STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER: WQ 98 - 09 - UST

In the Matter of the Petition of
WADDELL BROTHERS TRUST
for Review of Denial of
Petroleum Underground Storage Tank Site Closure
at
905 Calimesa Boulevard, Calimesa, California

BY THE BOARD:

Waddell Brothers Trust (petitioner) seeks review of the decision of the Riverside County Department of Environmental Health (County) not to close petitioner's case involving an unauthorized release from piping associated with petroleum underground storage tanks (USTs) located at 905 Calimesa Blvd., Calimesa, California. For the reasons set forth below, this order determines that petitioner's case should not be closed at this time.

I. STATUTORY, REGULATORY, AND FACTUAL BACKGROUND

Tank owners and operators who are eligible for reimbursement from the UST Cleanup Fund can petition the Fund Manager for a review of their case if they feel the corrective action plan for their site has been satisfactorily implemented, but closure has not been granted (Health and Saf. Code, § 25299.39.2, subd. (b)).[1]

Several statutory and regulatory provisions provide the State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST. (E.g., Health & Saf. Code, § 25299.37; Wat. Code, § 13304, subd. (a).) The

[1] To the extent that the SWRCB may lack authority to review this petition pursuant to the Health and Safety Code section 25299.39.2, subdivision (b) because the petitioner did not implement a corrective action plan for the site, the petition is being reviewed on the SWRCB's own motion pursuant to Health and Safety Code section 25297.1, subdivision (d) and SWRCB Resolution 88-23.

County has been designated as an agency to participate in the local oversight program for the abatement of, and oversight of the abatement of, unauthorized releases of hazardous substances from USTs. (Health & Saf. Code, § 25297.1.) The SWRCB has promulgated regulations specifying corrective action requirements for petroleum UST cases. (Cal. Code Regs., tit. 23, §§ 2720-2728.) The regulations define corrective action as "any activity necessary to investigate and analyze the effects of an unauthorized release, propose a cost-effective plan to adequately protect human health, safety and the environment and to restore or protect current and potential beneficial uses of water, and implement and evaluate the effectiveness of the activity(ies)." (Cal. Code Regs., tit. 23, § 2720.) Corrective action consists of one or more of the following phases: (1) preliminary site investigation, (2) soil and water investigation, (3) corrective action plan implementation, and (4) verification monitoring. (Cal. Code Regs, tit. 23, § 2722, subd. (a).)

The preliminary site assessment phase includes initial site investigation, initial abatement actions, initial site characterization and any interim remedial action. (Cal. Code Regs., tit. 23, § 2723, subd. (a).) Corrective action is complete at the conclusion of the preliminary site assessment phase, unless conditions warrant a soil and water investigation. A soil and water investigation is required if any of the following conditions exists: (1) There is evidence that surface water or ground water has been or may be affected by the unauthorized release; (2) Free product is found at the site where the unauthorized release occurred or in the surrounding area; (3) There is evidence that contaminated soils are or may be in contact with surface water or ground water; or (4) The regulatory agency requests an investigation, based on the actual or potential effects of contaminated soil or ground water on nearby surface water or ground water resources or based on the increased risk of fire or explosion. (Cal. Code Regs., tit. 23, § 2724.)

The purpose of a soil and water investigation is "to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup." (Cal. Code Regs., tit. 23, § 2725, subd. (a).)

The Water Quality Control Plan for the Santa Ana River Basin designates present and potential beneficial uses of the San Timoteo Groundwater Subbasin, which was the area of the release, as municipal and domestic supply (MUN), agricultural supply, industrial service supply, and industrial process water. (Santa Ana RWQCB and SWRCB. Water Quality

Control Plan for the Santa Ana River Basin (1995) at p. 3-26) The Basin Plan specifies a narrative taste and odor water quality objective as follows: "The groundwaters of the region shall not contain, as a result of controllable water quality factors, taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses." (*Id.* at p. 4-14.) The Basin Plan also contains the following narrative water quality objective for toxic substances: "All waters of the region shall be maintained free of all substances in concentrations which are toxic, or that produce detrimental physiological responses in human, plant, animal, or aquatic life." (*Ibid.*)

The following is a brief historical summary of petitioner's site at 905 Calimesa Boulevard in the city of Calimesa. Prior to September 1994, the site was an operating service station dispensing gasoline from two 5,000 gallon and one 3,000 gallon capacity USTs and diesel fuel from one 12,000 gallon capacity UST. Native soil beneath the site consists predominantly of interbedded clayey, silty and sandy sediments to a depth of approximately 210 feet, and sand and gravel from 210 feet to a depth of about 300 feet. The site overlies an important groundwater aquifer that provides the local municipal water supply. The depth to groundwater in the vicinity of the site varies seasonally from about 225 to 235 feet.

In June 1993, leak detection testing of the site's USTs and associated piping indicated that a leak may have occurred. While the record is not complete on the issue of the leak, it appears to have been in product lines between the USTs and the site's westerly dispenser island or at the dispenser. In December 1993, two borings were drilled near the UST complex and dispenser island to depths of 25 and 55 feet. Soil samples, collected at five foot intervals, contained concentrations of TPHg and benzene as high as 16,875 mg/kg and 26 mg/kg, respectively. In September 1994, four 90 foot deep soil borings were drilled at the site; soil samples at 10 foot intervals were collected from each boring and analyzed for gasoline constituents. Each of the borings encountered a stratum of "hard", "very stiff", and "very dense" silt and sandy silt at about 57 feet below grade and extending to the total depth explored (90 feet). Concentrations of TPHg and benzene detected in samples near the top of the stratum (i.e., about 60 feet) ranged from 0.2 to 13,000 mg/kg and 0.034 to 100 mg/kg, respectively. The samples from the 90 foot depth revealed TPHg and benzene concentrations ranging from <0.05 to 0.074 mg/kg and <0.003 to 0.011 mg/kg, respectively.

In February 1995, the USTs, dispensers and associated piping were removed. Samples of clayey soil at the bottom of the UST excavation had concentrations of TPHg and benzene ranging from 12 to 7,200 mg/kg and <0.01 to 300 mg/kg, respectively.

In September 1995, petitioner proposed to remediate affected site soil using soil vapor extraction (SVE) technology and in November 1995, three vapor extraction wells were installed to depths of 90 feet. During the drilling of the wells, soil samples were collected at 10 foot intervals and analyzed for gasoline constituents. Like the previous borings drilled in 1994, soil encountered in the 57 to 90 foot depth interval consisted primarily of silt and sandy silt and the analyses showed that TPHg and benzene concentrations decreased by three to four orders of magnitude in the 60 to 90 foot depth interval (1,500 to 9,900 mg/kg and 17 to 140 mg/kg , respectively, at 60 feet to 0.66 to 2.2 mg/kg and 0.003 to 0.11 mg/kg, respectively, at 90 feet). Preliminary testing of the wells indicated that SVE was a viable remedial option.

Prior to full installation of the proposed SVE system, petitioner sought preapproval of the associated costs from the UST Cleanup Fund manager. In March 1996, Fund staff informed petitioner that more information was needed prior to authorizing the expenditure of additional funds because available data suggested that only soil was impacted, that groundwater was not threatened or impacted, and that "no further action" may be a feasible corrective action option.

In April 1996, the South Mesa Water District collected a groundwater sample for MTBE analysis from its municipal supply well[2] located about 200 feet in the apparent down-gradient direction from the site. The results of the analysis indicated that MTBE was "non-detect" (1.0 µg/L detection limit).

By letter to the County dated September 3, 1996, petitioner requested that the site be closed on the basis that it was a "low-risk, soil only" case. By letter dated October 22, 1996, the County denied the request on the basis that "...contamination at the site is considered a source of continued contamination."

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[2] The well is 340 feet deep, screened from 278 to 340 feet, and has an annular seal extending from ground surface to 100 feet below grade. The depth to the groundwater measured in the well reportedly varies from about 225 to 235 feet. According to the South Mesa Water District, the well pumps at a rate of about 270-280 gallons per minute for a period of about 7-8 hours per day. The drawdown in the well during these periods of pumping is about 57 feet.

During February and March, 1997, staff from the Santa Ana RWQCB, the County, and the Fund debated the merits of site closure verses additional investigation and/or active site remediation. A consensus was reached that prior to initiating active remediation or closing the case, an additional boring would be drilled to provide a more complete delineation of the vertical extent of affected soil.

In a May 1997 letter to the Fund manager, petitioner requested that its site either be closed or that preapproval of corrective action costs be granted. The Fund staff subsequently preapproved funds to drill and sample one additional boring consistent with the consensus reached by the interested agencies.

In October 1997, the final boring was drilled to a depth of 90 feet. Soil samples, collected at five foot intervals, were analyzed for gasoline constituents and MTBE. The highest concentrations of constituents found at the site were at a depth of 35 feet bgs. These concentrations included benzene at 289 ppm, toluene at 986 ppm, ethylbenzene at 324 ppm, xylene at 1480 ppm, TPHg at 20,500 ppm, and MTBE at 112 ppm. The soil and analytical data developed from this boring corroborated the findings of previous work, i.e., concentrations of gasoline constituents decreased by three to four orders of magnitude in the 60 to 90 foot depth interval with TPHg and MTBE not detected below 80 feet. After review of the report documenting the work and consultation with Santa Ana RWQCB staff, the County informed petitioner in a letter dated January 13, 1998 that "...the site was not ready for closure due to elevated TPHg, BTEX and MTBE levels at the site."

In a letter to the SWRCB commenting on the SWRCB staff's recommendation to close the site, the Executive Officer of the Santa Ana RWQCB stated that a significant mass of residual petroleum is present at the site, the MTBE concentrations in soil are "one of the highest MTBE soil concentrations we have observed," preferential pathways for migration of soil contamination exist at the site and soil vapor extraction is a feasible and cost-effective remedial approach for the site.

II. CONTENTIONS AND FINDINGS

Contention: The petitioner contends that residual gasoline constituents in soil will not adversely affect current or future beneficial uses of underlying groundwater and that the site constitutes a "soil only" case and should be closed.

Findings: Petitioner correctly characterizes this site as a "soils only" case. However, other factors in the record, particularly the proximity of a municipal supply well only 200 feet downgradient from the site, support the conclusion that the site should not be closed at this time.

The detection and presumed repair of the piping leak in 1993 addressed the primary source of the release. Cessation of retail operations at the site in September 1994 and removal of the USTs, associated piping and dispensers in early 1995 further eliminated any possibility for additional releases at the site.

While the two soil borings drilled in 1993 demonstrated that affected soil was present to a depth of at least 55 feet, the total of eight borings drilled and sampled to depths of 90 feet in 1994, 1995, and 1997 indicate that (1) the composition and nature of the stratum encountered at a depth of about 57 feet effectively retards the downward migration of petroleum hydrocarbons and (2) residual petroleum hydrocarbon constituents, including MTBE, attenuate to or very near to non-detect concentrations at a depth of 90 feet. This is more than 100 feet above the underlying water bearing zone. Given the fact that the soil type below 90 feet and to a depth of about 210 feet is similar to the soil in the 60 to 90 foot depth interval, it is unlikely that detectable concentrations of petroleum hydrocarbons could impact groundwater at a depth of 230 feet. This conclusion is strengthened by the fact that in April 1996 (at least three years after the release had occurred) and again in August 1998, groundwater samples from the supply well located only 200 feet from the site indicated "non detect" MTBE, the most mobile and persistent constituent released at the site. In addition to "non-detect" MTBE, August 1998 water quality sampling results likewise indicated "non-detect" for all gasoline and chlorinated solvent constituents.

The construction and pumping characteristics of the water supply well indicate that it captures the deeper groundwater directly beneath petitioner's site. Given the fact that the capture zone underlies petitioner's site, any constituents escaping detection in the vadose zone

and somehow penetrating to the deeper water bearing zone should be readily detected in the pumping well. Thus, these recurrent "non-detect" analyses years after the leak source was eliminated indicate that hypothetical pathways extending through the vadose zone to groundwater probably do not exist at this particular site. Furthermore, these "non-detects" are consistent with the extensive quantitative soil analytical data which indicate that petroleum constituents have migrated less than 100 feet vertically, that the bulk of residual constituents are adsorbed to soil between the depths of 20-60 feet, and that cessation of the leak, source removal, and natural geologic factors altogether provide adequate protection of beneficial uses of deeper groundwater.

In spite of the above analysis, several factors lead to the denial of the request for closure of this site at this time. The close proximity of a domestic supply well to the area of the release and the possibility of vertical migration must be taken into consideration. Protection of a groundwater supply well for domestic use in an essentially desert area leads to the need for a cautious approach when considering closure of this site. This is especially true since MTBE, a relatively new pollutant of concern, is present at the site. In addition, no remediation has taken place and it appears that there are appropriate treatment methods that could greatly reduce the mass of residual petroleum at the site. Finally, both the County and the Santa Ana RWQCB have expressed significant concern about the remaining soil contamination and its threat to the beneficial uses of the underlying groundwater in the area. In light of the above factors, it would be premature to close the site at this time.

III. SUMMARY AND CONCLUSION

1. Corrective action should be taken to protect human health, safety, and the environment and to protect current and potential beneficial uses of water at this site.

2. The UST Cleanup Fund manager should work with the County to ensure that some reasonable amount of remediation takes place to reduce the remaining soil contamination at the site.

3. The case should not be closed until there is a greater degree of assurance that the remaining MTBE contamination at the site will not impact the nearby domestic supply well.

4. The above actions should be completed with all deliberate speed so that the petitioner's case may be closed as quickly as possible.

IV. ORDER

IT IS THEREFORE ORDERED that petitioner's request for closure of its case is denied.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 22, 1998.

AYE:	John Caffrey Marc Del Piero Mary Jane Forster John W. Brown
NO:	None
ABSENT:	None
ABSTAIN:	James M. Stubchaer

Maureen Marché
Administrative Assistant to the Board