



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
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June 21, 2013

Walter Sprague
Pacific Convenience & Fuel
7180 Knoll Center Parkway, Suite 100
Pleasanton, CA 94566
(Sent via E-mail to WSprague@pcandf.com)

Catalina Espino Devine
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, California 94583
(Sent via E-mail to: espino@Chevron.com)

Ed Ralston
Phillips 66 Company
76 Broadway, Sacramento, CA 95818
(Sent via E-mail to: Ed.C.Ralston@p66.com)

Subject: Fuel Leak Case No. RO0000219 and GeoTracker Global ID T0600101476, UNOCAL #5043, 449 Hegenberger Road, Oakland, CA 94621

Dear Messrs. Sprague and Ralston and Ms. Espino Devine:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site including the following documents prepared by Antea Group (Antea) for the subject site on your behalf.

1. *Work Plan- Additional Site Investigation* (Work Plan), dated November 14, 2011. The Work Plan proposes the advancement of five test borings to help assess if in-situ chemical oxidation (ISCO) is a viable remediation option to address impacted soil and groundwater beneath the site.
2. *ISCO Pilot Test Work Plan* (ISCO WP) dated May 15, 2012. The ISCO WP details the approach for conducting an in-situ chemical oxidation (ISCO) pilot test using alkaline activated sodium persulfate. The ISCO WP stated the pilot test will consist of four phases:
 - i. Baseline groundwater characterization of Contaminants of Concern (COCs) and geochemical parameters in selected monitoring wells;
 - ii. Initial round of ISCO injection within the two proposed pilot test areas and process monitoring to optimize injection pressure and flow rates, spacing of injection points, and the volume and strength of amendment slurry;
 - iii. Performance monitoring and assessment; and
 - iv. Potential expansion of the pilot test to additional areas throughout the site.

The ISCO WP presented the results of pressure and flow characteristics at five boring locations at various depths to a total depth of 13 feet below the ground surface (BGS). In each case, the data showed that fluid could be moved through the formation using acceptable pressures. The ISCO WP stated that prior to conducting a pilot test, soil

buffering tests would be used to confirm the soil's ability to resist changes in pH when calcium peroxide is applied and provide a ratio of calcium peroxide per kilogram of soil required to maintain the pH of the soil. Subsequent to the completion of the soil buffering test, Antea stated that the information gained will be used to determine the ideal amendment concentrations, volumes, and injection pressures for the final configuration of the remediation system. The injection intervals at the two pilot test areas were reported as 5 to 16 BGS.

In addition to the suite of petroleum fuel related compounds and mixtures, the ISCO WP identified geochemical and field parameters for monitoring the affects of ISCO injection. The geochemical parameters identified for analyses were methane, sulfate, sulfide, total iron, ferrous iron, ferric iron, nitrate, nitrite, alkalinity, trivalent and hexavalent chromium, total and dissolved manganese, and total dissolved solids (TDS). Additionally, field parameters were identified for monitoring and included depth to water, groundwater temperature, pH, oxidation-reduction potential (ORP), specific conductance, and dissolved oxygen (D.O.).

3. *Quarterly Summary Report, Fourth Quarter 2012* (GWMR) dated January 16, 2013. The GWMR states Antea, as detailed in the May 15, 2012 ISCO WP reviewed in Item 2 above, has recovered soil samples from one hand auger boring as part of the pilot test for in-situ remediation and will continue the pilot test for in-situ remediation.
4. *Remedial Action Plan* (RAP) dated April 23, 2013. The RAP proposes:
 - i. Excavation of two areas including excavation sampling density and scope of analysis for the collection of confirmation soil samples;
 - ii. Destruction of three monitoring wells (MW-6, MW-12, and MW-12a) in preparation for the excavation;
 - iii. Advancement of seven soil borings in the vicinity of monitoring well MW-6 to refine the boundaries of the proposed excavation;
 - iv. Addition of an oxygen release compound (ORC) to the excavation backfill for groundwater remediation; and
 - v. Replacement of monitoring well MW-6 subsequent to the remediation excavation and ORC application.

The RAP provides an attachment presenting the results of a Total Oxygen Demand (TOD) bench scale test on soil samples from the hand auger boring referenced in the January 16, 2013 GWMR report reviewed in Item 3 above. The RAP states the test evaluated TOD and the oxidant persistence during chemical oxidation treatment using stabilized hydrogen peroxide activated sodium persulfate. Based on the test results Antea does not recommend the use of hydrogen peroxide activated sodium persulfate for site remediation.

ACEH has evaluated the data and recommendations presented in the above-mentioned reports, in conjunction with the case files. Based on our review, ACEH does not agree with the work as proposed in the RAP. Therefore, at this juncture ACEH requests that you address the following technical comments prior to ACEH making a determination on the appropriateness of corrective

actions and send us the report in accordance with the schedule provided in the Technical Report Request section below.

TECHNICAL COMMENTS

1. Feasibility Study/Corrective Action Plan. ACEH requests that you prepare a Feasibility Study/Corrective Action Plan (FS/CAP) that meets the provisions of section 2725 of the Underground Storage Tank (UST) regulations provided in the California Code of Regulations (CCR) Title 23, Chapter 16, section 2600, et seq. According to the UST regulations, a FS/CAP must present an evaluation of a minimum of two active remedial alternatives including discussion of feasibility, cost effectiveness, and estimated time to reach cleanup goals, and the advantages and limitations for each remediation alternative. To date although two remedial technologies have been explored by Antea in the documents listed above - excavation and ISCO injection - neither of these methods has been completely evaluated. The RAP presents Antea's recommended corrective action for the site alternative combining two technologies - excavation and ORC application in the excavation pit. ACEH considers this recommendation premature as a FS has not been performed that presents two fully developed alternatives as required by the UST regulations.

i. Excavation-

- a.** Approximately 6,200 cubic yards of soil have been previously excavated and transported off site for disposal. The depth of the excavation was up to 16 feet BGS. The removed soil was replaced by clean import fill. The RAP proposes excavating two areas to a depth of 11 feet BGS, both of which contain areas previously excavated and backfilled with clean import. It is unclear to ACEH if the removal of several feet of clean overburden to excavate an additional three to six feet of additional soil is cost effective.
- b.** The 11-foot depth of the proposed excavation does not appear to be technically justified. The Antea ISCO WP states the depth of contamination east of the dispenser islands extends to a depth of 20 feet BGS. ACEH's review of the case file indicates, a soil sample collected in area of the proposed excavation A1 at a depth of 26.5 feet BGS has a reported concentration of total petroleum hydrocarbons as gasoline of 6,840 milligrams per kilogram (mg/kg) and 80.9 mg/kg benzene.
- c.** The borings proposed for delineating contamination within the A2 excavation area are proposed to be advanced to a depth of 11 feet BGS - the depth of the proposed excavation. The 11-foot depth does not appear to be technically justified. ACEH believes the boring depth for delineation should exceed the anticipated depth of excavation.
- d.** The proposed boring locations for determining the extent of the A2 excavation are not shown on the figures provided in the RAP. ACEH cannot comment on the appropriateness of these initial delineation borings.
- e.** Confirmation sidewall soil samples should be recovered from two different depths and be recovered from native material. Samples should be collected from the 0- to 5-foot and from the 5- to 10-foot BGS intervals. Sample depths can be staggered to maintain the one sample per 20- linear feet sampling interval outlined in the RAP.

- f. The RAP proposes abandonment of two monitoring wells (MW-12 and MW-12A) located in the area A1 excavation, but does not propose replacement wells. ACEH is of the opinion that the areas to be excavated should be delineated prior to well abandonment. As, well MW-12A is the only site well that monitors deeper groundwater, ACEH is of the opinion that the well should be replaced.
- ii. In-Situ Chemical Oxidation –**
- a. The ISCO WP reported fluid could be moved through the formation using acceptable pressures. This test was performed to a depth of 13 feet BGS; however, the proposed pilot test injection depth is 16 feet BGS. Depth to contamination exceeds the test depth of 13 feet. The flow test is considered incomplete as it does not evaluate the entire contaminated interval. Additionally the radius of influence was not determined.
 - b. Based on the ISCO bench test data, Antea does not recommend the use of hydrogen peroxide activated sodium persulfate for site remediation. There is no evaluation of alternative chemical oxidation compounds for remediation application; however, Antea proposes the use of ORC in conjunction with backfilling the excavated areas without technical justification. It is unclear to ACEH if ORC is a suitable remediation compound or if ORC injection would be a more appropriate application technique to target contamination.
 - c. The 2012 ISCO Work Plan indicates the injection chemical would be a proprietary blend of sodium persulfate and calcium peroxide; however, it was reported that the bench test was performed using hydrogen peroxide, which was shown not to be suitable. There was no evaluation of the suitability or use of calcium peroxide as an activator or a discussion of activators as it relates to the effectiveness of the persulfate application.
 - d. The 2012 ISCO WP stated process monitoring to optimize injection pressure and flow rates, spacing of injection points, and the volume and strength of amendment slurry would be determined during the pilot test. ACEH has not been provided the data for these determinations.
 - e. The 2012 ISCO WP stated performance monitoring and assessment would be performed. ACEH has not been provided with the performance reports.
 - f. The 2012 ISCO WP stated potential expansion of the pilot test to additional areas throughout the site may occur. ACEH has not been provided data documenting the performance of the ISCO pilot test or submittal of a work plan proposing to expand the pilot test.
 - g. The ISCO evaluation did not evaluate alternative chemicals for remediation application.
- 2. Meeting -** ACEH would like to schedule a meeting at our office with you and Antea to discuss the case and the technical comments above in order to determine the most effective strategy for moving this case forward. Please contact us by the date listed below with proposed dates for the meeting.

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TECHNICAL REPORT REQUEST

Please submit technical reports to ACEH (Attention: Keith Nowell), according to Attachment 1 and the following schedule:

- **July 9, 2013** – Provide ACEH with schedule containing times/dates for a meeting to be held at the ACEH office.
- **August 23, 2013** – Feasibility Study/Corrective Action Plan.
(File to be named: RO219_FEASSTUD_R_ yyyy-mm-dd)

If you have any questions or concerns regarding this correspondence or your case, please call me at (510) 567-6764 or send me an electronic mail message at keith.nowell@acgov.org.

Sincerely,

Keith Nowell, P.G., C.HG.
Hazardous Materials Specialist

Attachment 1: Responsible Party(ies) Legal Requirements/Obligations and ACEH Electronic Report Upload (ftp) Instructions

cc: Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032 (Sent via E-mail to: lgriffin@oaklandnet.com)
Dennis Dettloff, Antea Group, 11050 White Rock Road, Suite 110, Rancho Cordova, CA 95670 (Sent via E-mail to: dennis.dettloff@anteagroup.com)

Donna Drogos, ACEH (Sent via E-mail to: donna.drogos@acgov.org)
Dilan Roe (Sent via E-mail to: dilan.roe@acgov.org)
Keith Nowell, ACEH (Sent via E-mail to: keith.nowell@acgov.org)
GeoTracker
File

ATTACHMENT 1

**Responsible Party(ies) Legal Requirements/Obligations
& ACEH Electronic Report Upload (ftp) Instructions**

Attachment 1

Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements. (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/)

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, 7835, 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 note that delays in investigation, late 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.

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.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	REVISION DATE: July 25, 2012
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (petroleum UST and SCP) require submission of all reports in electronic form to the county's FTP site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as a **single Portable Document Format (PDF) with no password protection.**
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

- 1) Obtain User Name and Password
 - a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
 - i) Send an e-mail to .loptoxic@acgov.org
 - b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses,** and the **Case Numbers (RO# available in Geotracker) you will be posting for.**
- 2) Upload Files to the ftp Site
 - a) Using Internet Explorer (IE4+), go to <://alcoftp1.acgov.org>
 - (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
 - b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
 - c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
 - d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
 - e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.
- 3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
 - a) Send email to .loptoxic@acgov.org notify us that you have placed a report on our ftp site.
 - b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
 - c) The subject line of the e-mail must start with the RO# followed by **Report Upload.** (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
 - d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.