINEERED FILL.

COMPLETION DATE: December 31, 1993. Submit a workplan, acceptable to the Executive Officer, that addresses the collection and analysis of data necessary to evaluate alternatives for the remediation of engineered fill polluted with jet fuel and volatile organic chemicals, including, but not limited to: a. sampling sites; b. sampling techniques; c. chemical analytes and their analytical methods; d. detection limits, and e. a QA/QC plan.

2. TASK: EVALUATE AND PROPOSE REMEDIAL ACTION ALTERNATIVES FOR SOURCE CONTROL AND REDUCTION OF POLLUTION IN ENGINEERED FILL.

COMPLETION DATE: October 31, 1994. Submit a technical report, acceptable to the Executive Officer, that presents the results of the data collection and analysis for the evaluation of alternatives for the interim remediation of the engineered fill and propose remedial alternatives. Such report shall consider, but not be limited to, removal and/or in situ and ex-situ remediation and bioremediation, to result in pollution source reduction.

3. TASK: IMPLEMENT THE INTERIM REMEDIAL SOURCE REDUCTION ACTIONS.

COMPLETION DATE: April 30, 1995. Submit a notice of initiation of the interim remedial action for engineered fill. Such notice shall include interim remedial source reduction chosen, a schedule for implementation and time frame for completion.

c. The Discharger shall take the necessary actions to remediate polluted groundwater:

1. TASK: DEVELOP PLAN FOR A PILOT GROUNDWATER EXTRACTION SYSTEM TRENCH.

COMPLETION DATE: December 30, 1993. Submit a work plan, acceptable to the Executive Officer, that includes, but is not limited to: a. design and construction specifications for a pilot-scale groundwater extraction trench; b. a groundwater monitoring plan to evaluate the effectiveness of the extraction trench; c. criteria for determining the success of the groundwater extraction trench; d. a schedule for completion of the construction of the trench.

2. TASK: EVALUATE EFFECTIVENESS OF PILOT GROUNDWATER EXTRACTION SYSTEM.

COMPLETION DATE: July 30, 1995. Submit a technical report, acceptable to the Executive Officer, that includes, but is not limited to: a. an evaluation of the effectiveness of the pilot trench in removing polluted groundwater; b. recommendations for full-scale deployment of a trench system or other alternative to remediate the polluted groundwater at the Site; and c. a schedule for the completion of the implementation.

3. TASK: REMEDIAL ALTERNATIVES TO CONTAIN AND CLEAN UP POLLUTED GROUNDWATER.

COMPLETION DATE: December 31, 1995. Submit a schedule of activities, acceptable to the Executive Officer, that includes remedial actions for the contaminated groundwater plume under the Site. Such plan should contain, but not be limited to: a. definition of the geology and aquifers at the site; b. an assessment of the location and types of potential vertical conduits, both on-Site and in the vicinity of the Site, especially monitoring wells on-site and on-Site and off-Site agricultural wells; and c. relevant information about the relationship of fault fracture zones on the movement of contaminated groundwater; d. placement of groundwater extraction trenches or other remedial alternatives.

d. The Discharger shall submit a report containing a Self-Monitoring Program for the Site.

1. TASK: DEVELOP A WORKPLAN FOR A SELF-MONITORING PROGRAM.

COMPLETION DATE: September 15, 1993. Submit a report, acceptable to the Executive Officer, that contains a workplan for a quarterly Self-Monitoring Program. Such plan should contain, but not be limited to: a. identification of wells to be sampled; b. sampling frequency; c. list of chemical analytes, water level, and conventional parameters (pH, temperature, turbidity); d. detection limits; e. QA/QC plan.

2. TASK: SELF-MONITORING REPORT.

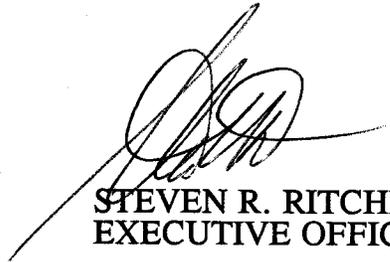
COMPLETION DATE: January 15, 1994. Submit a report, acceptable to the Executive Officer, that contains the results of the groundwater sampling at the Site. Such report should contain, but not be limited to: a. copies of signed chain-of-custody forms; b. laboratory QA/QC reports; c. chemical analytical, water level, and conventional parameter data; d. sample detection limits; e. contaminant isoconcentration maps. Future quarterly self-monitoring reports shall be submitted by the 15 of each month following the previous quarter.

2. In the Event that any work required to be performed or any document required to be prepared, pursuant to this Order is to be performed or prepared by a contractor of the Defense Logistics Agency (other than an agency of the federal government), such work shall be performed or document prepared by, or under the supervision of, a registered geologist in the State of California, a licensed professional engineer, or other licensed professional, appropriate to the type of work of document required.
3. If the Discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the Discharger shall promptly notify the Executive Officer and the reasons for such non-compliance shall be stated, plus an estimate of the date when the discharger will be in compliance.

4. The Discharger shall comply with the Self-Monitoring Program as will be adopted by the Board and as may be amended by the Executive Officer.
5. **POTENTIAL CONDUITS:** The Discharger shall properly abandon any of the Discharger's wells identified as potential conduits, pursuant to the Section C.1.b.1.e., for the migration of pollutants. A detailed workplan, which describes the proposed methods of abandonment, shall be submitted to the Board and the Contra Costa County Health Department for review and approval before any well is abandoned.
6. The Discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
7. The Discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
 - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the terms and conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the Discharger.
8. **RECLAMATION:** If groundwater extraction and treatment is considered as a final alternative, the feasibility of water reuse, and disposal to the sanitary sewer must be evaluated. Based on the Regional Board Resolution 88-160, the Discharger shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The Discharger shall not be found in violation of this Order if documented factors beyond the Discharger's control prevent the Discharger from attaining this goal, provided the Discharger has made a good faith effort to attain this goal. If reuse is part of a proposed alternative, an application for Waste Discharge Requirements may be required. If discharge to waters of the State is part of a proposed alternative, an NPDES permit application must be completed and submitted, and must include the evaluation of the feasibility of water reuse, and disposal to the sanitary sewer.
9. The Discharger shall file a report with the Board at least 30 days in advance of any changes in Site occupancy, operation and/or ownership.

10. All reimbursement for costs incurred by the Board staff in support of activities to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action required by this order for the Defense Fuel Supply Point Ozol Facility, will be obtained through the Cooperative Agreement between the State and the Department of Defense in accordance with the Defense and State Memorandum of Agreement (DSMOA) program.

I, Steven R. Ritchie, 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, San Francisco Bay Region, on October 20, 1993.



STEVEN R. RITCHIE
EXECUTIVE OFFICER

Attachments: Figure 1 - Location Map
 Figure 2 - Topographic Map
 Figure 1 - Cross Section

Figure 1. DFSP Ozol - Location Map

