

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OCTOBER 17, 2008

ITEM NUMBER: 7

SUBJECT: Recommended Case Closures

Recommended Case Closures

Site 33 – Missile Silo 576-E, Operated Unit 4, Vandenberg Air Force Base (VAFB), Santa Barbara County, [Kristina Seley 805/ 549-3121]

Central Coast Regional Water Quality Control Board (Central Coast Water Board) staff recommends closure of Site 33 at VAFB where trichloroethene (TCE) remains at 11 µg/L in one well. The Central Coast Water Board's Basin Plan contains a water quality objective for TCE in groundwater designated as MUN (municipal and domestic supply) of 5 micrograms per liter (µg/L) (i.e., the state drinking water maximum contaminant level (MCL)). All other waste constituents are below detection limits or their respective water quality objectives set forth in the Basin Plan. Based on supporting-groundwater, soil, and surface water data, as detailed below, this site is appropriate for closure with land use controls.

Site Description

Site 33 – Missile Silo 576-E (Site 33) is an active Taurus missile launch facility located on Spur Road of Northern VAFB, west of the airfield. The Site 33 historical infrastructure consists of a decommissioned, 182-foot-deep, 64-foot-diameter, cylindrical silo with an adjacent underground launch control center. The launch complex is surrounded by asphalt paving, and Site 33's fenced area encompasses approximately 4.1 acres.

The silo was originally constructed to launch Atlas F missiles, of which only four were launched between 1962 and 1964. The Atlas F missiles used "dry pad" technology for launches, meaning that deluge water was not generated as a result of the pre-launch, launch, or post-launch activities. Contaminants of concern that may have been released as a result of Atlas F missile launches are TCE from engine flushes, solvents from paint preparation, lead, zinc, and other metals abraded during sandblasting. Site 33 also had an underground diesel storage tank and an emergency rocket propellant fuel dump tank, both of which VAFB removed as part of the silo's decommissioning process in 1993 and 1994. During the Taurus missile platform construction in 1993, VAFB excavated and removed burned metal debris and approximately 40 tons of metal-contaminated soil from Site 33. This is the only active remediation that has been performed at Site 33; there has been no groundwater treatment and no additional soil remediation activities.

Site 33 is located on a wide erosional platform approximately 60 feet above sea level. Beneath Site 33, a thin groundwater zone is present in the unconsolidated dune sand deposits immediately above the shale bedrock, and depth to groundwater ranges from 20 to 40 feet below ground surface. Groundwater beneath Site 33 generally flows southwest towards the

ocean and is likely derived from local storm water infiltration through the dune sand. However, VAFB's monitoring well measurements show that the groundwater is not always laterally continuous outside of the Site 33 fence (i.e., since 2002, several wells are dry).

The Pacific Ocean is approximately 0.25 miles from Site 33. There are no permanent surface water bodies within the site's fenced area, and surface water runoff is limited to paved areas, due to the high permeability of the surrounding dune sands. Water for potable and industrial uses at VAFB, including Site 33, comes primarily from the State Water Project. The closest water supply wells are more than 3.3 miles to the south-southeast at the mouth of the Santa Ynez River, which is cross-gradient from Site 33.

Site Waste Characterization

VAFB has monitored eight wells at this site over the past 15 years, starting in 1993, and has monitored surface water seeps on the coastal bluffs for the past eight years, starting in 1999. Two downgradient monitoring wells (33-MW-3 and 33-MW-8) have had TCE detections in groundwater at concentrations above the MCL of 5 µg/L. No other wells or surface water seeps have had TCE detections above the MCL.

TCE concentrations in monitoring well 33-MW-3 have historically exceeded the MCL, with a maximum concentration of 55.6 µg/L, in 1993. Between 1993 and 2002 well 33-MW-3's TCE concentrations decreased to 15 µg/L. Since the end of 2002, TCE concentrations in this well have ranged between 4.1 and 11 µg/L. During the most recent sampling event, VAFB detected TCE in this well at 11 µg/L in February 2008.

Historic TCE concentrations in monitoring well 33-MW-8 rarely exceeded the MCL; VAFB detected TCE above the MCL only once, in 2000, at a concentration of 6.2 µg/L. The last TCE detection in this well was in spring quarter 2002, at a concentration of 2.6 µg/L. Since then, this monitoring well has been dry.

Consistent with TCE, VAFB has detected volatile organic compounds *cis*-1,2-dichloroethene (*cis*-DCE) and *trans*-1,2-dichloroethene (*trans*-DCE) in monitoring well 33-MW-3. These wastes have not been detected at any of the other seven monitoring locations. Both *cis*-DCE and *trans*-DCE were detected above their MCLs (6 and 10 µg/L respectively) in well 33-MW-3 from 1993 through summer of 2002. The maximum *cis*-DCE detection was 37 µg/L, and the maximum *trans*-DCE detection was 55 µg/L, both in spring quarter 2002. Since that time, the detected concentrations for both of these compounds have decreased to below their MCLs, with the exception of two *cis*-DCE detections, in summer and fall 2005, at concentrations of 8.6 and 6.1 µg/L, respectively. The most recent *cis*-DCE and *trans*-DCE analytical results from this well were 0.66 and 1 µg/L, in February 2008, both concentrations below the respective MCL.

In eight years of monitoring, VAFB detected TCE in only one water sample collected from surface seeps on the coastal bluffs, at an estimated concentration of 0.2 µg/L, less than five percent of the MCL. VAFB has not detected *trans*-DCE and *cis*-DCE in water samples collected from surface seeps on the coastal bluffs.

With the exception of naturally occurring arsenic, waste constituent soil concentrations are appropriate for unrestricted future land uses, based on comparisons of soil sample data to screening criteria. These comparisons used residential California human health screening levels, residential preliminary remediation goals, and the 95% & 99% VAFB background threshold value metal concentrations.

Recommendations for Closure

Central Coast Water Board staff recommends closure of Site 33 with land use controls based on the following:

1. VAFB has monitored eight wells for the past 15 years. Although historically several volatile organic compounds have been detected in two downgradient monitoring wells, only TCE remains above the drinking water MCL in well 33-MW-3. Additionally, the TCE in the vicinity of 33-MW-3 is limited in lateral extent, based on data from several nearby monitoring wells. Because of the residual waste around 33-MW-3, prior to site closure VAFB will document that land use controls are in place and document that site monitoring wells are properly destroyed.
2. Although 33-MW-3 is approximately 0.25 miles from the coastline, in 8 years of monitoring, TCE was only detected in one sample collected from seeps on the coastal bluffs, at an estimated concentration of 0.2 µg/L.
3. VAFB excavated surface soil impacted with metals in 1993 and 1994, and also removed the one underground diesel storage tank. Based on comparisons to risk-based criteria and background threshold values, metal waste constituents in site soils are consistent with unrestricted future land use, with the exception of naturally occurring arsenic.
4. Closure at this site is consistent with Section III.G. State Board Resolution No. 92-49, because the available information indicates that the levels of TCE are declining in a reasonable period of time and active remediation is not necessary to achieve concentration levels below the water quality objectives. In addition, in this case, cleanup levels less stringent than background water quality do not unreasonably affect present or anticipated beneficial uses of groundwater, and will not result in water quality less than prescribed by the Basin Plan.

Given the low TCE concentrations in one well, the limited lateral extent of the waste in groundwater, the low risk this site poses to surface water and supply wells, restricted access to the site (fenced and on an active military rocket launch site), and pending land use controls VAFB will put in place, this site is most appropriate for closure. This recommended case closure is also consistent with closure of similar low-risk solvent cases by the Central Coast Water Board in the past. Unless the Central Coast Water Board objects, the Executive Officer will issue a letter approving closure, with land use controls (i.e., no installation of water supply wells), and directing VAFB to destroy existing Site 33 monitoring wells. VAFB will then notify the public of case closure. If no comments are received in the 30-day public comment period, VAFB will generate a Record of Decision (ROD) in accordance with Comprehensive Environmental Response, Compensation, and Liability Act. The Executive Officer will issue a final case closure letter, upon confirmation that land use controls are in place, and receipt of a well destruction report documenting the proper destruction of all monitoring wells.

Beacon Station No. 657, 700 Lighthouse Avenue, Monterey, Monterey County
[Dr. Wei Liu 805/542-4648]

Central Coast Water Board staff recommends closure of this underground storage tank (UST) case where groundwater sample results indicate benzene remains in groundwater at a concentration of 2.2 micrograms per liter (µg/L) in one monitoring well. The water quality objective for benzene set forth in the Central Coast Water Board's Basin Plan is 1 µg/L. All other hydrocarbon constituents were below detection limits or their water quality objectives in the Basin Plan.

The site is located at 700 Lighthouse Avenue, Monterey, and has been used as a fuel service station since 1963. In 1994, Ultramar, the responsible party, removed three gasoline USTs (12,000, 10,000, and 4,000 gallons in capacity) and one 250-gallon waste oil UST. Soil samples collected from the tank excavations indicated maximum soil concentrations of 1,020 milligrams per kilograms (mg/kg) total petroleum hydrocarbons as gasoline (TPH-g) and 1.3 mg/kg benzene. Groundwater samples collected from the excavation during the UST removal detected up to 90,000 µg/L TPH-g and 16,000 µg/L benzene. Central Coast Water Board staff opened this case in 1994.

Approximately 865 cubic yards of petroleum hydrocarbon-impacted soil were excavated from beneath the UST during tank removal activities. In addition, an unknown volume of polluted groundwater was pumped and treated at an off-site facility. The responsible party's consultant subsequently installed four groundwater monitoring wells to characterize the extent of groundwater pollution and to monitor groundwater quality through time. Based on the monitoring results during the past year, waste constituents in soil and groundwater are confined to a small area within the property boundary. The most recent sampling data, collected in December 2007, indicate a maximum concentration of 2.2 µg/L benzene in MW-4. All other gasoline constituents have been below cleanup goals since November 2006.

The site lies within the Monterey Peninsula Subarea of the Salinas Hydrologic Unit. The "Water Quality Control Plan, Central Coast Region" (Basin Plan) designates this groundwater as having beneficial uses for domestic and municipal supply, agricultural supply, and industrial supply.

Groundwater beneath the site ranges from six to seven feet below ground surface. Monterey Bay is located approximately 1,000 feet northeast of the site. There are no water supply wells within a one-mile radius of the site. The groundwater flow direction around the site is primarily to the north-northeast. The benzene plume is not expected to impact Monterey Bay because of its distance, low residual concentration, and localized extent.

Staff's recommendation for closure is based on the following:

- 1) The source of the waste constituents has been removed,
- 2) The discharger removed the majority of the waste mass through excavation and dewatering during UST removal,
- 3) Groundwater monitoring during the past year confirmed that the residual benzene concentrations have declined to a level that is slightly above the water quality objective (from a maximum of 16,000 µg/L benzene in October 1994, to 2.2 µg/L in December 2007), and
- 4) Closure is consistent with Section III.G. State Board Resolution No. 92-49, because the available information indicates that the levels of benzene are declining in a reasonable period of time and active remediation is not necessary to achieve concentration levels below the water quality objectives. In addition, in this case, cleanup levels less stringent than background water quality do not unreasonably affect present or anticipated beneficial uses of groundwater, and will not result in water quality less than prescribed by the Basin Plan.

On July 7, 2008, Central Coast Water Board staff notified Ultramar, Inc., the current fee title holder, regarding the proposed case closure pursuant to Section 13307.1 of the Porter Cologne Water Quality Control Act and Section 25296.20 of the California Health and Safety Code. In addition, as part of our effort to increase public participation, we also notified the Monterey

County Health Department and landowners, businesses, and residents within 200 feet of site regarding the proposed case closure. We have not received any comments or objections to the proposed case closure.

The recommended case closure is consistent with closure of similar low-risk petroleum hydrocarbon cases by the Central Coast Water Board in the past. Unless the Central Coast Water Board objects, the Executive Officer will direct the Responsible Party to destroy monitoring wells. The Executive Officer will issue a final case closure letter upon receipt of a well destruction report documenting the proper destruction of all monitoring wells.