

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING FEBRUARY 9-10, 2006

Prepared January 09, 2006

ITEM NUMBER: 17

SUBJECT: **Underground Tank Program and MTBE Priority Sites**

DISCUSSION

New information is shown in italics.

This is a continuing report (every other Regional Board meeting) on the status of Central Coast Water Board MTBE sites.

Water Board staff members are working on numerous petroleum underground storage tank (UST) cleanup cases involving MTBE. Some high profile sites or "worst case" problems are discussed below. Also attached to this report is a list of sites with MTBE in groundwater that gives an overall perspective of the regionwide problem. Staff uses this report to answer questions from previous Regional Board meetings, and to provide the Regional Board with any new information pertaining to the UST program.

Attached is an updated Regionwide MTBE Listing and High Priority Sites table. The list shows site names and addresses as well as the priority listing (Rank A, B, or C) based on State Board MTBE guidelines. Staff has required accelerated cleanup at some higher priority Rank A sites. Interim cleanup action is required as soon as technically feasible until full-scale cleanup activity can begin.

MTBE cleanup goals are typically set at the secondary maximum contaminant level (MCL) for drinking water of 5 micrograms per liter ($\mu\text{g/L}$), which is a taste and odor threshold. The primary MCL, based on threat to public health, is 13 $\mu\text{g/L}$.

The Regionwide MTBE Listing and High Priority Sites list, included as Attachment 1, contains the latest information provided by Santa Barbara County as of January 11, 2006.

Beginning in late March 2002, Santa Barbara County obtained the ability to update information in the MTBE report by way of the statewide GeoTracker database system.

HIGH PRIORITY SITES STATUS

Chevron Service Station, 2194 Main Street, Cambria San Luis Obispo County [John Mijares 805/549-3696]

Chevron Cambria service station, located on the corner of Main Street and Burton Drive in Cambria, has been a Regional Board-lead groundwater investigation and cleanup case since December 1993.

Background:

In 1995 the underground storage tank (UST) system was removed and service station ownership/operation was transferred from Chevron Products Company (Chevron) to an independent owner/operator who installed a new UST system.

Chevron is cleaning up a petroleum hydrocarbon discharge from the original UST system, including the fuel additive methyl tertiary-butyl ether (MTBE). The discharge threatens groundwater in two Cambria Community Service District (CCSD) Wells, Nos. 1 and 3, which provide supplemental water to the Community of Cambria.

As part of interim corrective action beginning in May 2000, Chevron continuously pumped MTBE contaminated water from four onsite wells. Currently, there are 15 shallow groundwater extraction wells. Beginning in

November 2000, Chevron began full operation of a groundwater extraction and high vacuum dual phase extraction system. Both systems operated continuously, except for periodic system upgrade, mechanical breakdowns, and system maintenance activities. Extracted, treated groundwater is stored in an onsite 15,000-gallon tank until trucked offsite for disposal at the Santa Maria Wastewater Treatment Plant.

In February 2002, the Executive Officer enrolled Chevron in Waste Discharge Requirements Order No. 01-134, National Pollutant Discharge Elimination System (NPDES) No. CAG993002, General Permit for Discharges of Highly Treated Groundwater to Surface Waters (General Permit). In March 2002, the CCSD and the Cambria Legal Defense Fund filed an appeal with the State Water Resources Control Board (State Board) against Chevron's General Permit enrollment.

On March 5, 2004, CCSD served the Regional Board and Chevron with a dismissal without prejudice of the lawsuit regarding enrollment in the NPDES permit. CCSD also filed a petition with the State Board on similar issues (File No. SWRCB/OCC A-1462). That petition is still pending, although it is currently in abeyance at CCSD's request.

Alternative Water Supply Issues:

During the November 2001 technical work group meeting (with Regional Board staff, CCSD representatives, and Chevron representatives), the CCSD indicated the new temporary high school well was connected to the municipal drinking water supply. The CCSD's high school well is needed as an alternative water supply and the wellhead treatment system CCSD installed on their Santa Rosa Creek wells will enable its use in the event of an emergency.

On May 18, 2004, the Regional Board's Executive Officer rescinded Cleanup or Abatement Order (CAO) No. 00-28. The CAO required Chevron to provide CCSD with alternative water supply due to loss of CCSD's Well Nos. 1 and 3. The settlement agreement (\$8.4 M) of a civil lawsuit explicitly resolves

all of CCSD's claims against Chevron, including claims for an alternative water supply.

Since the Last Staff Report:

The third Quarter 2005 Groundwater Monitoring and Remediation Status Report indicates the following:

- The monitoring wells within the plume boundaries continue to exhibit MTBE concentrations exceeding the 5 micrograms per liter ($\mu\text{g/L}$); however, current concentrations have decreased significantly compared to historical maximum values. The current maximum MTBE concentration is 4,200 $\mu\text{g/L}$. The shallow-zone MTBE isoconcentration map is shown on Attachment 2.
- Monitoring wells historically known to be located beyond the plume boundaries continue to exhibit non-detectable concentrations of MTBE.
- Neither petroleum hydrocarbons nor fuel oxygenates were detected in any of the samples collected from Santa Rosa Creek (three sampling stations) and shallow groundwater samples from the northern bank of Santa Rosa Creek (three sampling stations) during this quarter. Sampling stations are located approximately upstream, adjacent to, and downstream of the identified lateral extent of the MTBE plume in groundwater.
- The high-vacuum dual phase extraction system operated intermittently from September 21 to October 31, 2005, due to the replacement of a motor starter on one blower and the replacement of a motor on another blower. The system was returned to full operational status on November 1, 2005, following system repairs.
- Approximately 191,000 gallons (compared to 340,000 gallons during the previous quarter) of groundwater were extracted, treated, and transported offsite during the third quarter of 2005.

California Water Service Company Supply Wells, Pajaro Street and Bridge Street, Salinas, Monterey County [John Goni 805/542-4628]

Water Board staff was notified by the Salinas water purveyor, California Water Service Company (CWSC), that two supply wells in the Salinas area showed detections of the fuel oxygenate methyl-tertiary-butyl-ether (MTBE). Water Board staff's review of known leaking underground tank cases near the wells indicated that there are no active cases involving high concentrations of MTBE in groundwater. Further investigation revealed a gasoline distributor (with 100,000 gallons of fuel product storage) close to the well, but a subsequent site investigation showed no evidence of a fuel release in underlying groundwater. Staff continued its investigation and directed other permitted underground tank facilities, without previously reported leaks, to perform groundwater investigations. These investigations did not find a release of MTBE of sufficient volume to account for the contaminant detected in the supply wells.

Surface water samples collected from the Salinas Reclamation Ditch by Water Board staff near the CWSC supply wells also did not detect concentrations of gasoline constituents or MTBE. As suggested by Water Board members, staff investigated a former packing plant near the CWSC supply wells. A joint investigation by the Monterey County Environmental Health Department (MCEHD) and Water Board staff concluded former packing houses in this area are not likely sources of the MTBE contamination because (1) of the small tank size, (2) the dates of tank closures are before the widespread use of MTBE, and (3) petroleum hydrocarbons were not found in soil beneath the removed tanks.

Water Board staff continued to coordinate the investigation with other agencies in search of the source of MTBE. A review of the State Water Resources Control Board's implementation of enhanced leak detection testing requirements for all underground tank facilities within 1000 feet of water supply wells did not identify any new potential sources of MTBE. The MCEHD agreed to

increase inspections at all nearby permitted underground and aboveground tank facilities to ensure compliance; no operational permit violations were found. The Monterey County Water Resources Agency performed additional groundwater analytical testing from nearby production wells, up- and cross-gradient of the CWSC wells, and did not detect any MTBE. CWSC information and Water Board staff inspections has also confirmed that gasoline has not been stored at the supply well locations. CWSC performed depth discrete sampling of Well Station 13-02 in December 2004. The sampling results indicate the shallower/180-foot aquifer contains the highest concentrations of MTBE.

In an effort to gain funding to expand the extent of the investigation to determine the source of MTBE, Water Board staff assisted the Monterey County Water Resources Agency in applying to the State Water Resources Control Board for Cleanup and Abatement Account money for well installations and additional groundwater sampling. State Board staff is currently holding the Cleanup and Abatement Account funding application in abeyance until all other sources of possible funding have been exhausted. The California Department of Health Services (DHS) has funds available from the Drinking Water Treatment and Research Fund, specifically for water purveyors to investigate drinking water sources impacted by MTBE. Water Board staff is now working with the CWSC staff to determine if they wish to apply for this source of DHS funding. State Board staff will re-evaluate the Cleanup and Abatement Account funding application if the DHS funding is not available to the CWSC.

Camp Evers Combined Site (Four Gasoline Service Stations) Mount Hermon Road at Scotts Valley Drive, Scotts Valley, Santa Cruz County [Wei Liu 805/ 542-4648]

Petroleum hydrocarbons and gasoline additives including BTEX, 1,2-DCA and MTBE have been detected in groundwater beneath and downgradient from four gasoline service stations located at the intersection of Mount Hermon Road and Scotts Valley Drive. The site, consisting of four service stations,

has been a Water Board lead groundwater investigation and cleanup case since 1989. Staff has been providing written status reports for this site since October 2001. This report provides updated information (in italics).

CORRECTIVE ACTIONS

The following site corrective actions are being performed:

- Tosco: Soil vapor extraction was discontinued in April 2005, due to low vapor influent concentrations. Air sparging is ongoing.
- Equiva: Soil vapor extraction is operated on an intermittent basis due to low vapor concentrations. Groundwater extraction system operation began in September 2000. Because the extraction well has been frequently dry, the system was converted to dual phase (vapor/groundwater) extraction in early 2001. The groundwater extraction system ended operations in 2002.
- BP: Two of the existing wells were included in the interim groundwater-pumping program. Since hydrocarbon removal rate became low due to reduced contaminant concentrations, pumping at the former BP site has been discontinued.

In addition, the supply water pumped from the Manana Woods well was treated with the existing air-striper and (a larger) carbon unit until October 2003. A new wellhead treatment facility with larger capacity to treat MTBE and benzene contamination was designed to replace the existing system and was installed in October 2003. The new wellhead treatment system was started on October 30, 2003, and has operated continuously since that time. The old treatment plan was taken off line on December 17, 2003.

In a joint effort, Tosco, Equiva, and BP Oil (Responsible Parties or RPs) submitted a workplan in October 2001 to delineate the MTBE plume extent in the downgradient area of the service stations and the Manana Woods

well, and selected a permanent remedial alternative to control and cleanup the downgradient plume. Staff concurred with the proposal.

Groundwater monitoring wells associated with the Camp Evers site and the treatment systems at Tosco and Equiva sites are monitored on a quarterly basis, and the wellhead treatment system is monitored on a weekly basis. MTBE concentrations have generally decreased in the source area (e.g., from the maximum of 86,000 to 200 µg/L in Equiva well, MW-4) as of the fourth quarter of 2002. In the downgradient plume area around CEMW-6 and newly installed well nests (CEMW-13 through CEMW-16), MTBE concentrations decreased first in mid-2000, and had increased (e.g., from 5,630 to 13,000 µg/L in cooperative well CEMW-6 as of the fourth quarter of 2002) before the downgradient plume remediation system began operation. However, MTBE concentrations in the downgradient plume area decreased significantly since operation of the downgradient plume remediation system began in November 2002 (see below).

DOWNGRADIENT PLUME DELINEATION AND CLEANUP

The RPs implemented the approved workplan, which included installation of seven groundwater monitoring well nests, a groundwater extraction well and a treatment system compound. Fieldwork was completed in October 2002. Initial sampling results showed most new wells containing non-detectable MTBE and benzene concentrations; one sample from well CEMW-19 detected MTBE at 8.8 µg/L and three samples from wells CEMW-17 and CEMW-21 contained benzene at concentrations ranging from 1.3 to 3.0 µg/L.

All new wells have been sampled since the first quarter 2003 monitoring event. MTBE was not detected in any of the new downgradient monitoring wells except the deep wells CEMW-19B and CEMW-17B. MTBE concentrations in CEMW-19B showed an increase from the initial 8.8 µg/L in September 2002, to a maximum of 220 µg/L in

March 2003, and reduced to 110 µg/L in July 2005. MTBE concentrations in CEMW-17B reached a high concentration of 2.3 µg/L in January 2004, and reduced to below the detection limit in October 2004, and July 2005. Trace MTBE (with the maximum concentration of 0.79 µg/L) was also detected in shallow well CEMW-20A during the sampling events between October 2003 and July 2005 when this well, which is sometimes dry, contained groundwater. Other fuel oxygenates were not detected in any of the new well clusters sampled during the Third Quarter 2005 monitoring event except TBA was detected in cooperative wells CEMW-6 (260 µg/L), CEMW-16 (1,100 µg/L), and CEMW-19B (33 µg/L); wells CEMW-6 and CEMW-16 are located upgradient of groundwater extraction well CEEW-1. Low levels of benzene (1.2 µg/L and 2.0 µg/L, compared to previous quarter concentrations of 2.2 µg/L and 2.1 µg/L) were detected in two new wells, which are located upgradient (CEMW-17B) or cross-gradient (CEMW-21B) from the Manana Woods Well, respectively. Based on the above results, it appears that the downgradient extent of petroleum hydrocarbon-impacted groundwater is defined by non-detectable or relatively low concentrations of chemicals of concern in the newly installed, downgradient well clusters, CEMW-17 through CEMW 23.

In October 2002 the Responsible Parties applied for coverage under Order No. 01-134, General NPDES Permit for discharge of highly treated groundwater from the downgradient plume remediation system to surface waters. The Executive Officer enrolled the RPs under the General Permit on November 7, 2002. The RPs started operation of their downgradient plume remediation treatment system in November 2002 and initiated continuous operation of the treatment system on December 12, 2002. Weekly monitoring of the discharge is performed.

From November 26, 2002, to September 21, 2005, the downgradient remediation system has removed approximately 16,600,000 gallons of water, 314 pounds (lbs) of TPH, 10 lbs of benzene, 65 lbs MTBE, and 22 lbs of TBA from the impacted downgradient area.

MTBE concentrations in the downgradient plume have shown significant decreases. For example, MTBE concentrations in wells CEMW-6 and CEMW-16 were reduced from 13,000 µg/L to 93 µg/L and from 3,500 µg/L to 14 µg/L from October 2002 to July 27, 2005, respectively. These results suggest that the downgradient remediation system is effective in removing petroleum hydrocarbons in the impacted area.

Quik Stop Market No. 78, 5505 Soquel Drive, Soquel, Santa Cruz County [Tom Sayles 805-542-4640]

Quik Stop Market No. 78 (Quik Stop) is an operating gasoline service station located on the corner of Soquel Drive and Hardin Way in Soquel. The site has been a Regional Board lead groundwater investigation and cleanup case since June 1999.

The approved corrective action plan consisting of a permanent dual-phase (soil vapor and groundwater) treatment system has been operating since July 5, 2002. The treated groundwater is discharged to the sanitary sewer under a County of Santa Cruz Permit (No. 00002829) and the Catalytic Oxidizer treatment system operates under a Monterey Bay Unified Pollution Control District air permit (No. 11054).

Three additional vapor extraction wells were installed in December 2003, in the vicinity of MW-3, to enhance cleanup system effectiveness. In addition, MW-3 was overdrilled and converted into a 4-inch diameter well to enhance groundwater extraction efficiency. The highest concentration of MTBE was 230,000 µg/L in monitoring well MW-4 (near the source area) on March 2, 2000, located near the source area.

Third Quarter 2005 groundwater samples were collected on September 9, 2005. A maximum concentration of 1,600 µg/L MTBE and 5,100 µg/L tert-butyl alcohol (TBA) were detected in onsite extraction well RW-3. A maximum concentration of 42 µg/L MTBE was detected in offsite monitoring well MW-6. The total petroleum hydrocarbon as gasoline

(TPH-g), benzene, and MTBE concentration contour maps show the highest concentrations to be near the fuel tank complex which is consistent with past quarters, and a comparison with past concentration contour maps show that the plume appears to be decreasing in size. Quik Stop continues to sample Nobel Creek on a monthly basis at four downgradient locations. MTBE was detected in Sample A at a concentration of 3.5 µg/L located near the storm culvert outfall. Creek Samples B, C, and E did not detect MTBE. TPH-G and BTEX were not detected in any of the creek samples collected on October 11, 2005.

Groundwater extraction pumps continue to operate in wells RW-2 and RW-3. As of November 8, 2005, approximately 558,000 gallons of water had been extracted since April 2001.

Los Osos Valley Garage, Former Bear Valley Chevron Service Station, 1099 Los Osos Valley Road, Los Osos, San Luis Obispo County, [Corey Walsh 805/542-4781]

Verification monitoring is scheduled to occur during the 1st and 4th quarters of 2006, and will be conducted using selected monitoring chambers identified in Revised Monitoring and Reporting Program No. 95-87 (revised in April 2005).

Site investigation and cleanup activities have been funded (reimbursed) through the State Water Resources Control Board UST Cleanup Fund (Fund). Projection of remaining UST Fund budget for the site indicate Fund monies will run out in 2007. Water Board staff are

investigating other possible cleanup funding sources.

Activities anticipated for Water Board staff during 2006 include:

- Review municipal water well monitoring results, and
- Review groundwater monitoring results for first quarter and fourth quarters 2006.

Southern California Water Company (Los Olivos No. 3) and the Los Osos Community Services District (10th Street) municipal water wells are located near the site. Los Olivos No. 3 continues to be sampled monthly, while sampling of the 10th Street well has been reduced to a quarterly monitoring frequency. Water production from each well continues to run at normal production rates. Monitoring results for the Los Olivos No. 3 well continue to be <0.5 µg/L for MTBE (last sampled December 7, 2005); MTBE has not been detected since June 2003. Sample results for the 10th Street well (last sampled October 3, 2005) continue to remain below detection limits (<0.2 µg/L) for MTBE and (<2.0 µg/L) for TBA. The DHS secondary maximum contaminant level for MTBE is 5 µg/L, and the DHS Notification Levels (formerly know as Action Level) for TBA is 12 µg/L.

ATTACHMENTS

1. Region wide MTBE Listing and High Priority Sites
2. MTBE Plume Map, Cambria Chevron

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