

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

STAFF REPORT FOR REGULAR MEETING DECEMBER 4-5, 2008

ITEM NUMBER: 8

SUBJECT: Cleanup Cases

DISCUSSION

Corrective Action Plan Approvals

**Chevron/Venoco Oil and Gas Facility, Carpinteria, Santa Barbara County
[Rich Chandler (805) 542-4627]**

The Central Coast Regional Water Quality Control Board (Water Board) is the regulatory agency responsible for overseeing the investigation and cleanup of the Venoco (former Chevron) Oil and Gas Processing Facility (Facility) located at 5675 Carpinteria Avenue, Carpinteria, California. A Site Location Map is presented in Attachment I. The responsible parties (RPs), Venoco, Inc. (Venoco) and Chevron Environmental Management Company (Chevron), have monitored soil, sediment, groundwater, and surface water since 2002, due to the presence of dichloro-diphenyl-trichloroethane (DDT), DDT breakdown products, DDE and DDD (collectively with DDT referred to as DDX), and other pesticides in the area of the Facility known as the former nursery area. In April 2002, the Executive Officer issued Cleanup and Abatement Order No. R3-2002-012 (2002 CAO) requiring the RPs to submit: 1) a work plan to complete waste characterization at the former nursery area, former sandblast area, processing plant, and former marketing terminal, 2) a plan to contain stormwater runoff from the nursery area, and 3) a corrective action plan to clean up site wastes associated with the former nursery and sandblast areas. The RPs submitted an inadequate corrective action plan in 2003, and the Executive Officer issued Cleanup and Abatement Order No. R3-2004-0081 (2004 CAO) in May 2004 specifically for DDX wastes. The 2004 CAO requires the RPs to clean up the DDX waste-impacted soil and prevent DDX waste-impacted sediment from reaching the ocean. The RPs have tested groundwater beneath the Facility and stormwater runoff from the Facility, but have not detected pesticides in any of those samples. In addition to excavating pesticide wastes in soil, the RPs will remove soil impacted by metal wastes from an area of the Facility known as the sandblast area.

Prior to the May 2008 Water Board meeting, the RPs withdrew their Technical Work Plan (TWP) for remediation of the nursery area and the sandblast area dated August 2007, in light of Water Board staff comments that the TWP did not fully address the requirements of the 2004 CAO. The RPs submitted a revised TWP in August 2008. Water Board staff received comments from the public on the revised TWP and agree that the revised TWP be amended to address several specific conditions. With these additions, described in detail below, Water Board staff recommends the Board direct the Executive Officer to approve the revised TWP.

Site Background

The Facility was constructed in the 1940's on a 55-acre property and is used for minimal processing and transfer of locally extracted oil and gas (see Attachment 1).

Chemicals Found at the Site

DDT is a pesticide formerly used in agricultural activities throughout California, including the Carpinteria area. Congress banned the use of DDT in the United States in 1972, primarily due to its adverse effect on wildlife and its persistence in the environment. During Chevron's Facility ownership and operation, it leased a portion of the property to a nursery business. The presence of DDT and DDT breakdown products in soil/sediment at the site is unrelated to the RP's oil and gas operations. Chevron has not detected pesticides in groundwater beneath the Facility or in stormwater runoff from the Facility.

As part of Chevron's oil and gas facility operations, workers cleaned metal parts in the sandblast area of the Facility, and these actions resulted in concentrations of metals in soil that warrant excavation and removal.

Proposed Cleanup Approach

The RP's August 2007 TWP proposed the following interim cleanup actions:

1. Remove all detectable DDX and other chlorinated pesticide wastes in sediment from onsite waters of the State;
2. Remove all detectable DDX and other chlorinated pesticide wastes in soil from a section of the Railroad Ditch located immediately downstream of the site;
3. Remove all detectable DDX and other chlorinated pesticide wastes in sediment from onsite Drainage Area 4 (the southwest corner of the site). The RPs proposed to replace the removed soil with clean fill;
4. Remove DDX wastes in soil at concentrations greater than 394 mg/kg from the former nursery area. Remove other chlorinated pesticides at concentrations in excess of USEPA Region 9 Industrial Preliminary Remediation Goals (PRGs) from the nursery area. The RPs proposed to replace the removed soil with clean fill. As noted below, Water Board staff disagreed with the proposed cleanup level for DDX and required the RPs to establish individual cleanup levels for each of the chlorinated pesticides detected at the site;
5. Remove metal wastes in soil at concentrations above USEPA Region 9 Industrial PRGs for these wastes from the sandblast area;
6. Construct a sediment filter at the southwest corner of the site where stormwater drains from the site to the Railroad Ditch;
7. Construct a gate valve and associated storage and appurtenances at the southwest corner of the site;
8. Construct curbs and gutters around the north and northeast site boundaries;
9. Grade the surface topography along the western portion of the site, such that it slopes towards the site interior, removing the western property boundary ditch (i.e. considered to be an onsite water of the State);
10. Monitor stormwater discharge from the southwest corner of the site;
11. Monitor, maintain, and report on all treatment and engineering control structures;
12. Allow stormwater discharge from the southwest corner of the site, as necessary; and

13. Construct a second surface water discharge conveyance and discharge point for Dump Road runoff, preventing stormwater from contacting surface soil at the site.

In the revised TWP submitted in August 2008, the RPs retained the above actions, but have included cleanup levels for each chlorinated pesticide detected at the site, and made the other modifications described below. The proposed cleanup levels are the soil-based equivalents of the Department of Public Health (DPH) Maximum Contaminant Levels (MCLs) for chlorinated pesticides in ocean waters as established by the California Toxics Rule. The revised TWP includes the following significant additions and modifications, specifically to address item numbers 4 and 5 above:

- Remove all DDT, DDE, and DDD wastes in soil above 90 µg/kg, 90 µg/kg, and 30 µg/kg, respectively, from the former nursery area.
- Remove all detectable concentrations of chlordane, dieldrin, and lindane wastes in soil/sediment from the nursery area. The detection limits for chlordane, dieldrin, and lindane are 20 µg/kg, 5 µg/kg, and 5 µg/kg, respectively,
- Remove metal wastes in soil in the sandblast area to background metal concentrations.
- The August 2007 corrective action plan was an interim remedial plan; the revised TWP is a final remedial plan requiring only continued maintenance and monitoring.

All of the activities proposed in the 2007 TWP (e.g., item numbers 1 through 3 and 6 through 13) are included in the Revised TWP with these four significant revisions.

The 2004 CAO includes a provision for assuring that any additive effects of DDT breakdown products will not cause adverse impacts. The 'Additive Toxicity Equation' states:

$$\text{Measured DDT}/.00059 \text{ ug/L} + \text{Measured DDE}/.00059 \text{ ug/L} + \text{Measured DDD}/.00083 \text{ ug/L} = n$$

$$n < 1 \text{ is acceptable}$$

$$n = \text{ or } > 1 \text{ is unacceptable}$$

The numbers in this equation refer to the MCLs for DDT and its metabolites in Ocean water as established by the California Toxics Rule. Clearly, these numbers would not apply to the current site situation because of the difference in referenced media. However, the proposed cleanup levels established in the revised TWP are surrogates for these MCLs. The modified Additive Toxicity Equation would read:

$$\text{Measured DDT}/90 \text{ µg/kg} + \text{Measured DDE}/90 \text{ µg/kg} + \text{Measured DDD}/30 \text{ µg/kg} = n$$

$$n < 1 \text{ is acceptable}$$

$$n = \text{ or } > 1 \text{ is unacceptable}$$

This equation is appropriate as a field test for the additive toxicity of DDT and its metabolites given the following caveats. First, Water Board staff contacted Rusty Farley, a marine scientist from California State University who has done extensive sediment work with the Bay Protection program, to ask about additive toxicity effects in soil-based systems. Mr. Farley commented:

"most of my work was with DDT in marine sediments and one of the things we found was there was little correlation between DDT toxicity (in acute or chronic exposures) and dry weight

concentrations. The relationships improved somewhat when they are organic carbon normalized but the concentrations need to be very high before you get demonstrable toxicity. Additivity does occur but most of the guidance values I've seen are already for the combined effects of DDT and its metabolites."

The calculation for the proposed cleanup levels includes a factor for organic carbon. Mr. Farley's conclusions indicate that the combined effects of the metabolites in the soil matrix do not truly correlate with their individual toxicities in Ocean sediments. The literature (e.g., Merck Index, CRC Handbook of Physics and Chemistry, and USEPA publications) indicates that DDT in the soil matrix is very tightly bound and relatively insoluble.

Second, Water Board staff notes that there are many thousands of combinations of individual metabolite concentrations that satisfy the above equation. The equation itself refers to 'Measured' DDT, DDE and DDD, implying that the equation be solved with field measurements, not written standards. Staff recommends that the modified equation be used as a field guide to show that the RP has eliminated the threat of additive toxicity. Water Board staff recommend the Board direct the Executive Officer to approve the revised TWP, with the condition that the RPs perform this field calculation, and the additional conditions outlined in the Conclusion section below.

NOTIFICATION AND COMMENTS

On August 22, 2008, Water Board staff sent a fact sheet to all interested parties. The fact sheet provided summary information about the Facility and the proposed cleanup, provided a link for downloading the TWP, and indicated that the public would have 30 days to comment on the proposed plan. Water Board staff received technical comments on the TWP from local resident Susan Allen and from Channelkeeper. We received correspondence or emails generally supporting Channelkeeper's comments but without technical comments from local residents Amrita Salm, Dan and Rae Emmett, Sally Eagle, and Vera Benson. We have summarized and responded to technical comments below. Copies of the public comment letters and emails are presented in Attachment II. In addition, Padre Associates, consultant for the RPs, has submitted a response letter to Channelkeepers technical comments, which is included as Attachment III.

Comments from Susan Allen

1. There are 22 hotspots at the Venoco facility. Failure to perform less than "total clean-up" will set a precedent for the rest of the facility. Cleanup should be thorough enough to permit future development of any sort.

Staff response: For due diligence purposes prior to the property's transfer to Venoco ownership in 1999, Chevron's consultants performed a comprehensive Phase I site assessment. Water Board staff reviewed the assessment report and identified approximately 33 potential water quality issues associated with historical and current site use. To comply with Water Board requirement letters issued in 1999, 2000, 2001, the 2002 CAO, and the 2004 CAO, the RPs collected additional site waste characterization data for soil, sediment, and/or groundwater at the processing plant, marketing terminal, former nursery area, and former sandblast area. The RPs did not detect petroleum hydrocarbon constituents or other wastes in groundwater beneath the Facility. In addition, the RPs submitted documentation about onsite abandoned oil production wells and hazardous substance storage and use, which were required in the 2002 CAO. Based on existing soil, sediment, and groundwater data, the RP identified two "hotspots" as having the greatest threat to water: areas of the facility affected by former nursery operations (which includes the nursery area itself, buffer zone, Railroad Ditch, southwest drainage channel, etc.) and the former sandblast area.

The proposed cleanup levels for the former nursery and sandblast areas are the soil-based equivalents of the MCLs for chlorinated pesticides in ocean waters as established by the California Toxics Rule. Staff believes that the 2008 TWP complies with the 2002 and 2004 CAOs, with the conditions outlined below.

Venoco currently uses the property for an oil and gas processing facility and proposes to expand its operations, subject to acceptance by various agencies of an Environmental Impact Report. Currently, the property is zoned for industrial use. With regard to a zoning change to allow for potential future residential use, the September 2008 USEPA Residential PRGs for DDD, DDE, and DDT are 2,000 µg/kg, 1,400 µg/kg, and 1,700 µg/kg, respectively. The RPs proposed soil and sediment cleanup objectives in the TWP are protective of water quality and human health.

2. Previous trenching in the nursery area has spread contaminated soil.

Staff response: The proposed excavation, followed by confirmation sampling, will ensure removal of the site wastes in soil/sediment to the proposed cleanup levels.

3. Water discharged from the Venoco facility traverses a park and popular surfing location. Sometimes oily sheens are observed in the ocean. Impounded water may put nearby homes at risk for flooding. The suggestion that it would take 2 to 3 inches of rain to cause runoff is not true based on my observations following rainfall at the site. There is an abandoned oil well on the property covered by boards.

Staff response: There is a very large natural oil seep on the beach at Tar Pit Park that discharges crude oil all day, every day, to the Pacific Ocean. There are numerous other natural oil seeps along the beach bluffs near the Venoco facility. These natural seeps are far more likely to be source of oil sheens, especially after major storm events. To mitigate stormwater runoff from the Facility, proposed engineering controls (including installation of curbs and gutters, site grading, and installation of a second stormwater conveyance) will greatly decrease the likelihood of a stormwater discharge from the site. Proposed chlorinated pesticide cleanup levels will ensure that any discharge will not threaten water quality in waters of the State. In addition, Venoco is enrolled in, and must comply with, the requirements of the Industrial Storm Water General Permit Order 97-03-DWQ. In 2000 and 2002, Water Board staff also required Venoco to perform additional, Facility-specific stormwater monitoring and reporting for oil and gas processing-associated wastes. California Division of Oil, Gas, and Geothermal Resources has regulatory authority over the abandoned oil well. There is no indication that this well is causing or threatens to cause an impact to water quality.

4. The TWP states "Based on site conditions at the time of the excavation activities and any permit restrictions placed on the excavation activities and associated truck traffic by the city of Carpinteria, the RWQCB staff may revise excavation requirements in Drainage Area 4." This language is vague; the cleanup project should not be scaled back.

Staff response: Water Board staff will ensure that clean up proceeds in accordance with the revised TWP. The RPs must obtain grading permits from the City of Carpinteria and the City may require **California Environmental Quality Act** (CEQA) review before issuing permits. It is unlikely that the City of Carpinteria will issue grading permits to allow the destruction of mature trees. Water Board staff will recommend that the Board direct the Executive Officer approve the revised TWP plan, with the condition that the TWP includes language indicating that grading and excavation be as close to mature trees as is allowed by the City's permit.

5. The TWP indicates that the site will be revegetated following excavation. A specific plan should be in place and native vegetation should be used.

Staff response: The City of Carpinteria will establish conditions for revegetation in their grading permit. Water Board staff will recommend that those conditions be amended to the TWP.

6. The TWP must describe how the public will access the seal rookery below the sandblast area during the excavation of that area, and the work must not be performed between December 1 and May 31 when seals are birthing.

Staff response: The City of Carpinteria will address public access issues in the grading permit process. Water Board staff will recommend language be added to the TWP indicating that work in the vicinity of the former sandblast area will not be conducted during the seal birthing period.

7. The TWP presents a health and safety plan but there have been safety violations at the Venoco facility. There must be monitoring provisions that ensure community safety.

Staff response: There is no correlation between operations at the Venoco facility and the proposed site cleanup. Venoco Facility personnel will not likely be involved in the remedial activities; the Division of Occupational Safety and Health (or Cal/OSHA) requires specialized training for personnel involved with designated wastes. The TWP proposes that each morning prior to the start of work a health and safety meeting be conducted and documented. In addition, the RP must monitor air quality and suppress dust to comply with Air Pollution Control District permits.

8. Prior to the start of work the community should be notified.

Staff response: Water Board staff will send another fact sheet to notify the community of the start date.

Channelkeeper

1. Only 35 of 72 soil samples collected at the site in May 2007 were analyzed, presumably because shallow soil sample results were non-detect and indicated no reason for analyzing samples collected from deeper depths with the same boreholes; however, sample results indicate that in some cases deeper samples contained higher concentrations than shallow samples. This indicates the need for more assessment sampling at the site.

Staff response: Channelkeeper cites two instances where deeper samples contained higher concentrations of chlorinated pesticides than shallow samples collected from the same borehole. In each of these two examples, the samples were collected vertically adjacent to each other, i.e., samples collected from one borehole at 0 to 6 inches and from 6 to 12 inches, and samples from another borehole at 6 to 12 inches and from 12 to 18 inches. The variation in the concentrations between adjacent samples was less than one order of magnitude. Slight variation between adjacent samples is common due to the natural non-homogenous distribution of wastes in soil and unavoidable variation in laboratory analysis. Analysis of soil from each end of a single sample tube would reveal the same minor variation in waste concentration. There have been over 100 locations sampled at the site, with the latest soil samples collected in 2007 to confirm elevated (greater than 1,000 mg/kg) DDX levels in the former nursery area, itself. It is Water Board staff's professional opinion there is no need for further assessment work prior to the proposed excavation. Excavation will continue until confirmation sampling indicates removal of the wastes meets the specified cleanup levels.

2. Modeling indicates significant erosion of the site will cause off-site migration of impacted sediment. Existing hay bales and silt fences should remain in place and a more sophisticated sediment filter installed. The TWP fails to provide sufficient detail about the proposed sediment filter, and the proposed maintenance and monitoring is inadequate.

Staff response: Based on the RPs modeling report, there is no reasonable potential of chlorinated pesticide wastes in soil located within the former nursery area and the buffer zone (outside of drainage area 4) from being transported to the waters of the State. The proposed engineering controls are additional protective measures to ensure chlorinated pesticide wastes will not be discharged to the waters of the State. The engineering controls proposed in the TWP (including installation of curbs and gutters, site grading, and installation of a second stormwater conveyance) will reduce erosion and increase the amount of rainfall needed to cause a discharge of stormwater in the future. The proposed sediment filter, using a Caltrans Storm Water Quality Handbook design, will decrease the velocity of stormwater discharged from the site. By slowing down the flow, more particulates will settle out of the runoff before it reaches the sediment filter itself. The sediment filter also serves as monitoring location for the RPs to confirm that sediment exiting the site has no detectable levels of chlorinated pesticide wastes.

Water Board staff will require the hay bales and silt fence be left in place and maintained during excavation, grading and installation of engineering controls. The hay bales and silt fences will serve no purpose after installation of the engineering controls because there will be no remaining threat to water quality after the engineering controls are implemented. Consequently, Water Board staff finds the proposed sediment filter to be adequate for its intended purpose.

3. The TWP should include removal of all detectable chlorinated pesticides from waters of the State, not just DDT, DDE, and DDD.

Staff response: Water Board staff agrees. The TWP proposes removal of soil containing any detectable concentrations of chlordane, dieldrin, and lindane. There have been no other chlorinated pesticides detected at the site.

4. There should be sampling downstream of the railroad drainage ditch, in Tar Pits Park, and at the outfall of Higgins Creek.

Staff response: The RPs previously sampled at the discharge point of the railroad ditch downstream from the Venoco facility and at the Higgins Creek outfall at Tar Pits Park. The samples did not contain detectable concentrations of chlorinated pesticides and indicate the furthest extent of chlorinated pesticides that might have originated from the site. The RPs have adequately delineated the extent of chlorinated hydrocarbon wastes in soil.

5. The TWP indicates removal of only "reasonably accessible" contaminants from Drainage Area 4. This language is vague. The TWP indicates that if detectable DDT, DDD, and DDE are present in Drainage Area 4 at depths of greater than 18 inches the requirements for additional excavation will be discussed in the field with Water Board staff. A non-committal reference to a discussion is not adequate.

Staff response: Drainage Area 4 contains numerous mature trees and other vegetation. Prior to acquiring the grading permit, the RPs cannot know the exact boundaries of the allowable excavation area. Water Board staff will be onsite and will ensure that pesticide wastes are removed from the maximum allowable area and to the total depth of detectable concentrations above soil cleanup objectives.

6. The remediation goals for DDT, DDD, and DDE should be lower and the additive toxicity equation indicates that the proposed cleanup levels will not be adequate to ensure compliance with the California Toxics Rule.

Staff response: Water Board staff reviewed the calculations used to establish the proposed cleanup levels and find that the calculations are correct. The proposed cleanup levels will comply with the 2004 CAO and will ensure compliance with the California Toxics Rule. Water Board staff has inquired about many similar sites and was not able to locate any DDX waste-impacted site in the United States with established cleanup levels lower than those proposed for this site. The proposed TWP is protective of human health and water quality. Water Board staff notes that there are many thousands of combinations of individual metabolite concentrations that satisfy the additive toxicity equation. The equation itself refers to 'Measured' DDT, DDE and DDD, implying that the equation be solved with field measurements not written standards. Staff will recommend that the equation be used as a field guide to show that the RPs have eliminated the threat of additive toxicity, and this requirement be a condition of the revised TWP approval.

7. The proposed monitoring of stormwater discharge is insufficient.

Staff response: Channelkeeper cites rainfall totals on several days in January and April 2007 to challenge discharge calculations in the TWP. However, the stormwater discharge in 2007 occurred without the proposed engineering controls that will prohibit offsite stormwater runoff from entering the site, as it did in 2007. Water Board staff finds the proposed monitoring plan to be sufficient.

8. There is no need for a second surface water conveyance.

Staff response: The second surface water conveyance will prohibit offsite stormwater runoff from entering the site, resulting in reduced erosion from the site.

9. The public must continue to have access to the seal rookery below the sandblast area and seals must not be disturbed.

Staff response: The City of Carpinteria will address public access issues in the grading permit process. The work will not be conducted during the seal birthing period.

CONCLUSION

The environmental contractor will begin the proposed Facility cleanup following Central Coast Water Board staff concurrence and after receiving all appropriate agency permits, including a grading permit from the City of Carpinteria. Water Board staff believe that the engineering controls designed to prevent stormwater runoff from entering the site and causing erosion, in combination with the removal of detectable chlorinated pesticides from Drainage Area 4, the lowered cleanup levels for the remainder of the site, and the discharge monitoring program, will prevent chlorinated pesticides from impacting the waters of the State. Water Board staff concludes that implementation of the Technical Work Plan (TWP) for cleanup at the subject site will eliminate the threat from DDT and its metabolite wastes, remove metal wastes in soil, and comply with the 2002 and 2004 CAOs.

RECOMMENDATION

This item is for informational purposes; however, the Water Board may provide direction to staff. Unless otherwise directed, the Executive Officer will approve the TWP with the following additions/conditions:

1. The RPs must use the Modified Additive Toxicity Equation as a field calculation during confirmation sampling, to confirm there is no threat of additive toxicity from DDT and its metabolites to waters of the State;
2. The RPs must include language in a TWP addendum indicating that grading and excavation of waste-impacted soil be as close to mature trees as is allowed by the City of Carpinteria grading permit;
3. The RPs must amend the TWP (in a TWP addendum) to include revegetation conditions from the City of Carpinteria grading permit;
4. The RPs must amend the TWP (in a TWP addendum) to allow hay bales and silt fence to be left in place and maintained during excavation, grading, and installation of engineering controls; and
5. The RPs must amend the TWP (in a TWP addendum) to indicate that work in the former sandblast area will not be conducted during the seal birthing period.

ATTACHMENTS

Attachment I: Padre Associates, Inc. Site Location Map

Attachment II: Public comments

Attachment III: Padre Associates, Response to Channelkeeper comments

Raytheon B-2 Facility, 75 Coromar Drive, Goleta, Santa Barbara County (Katie DiSimone (805) 542-4638)

On October 14, 2008, Central Coast Water Board staff received TN & Associates' (TN) *Feasibility Study and Remedial Action Plan* (Plan), submitted on behalf of Raytheon for its B-2 Facility located at 75 Coromar in Goleta. Since the early 1960s, Raytheon has performed electronic component research, development, and manufacturing at the facility. In the Plan, TN proposes to clean up trichloroethylene (TCE) and related hazardous compounds discharged to soil and groundwater at the facility. The maximum TCE concentration detected in shallow groundwater onsite was 230 milligrams per Liter. For reference, the Department of Public Health Maximum Contaminant Level for TCE is 5 micrograms per Liter.

Raytheon identified a former partially-buried clarifier in the B-2 building's southeast corner as the likely source of the TCE and other solvent wastes in soil and groundwater. TN has completed initial site characterization by collecting soil vapor samples, hydropunch™ groundwater grab samples, cone penetration soundings, soil sampling, and the installation of 28 groundwater monitoring wells. In the Plan, TN evaluated several remedial alternatives for the subject site, including in-situ thermal heating, dual-phase extraction, in-situ chemical oxidation, biological treatment, excavation, monitored natural attenuation, and permeable reactive barriers. Raytheon's selected remedial alternative is an electrical resistive heating (ERH) and dual-phase extraction system within the source area and the adjacent fringe area. The increased temperature will facilitate the extraction of TCE and other wastes from the subsurface. TN plans to route extracted groundwater and vapors from the heated, treatment area to an above-ground treatment unit. Extracted groundwater will be treated and disposed to an appropriately permitted discharge location, likely the adjacent sanitary sewer system. Santa Barbara County Air Resources Board permits are needed for the vapor treatment unit.

On October 10, 2008, Central Coast Water Board staff sent a Public Notice and Fact Sheet for the proposed cleanup action to Raytheon, regulatory agencies, and nearby property owners. No public comments were received in response to the notice. The Executive Officer approved TN's Plan. Raytheon is expected to begin ERH system installation in November 2008.

Franzke Residence, 17 Gaffey Road, Watsonville, Santa Cruz County [John Mijares (805) 549-3696]

The site was developed as a residence in the 1940s, and a 550-gallon underground storage tank (UST) and associated piping were used from 1980 to mid-1990s to provide regular, unleaded gasoline to fuel motor vehicles. The responsible party (RP) discovered a leak from the UST during a site assessment in 2000. The UST was properly closed and removed in 2001. The RP commissioned the excavation of approximately 400 cubic yards of petroleum hydrocarbon-impacted soil in the vicinity of the former UST in November 2003, and the removal of approximately 400 gallons of petroleum hydrocarbon-impacted groundwater in 2005. Analytical data from site investigations between 2000 and 2008 has adequately defined the extent of soil and groundwater hydrocarbon impacts.

Results of the March 2008 groundwater monitoring showed the following maximum concentrations of petroleum hydrocarbons that exceeded groundwater cleanup goals: Total petroleum hydrocarbons as gasoline (TPHg) – 35,000 micrograms per liter (µg/L); benzene – 4,100 µg/L; toluene – 5,300 µg/L; ethylbenzene – 1,700 µg/L; and xylenes – 5,600 µg/L.

Red Hills Environmental, Inc. (Red Hills) evaluated three alternatives for remediating petroleum hydrocarbons: (1) natural attenuation, (2) groundwater extraction and treatment, and (3) soil vapor extraction (SVE) with air sparging (AS). Red Hills conducted a SVE pilot test at the site in January 2008. Results indicate that SVE may not be viable as a stand-alone remedial alternative due to high groundwater levels and low flow rates. However, SVE may be effective in conjunction with other remedial alternatives such as dual phase extraction or air sparging. Based on technical and economic evaluation, Red Hills recommended the combination of SVE/AS as the most technically efficient system for mass removal of hydrocarbons and second to natural attenuation in cost effectiveness. Red Hills anticipates operation of the SVE/AS system for one year followed by monitored natural attenuation until contaminant levels meet soil and groundwater cleanup goals.

On July 25, 2008, Central Coast Water Board staff conditionally approved the proposed corrective action subject to the submittal of an implementation workplan containing specific details of the remedial system and a completion schedule. On October 6, 2008, Red Hills submitted a Corrective Action Implementation Work Plan, which provides the required information.

Central Coast Water Board staff conditionally approved the corrective action plan and notified neighboring property owners, tenants and other interested parties. We have not received any comments regarding the approval of the proposed corrective action plan.

Corrective Action Plan Approvals/General Waiver for Specific Types of Discharges

Former Methamphetamine Production Lab, 9400 Cabrillo Highway, Pescadero, San Mateo County [David Schwartzbart (805) 542-4643]

On March 19, 2008, Central Coast Water Board staff received a *Workplan for In-Situ Oxidation Remediation and Phyto-Remediation* (Plan), submitted by Atlas Engineering, Inc. (Atlas) on behalf of the responsible parties, the site tenant and property owners. On July 24, 2008, Atlas also submitted a *Request for General Waiver of Waste Discharge Requirements for specific Types of Discharges (General Waiver), Addition of Materials for In-Situ Chemical Oxidation*. The subject site was a methamphetamine production lab until it was dismantled by law enforcement personnel in 1997. The roughly one-acre agricultural property is located on the San Mateo County coastline at an elevation of approximately 65 feet above sea level. The site is located approximately 1,500 feet from the Pacific Ocean and approximately 400 feet south of,

and 35 feet or more vertically above, Spring Bridge Gulch, which drains to the Pacific Ocean. Site groundwater occurs at roughly 4 to 13 feet below ground surface (bgs) and groundwater flows generally north-northeast towards Spring Bridge Gulch.

In October 1997, the California Department of Toxics Substance Control conducted an emergency response and removed approximately 20 gallons of liquid chemicals from an onsite disposal pit, 75 gallons of waste materials/chemicals, and four 55 gallon drums of waste-affected soil. Under the direction of San Mateo County Health Services Agency (San Mateo County), the responsible parties investigated solvents (including, Freon 11, Freon 113, and 1,1,1,-trichloroethane) and methyl tertiary butyl ether (MTBE) wastes in site soils, groundwater, and in an intermittent seep located above Spring Bridge Gulch. MTBE wastes, although not expected from former lab operations, are present beneath the site.

The responsible parties installed three groundwater monitoring wells and one groundwater extraction well. Initially, responsible parties extracted waste-affected groundwater and aerated it onsite, until it was discontinued because it was ineffective. In September 2003, San Mateo County referred the case to the Central Coast Water Board for oversight. From 2006 to 2007, Atlas injected air into groundwater to promote biodegradation of solvent and MTBE wastes. However, Atlas discontinued air injections in 2007 because of its' lack of effectiveness.

To address remaining site wastes, Atlas proposed in its Plan to: 1) perform additional groundwater chemistry analysis and characterization during the second quarter of 2008 to determine oxygenate injection parameters; 2) inject oxygenates into groundwater in the remaining waste source areas; 3) plant vegetation to form a phytoremediation barrier to limit or prevent groundwater wastes from seeping to the ground surface; 4) report all subject activities in quarterly monitoring reports; and 5) comply with General Waiver requirements. In a letter dated September 22, 2008, Central Coast Water Board staff approved Atlas' Plan. After reviewing the groundwater chemistry data, Central Coast Water Board staff sent a Notice of General Waiver Applicability letter to the responsible parties and San Mateo County on October 17, 2008. Atlas plans to inject oxygenates in November 2008 and plant the vegetation barrier in December 2008. This staff report serves as notification to the Central Coast Water Board that Water Board staff has issued a Notice of Applicability to the responsible parties.

Former All-American Cleaners Property, 413 N. Broadway, Santa Maria, Santa Barbara County [Donette Dunaway (805) 549-3698]

On September 18, 2008, Santa Barbara County Fire Department, Fire Protection Division (County Fire) approved Buena Resources, Inc.'s (Buena) Corrective Action Plan (Plan) for the former All-American Cleaners property (All-American) located at 413 N. Broadway in Santa Maria. County Fire required All-American to obtain Waste Discharge Requirements prior to Plan implementation. On September 25, 2008, Central Coast Water Board staff received and reviewed Buena's Plan. Buena's subsurface investigations indicate that soil beneath the site is impacted with petroleum hydrocarbons, likely degraded gasoline and Stoddard solvent, above County Fire soil cleanup levels. The petroleum products in soil are located in an approximately 20-foot by 30-foot area and range in depth from ground surface to approximately 15 feet below ground surface (bgs). The depth to groundwater below the site is approximately 120 feet and is not expected to be impacted by petroleum wastes. All-American used the petroleum products to heat water to wash clothes and other textiles and did not use chlorinated solvents. Buena did not detect chlorinated wastes in site soils.

To clean up the soil, Buena plans to install four treatment wells with slotted casings extending vertically from ground surface to below the zone of petroleum impact, estimated at 17 feet below ground surface. The treatment wells will have positive air pressure at one end of the well field through which to inject bacteria and nutrients through the soil, and air extraction on the other end

of the well field to withdraw any hydrocarbon vapors and carbon dioxide generated as the petroleum products in soil biodegrade. Following injection, Buena will monitor extracted vapor for carbon dioxide and hydrocarbon levels to assess the effectiveness of the injections and determine when confirmation soil sampling is appropriate and clean up is complete.

All-American has agreed to comply with the requirements of the General Waiver for the bacteria and nutrient injections. County Fire placed a public notice in the Santa Maria Times, describing the Plan, requested public comments within 30-days, and did not receive any public comments. Water Board staff posted the Plan on the GeoTracker website if additional public interest arises about the project. On October 10, 2008, Central Coast Water Board staff approved the Plan, and issued a Notice of Applicability to All-American for enrollment under the General Waiver. This staff report serves as notification to the Central Coast Water Board that Water Board staff has issued a Notice of Applicability to All-American.