

**STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
320 West 4th Street, Suite 200, Los Angeles, California 90013**

**FACT SHEET
WASTE DISCHARGE REQUIREMENTS
FOR
NAVAL BASE VENTURA COUNTY**

CALCIUM CHLORIDE AND RHODAMINE DYE INJECTION

**ORDER NO. R4-2002-0030 (SERIES NO. 057)
CI-8862, FILE# 94-073**

FACILITY ADDRESS

Naval Base Ventura County
Port Hueneme Facility
401 Patterson Road
Port Hueneme, CA 93043

FACILITY MAILING ADDRESS

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PROJECT DESCRIPTION

The address for the evaluation site is 401 Patterson Road, Port Hueneme, Latitude: N34.138°, Longitude: W-119.194°. (Figures 1, 2, 3, 4). Naval activities began at the Port Hueneme facility in 1940. A gas station, built in 1950, is located at the southeast corner of 23rd Avenue and Dodson Street, at the Port Hueneme facility. A plume of groundwater contaminated with dissolved fuel hydrocarbons, including benzene, toluene, ethylbenzene, xylenes, (BTEX) and methyl tertiary butyl ether (MTBE), was discovered beneath and downgradient from the gas station in 1985. The MTBE associated with this plume extends to the evaluation area. Detectable BTEX is present approximately 1,000 feet downgradient of the former gas station. Detectable MTBE is present approximately 5,600 feet downgradient (southwest) of the former gas station.

The U.S. Navy, is planning to evaluate innovative technologies for determining aquifer characteristics and groundwater flow. As part of the evaluation process, they will inject and track the tracers calcium chloride and Rhodamine dye. The evaluation will be conducted at an existing test plot located near 401 Patterson Road. The plot measures approximately 60 feet by 100 feet (Figure 3). The test plot was formerly used by the US Environmental Protection Agency to evaluate wellhead treatment technologies for groundwater contaminated with MTBE.

VOLUME AND DESCRIPTION OF INJECTION

The first phase of the evaluation involves the injection of approximately 190 liters of aqueous 275,000 milligram per liter (mg/L) calcium chloride (CaCl₂) solution. The CaCl₂ solution injection is expected to take slightly more than an hour. The aquifer geophysical properties will be temporarily altered by the CaCl₂. The movement of the CaCl₂ plume (and groundwater) will be tracked geophysically. The data collected will be evaluated to select locations for monitoring wells. Wells will be installed during phase 1. Aquifer property tests will be conducted with the wells during phase 1. Phase 1 is expected to last approximately 5 months. The second phase of the project will involve direct-push probe, aquifer data collection using peizocone and GeoVIS devices. Phase 2 will also include computer modeling of aquifer properties using the piezocone and GeoVIS data. Phase 2 is expected to last approximately 5 months. Phase 3 will include the injection of 2 liters of 200 mg/L Rhodamine dye into well W1 (Figure 3). Dye

injection is expected to take about 15 minutes. The movement of the dye will be tracked by monitoring the dye in groundwater samples collected from wells installed in phase 1 (W2 and W3), and one existing downgradient well (B4-4) (Figures 3 and 4). Phase 3 is expected to last approximately 3 to 6 months, and will result in a report comparing the aquifer properties determined from wells versus the aquifer properties determined from the piezocone and GeoVIS evaluation.

Details of the test procedures, methods, and evaluation plan are included in a document titled, *Permit Package for Project Review Board Tracer Test for Detailed Hydraulic Assessment ESTCP Project*, dated September 14, 2004. The Regional Board requested clarification of some points in the Work Plan in a letter dated November 4, 2004. A response was received from the Discharger on November 9, 2004.

The injections of calcium chloride and Rhodamine dye into the groundwater are discharges of waste as defined in Section 13260 of the California Water Code. However, the discharges are intended to provide useful information on technologies that will provide more efficient remediation of polluted groundwater and may reduce assessment and cleanup times and costs for the treatment of aquifers throughout the country.

The Water Quality Control Plan for the Los Angeles Region designates the groundwater in the Oxnard Plain Basin for beneficial uses including municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply.

The permitted discharge is consistent with the antidegradation provisions of State Water Resources Control Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may result in some localized exceedences of background concentrations of constituents such as calcium, chloride, and Rhodamine dye. But these exceedences are not anticipated to result in any long-term groundwater degradation.