

**STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD**

ORDER WQ 2011-0010-UST

In the Matter of the Petition of

KELLY GATE ASSOCIATES

For Review of Denial of Petroleum Underground Storage Tank Site Closure

At

27821 DUTCHER CREEK ROAD, CLOVERDALE, CALIFORNIA

BY THE BOARD:

Kelly Gate Associates (petitioner) seeks review of the North Coast Regional Water Quality Control Board's (North Coast Water Board or regional board) decision not to close its underground storage tank (UST) case at 27821 Dutcher Creek Road, Cloverdale, California. For the reasons set forth below, this Order determines that both petitioner's UST and non-UST cases should be closed and no further action related to the releases should be required.

I. STATUTORY AND REGULATORY BACKGROUND

Owners and operators of USTs and other responsible parties may petition the State Water Resources Control Board (State Water Board) 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 & Saf. Code, § 25296.40, subd. (a)(1).)¹

Several statutory and regulatory provisions provide the State Water Board, regional water quality control boards (regional water boards), and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST. (See, e.g., Health & Saf. Code, § 25296.10; Wat. Code, § 13304, subd. (a).) The State Water Board 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).

(*Id.*, § 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. (*Id.*, § 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 exist: 1) there is evidence that surface water or groundwater 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 groundwater; or 4) the regulatory agency requests an investigation based on the actual or potential effects of contaminated soil or groundwater on nearby surface water or groundwater resources or

¹ To the extent that the State Water Board may lack authority to review this petition under Health and Safety Code section 25296.40, subdivision (a)(1) because petitioner did not submit a corrective action plan for the site, the petition is being reviewed on the State Water Board's own motion pursuant to Health and Safety Code section 25296.10, subdivision (g) and Water Code section 13320, subdivision (a).

based on the increased risk of fire or explosion. (*Id.*, § 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.” (*Id.*, § 2725, subd. (a).)

State Water Board Resolution 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* (Resolution 92-49) also applies to petroleum UST cases. Resolution 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored. (Resolution 92-49, Section III.G.) Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial uses of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. (*Ibid.*)

Resolution 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable time frame. (Resolution 92-49, Section III. A.)

The North Coast Water Board’s Water Quality Control Plan (Basin Plan) designates existing and potential beneficial uses of groundwater in the Russian River Hydrologic Unit as municipal and domestic supply (MUN), agricultural supply (AGR), and industrial process supply (PROC). (North Coast Water Board and State Water Board, Water Quality Control Plan for the North Coast Region (1994) at p.2-6.00.) The Basin Plan specifies a narrative taste and odor water quality objective for groundwater with an MUN beneficial use designation as follows: “Groundwaters shall not contain taste- or odor-producing substances at concentrations which cause nuisance or adversely affect beneficial uses.” (*Id.* at p. 3-11.) The Basin Plan also contains the following narrative water quality objective for Chemical Constituents: “Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits cited in California

Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5) and listed in Table 3-2 of this Plan. Groundwaters used for agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use.” (*Id.* at p. 3-11.)

Cleanup actions related to petroleum discharges from non-UST sources are addressed in Water Code section 13304. Section 13304 covers actions a regional water board may take to cleanup the discharged waste or abate its effects and cleanup and abatement orders issued pursuant to section 13304 may be petitioned to the State Water Board. Section 13320 provides that an aggrieved person may petition the State Water Board within 30 days of any regional water board action or failure to act. Section 13320 also authorizes the State Water Board to review, on its own motion, certain actions or inactions of regional water boards. To the extent that the North Coast Water Board cites non-UST related discharges as the basis for denying site closure, the State Water Board is reviewing the regional board’s actions on the State Water Board’s own motion.²

II. FACTUAL BACKGROUND

A. Site Setting

Petitioner’s site is located at 27821 Dutcher Creek Road, near the city of Cloverdale. Land use in the immediate vicinity of the site is industrial, agricultural, and rural residential. The site is currently used for livestock grazing.

There are two aquifer systems at the site—shallow unconfined and perched groundwater in a thin deposit of alluvium, and groundwater under confined conditions in fracture zones in the underlying shale bedrock. The groundwater in the alluvium flows northeasterly and discharges to a

² State Water Board review on its own motion is warranted in this matter because our review of the UST case includes the analysis of any impacts from potential non-UST sources.

small ephemeral creek that is located adjacent to the property. Groundwater in the fracture zones is consumptively used³ and also discharges via subsurface outflow to the Russian River.

B. UST Case History

Between 1951 and about 1990, the approximately 22-acre site was used for forest-industry truck operations and equipment staging, maintenance, and fueling operations. Possible sources of soil contamination on the site were five USTs removed sometime prior to 1992, an unknown number of aboveground storage tanks (ASTs), waste sumps, surface spillage, truck wash down areas, and chip sealing.⁴

In 1992, with direction from the North Coast Water Board, areas that formerly contained USTs, ASTs, waste sumps, equipment washdown pads, chip seal areas, and stained surface soil were investigated. During 1992, 21 exploratory borings were advanced and over 90 soil samples were taken from the areas of concern, including the five former UST locations. Five groundwater wells were also constructed at the site to establish the groundwater flow regime. Based on the results from the investigation, about 18,000 cubic yards of affected soil were excavated and later bioremediated on site. Following soil excavation, soil samples were taken from the bottom and sidewalls of the excavations. Data indicated that of the 74 soil samples taken, eight⁵ showed detectable concentrations of petroleum constituents and none had detectable concentrations of benzene, toluene, ethylbenzene or xylene (BTEX). The area of highest remaining contamination was a sample taken at 14 feet depth located in the area of former USTs #3 and #4. This sample had total petroleum hydrocarbon (TPH) values of 610 parts per million (ppm) as gasoline, 3,800 ppm as motor oil, and 3,600 ppm as diesel.

³ An industrial well currently in use at the site pumps groundwater from the fracture zone.

⁴ Chip sealing generally consists of aggregate spread over a sprayed-on asphalt emulsion or "cut-back" asphalt. Based on the May 13, 1992 staff report, more than 10 acres of the site were identified as "cs" or chip sealing.

⁵ Of these eight samples, five were from non-UST areas of concern, e.g., sumps and surface areas.

An onsite industrial water well was also sampled. The well is currently used for livestock watering. According to reports, the well is 585 feet deep and is packed with gravel from a depth of 575 feet to the surface. The well drilling report also indicates that the well has a 20-foot sanitary seal. Results from a single sample collected in 1992 detected bis-2 ethylhexyl phthalate (DEHP), lead, zinc, oil, grease, and diesel range hydrocarbons. Two subsequent samples collected from the well in 1998 and 2007 had non-detectable concentrations of potential contaminants.

In 1993, the North Coast Water Board transferred oversight of the case to the Sonoma County Health Department Local Oversight Program (LOP) and the UST case was opened. In 1996 and 1997, groundwater from the five site wells was sampled and analyzed for TPH-gasoline (TPH-g), TPH-diesel (TPH-d), TPH-motor oil (TPH-mo) and BTEX. All samples had non-detectable concentrations of all constituents. In December 1997 and again in April 1999, petitioner requested that the LOP close the case. The LOP denied UST case closure. The county LOP transferred oversight to the North Coast Water Board in August 1999 due to concerns over possible contamination from the non-UST sources that had been present on the site.

In December 2004, petitioner sampled existing groundwater wells MW-1, MW-2 and MW-3. All well samples were non-detect for all constituents of concern.⁶ In June 2005, petitioner drilled 13 borings and collected 18 soil samples in areas of concern, including the five former UST locations, a former sump excavation, and Surface Area No.4. Seven groundwater samples were collected from borings drilled near the former UST locations and sump excavations. All soil and groundwater samples were non-detect for all constituents of concern.

Based on the investigation results, petitioner recommended that the North Coast Water Board evaluate the case for closure. In April 2007, the regional board concluded that further monitoring, investigation, and cleanup were required. In September 2007, petitioner formally requested that the North Coast Water Board close the case. On October 26, 2007, the regional

⁶ Constituents of concern are volatile organic compounds (VOCs) including fuel oxygenates and chlorinated phenols including PCP, TPH-g, TPH-d, TPH-mo. and BTEX.

board denied petitioner's request stating that the groundwater site investigation was inadequate. The regional board stated that the site "contained a number of past activities that may have caused releases of various chemicals in addition to petroleum hydrocarbons." The regional board alleged that in addition to the USTs the site reportedly contained sumps, surface discharge areas, washdown areas, and chip seal areas where illegal discharge of waste occurred.

The regional board's denial letter referenced two cases, case 1TSO474 referring to the UST portion of the case, and case 1NSO474 referring to the non-UST case that the regional board later opened at the site. The regional board noted that although petitioner's sampling in 2005 was completed in areas near UST excavations, the regional board recommended that petitioner install three monitoring wells for each UST excavation area and complete additional monitoring before it could evaluate the case for closure.

On November 29, 2007, the State Water Board received a petition requesting case closure of both case 1TSO474 and 1NSO474. The petition requested case closure pursuant to California Code of Regulations, title 23, section 2814.6.⁷ In response to the petition, the regional board cited possible discharges from non-UST sources as a basis for denying closure. On March 4, 2008, petitioner submitted an additional petition to the State Water Board alleging that the regional board had considered the site a "UST case only" for 16 years and only in April 2007 had begun referencing the site as a non-UST site as well. Petitioner alleged that the regional board was advancing new arguments and concerns and that the regional board had not previously advised the petitioner of the regional board's concerns with non-UST sources. In the March 4, 2008 petition, Petitioner specifically requested closure of both cases.⁸

⁷ This section only pertains to closure of UST cases.

⁸ Although Petitioner had referenced both cases in its November 2007 petition, the petition submitted in November 2007 did not explicitly reference the non-UST case for purposes of closure or no further action. The March 2008 petition did request closure of the non-UST case, however, that petition relied only upon Health and Safety Code section 25296.40 as authority for the petition and closure.

III. CONTENTIONS AND FINDINGS

A. Contentions

Petitioner contends that the effects of past UST releases at its site have been successfully mitigated and that current site conditions do not pose a threat to human health, safety, and the environment. Petitioner further contends that the requirements for site cleanup set out by Resolution 92-49 have been satisfied.

The North Coast Water Board contends that insufficient groundwater sampling has been completed and potential sources of soil and groundwater contamination unrelated to the former USTs may be present requiring additional investigation. The regional board maintains that under California Code of Regulations, title 23, section 2724, additional soil and/or water investigation is necessary because: 1) there is evidence that surface water or groundwater has been or may be affected by the unauthorized releases; and 2) there is evidence that contaminated soils are, or may be in contact with surface water or groundwater.

B. Findings

Petitioner's contentions have merit. Soil and groundwater at the site have been sufficiently characterized to show that the effect of releases of petroleum hydrocarbons from the former USTs do not pose a threat to public health, safety, and the environment. Following the onsite excavation and remediation that began in 1992, 92 soil samples from 39 site characterization borings have been analyzed. Only eight soil samples have had detectable concentrations of constituents of concern. Constituents of concern have never been detected in the five groundwater wells (MW-1 – MW-5). In addition, no constituents of concern were detected in the seven temporary wells that were drilled near former excavation areas in 2005.

The data show that petroleum hydrocarbons from the UST release that remain in limited areas at the site are highly susceptible to being adsorbed and exhibit very low volatility and solubility.

The preliminary site investigation and initial remedial actions undertaken by petitioner have mitigated any threat to public health, safety or the environment. Further, cleanup activities are consistent with the requirements of Resolution 92-49. So long as permanent cleanup goals are achieved, Resolution 92-49 allows regional water boards and a responsible party to tailor cleanup approaches to address site-specific circumstances. Resolution 92-49 does not require a discharger to engage in further cleanup and abatement activities if it is determined that a discharger's cleanup proposal and implementation of the proposal will meet cleanup goals and objectives that implement water quality control plans for the affected site within a reasonable time frame. (See Resolution 92-49, section III.A.)

Additional investigation and cleanup of soil and groundwater associated with the former USTs is not warranted in this case. Eighteen thousand cubic yards of soil were excavated and remediated beginning in 1992. The residual petroleum hydrocarbons that remain in limited localized areas do not pose a threat to human health, safety, or the environment and will not adversely affect the beneficial use of groundwater in the area.

With respect to case 1NSO474, if the North Coast Water Board was concerned about potential discharges unrelated to the former USTs, the regional board could have requested further investigation pursuant to Water Code section 13267.⁹ Instead, when the petitioner requested site closure, the regional board opened a new case for alleged non-UST releases. The data, however, do not support the regional board's contentions and based on the evidence submitted to the State Water Board, further investigation of non-UST releases is not warranted.

⁹ Section 13267 authorizes a regional water board to require technical or monitoring program reports from any person who has discharged , or is suspected of having discharged, waste into waters of the state.

C. Discussion

There Is No Evidence that Past Petroleum UST Releases Present a Threat to Human Health, Safety, or the Environment

The North Coast Water Board justified its denial of petitioner's request for site closure on the basis that soils impacted by unauthorized releases have been in contact with groundwater and insufficient data exist to show that there is not a current potential impact to groundwater.

The record shows that following petitioner's excavation and remediation activities, diesel-range, motor oil-range, and gasoline-range hydrocarbons remained in the soil in limited and localized areas. Subsequent to soil excavation and remediation, gasoline-range hydrocarbon concentrations have ranged from non-detect to 610 ppm; diesel-range hydrocarbon concentrations have ranged from non-detect to 3,600 ppm; and motor oil-range hydrocarbon concentrations have ranged from non-detect to 3,800 ppm. BTEX concentrations have been below laboratory reporting limits.¹⁰

Data collected since 1992 indicate that any residual petroleum hydrocarbon contamination still present is localized. All groundwater samples collected since 1992 indicate that shallow groundwater, including groundwater in close proximity to UST excavation areas, has not been affected by past UST releases or other discharges. In June 2005, seven groundwater samples were collected from within five to ten feet of areas where detectable concentrations of petroleum hydrocarbons remained in soil after the 1992 excavation. All seven samples were non-detect for petroleum hydrocarbon constituents, including a sample near the excavation area of USTs #3 and #4 where a soil sample collected in 1992 had the highest reported gasoline, diesel, and motor oil concentrations.¹¹ In addition, the five groundwater wells (MW-1 – MW-5) that have been in operation since 1992 and located downgradient from sources of contamination have tested non-

¹⁰ Samples collected during the initial site investigation in early 1992 detected low concentrations of BTEX (typically <0.05 ppm).

¹¹ As previously mentioned, this sample had TPH-g values of 610 ppm, TPH-mo of 3,800 ppm, and TPH-d values of 3,600 ppm.

detect for all constituents of concern since 1992.¹² These data show that any petroleum hydrocarbons remaining in soil exhibit very low volatility and solubility.

The North Coast Water Board contends that groundwater investigations have been incomplete and contamination is possibly more significant than petitioner claims. The regional board cites analysis of a water sample collected from the on-site industrial well that is currently used for livestock watering as evidence that groundwater has been affected by releases at the site.

The sample the regional board relies on was collected from the well in 1992. The sample had detectable concentrations of DEHP, lead, zinc, oil, grease and diesel-range hydrocarbons. The regional board claims this sample is evidence that continued monitoring is necessary to determine the possible extent of contamination at the site. There is substantial evidence, however, that the sample collected in 1992 was unreliable due to improper sampling methods.

Reportedly, the sample was collected without first purging the well. Therefore, the detection of DEHP, zinc, and lead is likely a result of leaching from the well pump and plumbing system components. The well contained galvanized steel pipe which could reasonably explain the lead and zinc detected in the 1992 sample. Similarly, DEHP is a component in plastic piping and the detectable concentration of DEHP may have come from plastic piping present in the well. In June 1996, petitioner discovered that the well pump was leaking oil and replaced it. The damaged pump could explain the detection of oil and grease-range hydrocarbons in the sample.

Because proper sampling procedures were not employed when the well was sampled in 1992, and there are plausible explanations for the detection of contaminants in the sample, the single sample collected almost twenty years ago cannot reasonably be relied on as evidence that groundwater has been contaminated from an unauthorized release from an underground storage tank. Importantly, constituents of concern were not detected during sampling events in 1998 and 2007.

¹² Petitioner reports that groundwater well MW-5 was destroyed in 1997 due to necessary grading activities.

The North Coast Water Board seems primarily concerned with non-UST related releases at the site—as evidenced by the regional board's response to petitioner's request for case closure. Referring to the 2007 sample taken from the industrial well, the regional board claims, "if groundwater samples were collected with a high flow discharge rate... it would not be surprising that the analytical results did not detect the presence of VOCs and SVOCs. Standing alone, the North Coast Water Board's hypothesis may have merit. The 2007 sample does not conclusively resolve the absence of the DEPH and diesel range hydrocarbons; however, the 2007 sampling event does resolve the absence of zinc, lead, and motor oil and was preceded by an additional groundwater sampling event that failed to detect constituents of concern.

With respect to the most recent groundwater data collected in 2004 and 2005, the North Coast Water Board asserts that groundwater samples were not representative because samples were not collected from the bottom of the aquifer. The regional board asserts that groundwater samples must be collected deep enough to detect solvents, because unlike petroleum hydrocarbons, solvents will typically sink to the bottom of an aquifer. There are two aquifer systems on site, a shallow alluvial aquifer and deeper aquifer. It is unclear which aquifer the regional board is referring to, but in either case, it is not necessary to collect a sample from the bottom of the aquifer to determine whether the release of a chlorinated solvent has occurred. Following a surface or subsurface release, residual solvent will remain in pore spaces as it flows vertically through a soil column leaving evidence of its passing. Thus, residual solvent will affect groundwater at and near the water table, and all the way to the bottom of the aquifer. When sampled in June 2005, groundwater from the alluvial aquifer, as well as soil samples taken in the vicinity of alleged discharges, had non-detectable concentrations of chlorinated solvents

In summary, the single sample collected in 1992 from the onsite well does not support the North Coast Water Board's assertion that additional monitoring is necessary to determine whether surface or groundwater has been, or may be, affected by an unauthorized release from an underground storage tank, or discharge from a non-UST source. As reflected in soil and

groundwater samples taken in 2004 and 2005, there is no evidence that the residual petroleum hydrocarbons that were detected following excavation and remedial activities, and are likely still present in localized areas, have migrated beyond a limited spatial extent.

Petitioner excavated and remediated 18,000 cubic yards of soil after a site investigation determined that contamination was present in localized areas. Excavating additional soil to further reduce concentrations of TPH-g, TPH-d and TPH-mo is possible, but would result in minimal benefit—particularly in light of the fact that groundwater samples have always been non-detect for petroleum hydrocarbon constituents. Further, it is highly unlikely that the shallow alluvial groundwater will ever be utilized in areas where residual soil contamination remains. The groundwater storage capacity of the alluvium is insufficient to sustain a yield of 200 gallons per day,¹³ and well construction standards require a 20- to 50-foot sanitary seal that would preclude groundwater in the alluvium from entering any well constructed at the site.

The threat to human health, safety, and the environment caused by the release of petroleum hydrocarbons from UST operations or possible discharges from non-UST sources has been adequately addressed through petitioner's initial site investigation, remedial actions, and subsequent monitoring activities.

The Level of Site Cleanup is Consistent with Resolution 92-49

Resolution 92-49 does not necessarily require additional monitoring or cleanup and abatement activities if the State Water Board or a regional water board finds that the proposal submitted by the discharger has a substantial likelihood of achieving compliance with cleanup goals and objectives. Resolution 92-49, section III. A. states that a regional water board shall:

[c]oncur with any investigative and cleanup and abatement proposal . . . which . . . ha[s] a substantial likelihood to achieve compliance, within a reasonable time frame, with cleanup goals and objectives that implement the applicable [basin plans and state policies], and which implement permanent cleanup and abatement solutions which do not require ongoing maintenance, wherever feasible.

¹³ State Water Board Resolution 88-63 which considers all surface and ground waters to be suitable for domestic or municipal water supply makes an exception where the water source does not supply sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

In this case, petitioner completed a remediation plan that was a permanent cleanup and abatement solution. Confirmation samples collected immediately following the excavation and remediation, and samples taken 13 years later, have confirmed that the site does not require ongoing maintenance.

The North Coast Water Board claims that although samples have been non-detect for constituents of concern, further investigation is necessary for such a large site to confirm that historical activities do not pose a threat to groundwater. The degree of detail and accuracy required of a site investigation varies according to a site's hydrogeologic setting and waste type. Because the hydrogeology at this site is not complex or unusual, it requires less data than a complex site would. The site was adequately investigated. Following excavation and soil remediation activities, 74 confirmation samples were analyzed and in 1992 only eight of 74 samples had detectable concentrations of petroleum constituents. Also significant, the most recent sampling event completed in 2004 and 2005 took place in areas with the highest reported levels of petroleum constituents and all soil samples collected in 2004 and 2005 had non-detectable concentrations of petroleum constituents.

In addition, groundwater samples have never had detectable concentrations of petroleum hydrocarbons or other constituents of concern. Monitoring wells MW-2, MW-3, and MW-5 are located, respectively, about 45, 175, and 100 feet downgradient of UST areas that were excavated in 1992, or in the case of MW-4, less than 50 feet downgradient of an area with soil contamination that was not excavated.¹⁴ Groundwater samples from these wells have consistently been non-detect for petroleum hydrocarbons.¹⁵ In addition, the shallow groundwater sampling that occurred in June 2005 at seven locations near former excavation areas indicate that groundwater in close proximity to former USTs has not been affected by past releases from petroleum USTs or discharges from other sources.

Consistent with Resolution 92-49, petitioner completed large-scale, on-site remediation. In areas of soil contamination, petitioner removed about 18,000 cubic yards of impacted soils and

¹⁴ As noted earlier, MW-5 was destroyed in 1997. MW-4 was not tested in 2004-2005.

¹⁵ MW-2 and MW-3 also had non-detectable levels of solvents in 2004.

remediated the soils onsite. Since 1992, all groundwater samples collected have been non-detect for petroleum hydrocarbons, BTEX, and other constituents, supporting petitioner's argument that the on-site excavation and remediation of affected soils was a permanent cleanup solution.¹⁶

Nevertheless, the North Coast Water Board claims the petitioner has not satisfied the soil investigation requirements in the State Water Board's corrective action regulations for unauthorized releases from USTs.¹⁷ Specifically, the North Coast Water Board finds fault with petitioner's compliance with subdivision (3) in California Code of Regulations, title 23, section 2724. Subdivision (3) provides that if soil contamination is in contact with groundwater, a responsible party must complete a soil and water investigation and submit a corrective action plan.

While in most instances a soil and water investigation will be necessary, this petition presents some unusual facts. Here, nearly 20 years ago substantial soil removal occurred. Since that time, groundwater samples have been non-detect for constituents of concern. Recent data indicate that initial corrective action effected a permanent cleanup solution that complies with applicable cleanup goals and Basin Plan objectives. Section 2724 of our regulations should not be read to require further soil and water investigation, or submission of a corrective action plan, if after preliminary investigation and cleanup it is determined that the proposal will achieve compliance with cleanup goals and objectives.

Resolution 92-49 allows for a staged approach to the cleanup and abatement of unauthorized releases. If further stages of cleanup and/or investigation are necessary after a discharger's proposal has been implemented, additional corrective action consistent with Resolution 92-49 section III. F can be required.¹⁸ But there is no reason to require further cleanup activities or investigation if the State Water Board determines that the discharger's initial investigation and cleanup proposal will "have a substantial likelihood to achieve compliance, within a reasonable time

¹⁶ The North Coast Water Board asserts that the reporting detection limits for groundwater samples collected in 2004 and 2005 were above the values set for water quality objectives. The data show that reporting detection limits were at or below Basin Plan objectives.

¹⁷ Cal. Code Regs., tit. 23, §§ 2720-2728.

¹⁸ Resolution 92-49, section III. F lists actions the State Water Board or a regional water board may require to ensure the cleanup and abatement of an unauthorized release.

frame, with cleanup goals and objectives that implement the applicable Water Quality Control Plans and... which implement permanent cleanup and abatement solutions which do not require ongoing maintenance..." (Resolution 92-49 section III. A.)

Further investigation is not necessary because petitioner's remediation plan was a permanent cleanup and abatement solution. This interpretation is consistent with Resolution 92-49 section III. E. In section III. E., the State Water Board acknowledges that in certain circumstances, bioremediation is an acceptable cleanup and abatement measure. Thus, if a bioremediation proposal is approved after an initial site investigation, soil contamination may be left in place and the cleanup may still be complete and permanent. Although additional reports and sampling data could be obtained, the cost and burden of doing so should bear a reasonable relationship to the need for the reports and the benefits to be obtained. (See Resolution 92-49 section III.B.) Without any evidence to show that subsurface contamination from the former petroleum USTs, or from other possible sources has adversely affected groundwater, it is not necessary for petitioner to conduct further sampling on the site to ensure that beneficial uses are protected.

Closure of the site will not unreasonably affect present and anticipated beneficial use of water. There are no plans to use the shallow aquifer as a drinking water supply, and well construction standards preclude the use of shallow groundwater. In addition, soil and groundwater data indicate that any residual soil contamination has not migrated beyond a limited area. While it is impossible to determine the precise, immediate level of water quality that will be attained given the probable residual petroleum constituents that remain at the site, approval of an alternate level of quality for this isolated area is consistent with the maximum benefit to the people of the state.¹⁹

¹⁹ In approving an alternative level of water quality less stringent than background, the State Water Board has also considered the factors in California Code of Regulations, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effects on the shallow groundwater will be minimal and localized and there will be no adverse effects on groundwater in the deeper aquifer given the physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; and the quantity of the groundwater and direction of the groundwater flow. In addition, the potential for adverse effects on current and potential future beneficial uses of groundwater is low given that the current well on site has tested non-detect for contaminants in the two most recent sampling events; considering the current and potential future uses of groundwater in the area and the existing quality of groundwater; the potential for health risks caused by human exposure; the potential damage to wildlife, crops, vegetation, and physical structures; and the persistence and permanence of potential effects.

Water Quality Will Meet Objectives Within a Reasonable Time Frame

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate is the determination that the alternate level of water quality will not result in water quality less than that prescribed in the relevant basin plan. Pursuant to Resolution 92-49, a site may be closed if basin plan requirements will be met within a reasonable time frame. (Resolution 92-49, section III.A.) The determination as to what constitutes a reasonable time frame must be based on an evaluation of all relevant factors including: site specific conditions, the extent and gravity of any threat to public health and the environment during the period required to meet basin plan objectives, and the probability that the affected water will be used during the period of impairment.

Although groundwater samples have never had detectable concentrations of petroleum constituents, the remaining residual diesel- and gasoline-range hydrocarbons adsorbed to soil will likely result in dissolved-phase concentrations above Basin Plan objectives for municipal and domestic supply use (100 ppb and 5ppb, respectively). Transient groundwater flowing through the pore space of the small, localized volume of soil that contains sorbed-phase diesel- and gasoline-range hydrocarbons will likely possess dissolved-phase concentrations of diesel- and gasoline-range hydrocarbons in excess of water quality objectives for decades or more.

Based on site data, there is no measurable dissolved-phase hydrocarbon plume however, and such a limited, isolated scenario will not unreasonably affect existing or anticipated beneficial uses or create a threat to public health or the environment. Beyond the immediate vicinity of the affected soil, dissolved-phase concentrations of diesel- and gasoline-range hydrocarbons do not and will not exceed water quality objectives by virtue of the very low solubility of those hydrocarbons, their high sorption coefficients, and the character of the local geology (clay-rich sediments) and hydrology (shallow groundwater, high evapotranspiration).

Existing groundwater data indicate that residual TPH-g, TPH-d, or TPH-mo that has been detected in soil has not migrated beyond a limited spatial extent. Although longer chain

hydrocarbons comprising TPH-g, TPH-d, and TPH-mo biodegrade more slowly than shorter chain petroleum constituents, longer chain hydrocarbons are much less soluble or volatile. Thus, any adverse affect on shallow groundwater from UST releases will be minimal and localized.

It may take decades or more for water quality in limited areas to meet applicable water quality objectives. But this extended period is reasonable because it not anticipated that the shallow groundwater in this area will be used during the period of impairment. There is a limited shallow groundwater supply and well construction standards preclude the very limited affected groundwater from reaching well intake screens and impacting any actual beneficial uses of groundwater. With respect to the deeper aquifer located beneath the site, two samples collected in 1998 and 2007 show that the supply well which is currently used for livestock watering and reaches a depth of 585 feet has not been contaminated by releases from the USTs or discharges from other sources.

In summary, the time it will take for water quality to meet the Basin Plan objectives in the limited areas where residual contamination remains is a reasonable time frame given the nature of the contaminants, the hydrogeologic characteristics of the site (shallow alluvial aquifer), the limited current and potential future uses of the shallow groundwater, and the low potential for health risks caused by human exposure.

IV. SUMMARY AND CONCLUSIONS

1. Petitioner's site at 27821 Dutcher Creek Road, Cloverdale, is currently being used for livestock grazing. Land use in the vicinity of the site is rural residential, industrial, and agricultural. USTs at petitioner's site were removed sometime prior to 1992.

2. Petitioner successfully completed a preliminary site investigation in 1992 which included implementation of a permanent cleanup solution. Petitioner removed and remediated 18,000 cubic yards of soil. Post-excavation soil samples were taken at 92 locations on the site. Eight samples had detectable concentrations of petroleum hydrocarbon constituents; all were non-detect for BTEX.
3. As reflected in soil and groundwater samples taken in 2004, 2005, and 2007, the residual contamination has not migrated beyond a limited area. None of the groundwater samples collected from the shallow aquifer in 2004 or 2005 had detectable levels of any petroleum constituents or volatile organic components. The threat to human health, safety, and the environment caused by the release of petroleum hydrocarbons has been mitigated by petitioner's remedial actions.
4. The level of site cleanup is consistent with the maximum benefit to the people of the state.
5. It is probable that groundwater in contact with the limited and localized residual petroleum hydrocarbons remaining in site soil will likely exceed the Basin Plan water quality objectives for a considerable time (decades or more). This period is reasonable however, because the limited extent and magnitude of residual petroleum hydrocarbons will not unreasonably affect existing or anticipated beneficial uses of groundwater in the foreseeable future and it is unlikely that shallow site groundwater will ever be used as a source of drinking water.
6. No further action at the site is necessary.
7. The above conclusions are based upon site-specific information relative to this case.

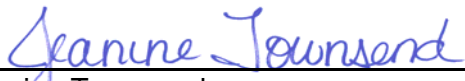
V. ORDER

IT IS THEREFORE ORDERED that petitioner's cases be closed and no further action be required. With respect to the UST case, case 1TSO474, the Deputy Director of the Division of Water Quality is directed to issue petitioner a closure letter consistent with Health and Safety Code, section 25296.10, subdivision (g). With respect to case 1NSO474, the Deputy Director is directed to issue petitioner a closure letter indicating no further action is necessary.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 21, 2011

AYE: Chairman Charles R. Hoppin
Vice Chair Frances Spivy-Weber
Board Member Tam M. Doduc
NAY: None
ABSENT: None
ABSTAIN: None



Jeanine Townsend
Clerk to the Board