

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
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May 18, 2007

Mr. Chris Panaitescu
Thrifty Oil Company
13116 Imperial Highway
Santa Fe Springs, CA 90670-00138

Subject: Fuel Leak Case No. RO00000004, Thrifty Oil #49, 3400 San Pablo Avenue, Oakland, CA

Dear Mr. Panaitescu:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above referenced site including the "Site Conceptual Model (SCM)" prepared in May 2006 by GeoHydrologic Consultants and the "Work Plan for Additional Offsite Assessment" prepared in May 2004 by Thrifty Oil. Current Laboratory analytical results from the sampling conducted in January 2007 indicate that groundwater from onsite monitoring well RW-1R, MW-R2 and MW-4R contains maximum concentrations of petroleum hydrocarbon at 211,000 µg/L, 254 µg/L, 300 µg/L for TPHg, MtBE, benzene and TBA, respectively. Moreover, a supplemental off site investigation to be conducted in 2004 has not been completed due to off site access issues. ACEH does agree that the vertical extent of soil contamination has been adequately defined on site. However, we do not consider the dissolved hydrocarbon plume to be adequately characterized downgradient of the site. Thrifty has proposed the installation of two soil borings and three additional groundwater monitoring wells to delineate dissolved hydrocarbon contamination on-site and immediately down-gradient of the site.

Based on the elevated concentrations of dissolved petroleum hydrocarbon on site and considering the projected hydraulic gradient is toward the west/southwest, ACEH does not agree with the conclusion, as suggested in the recently submitted SCM, that the site be closed based on low risk criteria. Of particular concern are groundwater samples collected from soil boring B-2 to B-4 installed in January 2004. The grab groundwater samples tested high concentration of up to 172,000 µg/L, 2,490 µg/L and 27,900 µg/L of TPHg, benzene and MtBE, respectively.

ACEH appreciates the submission of the SCM for the site. Unfortunately, there is no mention of a preferential pathway survey or a sensitive receptor survey in the Site Conceptual Model. However, a utility study was initiated in October 2003 without any discussion concerning the potential for the utility corridor to act as a preferential pathway for dissolved contamination migration. Considering high groundwater elevation on site, it is possible for a utility corridor to transmit contamination down-gradient of the site. Additionally, an important component of the SCM is the identification of data gaps, no data gaps were cited in the SCM. ACEH believes the lack of data offsite is a data gap and therefore should be discussed in the SCM. Consequently, due to the omission of these critical components ACEH deem the SCM to be incomplete and should re-evaluated. Prior to the implementation of the off site investigation ACEH requires you to

update your Preferential Pathway Study, which is discussed in detail in the technical comments below.

Based on ACEH staff review of the case file, we request that you address the following technical comments and send us the reports described below. Please provide 72-hour advance written notification to this office (e-mail preferred to steven.plunkett@acgov.org) prior to the start of field activities.

TECHNICAL COMMENTS

1. **Dissolved Hydrocarbon Plume Characterization.** The lateral extent of groundwater contamination off site has not been fully defined. Dissolved hydrocarbon contamination migration appears to be consistent with the projected groundwater gradient, toward the west/southwest. Additional soil and groundwater samples collected as part of the January 2004 investigation confirm that very high concentrations of up to 172,000 µg/L, 2,490 µg/L and 27,900 µg/L of TPHg, benzene and MtBE exists on the southwestern property boundary. These conclusions confirm that further off site investigation is needed to define the extent of dissolved hydrocarbon contamination down gradient of the site.

ACEH suggests one additional soil boring be installed midway between proposed soil borings SB-5 and SB-6 to supplement groundwater data collected from these borings. In addition, ACEH recommends that one of the proposed soil borings (SB-5 or SB-6) along the west side of San Pablo Avenue should be converted into a monitoring well to evaluate potential dissolved petroleum hydrocarbon plume migration down-gradient of the site. Furthermore, the linear distance between soil boring B-2 and the proposed soil borings on the west side of San Pablo Avenue is at least 60 feet; therefore ACEH recommends the installation of one additional soil down-gradient of B-2 and south of the median strip in San Pablo Avenue. Lastly, the proposed location of monitoring well MW-8 should be moved to the southeast corner of 34th Street in an attempt to determine if dissolved phase hydrocarbon contamination detected from soil boring B-3 is migrating off site.

The Work Plan requested below is to include plans to characterize petroleum hydrocarbon contamination in groundwater within the shallow groundwater zone and possible deeper water-bearing zones. Please consider the use of depth discrete groundwater samples collected to characterize off site conditions prior to installation of monitoring wells. We request that you use detailed hydrogeologic cross sections to determine the appropriate location and design for monitoring wells that are needed to appropriately characterize the three-dimensional extent of soil and groundwater contamination down gradient of the site. To appropriately evaluate your site, the monitoring wells will need to be screened in the permeable zones with screen lengths that match the stratigraphic sequence. Please include the above requested information in the Revised Work Plan requested below.

2. **Proposed Soil Boring Installation and Soil Sampling.** Thrifty suggests that soil sampling be completed to a maximum depth of 20 feet bgs., with soil samples collected at 5 foot intervals. It is important to determine the depth at which soil is not impacted by petroleum hydrocarbon contamination, and thus demonstrate the vertical profile of soil contamination. ACEH requests that soil samples be submitted for laboratory analyses at all depth intervals where staining, odor, changes in lithology, elevated PID readings are observed and at the

capillary fringe. If staining, odor, or elevated PID readings are observed over an interval of several feet, a sufficient number of soil samples from this interval should be submitted for laboratory analyses to characterize the contamination within this interval. Please present the result of the investigation in SWI report requested below.

3. **Well Installation and Development.** Thrifty Oil has proposed the installation of three monitoring wells with screen intervals from 3 to 18 feet bgs. Please explain the rationale to define the vertical extent of groundwater contamination and to assess, based on site-specific conditions, whether the long screen wells provide accurate groundwater monitoring results, which may not be consistent with the collection of depth discrete groundwater samples due to various conditions that can occur within the well bore. ACEH suggests the use of monitoring wells designed with sand pack intervals of 2'-5' or less, as these wells will likely be representative of depth discrete groundwater conditions. Please include well designs in the Revised Work Plan requested below.

4. **Preferential Pathway Study**

The purpose of the preferential pathway study is to locate potential migration pathways and conduits and determine the probability of the NAPL and/or plume encountering preferential pathways and conduits that could spread contamination. Of particular concern is the identification of abandoned wells and improperly-destroyed wells that can act as vertical conduits to deeper water bearing zones, pumping wells in the vicinity of your site, and manmade conduits for shallow migration.

Please update your study completed in October 2003, and discuss your analysis and interpretation of the results of the preferential pathway study (including the detailed well survey and utility survey) and report your results in the Revised Preferential Pathway Study requested below. Include an evaluation of the probability of the dissolved phase and NAPL plumes for all constituents of concern encountering preferential pathways and conduits that could spread the contamination, particularly in the vertical direction to deeper drinking water aquifers. The results of your study shall contain all information required by 23 CCR, Section 2654(b).

a) Utility Survey

An evaluation of all utility lines and trenches (including sewers, storm drains, pipelines, trench backfill, etc.) within and near the site and plume area(s) is required as part of your study. Submittal of map(s) and cross-sections showing the location and depth of all utility lines and trenches within and near the site and plume area(s) is required as part of your study.

b) Well Survey

The preferential pathway study shall include a **detailed well survey** of all wells (monitoring and production wells: active, inactive, standby, destroyed (sealed with concrete), abandoned (improperly destroyed); and dewatering, drainage, and cathodic protection wells) within a 1-mile radius of the subject site. As part of your detailed well survey, please perform a background study of the historical land uses of the site and properties in the vicinity of the site. Use the results of your background study to determine the existence of unrecorded/unknown (abandoned) wells, which can act as pathways for migration of

contamination at and/or from your site. Please review historical maps such as Sanborn maps, aerial photos, etc., when performing the background study. Submittal of map(s) showing the location of all wells identified in your study, and the use of tables to report the data collected as part of your survey are required. Include appropriate photographic prints, in stereo pairs, of historic aerial photos used as part of your study. We also request that you list by date all aerial photographs available for the site from the aerial survey company or library you use during your study. Please refer to the Regional Board's guidance for identification, location, and evaluation of potential deep well conduits (see Attachment 2) when conducting your preferential pathway study.

5. **Soil and Groundwater Chemical Analysis.** ACEH requests that all soil and groundwater samples collected be analyzed for the following constituents; TPHg and TPHd by EPA Method 8015M or 8260, BTEX, EDB, EDC, MiBE, TAME, ETBE, DIPE, TBA and EtOH by EPA Method 8260. Please include results from the investigation in the SWI report requested below.
6. **Project Approach and Investigation Reporting – Site Conceptual Model.**

We anticipate that characterization and remediation work in addition to what is requested in this letter will be necessary at and down gradient from your site. Considerable cost savings can be realized if your consultant focuses on developing and refining a viable Site Conceptual Model (SCM) for the project. A SCM is a set of working hypotheses pertaining to all aspects of the contaminant release, including site geology, hydrogeology, release history, residual and dissolved contamination, attenuation mechanisms, pathways to nearby receptors, and likely magnitude of potential impacts to receptors. The SCM is used to identify data gaps that are subsequently filled as the investigation proceeds. As the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened. Subsurface investigations continue until the SCM no longer changes as new data are collected. At this point, the SCM is said to be "validated." The validated SCM then forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

When performed properly, the process of developing, refining and ultimately validating the SCM effectively guides the scope of the entire site investigation. We have identified, based on our review of existing data, some key data gaps in this letter and have described several tasks that we believe will provide important new data to refine the SCM. **We request that your consultant develop a SCM for this site, identify data gaps, and propose specific supplemental tasks for future investigations.** There may need to be additional phases of investigations, each building on the results of the prior work, to validate the SCM. Characterizing the site in this way will improve the efficiency of the work and limit its overall cost.

The SCM approach is endorsed by both industry and the regulatory community. Technical guidance for developing SCMs is presented in API's Publication No. 4699 and EPA's Publication No. EPA 510-B-97-001 both referenced above; and "Guidelines for Investigation and Cleanup of MTBE and Other Ether-Based Oxygenates, Appendix C," prepared by the State Water Resources Control Board, dated March 27, 2000.

The SCM for this project would incorporate, but not be limited to, the following:

- a) A concise narrative discussion of the regional geologic and hydrogeologic setting obtained from your background study. Include a list of technical references you reviewed, and copies (photocopies are sufficient) of regional geologic maps, groundwater contours, cross-sections, etc.
- b) A concise discussion of the on-site and off-site geology, hydrogeology, release history, source zone, plume development and migration, attenuation mechanisms, preferential pathways, and potential threat to down gradient and above-ground receptors. Be sure to include the vapor pathway in your analysis. Maximize the use of large-scale graphics (e.g., maps, cross-sections, contour maps, etc.) and conceptual diagrams to illustrate key points. Include structural contour maps (top of unit) and isopach maps to describe the geology at your site. Geologic cross-sections, which include an interpretive drawing of the vertical extent of soil and groundwater contamination (i.e., an interpretive drawing—not a plot of laboratory results). The SCM report requested below is to include one cross section parallel and one cross section perpendicular to the contaminant plume axis. Each cross section should include, but not be restricted to, the following:
 1. Subsurface geologic features, depth to groundwater and man-made conduits.
 2. Surface topography. The cross sections should be extended off-site where necessary to show significant breaks in slope.
 3. Soil descriptions for all borings and wells along the line of section.
 4. Screen and filter pack intervals for each monitoring well.
 5. Sampling locations and results for soil and grab groundwater samples.
 6. Site features such as the tank pit, dispensers, buildings etc. Where appropriate, monitoring well locations and soil boring locations should be projected back to the strike of the cross section line.
- c) Identification and listing of specific data gaps that require further investigation during subsequent phases of work.
- d) Proposed activities to investigate and fill data gaps identified above.
- e) The SCM shall include an analysis of the hydraulic flow system at and downgradient from the site. Include rose diagrams for groundwater gradients. The rose diagram shall be plotted on groundwater contour maps and updated in all future reports submitted for your site. Include an analysis of vertical hydraulic gradients. Note that these likely change due to seasonal precipitation and pumping.
- f) Temporal changes in the plume location and concentrations are also a key element of the SCM. In addition to providing a measure of the magnitude of the problem, these data are often useful to confirm details of the flow system inferred from the hydraulic head measurements. Include plots of the contaminant plumes on your maps, cross-sections, and diagrams.
- g) Other contaminant release sites exist in the vicinity of your site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for your SCM. Include a summary of work and technical findings from nearby release sites and incorporate the findings from nearby site investigations into your SCM.

Please report the information discussed above in your revised SCM and include it in report requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Mr. Steven Plunkett), according to the following schedule:

- **June 15, 2006** – Revised Work Plan for Soil and Groundwater Investigation with Revised Site Conceptual Model and Updated Preferential Pathway Study
- **August 30, 2007** – Soil and Groundwater Investigation Report

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please be aware that you may be eligible for reimbursement of the costs of investigation from the California Underground Storage Tank Cleanup Fund (Fund). In some cases, a deductible amount may apply. If you believe you meet the eligibility requirements, I strongly encourage you to call the Fund for an application.

However, please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

Chris Panaitescu
May 15, 2006
Page 7

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

If you have any questions, please call me at (510) 383-1767.

Sincerely,



Steven Plunkett
Hazardous Materials Specialist

cc: Richard Blackmer
Equipoise Corporation
1401 N. El Camino Real, Suite 107
San Clemente, CA 92672

Donna Drogos, ACEH
Steven Plunkett, ACEH
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