



ENVIRONMENTAL HEALTH DEPARTMENT  
ENVIRONMENTAL PROTECTION  
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April 4, 2014

Ms. Alexis Fischer  
Chevron Products Company  
6101 Bollinger Canyon Road  
San Ramon, CA 94583  
(sent via electronic mail to [AFischer@chevron.com](mailto:AFischer@chevron.com))

Subject: Request for Data Validation, a Focused Site Conceptual Model, and a Data Gap Work Plan;  
Fuel Leak Case No. RO0000284 and Geotracker Global ID T0600100328, Chevron #9-0121;  
3026 Lakeshore Avenue, Oakland, CA 94610

Dear Ms. Alexis Fischer:

Alameda County Environmental Health (ACEH) staff has reviewed the case file including the *Second Semi-Annual 2013 Groundwater Monitoring and Sampling Report*, dated November 20, 2013, and the *Subsurface Investigation Report*, dated February 14, 2014. The reports were submitted on your behalf by Conestoga-Rovers & Associates (CRA). Thank you for their submittal. The *Subsurface Investigation Report*, documents the installation of seven soil bores, the collection of soil and grab groundwater samples, and the collection of two crawl space vapor samples, six indoor air samples, two outdoor air samples, and three subslab vapor samples.

ACEH has evaluated the data and recommendations presented in the above-mentioned reports, in conjunction with the case files, to determine if the site is eligible for closure as a low risk site under the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy (LTCP). Based on ACEH staff review, we have determined that the site fails to meet the LTCP General Criteria e (Site Conceptual Model), and the Media-Specific Criteria for Groundwater, the Media-Specific Criteria for Vapor Intrusion to Indoor Air, and the Media-Specific Criteria for Direct Contact (see Geotracker for a copy of the LTCP checklist).

Therefore, at this juncture ACEH requests that you prepare a Revised Data Gap Investigation Work Plan that is supported by a focused Site Conceptual Model (SCM) to address the Technical Comments provided below and discussed with you in a meeting with Chevron and ACEH staff on March 13, 2014.

### **TECHNICAL COMMENTS**

1. **Comments on Subsurface Investigation Report** – ACEH has a number of comments relative to the referenced investigation report. These include the following:
  - a. **Data Validation Request** – The referenced *Subsurface Investigation Report* contains soil and grab groundwater analytical data that contains a significant number of footnote qualifiers indicating the data is poorly collected, and is potentially unusable to characterize the site. A data QA/QC discussion or section was not included in the report. In particular, laboratory analytical data qualifiers include the following:
    - i. Surrogate recovery in multiple soil analytical results did not meet quality control requirements.
    - ii. Reporting limits were raised due to foaming in both soil and groundwater samples.

- iii. All grab groundwater Total Petroleum Hydrocarbons (TPH) as motor oil (TPHmo) and TPH as diesel (TPHd) analysis were conducted outside hold times.
- iv. Footnotes state that preserved VOAs were used; however, the pH of three (of seven total) samples with low volatile compound detections contained a pH as high as 8.
- v. The uniformity of oxygen and nitrogen content, especially in the subslab vapor environment, warrants an evaluation of collection procedures in an effort to determine that sampling procedures or errors may have inadvertently contributed to the uniformity of results.

It appears that a review of Data Quality Objectives (DQO) and the appropriateness of the use of the data, including vapor analytical data, are warranted. Therefore ACEH requests the validation of analytical data prior to acceptance of the data for the characterization of the site, by the date identified below.

- b. **Soil Bore Log Descriptions** – A discrepancy exists between descriptions of Light Non-Aqueous Phase Liquids (LNAPL) included in the text of the report and descriptions contained on bore log B-7. The bore log does not include a note about the presence of LNAPL. At a minimum it appears appropriate to include these descriptions on the log for B-7.
2. **Low Threat Closure Policy Review** – As noted above the site has been reviewed under the LTCP and it is not eligible for closure under policy at this time. ACEH provides the following observations.

- a. **LTCP General Criteria e (Site Conceptual Model)** – According to the LTCP, the SCM is a fundamental element of a comprehensive site investigation. The SCM establishes the source and attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants). The SCM is relied upon by practitioners as a guide for investigative design and data collection. All relevant site characteristics identified by the SCM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy.

Our review of the case files indicates that insufficient data collection and analysis has not been presented to assess the nature, extent, and mobility of the release and to support compliance with Media Specific Criteria for Groundwater, Vapor Intrusion to Indoor Air, and Direct Contact and Outdoor Air Exposure as described in Items b, c and d below, respectively.

- b. **LTCP Media Specific Criteria for Groundwater** – To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites listed in the policy.

Our review of the case files indicates that insufficient data collection and analysis has been presented to support the requisite characteristics of plume stability or plume classification as follows:

- i. **Downgradient and Lateral Extent of Groundwater Plume** - The downgradient and lateral extent of the groundwater plume has not been adequately defined. As presently understood, there are three groundwater flow directions at the site; two (northerly and southwesterly) apparently created by the subterranean Visqueen plastic vertical sheet installed between the subject site and the adjacent downgradient property, belonging to the Archdiocese of Oakland. A third flow direction is located in the eastern corner of the site and appears to flow uphill towards Excelsior Court to the east. This area is in the vicinity of a source area and a storm drain conduit documented along the southern property boundary.

In the northerly flow direction, onsite groundwater well MW-2A is currently the most downgradient well. Well MW-2A, and the previous well MW-2, have historically contained

groundwater concentrations that LTCP technical support documents consider to be indicative of indirect evidence of LNAPL (concentrations up to 26,000 micrograms per liter [ $\mu\text{g/l}$ ] TPHg, and 5,700  $\mu\text{g/l}$  benzene). Concentrations of TPHd are not defined downgradient of the well(s) and Lake Merritt is also downgradient. The southwesterly gradient remains undefined as documented by TPHd concentrations in well MW-6. Additionally the storm drain conduit along the southern edge of the property by-passes the well network and may provide a conduit for discharge of contaminated water directly into Lake Merritt.

- ii. **Preferential Pathway and Sensitive Receptor Survey** – The *Sensitive Receptor and Preferential Pathway Survey, Response to Regulatory Comments, and Work Plan for Additional Assessment*, dated May 15, 2011 indicates there are multiple conduits in Lakeshore Avenue that may act as preferential pathways; including several large diameter sewer and storm drain trunk lines. A key reason for the collection of groundwater samples along the storm drain alignment on the eastern edge of the site and downgradient properties during the November 13, 2013 field investigation was to determine the extent this likely conduit is used in the offsite migration of petroleum contamination from the site. ACEH notes that the collection of groundwater at 25 and 20 feet, respectively in bores B-4 and B-5, does not define the downgradient extent of groundwater along this conduit; however, may, upon data validation as discussed above, define the vertical extent of groundwater contamination beneath the subject site and vicinity. Soil collected in these bores may, upon data validation, help define the downgradient extent of soil contamination along the conduit.

The referenced May 2011 report also indicates that other sensitive receptors, such as basements with basement sumps, also appear to exist within the currently undefined down- or lateral-gradient extent of the groundwater plume.

Further evaluation of potential preferential pathways and sensitive receptors appears appropriate.

- iii. **Historic Data Quality Review** – Review of groundwater analytical data from well couple MW-3 and MW-3A has not been conducted. A review of analytical data indicates that concentrations of contaminants in groundwater samples collected from well MW-3A (installed as a replacement well for MW-3) were substantially lower than samples collected from well MW-3 within a period of approximately one month (2,880 to  $<50 \mu\text{g/l}$  TPHg, 763 to  $93 \mu\text{g/l}$  TPHd, 355 to  $<0.5 \mu\text{g/l}$  benzene). Well MW-3A contains a longer screen interval that may allow dilution of hydrocarbon contaminants. An evaluation of the wells appears warranted to ensure that a source of residual hydrocarbons is not located near the storm drain line.

Please present a strategy in the Revised Data Gap Work Plan (described in Item 3 below) to address the items discussed above. Alternatively, please provide justification of why the site satisfies the Media-Specific Criteria for Groundwater in the focused SCM described in Item 3 below.

- c. **LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air** – The LTCP describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to human occupants of existing or future site buildings, and adjacent parcels. Appendices 1 through 4 of the LTCP criteria illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario.

Our review of the case files indicates that the site data collection and analysis fail to support the requisite characteristics of one of the four scenarios. These comments apply to the subject site, which is no longer an active service station, and to the adjacent downgradient property containing a basement. Water level data indicates the site may not have a bioattenuation zone as defined by the LTCP, as the depth to groundwater is as shallow as the ground surface at times of the year. Additionally, concentrations greater than 100 mg/kg TPH are present in the 0 to 5 foot

depth interval at multiple locations on the subject site as well as immediately upgradient of the offsite basement with documented infiltration of contaminated groundwater. At present no onsite soil vapor samples have been collected at the former service station.

Subslab indoor air outdoor crawl space sampling was conducted at the site in Nov 2013. A review of the crawl space, outdoor air, and indoor air vapor data collected indicates very uniform TPHg, BTEX, MTBE, and naphthalene results in each environment. ACEH notes that all benzene vapor concentrations, including outdoor air samples, are above generic but conservative Environmental Screening Levels (ESLs) promulgated by the San Francisco Regional Water Quality Control Board (RWQCB). Concentrations below ESLs are generally considered to be protective of human health. ACEH also notes that the site is in a very busy area of Oakland, and is just west of an onramp to I-580 south, thus anticipates that air concentrations could be expected to be elevated above indoor ESLs.

Based on the data collected CRA recommends conducting an additional round of sampling to confirm the results of samples collected. ACEH notes that concentrations of B and ethylbenzene in groundwater indicate these constituents not pose a risk to indoor air. However, ACEH also notes that naphthalene, which is one of the criteria used in the LTCP, has not been evaluated in soil, groundwater, or air even though a significant source of diesel appears to exist. Therefore ACEH requests the addition of the analyte to groundwater and vapor samples collected in the future.

ACEH has a number of comments and observations in regards to the vapor sampling effort conducted at the site in November 2013, that are not discussed in the *Subsurface Investigation Report*, dated February 14, 2014. Clarification of sampling procedures and building conditions appears warranted to validate the sampling results.

- i. Indoor air sampling analytical data suggest that there is no difference between indoor and outdoor air; that they are equilibrated. This is atypical and suggests that the windows and doors may have been open during the sampling event or that the HVAC unit was on and had equilibrated or had entirely replaced indoor air with outside air. This is additionally indicated by the building survey form for 3008 Lakeshore Avenue that includes a note about an open door in the back storage area. ACEH would expect that keeping doors open is seasonally not a normal practice at the building, therefore please clarify if the door or windows were closed during the 24 hour collection time period, or if changes in door or window position occurred during the sampling period.
- ii. Review of the building survey forms indicates that indoor air sample IA-4 was collected on the first floor of the Archdiocese building, and not in the basement near the elevator sump as requested, and also stated in the text of the report. It appears that the basement was not included in the building survey, as the location of the elevator (on any floor) and the elevator sump in the basement is not depicted in the building diagram. This is critical as sump seepage water samples have consistently detected petroleum compounds (TPHd, with and without silica gel cleanup, TPHg, BTEX, and MTBE). Please clarify whether a sample was collected near the basement sump as requested.
- iii. A standard statement is included in the report that a shroud atmosphere of approximately 40% helium was created during vapor sampling; however, there are no helium concentrations reported for the shroud, either as meter readings or through laboratory analysis to validate the statement. Data validation, requested above, must include this detail.

Alternatively, please provide justification of why the site satisfies the Media-Specific Criteria for Vapor Intrusion to Indoor Air in a SCM that assures that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to occupants of adjacent buildings.

- d. **LTCP Media Specific Criteria for Direct Contact and Outdoor Air Criteria** – The LTCP describes conditions where direct contact with contaminated soil or inhalation of contaminants volatilized to outdoor air poses a low threat to human health. According to the policy, release sites

where human exposure may occur satisfy the media-specific criteria for direct contact and outdoor air exposure and shall be considered low-threat if the maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 for the specified depth bgs. Alternatively, the policy allows for a site specific risk assessment that demonstrates that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health, or controlling exposure through the use of mitigation measures, or institutional or engineering controls.

Our review of the case files indicates that insufficient data collection and analysis has been presented to satisfy the media-specific criteria for direct contact and outdoor air exposure. Specifically, the presence of TPHmo range hydrocarbons at the site and vicinity indicate that while a waste oil UST has not been reported at the site, the source of the TPHmo is unknown and may suggest the presence of an undocumented WO UST. At present, naphthalene soil analytical data is not documented to have been collected in a source area for motor oil at the site. It appears appropriate to determine the source of the TPHmo and collect soil analytical data for naphthalene and polycyclic aromatic hydrocarbons (PAHs) in the source area(s). The presence of TPHd at the site further indicates the collection of these analytical parameters is appropriate.

Additionally, several tank or product line removal reports document the presence of benzene concentrations at 2.5 feet bgs beneath product piping, and ranging between 23 to 40 mg/kg. Some of this area may have been vertically overexcavated; however, the lateral extent of the removal, or the presence of residual contamination that affects this criterion, has not been confirmed.

Therefore, please present a strategy as described in Item 3 below to collect sufficient data to satisfy the direct contact and outdoor air exposure criteria in source areas (dispenser locations, former waste oil locations, etc.). Sample and analyze soil at the five and ten foot intervals, at the groundwater interface, lithologic changes, and at areas of obvious impact. Also, collect a groundwater sample from each boring and propose the requisite analysis including naphthalene and PAH analysis.

Alternatively, please provide justification of why the site satisfies the Media-Specific Criteria for Direct Contact and Outdoor Air Exposure in the focused SCM described in Item 3 below that assures that exposure to petroleum constituents in soil will have no significant risk of adversely affecting human health.

- 3. Data Gap Investigation Work Plan and Focused Site Conceptual Model** – Please prepare a Data Gap Investigation Work Plan to address the technical comments listed above. Please support the scope of work in the Data Gap Investigation Work Plan with a focused SCM and Data Quality Objectives (DQOs) that relate the data collection to each LTCP criteria. For example please clarify which scenario within each Media-Specific Criteria a sampling strategy is intended to apply to.

In order to expedite review, ACEH requests the focused SCM be presented in a tabular format that highlights the major SCM elements and associated data gaps, which need to be addressed to progress the site to case closure under the LTCP. Please see Attachment A “Site Conceptual Model Requisite Elements”. Please sequence activities in the proposed revised data gap investigation scope of work to enable efficient data collection in the fewest mobilizations possible.

- 4. Missing Subsurface Investigation Report and Associated Data** – Soil bores SB-1 to SB-7 were installed at the site at some time in the past; however, an associated report and analytical data has not been submitted to ACEH or to Geotracker. The bore locations appear to have been installed in useful locations, and thus fill data gaps in the understanding of contaminant distribution in soil, and perhaps groundwater, at the site. Therefore ACEH requests the submittal of the report to the ACEH ftp site and to Geotracker. Depending on the date of the report, it may be uploadable without a perjury statement as a historic document (pre-2006).
- 5. Future Site Plans** – As of approximately August 2010 all fuel dispensing infrastructure was removed from the site. While the subject site is no longer an active service station, future plans for the site have not been provided. In order to help with a closure analysis under the LTCP, ACEH requests

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that future site plans or intensions be provided in the requested Data Gap Work Plan and focused SCM.

### **TECHNICAL REPORT REQUEST**

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **April 25, 2014** – Missing Report (SB-1 to SB-7 data)  
File to be named: RO284\_SWI\_R\_yyyy-mm-dd
- **May 16, 2014** – First Semiannual 2014 Groundwater Monitoring Report  
File to be named: RO284\_GWM\_R\_yyyy-mm-dd
- **July 3, 2014** – Data Gap Investigation Plan and Focused Site Conceptual Model  
File to be named: RO284\_WP\_SCM\_R\_yyyy-mm-dd
- **November 21, 2014** – Second Semiannual 2014 Groundwater Monitoring Report  
File to be named: RO284\_GWM\_R\_yyyy-mm-dd

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.

Online case files are available for review at the following website: <http://www.acgov.org/aceh/index.htm>.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at [mark.detterman@acgov.org](mailto:mark.detterman@acgov.org).

Sincerely,

Mark E. Detterman, P.G., C.E.G.  
Senior Hazardous Materials Specialist

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

Attachment A – Site Conceptual Model Requisite Elements

cc: Nathan Lee, Conestoga-Rovers & Associates, Inc., 5900 Hollis Street, Suite A, Emeryville, CA 94608; (sent via electronic mail to [nlee@croworld.com](mailto:nlee@croworld.com))

Dilan Roe, ACEH (sent via electronic mail to [dilan.roe@acgov.org](mailto:dilan.roe@acgov.org))  
Mark Detterman (sent via electronic mail to [mark.detterman@acgov.org](mailto:mark.detterman@acgov.org))  
Electronic file, GeoTracker

# 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/](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.

<b>Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)</b>	<b>REVISION DATE:</b> July 25, 2012
	<b>ISSUE DATE:</b> July 5, 2005
	<b>PREVIOUS REVISIONS:</b> October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010
<b>SECTION:</b> Miscellaneous Administrative Topics & Procedures	<b>SUBJECT:</b> 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 [deh.loptoxic@acgov.org](mailto:deh.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 <ftp://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 [deh.loptoxic@acgov.org](mailto:deh.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.



**ATTACHMENT A**

**Site Conceptual Model Requisite Elements**

# ATTACHMENT A

## Site Conceptual Model

The site conceptual model (SCM) is an essential decision-making and communication tool for all interested parties during the site characterization, remediation planning and implementation, and closure process. 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 initially used to characterize the site and identify data gaps. As the investigation proceeds and the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened until it is said to be “validated”. At this point, the focus of the SCM shifts from site characterization towards remedial technology evaluation and selection, and later remedy optimization, and forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 2 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

The SCM should incorporate, but is not limited to, the topics listed below. Please support the SCM with the use of large-scaled maps and graphics, tables, and conceptual diagrams to illustrate key points. Please include an extended site map(s) utilizing an aerial photographic base map with sufficient resolution to show the facility, delineation of streets and property boundaries within the adjacent neighborhood, downgradient irrigation wells, and proposed locations of transects, monitoring wells, and soil vapor probes.

- a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.
- b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.
- c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

## ATTACHMENT A

### Site Conceptual Model (continued)

concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes). Include local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.).

- d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.
- e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.
- f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.
- g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).
- h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).
- i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate.
- j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

**TABLE 1**  
**INITIAL SITE CONCEPTUAL MODEL**

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	<p>The site is in the northwest portion of the Livermore Valley, which consists of a structural trough within the Diablo Range and contains the Livermore Valley Groundwater Basin (referred to as "the Basin") (DWR, 2006). Several faults traverse the Basin, which act as barriers to groundwater flow, as evidenced by large differences in water levels between the upgradient and downgradient sides of these faults (DWR, 2006). The Basin is divided into 12 groundwater basins, which are defined by faults and non-water-bearing geologic units (DWR, 1974).</p> <p>The hydrogeology of the Basin consists of a thick sequence of fresh-water-bearing continental deposits from alluvial fans, outwash plains, and lacustrine environments to up to approximately 5,000 feet bgs (DWR, 2006). Three defined fresh-water bearing geologic units exist within the Basin: Holocene Valley Fill (up to approximately 400 feet bgs in the central portion of the Basin), the Plio-Pleistocene Livermore Formation (generally between approximately 400 and 4,000 feet bgs in the central portion of the Basin), and the Pliocene Tassajara Formation (generally between approximately 250 and 5,000 or more feet bgs) (DWR, 1974). The Valley Fill units in the western portion of the Basin are capped by up to 40 feet of clay (DWR, 2006).</p>	None	NA
	Site	<p><b>Geology:</b> Borings advanced at the site indicate that subsurface materials consist primarily of finer-grained deposits (clay, sandy clay, silt and sandy silt) with interbedded sand lenses to 20 feet below ground surface (bgs), the approximate depth to which these borings were advanced. The documented lithology for one on-site boring that was logged to approximately 45 feet bgs indicates that beyond approximately 20 feet bgs, fine-grained soils are present to approximately 45 feet bgs. A cone penetrometer technology test indicated the presence of sandier lenses from approximately 45 to 58 feet bgs and even coarser materials (interbedded with finer-grained materials) from approximately 58 feet to 75 feet bgs, the total depth drilled. The lithology documented at the site is similar to that reported at other nearby sites, specifically the Montgomery Ward site (7575 Dublin Boulevard), the Quest laboratory site (6511 Golden Gate Drive), the Shell-branded Service Station site (11989 Dublin Boulevard), and the Chevron site (7007 San Ramon Road).</p> <p><b>Hydrogeology:</b> Shallow groundwater has been encountered at depths of approximately 9 to 15 feet bgs. The hydraulic gradient and groundwater flow direction have not been specifically evaluated at the site.</p>	<p>As noted, most borings at the site have been advanced to approximately 20 feet bgs, and one boring has been advanced and logged to 45 feet bgs; CPT data was collected to 75 feet bgs at one location. Lithologic data will be obtained from additional borings that will be advanced on site to further the understanding of the subsurface, especially with respect to deeper lithology.</p> <p>The on-site shallow groundwater horizontal gradient has not been confirmed. Additionally, it is not known if there may be a vertical component to the hydraulic gradient.</p>	<p>Two direct push borings and four multi-port wells will be advanced to depth (up to approximately 75 feet bgs) and soil lithology will be logged. See items 4 and 5 on Table 2.</p> <p>Shallow and deeper groundwater monitoring wells will be installed to provide information on lateral and vertical gradients. See Items 2 and 5 on Table 2.</p>
Surface Water Bodies		<p>The closest surface water bodies are culverted creeks. Martin Canyon Creek flows from a gully west of the site, enters a culvert north of the site, and then bends to the south, passing approximately 1,000 feet east of the site before flowing into the Alamo Canal. Dublin Creek flows from a gully west of the site, enters a culvert approximately 750 feet south of the site, and then joins Martin Canyon Creek approximately 750 feet southeast of the site.</p>	None	NA
Nearby Wells		<p>The State Water Resources Control Board's GeoTracker GAMA website includes information regarding the approximate locations of water supply wells in California. In the vicinity of the site, the closest water supply wells presented on this website are depicted approximately 2 miles southeast of the site; the locations shown are approximate (within 1 mile of actual location for California Department of Public Health supply wells and 0.5 mile for other supply wells). No water-producing wells were identified within 1/4 mile of the site in the well survey conducted for the Quest Laboratory site (6511 Golden Gate Drive; documented in 2009); information documented in a 2005 report for the Chevron site at 7007 San Ramon Road indicates that a water-producing well may exist within 1/2 mile of the site.</p>	<p>A formal well survey is needed to identify water-producing, monitoring, cathodic protection, and dewatering wells.</p>	<p>Obtain data regarding nearby, permitted wells from the California Department of Water Resources and Zone 7 Water Agency (Item 11 on Table 2).</p>

**TABLE 2  
DATA GAPS AND PROPOSED INVESTIGATION**

<b>Item</b>	<b>Data Gap</b>	<b>Proposed Investigation</b>	<b>Rationale</b>	<b>Analysis</b>
5	Evaluate the possible presence of impacts to deeper groundwater.  Evaluate deeper groundwater concentration trends over time.  Obtain data regarding the vertical groundwater gradient.  Obtain more lithological data below 20 feet bgs.	Install four continuous multichannel tubing (CMT) groundwater monitoring wells (aka multi-port wells) to approximately 65 feet bgs in the northern parking lot with ports at three depths (monitoring well locations may be adjusted pending results of shallow grab groundwater samples; we will discuss any potential changes with ACEH before proceeding). Groundwater monitoring frequency to be determined. Soil samples will be collected only if there are field indications of impacts. Soil lithology will be logged. However, information regarding the moisture content of soil may not be reliable using sonic drilling technology (two borings will be logged using direct push technology; see Item 4, above).	One well is proposed at the western (upgradient) property boundary to confirm that there are no deeper groundwater impacts from upgradient. Two wells are proposed near the center of the northern parking lot to evaluate potential impacts in an area where deeper impacts, if any, would most likely to be found. One well is proposed at the eastern (downgradient) property boundary to confirm that there are no impacts extending off-site. Port depths will be chosen based on the locations of saturated soils (as logged in direct push borings; see Item 4, above), but are expected at approximately 15, 45, and 60 feet bgs.	<i>Groundwater:</i> VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
6	Evaluate possible off-site migration of impacted soil vapor in the downgradient direction (east).  Evaluate concentration trends over time.	Install 4 temporary nested soil vapor probes at approximately 4 and 8 feet bgs along the eastern property boundary. Based on the results of the sampling, two sets of nested probes will be converted to vapor monitoring wells to allow for evaluation of VOC concentration trends over time.	Available data indicate that PCE and TCE are present in soil vapor in the eastern portion of the northern parking lot. Samples are proposed on approximately 50-foot intervals along the eastern property boundary to provide a transect of concentrations through the vapor plume. The depths of 4 and 8 feet bgs are chosen to provide data closest to the source (i.e., groundwater) while avoiding saturated soil, and also provide shallower data to help evaluate potential attenuation within the soil column. Two sets of nested vapor probes will be converted into vapor monitoring wells (by installing well boxes at ground surface); the locations of the permanent wells will be chosen based on the results of samples from the temporary probes.	<i>Soil vapor:</i> VOCs by EPA Method TO-15.
7	Evaluate potential for off-site migration of impacted groundwater in the downgradient direction (east).	Advance two borings to approximately 20 feet bgs in the parking lot of the property east of the Crown site for collection of grab groundwater samples.	Two borings are proposed off-site, on the property east of the Crown site, just east of the building in the expected area of highest potential VOC concentrations.	<i>Groundwater:</i> VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
8	Evaluate VOC concentrations just north of the highest concentration area.	Advance two borings to approximately 20 feet bgs north of Building A for collection of soil and grab groundwater samples. Soil samples will be collected at two depths in the vadose zone. Soil samples will be collected based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	The highest concentrations of PCE in groundwater were detected at boring NM-B-32, just north of Building A. The nearest available data to the north are approximately 75 feet away. One of the borings will be advanced approximately 20 feet north of NM-B-32 to provide data close to the highest concentration area. A second boring will be advanced approximately halfway between the first boring and former boring NM-B-33 to provide additional spatial data for contouring purposes. These borings will be part of a transect in the highest concentration area.	<i>Groundwater:</i> VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.  <i>Soil:</i> VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
9	Evaluate VOC concentrations in soil vapor in the south parcel of the site.	Install four temporary soil vapor probes at approximately 5 feet bgs around boring SV-25, where PCE was detected in soil vapor at a low concentration.	PCE was detected in soil vapor sample SV-25 in the southern parcel, although was not detected in groundwater in that area. Three probes will be installed approximately 30 feet from of boring SV-25 to attempt to delineate the extent of impacts. A fourth probe is proposed west of the original sample, close to the property boundary and the location of mapped utility lines, which may be a potential conduit, to evaluate potential impacts from the west.	<i>Soil vapor:</i> VOCs by EPA Method TO-15.
10	Obtain additional information regarding subsurface structures and utilities to further evaluate migration pathways and sources.	Ground penetrating radar (GPR) and other utility locating methodologies will be used, as appropriate, to further evaluate the presence of unknown utilities and structures at the site.	Utilities have been identified at the site that include an on-site sewer lateral and drain line, and shallow water, electric, and gas lines. Given the current understanding of the distribution of PCE in groundwater at the site, it is possible that other subsurface utilities, and specifically sewer laterals, exist that may act as a source or migration pathway for distribution of VOCs in the subsurface.	NA