

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF MAY 8, 2009

Prepared April 9, 2009

ITEM NUMBER: 9

SUBJECT: Recommended Case Closures

Background:

This staff report provides summaries for cleanup sites that Central Coast Water Board staff has recommended for closure, although the groundwater beneath these sites has not attained water quality goals for one or more constituents. Staff's closure recommendations are premised on the knowledge that: 1) the remaining constituent concentrations are sufficiently low so as to not pose a threat to surrounding existing beneficial uses of the water (e.g., supply wells; surface waters, etc.); 2) the constituent sources have been removed; 3) monitoring has indicated that the groundwater plumes are contracting in size and concentration; and 4) continued monitoring at these sites would not provide additional benefit for the staff resources invested. Based on site-specific information provided below, these sites are appropriate for closure.

ARCO Service Station No. 6038, 12424 Los Osos Valley Road, San Luis Obispo, San Luis Obispo County [Corey Walsh 805-542-4781]

Central Coast Regional Water Quality Control Board (Central Coast Water Board) staff recommends closure of this underground storage tank (UST) case where groundwater sample results indicate methyl tertiary-butyl ether (MTBE) remain at concentrations slightly greater than Water Board cleanup goals. The *Water Quality Control Plan, Central Coast Region* (Basin Plan) designates groundwater beneficial uses beneath this site as domestic and municipal supply, agricultural supply, and industrial supply. Groundwater samples collected from one onsite and one offsite monitoring well exceed the Central Coast Water Board MTBE cleanup goal of 5 micrograms per liter ($\mu\text{g/L}$). During the most recent groundwater monitoring event, samples were collected from 21 groundwater monitoring wells screened in either shallow or deep water-bearing zones. The shallow water zone extends from approximately 1 to 25 feet below ground surface (bgs) and the deep water zone ranges between approximately 35 and 45 feet bgs. Analytical results indicate groundwater contaminant levels in shallow wells MW-4 and MW-21 are 20 $\mu\text{g/L}$ and 11 $\mu\text{g/L}$, respectively. Other common contaminants associated with gasoline and fuel oxygenates are below cleanup goals, or are below laboratory detection limits in groundwater. Attachment 1, *Shallow MTBE Isoconcentrations*, presents concentrations for samples collected on December 22, 2008. The groundwater monitoring data indicate that hydrocarbons continue to degrade naturally. Water Board staff believes that groundwater beneath the site will meet cleanup goals in the near future.

The site is an active retail gasoline service station and is located at the northwestern corner of the intersection of Los Osos Valley Road and Highway 101 in San Luis Obispo. Contractors discovered the release in November 1997 during renovation and station upgrade activities. The responsible party (ARCO) commissioned several phases of soil and groundwater investigation and remediation. During July 1998, approximately 56.5 tons of hydrocarbon impacted soil was removed from the site. ARCO applied various remedial strategies between 2000 to 2009 including: soil excavation, Iso-Gen™ technology/enhanced in-situ bioremediation (this method

uses electrolysis to generate dissolved oxygen in groundwater), High Vacuum Dual Phase Extraction (HVDPE) removed approximately 560,000 gallons of contaminated groundwater, Air Sparge (AS) and In-Situ Oxygen Curtain (iSOC™) remediation (in-situ bioremediation). The various remedial activities have removed more than 340 pounds of contaminant mass.

Currently, groundwater is first encountered between 1 to 12 feet below ground surface. Both the shallow and deep zones generally flow toward the south/southeast at an average gradient between 0.06 and 0.10 feet per foot. Prefumo Creek is located adjacent to the site and flows along the southern boundary of the property. ARCO collected surface water samples from Prefumo Creek at four locations and a storm drain discharge between March 1998 and July 2003. Surface water analyses showed MTBE at concentrations between 1.2 µg/L and 5.2 µg/L during three sampling events between December 2000 and June 2001. Subsequent surface water analyses did not detect MTBE at or above the reporting limit or method detection limit (<1.0 µg/L). The nearest water supply wells include four active water supply wells operated by the City of San Luis Obispo: Well No. 31S12E-3K1, (industrial supply) is located approximately 1 mile northeast of the site; the Laguna Lake Golf Course well (irrigation supply) is located approximately 1 mile northwest; the Fire Station No. 4 well (stand-by municipal supply) is located approximately 4,100 feet northwest; and the Pacific Beach #1 well (irrigation supply) is located approximately 2,800 ft. northwest of the site. In addition, the Toyota Dealership (John Frangie) operates a domestic multi-use well located approximately 900 ft. to the north. The Toyota well was sampled on May 14, 2008. Analytical results showed no petroleum hydrocarbon constituents of concern in groundwater samples. The City of San Luis Obispo maintains an inactive municipal well approximately 500 ft. to the northeast, and the inactive Hysen-Johnson Ford well is located approximately 1,800 ft. north. The residual petroleum hydrocarbons are unlikely to impact these wells or surface waters considering the area geology/hydrology, well distances, and low remaining contaminant concentrations.

Based on soil and groundwater investigations, verification monitoring, and groundwater cleanup results, this site does not pose a significant threat to groundwater resources. Central Coast Water Board staff's recommendation for case closure is based on the following:

1. The extent of soil and groundwater contamination has been adequately characterized, and will decrease with time through natural attenuation;
2. Monitoring data indicate the plume is contracting in size and declining in concentration. We expect the decline to continue and the site to meet groundwater cleanup goals within a reasonable period of time;
3. The source and majority of contaminant mass has been removed to the maximum extent practicable using various remedial actions including: soil excavation, enhanced in-situ bioremediation, dual-phase extraction and air-sparging;
4. Remaining hydrocarbon contamination is unlikely to reach drinking water supply wells or other sensitive receptors considering the low groundwater contaminant concentrations remaining; and
5. Closure is consistent with Section III.G. of State Water Board Resolution No. 92-49, allowing the consideration of cost effective abatement measures for a site where attainment of reasonable objectives less stringent than background water quality does not unreasonably affect present or anticipated beneficial uses of groundwater, and will not result in water quality less than that prescribed by the Basin Plan.

Central Coast Water Board staff notified the site property owner (ARCO), neighboring property owners, and other interested parties that the UST case was being considered for closure. We

have not received any comments to date. The City of San Luis Obispo, City Fire Department agrees with the proposed case closure.

Residual soil and groundwater contamination could pose an unacceptable risk under certain site development activities such as site grading, excavation, or de-watering. The Central Coast Water Board, San Luis Obispo City Fire Department, San Luis Obispo County Environmental Health Services, and the appropriate local planning and building departments must be notified prior to any changes in land use, grading activities, excavation, or dewatering. This notification should include a statement that residual soil and groundwater contamination may underlie the property and nearby properties. It should also include a description of the mitigation actions necessary (if any) to ensure that any possibly contaminated soils or groundwater brought to the surface by these activities are managed appropriately. Future site disturbance could require worker health and safety protection, and restrictions on the disposal of soil and groundwater. The levels of residual contamination and any associated risks are expected to reduce with time.

Unless the Water Board directs staff otherwise and pending destruction of monitoring and treatment wells, the Executive Officer will issue a case closure letter for this site pursuant to California Underground Storage Tank Regulations.

Attachment 1: Shallow MTBE Isoconcentrations Map

Chevron Service Station No. 9-3181, 6280 Morro Road, Atascadero, San Luis Obispo County; [Corey Walsh 805-542-4781]

Central Coast Water Board staff recommends closure of this UST case where soil and groundwater sample results indicate MTBE remains at concentrations greater than the Central Coast Water Board cleanup goal. Groundwater samples collected from several on-site monitoring wells continue to exceed the cleanup goal of 5 micrograms per liter ($\mu\text{g/L}$) MTBE. During the most recent sampling event MTBE was detected in monitoring wells MW-1, MW-2, MW-3, MW-6, MW-7, and MW-8 at concentrations of 12 $\mu\text{g/L}$, 14 $\mu\text{g/L}$, 40 $\mu\text{g/L}$, 26 $\mu\text{g/L}$, 14 $\mu\text{g/L}$, and 8 $\mu\text{g/L}$, respectively. Other common contaminants associated with gasoline, diesel, and fuel oxygenates have been analyzed and are below cleanup goals, or are below laboratory detection limits. Historic groundwater analytical results show the primary constituents of concern were total petroleum hydrocarbons reported as gasoline (TPH-g), benzene, and MTBE. The maximum concentrations for TPH-g, benzene, and MTBE were as follows: 8,100 $\mu\text{g/L}$, 1,200 $\mu\text{g/L}$, and 3,950 $\mu\text{g/L}$ respectively. Attachment 2, Groundwater Hydrocarbon Concentration Map, presents hydrocarbon concentrations in samples collected on December 3, 2008. The Basin Plan designates groundwater beneficial uses beneath this site as domestic and municipal supply, agricultural supply, and industrial supply.

The subject site was recently remodeled/upgraded and contains an active retail gasoline service station. The site is located at the southeast corner of the intersection of Morro Road (Highway 41) and Highway 101 in Atascadero. The leak investigation began in January 1989, with the removal of four USTs, and discovery of petroleum hydrocarbon impacted soil and groundwater. The contractor excavated impacted soil to the extent practical and disposed of this soil appropriately. The responsible party (Chevron Environmental Management Company) commissioned several phases of soil and groundwater investigation and evaluated or tested cleanup options. Contaminant concentrations have attenuated naturally to their current levels since the final excavation in 2006.

Water Board staff notified the site property owner (Atascadero Gas & Mart, Inc.), neighboring property owners, and other interested parties that the UST case was being considered for closure. We have not received any comments to date. The San Luis Obispo County Division of Environmental Health Services agrees with the proposed case closure.

Groundwater currently ranges in depth from approximately 5 to 24 feet (ft) below ground surface and generally flows to the north at an average gradient of 0.15 ft/ft. The nearest water supply wells are an irrigation well owned by Atascadero Unified School District located approximately 3,500 feet northwest of site, and Atascadero Mutual Water Company municipal wells located approximately 6,000 feet north of site. The nearest surface water body is Atascadero Creek, which is located approximately 700 ft northwest of site. The residual petroleum hydrocarbons are unlikely to affect these wells or surface waters considering the distances and low remaining contaminant concentrations.

Sample analysis also showed residual soil contamination at concentrations slightly greater than the Central Coast Water Board cleanup goal for MTBE. The soil cleanup goal for MTBE was exceeded in eight soil samples presented in the July 20, 2007 Soil Assessment Report. The samples were collected at depths ranging from 9.5 feet to 29.5 feet below ground surface (bgs) and showed concentrations ranging from 0.046 milligrams per kilogram (mg/kg) to 0.091 mg/kg. Generally the most conservative cleanup goal for MTBE in soil is 0.023 mg/kg and is based on environmental screening levels (ESL) for leaching of contaminants.

Our recommendation for closure is based on the following:

1. The extent of the release has been adequately characterized,
2. The soil contaminant source was removed from the site, to the extent practical,
3. The remaining constituent of concern is limited to MTBE,
4. The remaining soil pollution above the cleanup goal is limited in extent, and is only slightly above the cleanup goal for MTBE,
5. The groundwater plume has been adequately characterized and is declining in size and concentration,
6. MTBE concentrations in groundwater have been reduced from a maximum of 3,950 micrograms per liter ($\mu\text{g/L}$) to between non-detect and 40 $\mu\text{g/L}$,
7. The remaining groundwater pollution above MTBE cleanup goal is limited to onsite monitoring wells near the former USTs and dispensers,
8. Monitoring data indicate the petroleum hydrocarbon concentrations are expected to continue to decrease with time,
9. No drinking water supply wells are within one mile of the site, and remaining contamination is unlikely to reach water supply wells,
10. Because the existing land use in the vicinity is controlled by Highways 101 and 41, the property will likely remain as a gas station, with limited infiltration (the site is surrounded by impervious surfaces). Therefore, the groundwater conditions and uses will likely remain unchanged, allowing for natural attenuation to continue as predicted,
11. The current fee titleholders of the subject property and adjacent properties have been notified of the proposed case closure and have no objections to case closure, and
12. Closure is consistent with Section III.G. State Board Resolution No. 92-49, allowing consideration of cost effective abatement measures for a site where attainment of reasonable objectives less stringent than background water quality does not unreasonably affect present or anticipated beneficial uses of groundwater.

Residual soil and groundwater contamination still exists that could pose an unacceptable risk under certain site development activities such as site grading, excavation, or de-watering. The Central Coast Water Board, San Luis Obispo County Environmental Health Services, and the appropriate local planning and building departments must be notified prior to any changes in land use, grading activities, excavation, or dewatering. This notification should include a statement that residual soil and groundwater contamination underlie the property. The levels of residual contamination and any associated risks are expected to reduce with time. The site is in a commercialized area, is surrounded by parking lots and fronts on to a major thoroughfare. The site was recently remodeled and a change in land-use is unlikely in the foreseeable future.

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 Water Board directs staff otherwise and pending proper monitoring well destruction, the Executive Officer will issue a case closure letter pursuant to California Underground Storage Tank Regulations.

Attachment 2: Groundwater Hydrocarbon Concentration Map

Former Hydrex Pest Control Facility, 3028 De La Vina Street, Santa Barbara, Santa Barbara County [John Mijares, (805) 549-3696]

The Santa Barbara County Fire Prevention Division (FPD) staff recommends closure of this UST case. Groundwater sample results indicate benzene contamination remains at a concentration above the Central Coast Water Board cleanup goal of 1 microgram per liter ($\mu\text{g/L}$). Results of the December 2008 monitoring event show benzene at a concentration of 3.4 $\mu\text{g/L}$ in monitoring well MW-5 (see Attachment 3, site map for location). Benzene concentrations fluctuated in this well from 1.2 $\mu\text{g/L}$ to 3.4 $\mu\text{g/L}$ during the last year. Other petroleum hydrocarbon constituents were either below their respective reporting limits or were below their respective groundwater cleanup goals in MW-5 and the remaining six monitoring wells. Central Coast Water Board staff concurs with the FPD recommendation

The site was a former Hydrex Pest Control (Responsible Party) Facility that operated until 2004 and then was sold to Donn Roberts Construction (property owner). The site is approximately 6,000 square feet in area and houses an office building and a garage. An asphalt-paved driveway is located along the southern property boundary and provides access to a concrete-paved parking area in the eastern portion of the property.

In December 1991 Applied Environmental Technologies, Inc. supervised the removal of two USTs (one 1000-gallon gasoline UST and one 550-gallon kerosene UST) from the site. Analytical results of soil samples collected from the excavation pit indicated the presence of petroleum hydrocarbon impacted soil exceeding the FPD soil cleanup goals.

Between 1994 and 2006, the responsible party commissioned four phases of site assessment and characterization to determine the extent of soil and groundwater contamination. The responsible party initiated quarterly groundwater monitoring in November 2003.

During the first quarter of 2007, the responsible party's contractor excavated approximately 275 cubic yards of hydrocarbon-impacted soil from beneath the former UST and disposed of appropriately. Approximately 300 pounds of ORC Advanced™ (an oxidizing agent) were added to the excavation pit to enhance the bioremediation of residual hydrocarbons. The excavation was backfilled, compacted, and paved over with asphalt and concrete to match the existing surface.

Results of confirmation soil samples indicate the excavation had successfully removed the hydrocarbon-impacted soil at the source area.

The depth to groundwater varies from 2.5 feet to 20 feet below grade. The flow direction is generally to the southeast. Based on the December 2008 groundwater data, the flow gradient was 0.13 feet per foot. Mission Creek is located approximately 200 feet southeast of the site and a domestic well is located approximately 0.6 mile north-northwest (upgradient) of the site. The residual benzene plume is unlikely to impact the domestic well or Mission Creek because of the distance, low benzene concentration, and its limited extent. The site lies within the Santa Barbara Groundwater Basin. The Basin Plan designates groundwater beneficial uses beneath this site as domestic and municipal supply, agricultural supply, and industrial supply.

Central Coast Water Board staff and Santa Barbara County FPD staff recommend closure of this case based on the following:

1. The extent of residual benzene groundwater contamination is limited, fully delineated and have decreased from a high of 11 $\mu\text{g/L}$ to 3.4 $\mu\text{g/L}$;
2. The residual benzene plume is unlikely to reach Mission Creek or a local domestic well because of the distance, low concentration and limited extent of benzene;
3. Natural attenuation processes are expected to reduce the benzene concentration to below the 1 $\mu\text{g/L}$ groundwater cleanup goal in a reasonable amount of time; and
4. Case closure is consistent with State Board Resolution No. 92-49, Section III.G., which allows consideration of cost effective abatement measures where attainment of reasonable objectives, less stringent than background water quality, does not unreasonably affect present or anticipated beneficial uses of groundwater, and will not result in water quality less than that prescribed by the Basin Plan.

Water Board staff has evaluated the remaining benzene groundwater concentrations with respect to possible indoor air impacts. Comparison of this benzene groundwater concentration with corresponding environmental screening level for indoor air impacts indicate no significant threat to human health or the environment.

Residual soil and groundwater contamination could pose an unacceptable risk under certain site development activities such as site grading, excavation, or de-watering. The Central Coast Water Board, Santa Barbara County FPD, and the appropriate local planning and building departments must be notified prior to any changes in land use, grading activities, excavation, or dewatering. This notification should include a statement that residual soil and groundwater contamination may underlie the property and nearby properties. This notification should also include a description of the mitigation actions necessary (if any) to ensure that any possibly contaminated soils or groundwater brought to the surface by these activities are managed appropriately. Future site disturbance could require worker health and safety protection, and restrictions on the disposal of soil and groundwater. The levels of residual contamination and any associated risks are expected to reduce with time.

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 Water Board directs staff otherwise, the Executive Officer will issue a concurrence letter to Santa Barbara County Fire Department to proceed with case closure activities and destruction of monitoring wells.

Attachment 3: Well Location Map