

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING OF MAY 12-13, 2010

Prepared April 20, 2010

ITEM NUMBER: 15

SUBJECT: **Consideration of Closure for San Paso Truck and Auto,
81 Wellsona Road, Paso Robles**

THIS ACTION: Staff recommends against closure of this leaking Underground Storage Tank groundwater cleanup case

Summary:

A representative of the party responsible for the cleanup at this site requested that Central Coast Water Board staff recommend closing this case. After considering the available technical data for this site, staff determined that closure is not appropriate at this time. The responsible party's representative then requested an opportunity to seek closure of the case from the Central Coast Water Board. Water Board staff does not concur with the closure request and recommends against closing this case at this time in order to confirm soil and groundwater cleanup action effectiveness.

Discussion:

Site Details: The subject property is located in the Wellsona area of northern San Luis Obispo County, approximately 3.5 miles north of the City of Paso Robles (Figure 1), west of U.S. Highway 101. The Salinas River is located approximately 0.5 mile to the east. The subject property encompasses approximately 10 acres and is developed as a truck stop improved with a convenience store and a restaurant. Separate fuel dispenser islands for autos and trucks are located to the north and northwest, respectively, of the convenience store building. A water supply well is located near the western property boundary, south of the diesel above-ground storage tanks. The well currently provides water to the café at the site. February 2010 samples from this well show no detectable petroleum or petroleum byproducts. During the tenure of this case, this well has been sampled at least five times and has never had detectable petroleum hydrocarbons or their byproducts. This well is cross-gradient from the tank site. There are also a number of private supply wells within one mile of the site. Samples from July 2002 showed 1.4 micrograms per liter ($\mu\text{g/l}$) of benzene and 220 $\mu\text{g/l}$ of gasoline in a private supply well 600 feet northeast of the site. Samples from this and four other private wells (those within 1000 feet of the site) over the following year showed no detections of these or other constituents of concern.

Technicians first reported a leak of petroleum hydrocarbons during the upgrade of on-site underground storage tanks in 1989. Maximum concentrations of gasoline (TPHg), benzene and toluene in groundwater beneath the site were 820,000 $\mu\text{g/l}$, 17,000 $\mu\text{g/l}$ and 100,000 $\mu\text{g/l}$, respectively. The responsible party conducted a 48-hour, dual-phase extraction test in 2006 which removed 2,116 gallons of hydrocarbon-impacted water.

Recent Groundwater Remediation: Beginning on March 19, 2009, and with Water Board staff approval, consultants conducted six weekly hydrogen peroxide infiltration events at this

site. At that time, 15 gallons of hydrogen peroxide (10% solution) were gravity fed into three monitoring wells on the site.

In late July 2009, consultants began a second phase of six bi-weekly (every two weeks) hydrogen peroxide infiltration events. All eight monitoring wells associated with the site were used as treatment wells. The consultant staggered the treatments so that each well received six treatments over the course of 12 events. A total of approximately 75 gallons of 10% hydrogen peroxide solution were infiltrated into each of the eight monitoring wells. The second phase was completed in late October 2009. The consultant reported initial results from post-remediation sampling in November 2009.

While remedial treatment with hydrogen peroxide has been effective in many cases on the Central Coast, staff requires additional monitoring and/or verification sampling when monitoring wells are used for treatment delivery. Monitoring results at the point of treatment (within the wells) will not be representative of the surrounding groundwater until the groundwater has migrated both horizontally and vertically. Depending on groundwater flow velocity, a year of monitoring generally allows for sufficient migration and seasonal fluctuation of groundwater to determine treatment effectiveness.

The initial post-treatment data (results from samples taken directly after the final treatment event in October 2009) and data from the first quarter 2010 look promising, but we typically require a series of verification monitoring events upon completing any remedial action. Generally we require a minimum of one year (a seasonal rain cycle) of data to verify the effectiveness of the cleanup action. In addition, we often require confirmation soil sampling and additional site assessment depending on monitoring results.

Water Board staff has discussed this request for closure, and our recommendation to confirm treatment effectiveness prior to closure, with the responsible party on several occasions. Staff does not concur with the closure request. Hydrogen peroxide is a powerful oxidizing agent. For sites using hydrogen peroxide, we typically find low petroleum hydrocarbon concentrations in a monitoring well following recent treatment within that well. We also typically require an extended monitoring period to verify the long-term effectiveness of the treatment and to evaluate hydrocarbon concentrations in groundwater beyond the radius of treatment in the well.

The case is clearly moving towards closure and the current owners have been instrumental in that progress. However, it is staff's professional opinion that we cannot recommend closure without verification that remedial activities in both soil and groundwater have been effective.

State Water Board Technical Review: State Water Board Cleanup Fund (State Water Board) technical staff has conducted three reviews of this site over the past four years. We received the State Water Board reviews on September 7, 2007 (Attachment 1), December 3, 2008 (Attachment 2), and April 20, 2010 (Attachment 3). The recommendations from the three reports are summarized as follows:

2007 Recommendation: "Our reviews of groundwater data contained in the June 29, 2007 monitoring report, received via fax on 9/13/07 to this office, showed that TPHg and BTEX are the main petroleum constituents of concern. These constituents have been detected in all five monitoring wells. The highest levels of benzene and TPHg for the 2nd quarter 07 were detected at 510 ppb and 33,000 ppb in MW4. No oxygenates have been detected in any of the samples collected from the on site [sic] monitoring wells. It should be mentioned that historically one downgradient well has been impacted with benzene and TPHg at 1.4 ppb and 220 ppb, respectively.

Based on our reviews of the site groundwater data, the Fund recommends that Regional Board require owner to submit an acceptable corrective action plan to abate the impact of elevated petroleum constituents on soil and groundwater at the site. The owner must also be required to comply with the State Geotracker report uploading requirements.”

2008 Recommendation: “A review of the site [sic] most recent groundwater quality data indicate that the level of petroleum hydrocarbon contaminations especially in the diesel and gasoline ranges are still elevated in groundwater, and the site does not meet the low risk site closure criteria. It should be mentioned that since our last review of September 2007, other than monitoring no other corrective action measures have ever been conducted at the site.

Therefore, the Fund recommends that the Regional Board direct the RP with enforcement if necessary to implement appropriate corrective actions to expedite removal of contaminations from the subsurface.”

The State Water Board staff recommendations cited above, reflect groundwater and hydrocarbon conditions prior to the most recent peroxide treatment activities. As part of our closure evaluation, Central Coast Water Board staff requested an updated review of the case from the technical review team at the State Water Board. State Water Board staff responded with the following recommendations.

2010 Recommendation “Although many of the listed contaminant concentrations in this 3rd Review have been reduced to near or below laboratory detection levels, Fund Staff makes the following recommendations.

- Earlier groundwater monitoring reports listed the groundwater flow direction as southeast whereas later reports list the groundwater flow direction as westerly. Fund Staff recommends that downgradient monitoring well(s) be installed. This is important since there are no monitoring wells along the property lines to verify that the contaminant plume has been remediated and not just migrated out of the remediation area.
- The responsible party (RP) injected hydrogen peroxide into what would appear to be the up gradient location of the plume if the westerly groundwater flow direction is correct. As cited above, this does not prove that remedial technology is working only that contaminant concentration at the injection wells is being reduced. Depending upon groundwater flow direction, a well or series of wells may need to be installed to verify that the contaminant plume concentration has being reduced.
- Monitoring wells MW-6, MW-7, and MW-8 have not been surveyed as required by the state. Fund Staff recommends this be required of the RP. Providing this data will assist in evaluating plume direction.
- Boring logs for monitoring wells MW-6, MW-7, and MW-8 show a clay or sandy clay zone from 24 feet *below ground surface* (bgs) [sic] down to 35 feet bgs. Clay materials can retard the ability of oxidants to reach hydrocarbon contaminants that are entrained. Fund Staff recommends that a confirmation soil sampling event be conducted in order to determine the effectiveness of the oxidant application.”

State Water Board staff comments are consistent with our conclusions and we concur with the State Board staff recommendations.

Comments from the Responsible Party

A representative (Gerard Martorano) of the responsible party submitted written comments to the Public Forum at the Central Coast Water Board's March 18, 2010 meeting in Watsonville (Attachment 4). Central Coast Water Board staff responded to this comment letter with a letter dated March 17, 2010 (Attachment 5). Staff's March 17, 2010 response letter was also included as part of the public forum item at the March Water Board meeting.

The responsible party's consultant (Stantec) submitted an April 13, 2010 letter evaluating remedial progress (Attachments 6). Among other elements, this letter suggests that current measured dissolved oxygen levels in groundwater are reflective of pre-treatment concentrations, indicating that current hydrocarbon analytical results are representative of actual aquifer conditions. While we don't fully dispute this assertion, consistent with technical practice at other sites using hydrogen peroxide within this region, we would monitor this site for a minimum of four quarters to confirm remediation effectiveness.

Recommendation

Central Coast Water Board staff recommends against closure without verification that remedial activities in both soil and groundwater have been effective. This verification includes the following:

- 1) At a minimum depending on monitoring results, a year of post-remediation groundwater monitoring,
- 2) Establishment of down-gradient monitoring well(s) to verify that the contaminant plume has been remediated and,
- 3) Confirmation soil sampling.

All parcels in the immediate area of this site are entirely dependent on local groundwater for water supply. There is no other water source available now and Water Board staff understands that dependency will continue to be the case indefinitely. Consequently, it is imperative that not only existing wells are protected, but that groundwater and soil are sufficiently remediated to be suitable for future beneficial uses (drinking water).

Attachments

- Attachment 1: State Water Board September 2007 Case Review
- Attachment 2: State Water Board December 2008 Case Review
- Attachment 3: State Water Board April 2010 Case Review
- Attachment 4: March 2010 Letter from Gerard Martorano
- Attachment 5: March 17, 2010 Central Coast Water Board staff response to March 2010 letter
- Attachment 6: Stantec's April 13, 2010 Evaluation of Remedial Progress