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By Alameda County Environmental Health 2:58 pm, Nov 02, 2017

AK SERVICES INC.
821 Corporate Way
Fremont, CA 94539

RE: Chevron Extra Mile 4707 First Street, Livermore, CA 94551

Submittal Acknowledgment Statement

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB Geotracker Website.

Sincerely,

Jadwinder Singh

PIERS Environmental Services

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October 28, 2017

Mr. Mark Detterman
Alameda County Health Services Agency
Department of Environmental Health Local Oversight Program (LOP)
1131 Harbor Bay Parkway
Alameda, CA 94502

RE: DATA GAPS INVESTIGATION WORK PLAN
4707 1ST STREET, LIVERMORE, CA 94551
Fuel Leak Case No. RO0003260, Geotracker Global ID T10000010821

Dear Mr. Detterman:

PIERS Environmental Services is pleased to provide you with the attached Data Gaps Investigation Work Plan (Work Plan) for the property located at 4707 First Street in Livermore, California (Site). This Work Plan has been prepared in response to the Alameda County Department of Environmental Health – Local Oversight Program (ACDEH) letter August 23, 2017.

Should you have any questions or concerns regarding this Work Plan please do not hesitate in contacting PIERS Environmental Services.

Respectfully,

PIERS Environmental Services

PROFESSIONAL GEOLOGIST
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Data Gaps Investigation Work Plan

Chevron Gas Station (former Unocal #2611129/BP#11128)
4707 First Street
Livermore, California 94551

Prepared for:

AK Services, Inc.
821 Corporate Way
Fremont, California 94539

October 17, 2017

PIERS Project No. 17220

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1.0 INTRODUCTION AND BACKGROUND

This *Data Gaps Investigation Work Plan* (Work Plan) has been prepared by PIERS Environmental Services (PIERS) on behalf of the AK Services, Inc. (AKI) for the property located at 4707 First Street in Livermore, California (Site) (Figures 1 and 2). In their correspondence to AKI dated August 23, 2017, the Alameda County Department of Environmental Health – Local Oversight Program (ACDEH) requested this Work Plan to define the extent of petroleum hydrocarbon contamination beneath former underground product piping and gasoline dispensers at the Chevron Gas Station formerly located at the Site.

Their letter requested preparation of (1) a Focused Site Conceptual Model (SCM); and (2) Data Quality Objectives (DQOs) that relate to collection of data to satisfy State Water Resources Control Board (SWRQCB) Low-Threat Closure Policy (LTCP) requirements for petroleum hydrocarbon release sites. The ACDEH letter is presented in Appendix A (ACDEH, 2017).

1.1 Site Description

The Site is located at 4707 First Street in Livermore, California, in a primarily commercial area with several nearby gasoline service stations. The Site is an irregularly-shaped parcel and is identified as Alameda County Assessor's Parcel Number (APN) #99-40-13-29. The parcel is bounded by Southfront Lane on the north, Southfront Road on the east, and First Street on the west (Figure 2). An engineered surface water canal (Arroyo Seco Canal) runs east-to-west along the southern parcel boundary.

In 2017, the Subject Parcel building convenience store (C-Store) and gasoline-related structures were razed (i.e., a "Scrape and Rebuild"), which included removal of all aboveground structures and underground piping associated with three in situ underground fuel storage tanks (USTs). The USTs were left in place and will be used for gasoline storage at the newly constructed (currently non-operational) Extra Mile Gas Station. The new station contains: a C-store, a canopy overlying dispenser islands, and a car wash with a drive-through tunnel (Figure 3). The surrounding area is paved with either asphalt or concrete. A portion of the Site is landscaped.

1.2 Site History

The Site has been operated as a gasoline service station by several companies including Chevron, Unocal, and BP, since at least as early as the 1970s. In 2009, a detailed Site history was prepared by Delta in the report entitled *"Additional Site Assessment"* prepared for the Site. The report summarizes historical gasoline service station operations, investigations, and remediation from 1972 through to 2007 (Delta, 2008). An excerpt from the report is presented in Appendix B. Pertinent events are summarized below:

- In the early 1970s, four USTs were installed at the Site: one 10,000-gallon unleaded gasoline UST; one 8,000-gallon super unleaded gasoline UST; one 6,000-gallon regular gasoline UST; and one 280-gallon waste oil tank.
- In May 1994, the waste oil tank was removed from the Site. ACDEH oversaw the removal, and the site, then listed as BP #1128 (Global ID: T06000100925; LOP Case #RO0000560), was closed.
- In August 2007, a release of petroleum hydrocarbons was identified during a Phase II Environmental Site Assessment (ESA) performed at the Site (then identified as Unocal Station #2611129) by ATC.[1] Total Petroleum Hydrocarbons as diesel (TPHd) (TPH-Diesel Range Organics [TPH-DRO]) were detected in soil and groundwater samples. TPH-DRO was detected at a concentration of 80 milligrams per kilogram (mg/kg) in a soil sample collected approximately 21 feet below ground surface (bgs) from one boring B-4, and at concentrations of 1,100 micrograms per liter (µg/L), 4,600 µg/L, 6,300 µg/L, and 7,300 µg/L, in groundwater samples collected from four borings, B-1, B-2, B-3 and B-6, respectively, (Figure 2).
- In 2009, Delta performed an investigation of soil and groundwater at the Site. Seven borings were drilled and sampled (Figure 4). Benzene was detected in two soil samples at low concentrations (i.e., 0.0013 mg/kg and 0.0015 mg/kg), TPH-DRO was detected in several soil samples at a maximum concentration of 5.0 mg/kg, and TPH-DRO was detected in three groundwater samples collected along the eastern and southern parcel boundaries at a maximum concentration of 39 µg/L. The results of Delta's research indicated the Site's tanks did not utilize diesel at that time, or in the past, and that the contamination was a result of an off-site, up-gradient release. Based on the information provided in their report *"Additional Site Assessment"*, Delta requested closure of the Site (Delta, 2009).
- In March 2010, ACDEH closed the Unocal #2611129 site, listed as Global ID: T0619756184; LOP Case #RO0002970. According to the GeoTracker Case Closure Summary (CCS), the site contaminants *"appeared to be related to migration of free product from historic releases that occurred at a Chevron service station located east of the site at 4904 Southfront Lane. The historic releases at the Chevron service station were evaluated as part of fuel leak case RO000477, which was closed on December 21, 2007."*[2] The Site was closed on the basis that *"residual contamination did not pose a significant threat to water resources, public health and safety, and the environment under the current commercial land use."*

[1] The Phase II ESA was conducted in response to Phase I ESA recommendations prepared for due diligence purposes.

[2] The CCS stated that no water supply wells were located within 2,000 feet of the Site[2], and the nearest well (PG&E) was located upgradient (east), approximately 1,950 feet east of the Site.

- The 2010 closure letter indicated TPHd (TPH-DRO) remained in soil and groundwater at concentrations up to 80 parts per million (ppm) and 39 parts per billion (ppb), respectively. The Site was closed with future land use restricted to commercial operations. According to GeoTracker, the following is prohibited at the Site: day care centers, elder care centers, hospitals, groundwater extraction at any depth without approval, public or private schools for persons under 21, raising of food, and residences. Also, notification to ACDEH is required prior to a change in land use, and a health and safety plan (HASP) must be prepared prior to subsurface work.

As stated previously, in 2017, the existing service station (the former Chevron station) underwent a complete remodeling that included removal of the dispenser islands, the canopy, underground fuel lines, and the C-Store. The last recorded removal of product piping prior to 2017 was cited by Delta as having been conducted in September 1999 (Delta, 2009). The fuel lines were reportedly free of holes, and no soil samples were collected. It is unclear from readily available information if additional repairs were conducted post-1999. During the 2017 fuel line removals, the in situ USTs were left in place for future use.

During the 2017 fuel line removals, Geo-Logic Consulting conducted sampling of the soil beneath the former fuel lines to evaluate conditions (Figure 4) (Geo-Logic, 2017). The sampling was conducted under the supervision of Mr. Isaac Mendel of the Livermore-Pleasanton Fire Department (LPFD) (Geo-logic, 2017). According to the Geo-Logic report dated August 15, 2017, on July 20, 2017, fifteen soil samples were collected beneath four former dispensers and along the product and vent piping trenches (Figure 4). The soil samples were designated P1 d 3' through P4 d 3' ("d" for depth below ground surface [bgs]).[3] Soil samples designated T1, and T3 through T11 (collected at a depth of approximately 3.5 to 4 feet bgs) were collected at critical joins and approximately every 20 lateral feet along the former piping and vent trench. Soil was described as clayey silt and silty clay. According to the report, *"no odors of hydrocarbons or obvious hydrocarbon staining was observed during the sampling."*

Soil samples were analyzed by McCampbell Analytical, of Pittsburg, California for TPHg and TPHd, benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl-tertiary butyl ether (MTBE), t-butyl alcohol (TBA), 1,2-dibromomethane (EDB), 1,2-dichloroethane (1,2-DCA), naphthalene, and ethanol by EPA Method 8260, and for total lead by EPA Method 6010.

As shown in Table 1, TPHd, TPHg, toluene, ethylbenzene, total xylenes, and naphthalene were detected in four (i.e., P3 d 3', P 3d 10.5', P4 d 3', and T3 d 4') of fifteen soil samples collected. Of the detected compounds, only TPHd exceeded the San Francisco-Regional Water

[3] The samples were collected beneath the pea gravel fill.

Quality Control Board Environmental Screening Level (ESL) for Commercial/Industrial Land Use of 1,100 mg/kg, at a detected concentration of 1,800 mg/kg in P3 d 3' (Figure 4).

As shown on Figure 4, the maximum concentration of TPHd was identified at sample P3 d3', which is located at the southeastern dispenser beneath the former canopy. Based on a pre-demolition 2017 Google Earth street view photograph of the Site, the service station maintained only one diesel pump that was located at the southwestern dispenser, approximately 20 feet northwest of P3 d3'. A soil sample (i.e., P1 d3') collected adjacent to the diesel dispenser did not contain reportable quantities of petroleum hydrocarbons. Consequently, it is unclear why TPHd was detected at an elevated concentration southeast of the diesel dispenser, and not at the diesel dispenser itself. A possible explanation is a surface spill related to overfilling a diesel tank.

Soil in the vicinity of P3 d3' and the dispenser was over-excavated to a depth of 10.5 feet bgs; the excavation was approximately four feet by eight feet. An additional soil sample (P2 d 10.5') was collected at the base of the excavation.[4] Sample P2 d 10.5' contained TPHd and TPHg at concentrations of 1.1 mg/kg and 0.32 mg/kg, respectively.

In August 2017, the ACDEH submitted the correspondence to AKI requiring this Work Plan.

1.3 Current Status of Site

According to a Site Plan provided by Mr. Rick Montesano of Armer/Norman & Associates, the Site was redeveloped in 2017 as an Extra Mile Gas Station with a new C-store, canopy, fuel dispensers and associated underground piping, and a drive-through car wash (Figure 3). The Site is currently non-operational and a Grand Opening is scheduled for January 31, 2018.

[4] The excavation was overseen by Mr. Isaac Mendel of the Livermore-Pleasanton Fire Department.

2.0 FOCUSED SITE CONCEPTUAL MODEL (SCM)

At the request of ACDEH, PIERS presents below a focused SCM based on available information regarding Site conditions. PIERS assumes the SCM will be updated with the data generated in this investigation. The SCM is presented in tabular format, in conformance with Table 4-1, Site Conceptual Model in Attachment A of the August 23, 2017 ACDEH correspondence.

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Regional	The City of Livermore is located in the Great Coastal Range Geologic Province of California. Geologic formations in the region include Quaternary Alluvium (i.e., gravel, sand, silt, and clay of Pleistocene to Recent Age) underlain by a thick sequence of the primary water-bearing materials of the Livermore Formation (i.e., gravel, sand, silt, and clay of Plio-Pleistocene Age), followed by mostly nonwater-bearing rocks ranging in age from Jurassic to Pliocene (DWR, 1966).	NA	NA
Geology and Hydrogeology	Site	Site soils are described as clay with silt, sand and gravel; silt with clay and sand; and, sand with clay, silt and gravel from the ground surface to approximately 35 feet bgs, the maximum extent explored. The Site is within the Livermore Valley Groundwater Basin, in the South Bay – Alameda Creek Watershed. The depth-to-groundwater is described in various reports as ranging from 20 feet to 32 feet bgs. The current depth is	1	Evaluate depth-to-groundwater with borings drilled to first-encountered water or 32 feet, whichever occurs first.

		unknown and groundwater was not encountered in the most recent investigation conducted in 2017. Based on nearby environmental sites, groundwater reportedly flows primarily to the west.		
Surface Water Bodies	Site	The nearest surface water body is an east-to-west trending engineered canal (i.e., Seco Arroyo Canal) located along the southern parcel boundary. The watercourse is not naturally occurring, and groundwater is unlikely to discharge into the canal. Groundwater is expected to occur at depths between 20 feet and 32 feet bgs, well below the bottom of the canal.	NA	NA
Release Source and Volume	Site	The release source may be former underground fuel piping associated with Site USTs. An unknown amount of fuel has been released, but sampling conducted in 2017 suggests the release was likely limited in lateral extent, as petroleum hydrocarbons were detected only at one location and concentrations were mostly below Commercial ESLs and/or Tier 1 ESLs (excepting TPHd).	NA	NA
Light Non-Aqueous Phase Liquid (LNAPL)	Site	LNAPL was not identified at the Site in the 2017 investigation.[5]	NA	NA

[5] The CSM Report for Public Noticing on Geotracker stated that free product was present at the Site; however, the Geo-Logic report dated August 15, 2017 did not indicate separate-phase product was observed.

Source Removal Activities	Site	Historical removal activities (i.e., a waste oil tank and soil excavation) were conducted at the Site and are associated with ACDEH closures in 1994 and 2010, respectively. Residual petroleum hydrocarbons were left in situ with permission from ACDEH. On July 20, 2017, soil samples were collected beneath product piping and dispensers during a Site upgrade. Soil samples contained TPHd up to 1,800 mg/kg, TPHg up to 950 mg/kg, and naphthalene up to 4.0 mg/kg. The fuel lines were removed and soil was excavated to a depth of 10.5 feet below grade. A confirmation sample collected at the base of the excavation contained 0.32 mg/kg of TPHg and 1.1 mg/kg of TPHd.	NA	The primary source (fuel lines) and secondary source (contaminated soils) associated with leaking fuel lines were removed in July 2010.
Contaminants of Concern	Site	Petroleum hydrocarbons (primarily diesel) and associated chemical components. Lead was detected in soil samples at concentrations within typical background levels for the Bay Area.	NA	NA
Petroleum Hydrocarbons in Soil	Site	Recent sampling indicates TPHd, TPHg, toluene, ethylbenzene, total xylenes, and naphthalene were detected in four samples (i.e., P3 d 3', P 3d 10.5', P4 d 3', and T3 d 4') of fifteen soil samples collected.	2	Sample to evaluate the lateral and vertical distribution of petroleum hydrocarbons that may remain in soil.
Petroleum Hydrocarbons in Groundwater	Site	Groundwater has not been recently sampled. In 2009, TPHd was detected at concentrations up to 39 µg/L (ppb), and the site was closed by the ACDEH in 2010 with restrictions on water use	3	Sample to evaluate the potential presence of petroleum hydrocarbons in groundwater.

		and redevelopment.		
Risk Evaluation	Site	According to GeoTracker CSM documentation, no CDPH wells were identified within 1,500 feet of the site. The Site and surrounding area are supplied water through the City of Livermore. Therefore, preferential pathways to drinking water supplies are not likely. Of the detected compounds, only TPHd exceeded the ESL for Commercial and Industrial Land Use of 1,100 mg/kg, at a detected concentration of 1,800 mg/kg in P3 d 3'. Potential risks associated with unidentified petroleum hydrocarbons are unknown.	4	Once soil and groundwater data are received, they will be compared to applicable Commercial Use ESLs.

Note:
NA = Not applicable

3.0 LOW-THREAT CLOSURE POLICY CHECKLIST EVALUATION

According to GeoTracker, the Site currently does not satisfy the LTCP General Criteria, *#1 Media-Specific Criteria for Groundwater*, and *#3 Media-Specific Criteria – Direct Contact and Outdoor Air Exposure*. The Site is exempt from *#2 Media-Specific Criteria – Petroleum Vapor Intrusion to Indoor Air* due to its status as a gasoline service station.

The table below is excerpted directly from GeoTracker for the Site. Criteria in each category that have not been satisfied with existing data are highlighted in yellow; the Scope of Work proposed to satisfy each criteria is shown below:

General Criteria - *The site satisfies the policy general criteria*	**NO**
a. Is the unauthorized release located within the service area of a public water system? **Name of Water System : City of Livermore; however, groundwater in the area is used for drinking water**	**YES**
b. The unauthorized release consists only of petroleum (info).	**YES**
c. The unauthorized (�primary�) release from the UST system has been stopped.	**YES**
d. Free product has been removed to the maximum extent practicable (info). **Free Product Remaining:** Not Measureable (Sheen) **Removal Methods Tried:** **OTHER - Not investigated yet.** **Proposed Scope of Work:** • Drill and sample soil and groundwater from five (5) borings to evaluate if separate-phase hydrocarbons are present in soil, or as a sheen on the groundwater surface (Figure 5).	**NO**
e. A conceptual site model that assesses the nature, extent, and mobility of the release has been developed (info). **Description:** **- GW Not Evaluated** **- Groundwater Assessment Incomplete - Areal Extent of Contamination Not Defined** **- Groundwater Assessment Incomplete - Depth of Contamination Not Defined** **- Hydrogeology Not Adequately Defined** **- Potential Receptors Not Identified** **- Soil Assessment Incomplete - Areal Extent Not Defined** **- Soil Assessment Incomplete - Depth Unknown** **Proposed Scope of Work:** • The lateral and vertical extent of contamination will be evaluated by drilling and sampling soil and groundwater from five (5) borings (Figure 5). Four (4) borings will be drilled in the expected downgradient direction (i.e., west and northwest) from the former underground pipelines. One boring will be drilled in the upgradient direction to evaluate potential chemicals originating from off the Site. • Depth-to-groundwater will be evaluated during drilling at the Site (data from nearby environmental sites indicate groundwater generally flows to the west). • An updated Focused CSM will be prepared and submitted to SCDEH using soil and groundwater data generated in the proposed investigation. The report will include confirmation of no potential well receptors within 1,500 feet of the Site, as stated in the GeoTracker file for the Unocal Site that was closed	**NO**

by the ACDEH in 2010.	
f. Secondary source has been removed to the extent practicable (info).	**YES**
g. Soil or groundwater has been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15.	**YES**
h. Does a nuisance exist, as defined by Water Code section 13050.	**NO**

1. Media-Specific Criteria: Groundwater - *The contaminant plume that exceeds water quality objectives is stable or decreasing in areal extent, and meets all of the additional characteristics of one of the five classes of sites listed below.* **NO**

EXEMPTION - Soil Only Case (Release has not Affected Groundwater - Info)	**NO**
Does the site meet any of the Groundwater specific criteria scenarios?	**NO**

ADDITIONAL QUESTIONS - The following conditions exist that do not meet the policy criteria:

Plume Length (That Exceeds Water Quality Objectives) :
- Unknown

Plume is Stable or Decreasing in AREAL Extent :
- Unknown

Free Product in Groundwater :
- Unknown

Free Product Has Been Removed to the Maximum Extent Practicable :
- Unknown

For sites with free product, the Plume Has Been Stable or Decreasing for 5-Years (info) :
- Unknown

For sites with free product, owner Willing to Accept a Land Use Restriction (if required) :
- Unknown

Free Product Extends Offsite :
- Unknown

Benzene Concentration :
- Unknown

MTBE Concentration :
- Unknown

Nearest Supply Well (From Plume Boundary) :
- Unknown

Nearest Surface Water Body (From Plume Boundary) :
- Unknown

Proposed Scope of Work:

Evaluate if groundwater has been impacted by petroleum hydrocarbons (including TPHd above the maximum concentration [i.e., 39 ppb] previously left in situ following closure of the Unocal site by the SCDEH in 2010). Analyze five (5) grab-groundwater samples for TPHg, TPHd, TPHmo, BTEX, and MTBE.

2. Media Specific Criteria: Petroleum Vapor Intrusion to Indoor Air - *The site is considered low-threat for the vapor-intrusion-to-air pathway if site-specific conditions satisfy items 2a, 2b, or 2c* **YES**

EXEMPTION - Active Commercial Petroleum Fueling Facility	**YES**

3. Media Specific Criteria: Direct Contact and Outdoor Air Exposure - *The site is considered low-threat for direct contact and outdoor air exposure if it meets 1, 2, or 3 below.* **NO**

EXEMPTION - The upper 10 feet of soil is free of petroleum contamination	**NO**
Does the site meet any of the Direct Contact and Outdoor Air Exposure criteria scenarios?	**NO**

ADDITIONAL QUESTIONS - The following conditions exist that do not meet the policy criteria:

Exposure Type :

- Commercial

Petroleum Constituents in Soil :

- Unknown

Soil Concentrations of Benzene :

- Unknown

Soil Concentrations of Ethyl Benzene :

- Unknown

Soil Concentrations of Naphthalene :

- Unknown

Soil Concentrations of PAH :

- Unknown

Proposed Scope of Work:

- Drill and sample soil at five (5) locations to evaluate the potential presence of petroleum hydrocarbons and associated chemicals above Commercial ESLs (Figure 5).
- Analyze soil samples for VOCs, TPHd, TPHmo, TPHg, and polynuclear aromatic hydrocarbons (PAHs).

Additional Information

Should this case be closed in spite of NOT meeting policy criteria?	NO

4.0 SCOPE OF WORK

4.1 Summary of Data Gaps and Proposed Scope of Work

To address the data gaps discussed above in Section 2.0 and to satisfy LTCP requirements, PIERs proposes the following scope of work:

- **Data Gap #2 (Petroleum Hydrocarbons in Soil):**
  - Collect soil samples at five (5) direct-push boring locations, as shown on Figure 5.
  - Analyze the soil samples for:
    - TPHd, TPHmo, and TPHg using EPA Method 8015B.
    - BTEX, MTBE, and fuel oxygenates using EPA Method 8260B.
    - PAHs using EPA Method 8100 Modified.

- **Data Gaps #1 (Site Geology and Hydrogeology) and #3 (Petroleum Hydrocarbons in Groundwater):**
  - Collect grab-groundwater samples at five (5) direct-push boring locations, as shown on Figure 5.
  - Analyze the grab-groundwater samples for:
    - TPHd, TPHg, and TPHmo using EPA Method 8015B.
      BTEX, MTBE, and fuel oxygenates using EPA Method 8260B.

- **Data Gap #4 (Risk Evaluation):**
  - Update the Focused SCM utilizing newly generated data.
  - Perform a comparison of newly generated data to RWQCB Commercial/Industrial Use ESLs.
  - Further evaluate potential preferential pathways at the Site.
  - Confirm the absence of wells within 1,500 feet of the Site for use.
  - Evaluate the Site conditions for closure under the LTCP.

4.2 Pre-Field Investigation

Pre-field investigation work is described below.

4.2.1 Permits

- A drilling permit will be acquired from the ACDEH prior to the onset of drilling.

- An encroachment permit is not expected to be required because the proposed drilling locations are on private property (Figure 5).

4.2.2 Site-Specific Health and Safety Plan

- Work will be conducted under a Site-specific HASP prepared by PIERS prior to the onset of the field investigation.

- The HASP will be reviewed and signed by site workers and visitors, and kept on site at all times during field investigation activities.

4.2.3 Location of Underground Utilities

- Prior to drilling, Underground Service Alert (USA) will be notified to mark existing underground utilities entering the property.

- A private utility locating service will be utilized to confirm the absence of utilities at borehole locations.

4.2.4 Professional Oversight

Work will be performed under the direction of a California Professional Geologist.

4.3 Soil Boring and Sampling

Five soil borings will be drilled using the direct-push method. All drilling activities will be conducted by a California C-57 licensed driller. Borings will be drilled using a Geoprobe® rig (or equivalent) to an approximate depth of 20 feet bgs, or first-encountered groundwater, whichever occurs first.[6] A pre-cleaned sampler with a clear acetate liner and drive rods (typically two inches in diameter) will be advanced for the purpose of collecting samples and evaluating subsurface conditions.

Typically, the sampler is advanced in intervals of 3 to 4 feet, the rods and sampler are retracted, and the acetate liner is removed from the sampler head for evaluation and sample collection by the on-site geologist. The sampler head is then cleaned, filled with a new acetate liner, inserted into the borehole, and advanced over the next sampling interval where the sample retrieval process is repeated.

After retrieval, selected intervals (i.e., depths of approximately 2, 5, 10, 15, and 20 feet bgs) of the soil-filled acetate liner will be cut and retained for analyses (if groundwater is encountered shallower than 20 feet bgs, saturated soil samples will not be retained for analyses [see Section 4.4, Grab-Groundwater Sampling]). The samples are then capped with Teflon™ sheeting and plastic end caps, properly labeled, and placed in an ice-filled cooler for transport to the laboratory under chain-of-custody documentation. Soil sample analyses were described

[6] The maximum depth that groundwater has been encountered at the Site is estimated at 32 feet bgs. However, the water table is expected to be higher (shallower) due to the 2016/2017 rains. If groundwater is not encountered within the upper 20 feet bgs, the borings will be advanced to groundwater, but soil samples will not be collected below 20 feet bgs.

in Section 4.1.

The remaining liners will be split for examination of soils. The physical description of observed soil characteristics (i.e. moisture content, consistency, grain size, obvious odors, color, etc.), drilling difficulty, and soil type as a function of depth, will be recorded in a field log in accordance with the Unified Soil Classification System (USCS).

Soil samples examined and collected during drilling activities will be screened in the field for volatile organic compounds (VOCs) using a photoionization detector (PID). The test procedure involves placing a small soil sample into a clean plastic re-sealable bag. The bag is left undisturbed for approximately 20 minutes, and the headspace within the bag is tested for total organic vapors measured in ppm (calibrated to isobutylene prior to field use). The PID readings represent relative levels of organic vapors at the time of drilling. The breathing zone of the drillers and geologist will be monitored in accordance with the HASP prepared for the site.

4.4 Grab-Groundwater Sampling

A grab-groundwater sample will be collected with a disposable bailer at each boring location through a temporary well casing installed in the drill rods. The groundwater will be gently poured directly into laboratory-supplied containers appropriate for the desired analyses. The samples will be properly labeled and placed in an ice-filled cooler for transport to a State of California certified analytical laboratory under chain-of-custody documentation. Grab-groundwater sample analyses were described in Section 4.1.

4.5 Data Quality Objectives and Quality Assurance/Quality Control

Data Quality Objectives (DQO) and Quality Assurance Quality Control (QA/QC) procedures are presented in Appendix B.

Duplicate grab-groundwater samples will be collected in the field to evaluate analytical and sampling consistency. Duplicate samples will be collected immediately after the primary sample using the same equipment and procedure. Field duplicate QA/QC grab-groundwater samples will be collected at an approximate rate of ten percent (10%) of the total number of samples collected.

Additionally, one trip blank per cooler will be supplied by the laboratory and analyzed for VOCs to evaluate the potential for introduction of contaminants between sample containers during shipping and handling of the samples.

4.6 Investigation-Derived Waste

Investigation-derived waste (IDW), including soil cuttings, purged groundwater, and decontamination rinsate will be placed into properly labeled DOT 55-gallon drums or appropriate

soil bins and sampled to determine the waste profile. The IDW will be stored on Site pending receipt of analytical results. Once profiled, a licensed contractor will transport the wastes to an approved disposal facility.

4.7 GeoTracker and ACDEH Website

Data generated in the investigation will be uploaded to GeoTracker and the ACDEH website, as required.

5.0 REPORTING AND SCHEDULE

Within 60 days following approval of this Work Plan, PIERS will generate a report describing field investigation activities, the results of the investigation, summary data tables (including RLs for analytes not detected), figures with a scale bar, an updated CSM, an evaluation of Site conditions versus closure requirements under the LTCP, and recommendations.

The report will be uploaded to the GeoTracker and the ACDEH website, as required.

6.0 LIMITATIONS

This Work Plan has been prepared in accordance with generally accepted environmental practices for similar soil sampling work plans prepared at this time and in this geographic area. No other guarantees or warranties, express or implied are provided.

PIERS' proposed scope of work does not include a determination of the environmental and public health impact, or unidentified contamination. The proposed work scope includes an evaluation of detected compounds against RWQCB ESLs for commercial and industrial use scenarios. Assumptions about apparent public health risks will be based on limited data and will not constitute a formal assessment of risk.

The proposed sampling and testing program was intended to provide evaluation of contamination for specific compounds, at specific locations, and depths, and at specific times. The proposed sampling scope is not exhaustive, and may not reveal contamination that may be present at locations (horizontal or vertical) other than those explored, sampled and analyzed. Also, the proposed scope of work is not intended to predict future on-Site or off-Site conditions.

It is understood by the parties hereto that the Client who has requested this investigation and sampling will use the results for the stated purpose, and no other purpose. No other use or disclosure is intended by project Consultants. Client agrees to hold project Consultants harmless for any inverse condemnation or devaluation of said property that may result if the Consultants' report or information generated is used for other purposes.

7.0 REFERENCES

Alameda County Health Care Services Agency, Department of Environmental Health, Local Oversight Program (ACDEH), 2017. *Request for Data Gap Work Plan; Fuel Leak Case No. Ro0003260 and GeoTracker Global ID T10000010821, Chevron Gas Station (AK Services), 4707 First Street, Livermore, CA 94551.* August 23.

Delta, 2008. *Additional Site Assessment Work Plan, Unocal #2611129/BP #11128, 4707 First Street, Livermore, California*. October 17.

Delta, 2009. *Additional Site Assessment, Unocal #2611129/BP #11128, 4707 First Street, Livermore, California*. March 31.Department of Water Resources, 1966. *Livermore and Sunol Valley, Evaluation of Ground Water Resources, Appendix A: Geology. Bulletin No. 118-2*. August.

Geo-Logic, 2017. *Sampling Report for Station Upgrades, Livermore Chevron, 4707 First Street, Livermore, California.* August 15.

FIGURES

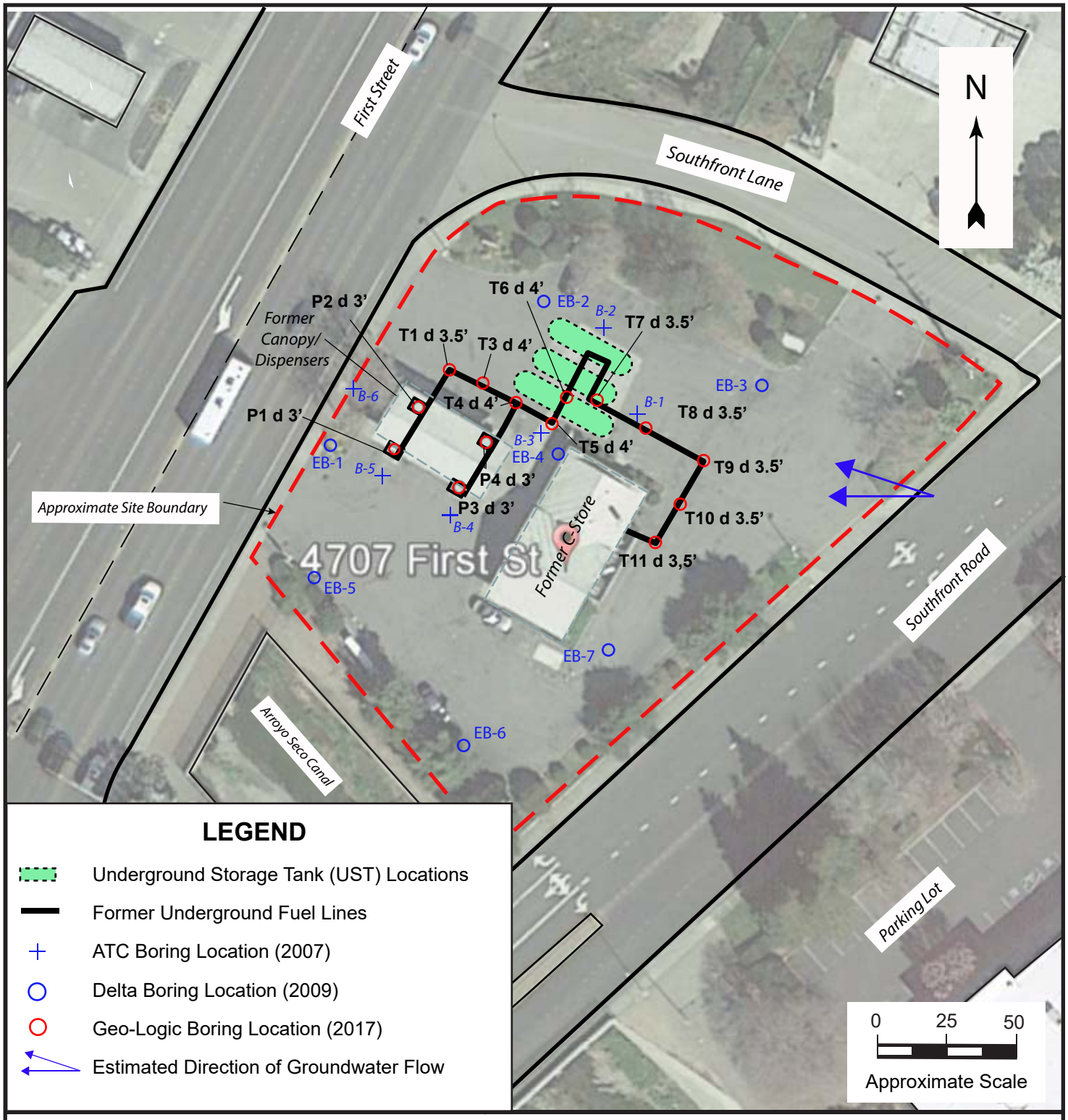
Source: Google Earth, 2017

FIGURE 1
SITE LOCATION MAP
4707 FIRST STREET
LIVERMORE, CALIFORNIA

OCTOBER 2017

PIERS Environmental Services

1038 Redwood Highway, Suite 100A, Mill Valley, CA 94941
Phone: 415-388-7900 Fax: 415-388-7909 www.pierses.com



Source: Google Earth, 2017

FIGURE 2
PRE-REDEVELOPMENT SITE PLAN WITH HISTORICAL BORING LOCATIONS
4707 FIRST STREET
LIVERMORE, CALIFORNIA

OCTOBER 2017

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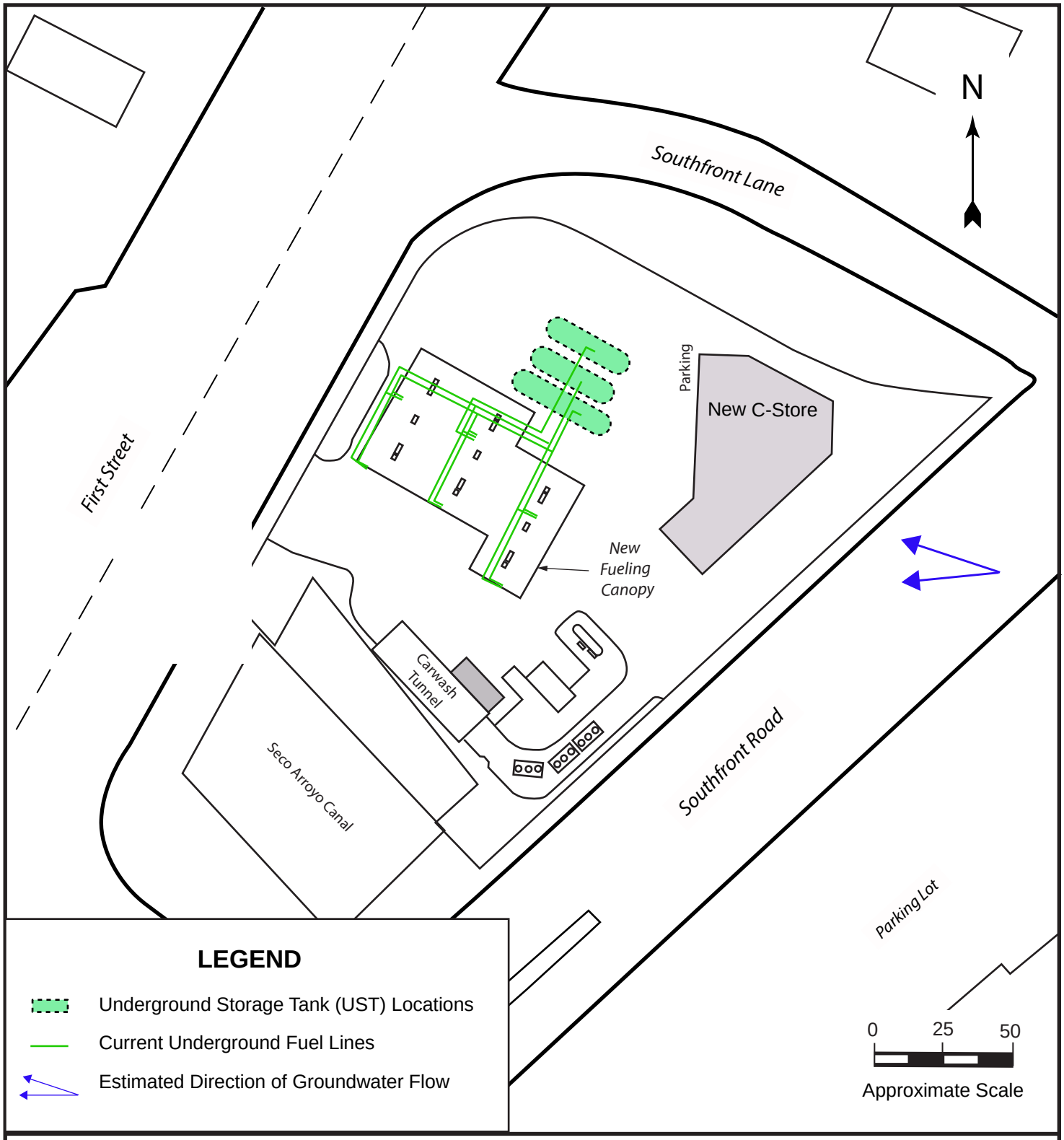

FIGURE 3
NEW SERVICE STATION CONFIGURATION
4707 FIRST STREET
LIVERMORE, CALIFORNIA

OCTOBER 2017

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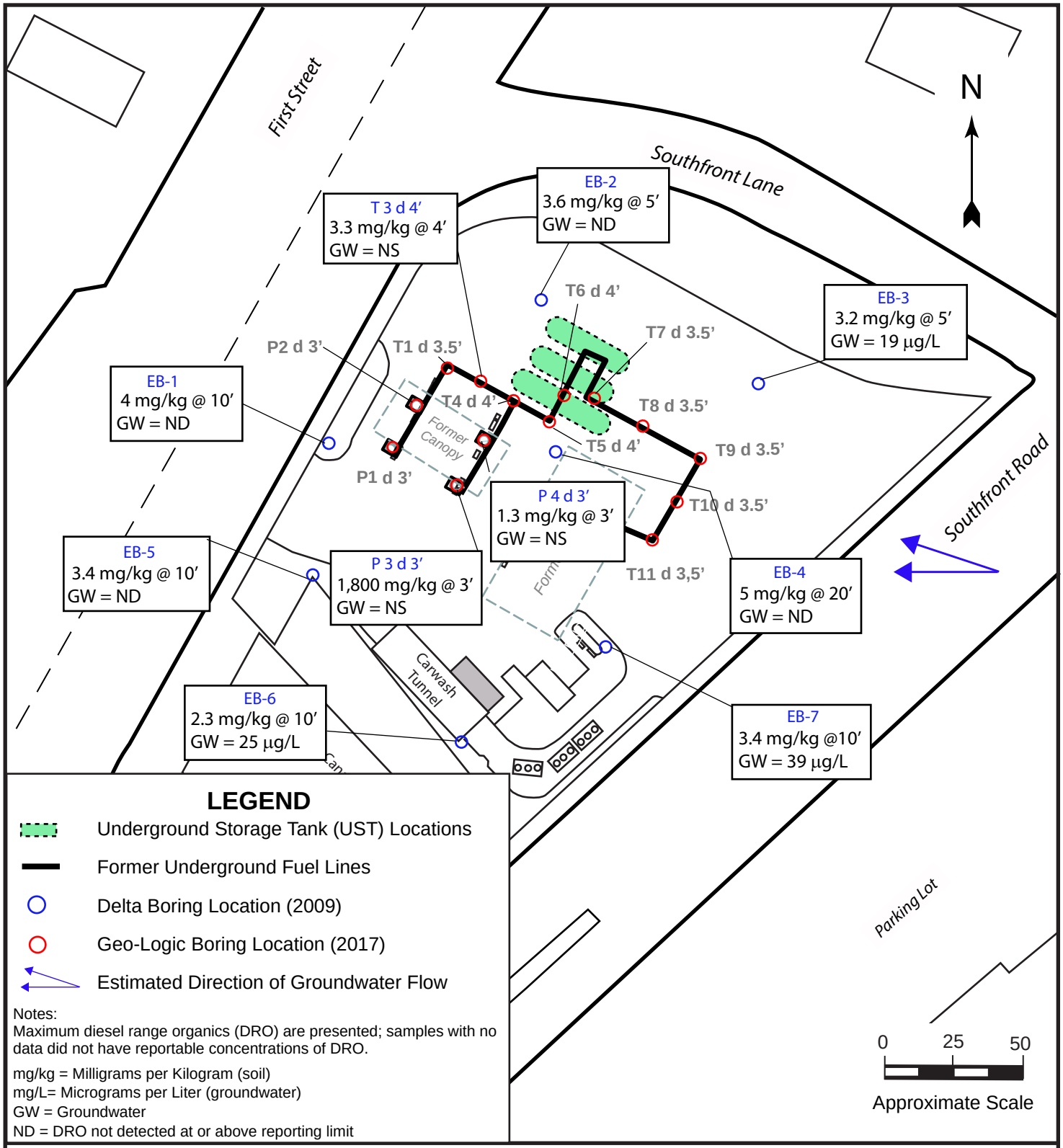

LEGEND

- Underground Storage Tank (UST) Locations
- Former Underground Fuel Lines
- Delta Boring Location (2009)
- Geo-Logic Boring Location (2017)
- Estimated Direction of Groundwater Flow

Notes:
Maximum diesel range organics (DRO) are presented; samples with no data did not have reportable concentrations of DRO.

mg/kg = Milligrams per Kilogram (soil)
mg/L= Micrograms per Liter (groundwater)
GW = Groundwater
ND = DRO not detected at or above reporting limit

FIGURE 4
MAXIMUM DIESEL RANGE ORGANIC DETECTIONS
4707 FIRST STREET
LIVERMORE, CALIFORNIA

OCTOBER 2017

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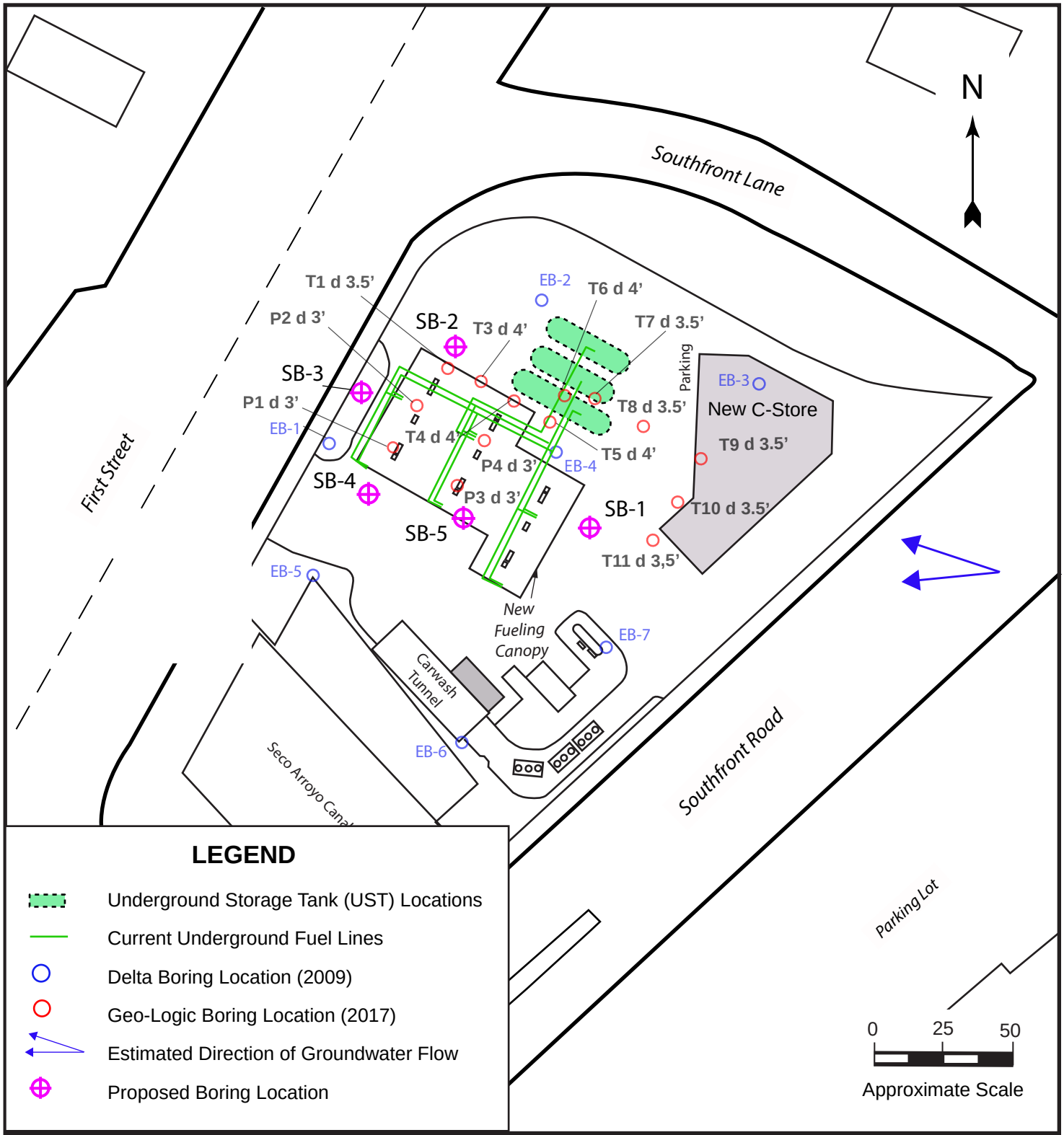


LEGEND

- Underground Storage Tank (UST) Locations
- Current Underground Fuel Lines
- Delta Boring Location (2009)
- Geo-Logic Boring Location (2017)
- Estimated Direction of Groundwater Flow
- Proposed Boring Location

FIGURE 5
PROPOSED BORING LOCATIONS
4707 FIRST STREET
LIVERMORE, CALIFORNIA

OCTOBER 2017

PIERS Environmental Services

1038 Redwood Highway, Suite 100A, Mill Valley, CA 94941
Phone: 415-388-7900 Fax: 415-388-7909 www.pierses.com

TABLES

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS
4707 First Street
Livermore, California

Location/Sample Depth (feet bgs)	TPHd (mg/kg)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	Napthalene (mg/kg)	Total Lead (mg/kg)
P1 d 3'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	14
P2 d 3'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	10
P3 d 3'	**1,800**	**950**	<0.005	**9.1**	**5.2**	**36**	**4**	8.2
P3 d 10.5'	1.1	0.32	<0.005	<0.005	<0.005	<0.005	<0.0050	8.2
P4 d 3'	1.3	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	5.7
T1 d 3.5'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	16
T3 d 4'	3.3	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	7.2
T4 d 4'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	18
T5 d 4'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	15
T6 d 4'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	9.7
T7 d 3.5'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	6.3
T8 d 3.5'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	11
T9 d 3.5'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	7.3
T10 d 3.5'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	8.1
T11 d 3.5'	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	9.5
Comp S1 (A-D)	<1.0	<0.25	<0.005	<0.005	<0.005	<0.005	<0.0050	9
Comp S1 (N-S-E-W)	25	11	<0.005	<0.005	<0.005	<0.005	<0.0050	8.9
RWQCB-SF ESL - Tier 1	*230*	*100*	*0.044*	*2.9*	*1.4*	*2.3*	*0.033*	*80*
RWQCB- SF Residential Use ESL	*230*	*740*	*0.23*	*970*	*5.1*	*560*	*3.3*	*80*
RWQCB- SF Commercial/Industrial Use ESL	*1,100*	*3,900*	*1*	*4,600*	*22*	*2,400*	*14*	*320*

Notes:
Samples collected on July 20 and 31, 2017.
bgs = Below ground surface ("d" indicates approximate depth bgs).
mg/kg = Milligrams per kilogram.
TPHg/d =Total Petroleum Hydrocarbons as gasoline/diesel.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
ESL = Environmental Screening Level, San Francisco Regional Water Quality Control Board, Tier 1, February 2016.

APPENDIX A
REGULATORY AGENCY DOCUMENTATION

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBECCA GEBHART, Interim Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
LOCAL OVERSIGHT PROGRAM (LOP)
For Hazardous Materials Releases
1131 HARBOR BAY PARKWAY
ALAMEDA, CA 94502
(510) 567-6700
FAX (510) 337-9335

August 23, 2017

AK Services, Inc.
821 Corporate Way
Fremont, CA 94539

Subject: Request for Data Gap Work Plan; Fuel Leak Case No. RO0003260 and GeoTracker Global ID T10000010821, Chevron Gas Station (AK Services), 4707 First Street, Livermore, CA 94551

Dear AK Services:

Alameda County Department of Environmental Health (ACDEH) has reviewed the case file, including the August 15, 2017 *Sampling Report for Station Upgrades* prepared and submitted on your behalf by geologic. On July 20, 2017, soil samples were collected below product piping and dispensers during a piping and dispenser upgrade at the site. Groundwater was not encountered in the excavation. After removal of the product lines and dispensers, soil sampling documented concentrations up to 950 milligrams per kilogram (mg/kg) Total Petroleum Hydrocarbons as gasoline (TPHg), 1,800 mg/kg Total Petroleum Hydrocarbons as diesel (TPHd), and 4.0 mg/kg naphthalene. Further excavation was conducted to remove the bulk of accessible contamination. Concentrations reported at a depth of approximately 10.5 feet were up to 0.32 mg/kg TPHg and 1.1 mg/kg TPHd. These data indicate that an unauthorized release has occurred at the site.

Further work is required to assess the extent of contamination around the release both vertically, as well as laterally, in order to characterize the case. At present it is uncertain if the release extended vertically to groundwater, and the degree to which groundwater may be contaminated. Please ensure that the case is characterized in light of the requirements contained in the Low Threat Closure Policy (LTCP). At present the case fails General Criteria d, and e, and Media-Specific Criteria for Groundwater, and the Media-Specific Criteria for Direct Contact and Outdoor Air (Please see Geotracker for details).

Based on the review of the case file ACDEH requests that you address the following technical comments and send us the documents requested below.

TECHNICAL COMMENTS

1. **Data Gap Investigation Work Plan and Focused Site Conceptual Model –** Please prepare Data Gap Investigation Work Plan to address the technical comments 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.

   Please include a site map with a bar scale showing the location of all former USTs, the locations of all historic UST system appurtenances by the date specified below. Please include in all future reports an extended site map with a bar scale using an aerial photographic base map to depict both the site and immediate vicinity to facilitate understanding the site and surrounding vicinity. Please note that when preparing summary tables of current and historical soil and groundwater analytical results, please report the actual detection limits for all Non-Detected (ND) results. Do not use “ND” on the tables.

   In order to expedite review, ACDEH requests the 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 in Tabular Form including Preferential Pathway and Sensitive Receptor Survey* and Attachment B*, Sample Well Survey and Table*. Please sequence activities in the proposed Data Gap Investigation scope of work to enable efficient data collection in the fewest mobilizations possible.

2. **Claim Site On Geotracker -** As described in the Attachment 1, Responsible Party(ies) Legal Requirements/Obligations, all technical reports must be submitted to both the ACDEH ftp website and the State Water Resource Control Board (SWRCB) GeoTracker website. To upload to the Geotracker website you will need to claim your site on GeoTracker and then upload the Work Plan and all future reports to the GeoTracker website. Pursuant to CCR Sections 2729 and 2729.1, all analytical data submitted in a report to a regulatory agency as part of the LUFT program, must be transmitted electronically to the SWRCB Geotracker website via the internet. Additionally, should groundwater wells be required, all permanent monitoring points utilized to collect groundwater samples (i.e. monitoring wells) and submitted in a report to a regulatory agency, must be surveyed (top of casing) to mean sea level and latitude and longitude accurate to within 1-meter accuracy, using NAD 83, and transmitted electronically to the SWRCB Geotracker website. Beginning July 1, 2005, electronic submittal of a complete copy of all reports (LUFT or SLIC) is required in GeoTracker (in PDF format). Please upload all reports prepared after July 1, 2005 to the SWRCB's Geotracker database website in accordance with the above-cited regulation. At the same time, please upload the reports to the ACDEH ftp website.

3. **Request for information -** The ACDEH case file for the subject site contains only the electronic files listed on our web site at http://www.acgov.org/aceh/lop/ust.htm. Please submit electronic copies of all other reports including Phase I Reports, laboratory data, correspondence, etc. related to environmental investigations for this property not currently contained in our case file by the date specified in the Technical Report Request Section below. ACDEH requests e-mail notification of, and a list of the documents uploaded to Geotracker by the date listed below.

   Additional information regarding the SWRCB's GeoTracker website may be obtained online at http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/ and http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml) or by contacting the GeoTracker Help Desk at geotracker@waterboards.ca.gov or (866) 480-1028.

4. **Release Source Identification –** In order to correctly identify all potential Responsible Parties and identify the release cause, ACDEH requests information relative to the age of the product piping, dispensers, and the release source or location, including the presence of previous repairs at that location.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please be aware that site investigation/site cleanup costs may be reimbursable from the California Underground Storage Tank Cleanup Fund. The application and additional information is available at the State Water Resources Control Board's website at http://www.waterboards.ca.gov/water_issues/programs/ustcf. Please be aware that reimbursement monies are contingent upon maintaining compliance with directives from ACDEH.

SUBMITTAL ACKNOWLEDGEMENT STATEMENT

Please note that ACDEH has updated Attachment 1 with regard to report submittals to ACDEH. ACDEH will now be requiring a Submittal Acknowledgement Statement, replacing the Perjury Statement, as a cover letter signed by the Responsible Party (RP). The language for the Submittal Acknowledgement Statement is as follows:

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's Geotracker Website.

Please make this change to your submittals to ACDEH.

TECHNICAL REPORT REQUEST

Please submit the following deliverable to ACDEH (Attention: Mark Detterman), according to the following schedule:

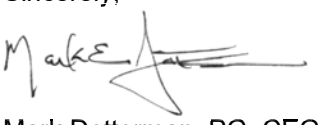
- **September 22, 2017 –** Documentation of Geotracker Claim and Upload Status Completion
- **October 27, 2017 –** Data Gap Investigation Work Plan (Including additional information and release location repairs / location / etc.)
- **60 Days After Work Plan Approval –** Soil and Groundwater Investigation 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.

Please note, that if your email does not appear next to your name and address, ACDEH requests that you forward it. This will expedite communications for the site.

Should you have any questions, please contact me at (510) 567--6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,



Mark Detterman, PG, CEG
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
Attachment B*, Sample Well Survey and Table*

cc: Joel Greger, geo-logic, inc, 1140 5th Avenue, Crockett, CA 94525, (Sent via electronic mail to: joelgreger2@gmail.com)

Dilan Roe, ACDEH, (Sent via electronic mail to: dilan.roe@acgov.org)
Paresh Khatri, ACDEH; (Sent via electronic mail to: paresh.khatri@acgov.org)
Mark Detterman, ACDEH, (Sent via electronic mail to: mark.detterman@acgov.org)
Electronic File; GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

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.

ELECTRONIC SUBMITTAL OF REPORTS

Alameda County Department of Environmental Health's (ACDEH) Environmental Cleanup Oversight Programs, Local Oversight Program (LOP) and Site Cleanup Program (SCP) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program File Transfer Protocol (FTP) site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to SCP sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/) for more information on these requirements.

ACKNOWLEDGEMENT STATEMENT

All work plans, technical reports, or technical documents submitted to ACDEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website." 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 6731, 6735, and 7835) 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 licensed 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 case meet this requirement. Additional information is available on the Board of Professional Engineers, Land Surveyors, and Geologists website at: http://www.bpelsg.ca.gov/laws/index.shtml.

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:** December 1, 2016
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP 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.
   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) Open File Explorer using the Windows  key + E keyboard shortcut.
      i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) On the address bar, type in ftp://alcoftp1.acgov.org.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive)
   d) Click Log On.
   e) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   f) 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 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

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 4-1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 5-1 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-

Site Conceptual Model Requisite Elements (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 refer to the *Preferential Pathway and Sensitive Preceptor Study* description on the next page. 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. Please refer to the *Preferential Pathway and Sensitive Preceptor Study* description on the next page.

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.

Preferential Pathway and Sensitive Receptor Study

Please conduct a study as a part of the SCM requested in order to (1) locate potential anthropogenic migration pathways on and in the vicinity of the site that could spread contamination through vertical and lateral migration, and (2) identify exposure scenarios and sensitive receptors that are linked to site contamination through these preferential pathways. The results of your study shall contain all information required by California Code of Regulations, Title 23, Division 3, Chapter 16, §2654(b) including but not limited to the following components, as applicable to the site:

a. **Utility Survey** - An evaluation of all existing subsurface utility lines, laterals, and trenches including sewers, electrical, fiber optic cable, cable, water, storm drains, trench backfill, etc. within and near the site and plume area(s). Please include an evaluation of shallow utilities associated with current and historical site operations/processes including UST systems, remediation systems, parts cleaning, sumps, etc.

b. **Updated Well Survey** – ACEH requests that well data sources (Alameda County Public Works Agency [ACPWA] and Department of Water Resources [DWR]) be reviewed for more recently installed vicinity water supply wells. ACEH requests the identification of all active, inactive, standby, decommissioned (sealed with concrete), unrecorded, and abandoned (improperly decommissioned or lost) wells including monitoring, remediation, irrigation, water supply, industrial, livestock, dewatering, and cathodic protection wells within a ¼-mile radius of the subject site. Please inspect all available Well Completion Reports filed with the DWR and ACPWA in your survey, and 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 contaminant migration pathways at or from your site.

c. **Land Uses and Exposure Scenarios on the Facility and Adjacent Properties** – The surrounding land use appears to be predominately agricultural; however, redevelopment of the site as a service station has been planned. Consequently, the identification of existing and future land use on and in the vicinity of the site is requested, including:

   - Beneficial resources (e.g., groundwater classification, wetlands, surface water bodies, natural resources, etc.)
   - Subpopulation types and locations (e.g., schools, hospitals, day care centers, elder care facilities, etc.)
   - Exposure scenarios (e.g. residential, industrial, recreational, farming) and exposure pathways including those identified in the Low Threat Underground Storage Tank Case Closure Policy General Criteria h – Nuisance Conditions, and Media-Specific Criteria for Groundwater, Vapor Intrusion to Indoor Air, and Direct Contact and Outdoor Air Exposure

d. **Planned Development** – Future development activities are planned in the vicinity of the site. Please include an analysis of new utility corridors, building foundations, wells, and/or development activities that could significantly alter contaminant migration (i.e., covering of large areas of the site with pavement, etc.).

Please synthesize this information and discuss your analysis and interpretation of the results of the preferential pathway and sensitive receptor study and incorporate into the requested SCM. Please provide the following supporting documentation and data as applicable:

- Copies of current and historical maps, such as site maps, Sanborn maps, aerial photographs, etc., used when conducting the background study.
- DWR well logs, marked as confidential, uploaded to Alameda County Environmental Health's ftp site. For confidentiality purposes do not upload the DWR well logs to Geotracker. The well logs will be placed in our confidential file and will be available only to internal staff for review.
- Table with details of the well search findings including Map ID corresponding to well location on map, State Well ID, Well Owner ID, approximate distance from the site, direction from the site, use, installation date, depth (feet below ground surface [bgs]), screened interval (feet bgs), sealed interval (feet bgs), diameter (inches), and well location address.
- Maps and geologic cross-sections illustrating historical groundwater elevations and flow directions (rose diagram) at the site. Synthesize the data requested above and include the location and depth of all utility lines, trenches, UST pits and piping trenches, wells, surface water bodies, foundational elements, surface covering types (pavement, landscaped, etc.) within and near the site and plume area(s), and the location of potential receptors.

Table 4-1
Site Conceptual Model

SM Sub-Element	Description	Data Gap Item #	Resolution
egional	As described by URS (2004), the lithology encountered in the subsurface beneath the Site during drilling activities consisted predominantly of a brown to greenish-gray silty clay with sand and gravel. The primary stratigraphic units at the Site are listed below, with the approximate ranges of depth (bgs) each unit was encountered across the Site: • 0 to 5 feet bgs: The surface soil typically consisted of very dark-brown clay to dark-gray gravel fill, depending on whether the boring was in the vacant vegetated parcel (dark-brown clay), at 3860 MLK Jr. Way; or beneath the asphalt and concrete surfaces at the Lucky's Auto Body parcel at 3884 MLK Jr. Way (gravel fill). • 5 to 20 feet bgs: very dark-brown silty clay grades to a greenish-gray silty clay and brown silty clay and gravelly clay. Groundwater was encountered in direct-push boreholes at an average depth of 17.2 feet bgs, with depths ranging from 16.2 to 19.6 feet bgs. This groundwater depth is not considered a stabilized groundwater depth, because it was not measured from appropriately constructed monitoring wells.	None	NA

Table 4-1
Site Conceptual Model (Continued)

CSM Sub-Element	Description	Data Gap Item #	Resolution
ite	Regional groundwater in the Oakland area generally follows topography, from areas of higher elevation in the east toward lower elevation in the west and southwest. The groundwater flow direction in the vicinity of the Site is to the west towards San Francisco Bay (Arcadis, 2012). URS reviewed groundwater investigation reports from the ARCO #4931 station at 731 West MacArthur Boulevard, approximately 1,000 feet southwest of the Site (Arcadis, 2012). The depth to water in the groundwater monitoring wells at the ARCO site ranged from approximately 3.2 to 10.8 feet bgs (approximately 52.2 to 43 feet elevation).	1.There are no monitoring wells on site so that the local groundwater flow direction and gradient is not known.	Five groundwater wells are to be installed at the site.
	The closest surface water body is the San Francisco Bay, which is 1.5 miles west of the site.		
	The State Water Resource Quality Control Board (RWQCB) Geotracker GAMA website provides the locations of water supply wells proximal to the site. The nearest supply well is located approximately 2 miles southwest of the site. There are multiple monitoring wells in the vicinity of the site including those at the Arco services station at 781 West MacArthur Blvd., and Dollar Cleaners, 4860 – 4868 Telegraph Avenue, Oakland.	2.	NA
	The three prior gasoline USTs (two 650-gallon and one 500-gallon) are considered the main source of the release of fuel hydrocarbons that have been detected in soil and groundwater beneath the Site. Tanks #1 and #2 were both observed to have one or more holes from corrosion at the time of removal. Although no holes were observed in Tank #3 during removal, the integrity of the tank was questionable as it split into two pieces along the weld during removal. Soil surrounding the tanks was stained green and was noted to have strong petroleum hydrocarbon odors. The release from the Tanks at the Site was discovered on January 5, 1995 during tank removal activities. The volume of the release is not known.	5. & 6. Additional soil and groundwater data is required in the source areas.	See data gaps table. Additional soil borings will be advanced in the source areas. Groundwater monitoring wells will be installed.

Table 4-1
Site Conceptual Model (Continued)

SM Sub-Element	Description	Data Gap Item #	Resolution
	The area around the ramps and pit in the southern area of the site is considered a potential source area.		
	There are currently no groundwater monitoring wells located at the Site. Although light non-aqueous phase liquids were not observed during grab groundwater sampling activities, concentrations of TPH-g in sample G2 (22,000 µg/L), located near former Tank #3, and sample GP3 (79,800 µg/L), located adjacent to former Tank #1 may indicate the potential for the presence of light non-aqueous phase liquid (LNAPL) to be present.	1. Need monitoring wells at the site.	Monitoring wells (5) to be installed.
	Soil that was excavated from the UST pits during tank removal activities was returned to the excavation after the collection of soil samples for chemical analysis. There is no information regarding the quality of the soil that was placed back in the UST excavations. As such, with the exception of the removal of the USTs themselves, there have been no other source removal activities conducted at the Site.	2., 5.,6. Soil contamination at depth (12-foot bgs and deeper) is not well characterized. Since the site is to be excavated to approximately 12 feet bgs for the construction of a parking garage, additional shallow soil sampling is not required.	Ten soil borings are proposed, as discussed in the data gaps table.
	Based on the historical investigations conducted at the Site, BTEX, cis-1,2-dichloroethene (cis-1,2-DCE), 1,2-dichloroethane (1,2-DCA) and TPH-g are present in groundwater above their respective MCLs and/or ESLs. However, based on correspondence from the ACEHSD, the contaminants of concern (COCs) for the site are BTEX, and TPH-g. These COCs are present above the screening levels primarily in the northern corner of the Site, near the location of the former USTs. Benzene and TPH-g are also present in groundwater above their MCLs and ESLs in the southern portion of the Site in the vicinity of the truck ramp and pit adjacent to the	4.	

Table 4-1
Site Conceptual Model (Continued)

CSM Sub-Element	Description	Data Gap Item #	Resolution
	former shop building, and in the northwestern area of the Site.		
	Of the 58 samples analyzed from the two investigations, eight samples from seven borings exceeded their respective screening criteria. These samples were typically the deepest sample from the boring, ranging from 8.0 to 14.0 feet bgs. This is consistent with releases from a UST as opposed to a surface spill or release. Based on the historical investigation data, BTEX and TPH-g are the contaminants present in soil at concentrations exceeding their respective screening criteria. The contaminants are present mainly in soil at the location of former Tanks #1 through #3, and to a lesser extent, near the former fuel pump island in the northern corner of the Site. The lateral extent of contamination exceeding the screening criteria appears to be limited to the area around the former USTs. Soil concentration in all the samples from boring GP3 and S10, located in the sidewalk by Martin Luther King Jr. Way near former Tank #1 and Tank #2 are below their respective screening criteria. There is no additional data from around former Tank #3. Given the nature of the petroleum hydrocarbon (mainly light fraction gasoline), the vertical extent of contamination beneath and in close proximity to the former tanks is likely limited to the lowest level of groundwater fluctuation.	4. & 7. Additional soil sampling is required to better define the vertical extent of contamination. Redevelopment will include excavation of the entire site to a depth of 12 feet bgs for the construction of an underground parking garage.	Additional soil borings to be advanced, as described in the data gaps table.
	During the two subsurface investigations conducted at the Site, a total of 15 grab groundwater samples were collected and analyzed for TPH-g and BTEX. The results of the analyses are summarized in Table 2-2. Concentration of TPH-g and/or BTEX exceeded their respective screening criteria in ten of the 15 samples analyzed. Similar to the soil sampling results, the highest concentrations were detected beneath or in close proximity to the former USTs. However, TPH-g and benzene were detected in one Site boring (G7) exceeding their respective screening criteria near the southern corner of the Site. There are no permanent monitoring wells located at the Site. As such, the groundwater flow direction across	8. There are no monitoring wells on site.	Five monitoring wells will be installed, as described in the data gaps table and in the work plan.

Table 4-1
Site Conceptual Model (Continued)

CSM Sub-Element	Description	Data Gap Item #	Resolution
	the Site cannot be evaluated. This has been defined as a significant data gap. The scope of work presented in this work plan includes the installation of four groundwater monitoring wells at the Site.		
	The Site is a former auto body and car wash facility. The Site is currently vacant, and with the exception of a billboard located in the northwest corner of the Site, has no structures and is covered with either asphalt or concrete foundations from former buildings located at the Site. The Site is zoned for residential and current plans are to redevelop the Site for residential use. However, there may be some commercial use on the ground level. This preliminary CSM assumes that development would consist of an underground parking garage; store fronts and residential units at ground level; and second story residential units. The CSM identifies the primary source; impacted media; release mechanism(s); secondary source(s); exposure route; potential receptors (residential, commercial/industrial worker, and construction worker), and an assessment of whether the exposure route/pathway is potentially complete, incomplete, or insignificant. Potential exposure routes that have been evaluated include incidental ingestion, dermal contact, dust inhalation, and vapor inhalation. For direct contact with contaminated soil, the exposure route for incidental ingestion, dermal contact, and dust inhalation for a residential and commercial/industrial worker are considered incomplete. These exposure routes for the construction worker are considered a potentially complete pathway, depending on the nature of the work. For volatilization from soil to outdoor air, vapor inhalation is the potential exposure pathway. Given dilution effects that take place outdoors, this exposure pathway is considered incomplete for all three potential receptors. For indoor air, this exposure pathway is considered potentially complete for all three potential receptors.		

Table 4-1
Site Conceptual Model (Continued)

CSM Sub-Element	Description	Data Gap Item #	Resolution
	For leaching of contaminants from soil to groundwater, the ingestion and dermal pathways for groundwater are considered incomplete, except for the construction worker, as shallow groundwater is not utilized as a drinking water source at the Site. For the construction worker, incidental ingestion and dermal contact is a potentially complete pathway. For volatilization from groundwater to outdoor air, the exposure pathway is considered insignificant due to dilution effects that take place outdoors. For indoor air, volatilization from groundwater to indoor air is considered a potentially complete pathway.		

Table 5-1
Data Gaps Summary and Proposed Investigation

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
1	Groundwater flow direction and gradient is unknown. There are only grab groundwater data points; there are no monitoring wells on site. There are no upgradient groundwater sample locations. The current groundwater data sets are 7 and 9 years old and may not be representative of current site conditions.	Install five groundwater monitoring wells, as described in the work plan. Wells will be constructed of 2-inch-diameter Schedule 40 PVC well casing, total depth up to 25 feet bgs; the screened interval will be determined based on observations of groundwater levels during field work. The well screen will consist of 5 to 10 feet of 0.010-inch well screen. Soil samples will be collected at 12 feet, 15 feet, and 20 feet bgs. Additional samples may be collected based on professional judgment.	The wells will be located to provide up- and downgradient control for the shallow groundwater plume. They will enable water level data to be collected to allow the groundwater flow direction and gradient to be calculated. Wells will be installed as follows: At the source area associated with UST #3. Downgradient of the site to the northwest, near the billboard. At the source area associated with USTs 1 and 2. Upgradient of the site adjacent to the ramp and pit. Adjacent to prior soil boring S4 (prior BTEX detections). Soil samples will be collected during well installation to further characterize subsurface soil contamination. Northern (off-site, downgradient) grab groundwater samples (far side of MLK, sidewalk): three borings.	Soil: TPH-g, BTEX, EDB, EDC. Soil samples from MW-1 will also be analyzed for PAHs. Groundwater: Natural attenuation parameters [COD, Fe(2+), Dissolved Gases (methane)] at selected locations (2). BTEX, TPH-g

Table 5-1
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
2	The soil data set does not adequately characterize the contamination (if any) that may remain on site after the excavation to approximately 11 to 12 feet bgs for the underground parking structure. The current soil data sets are 7 and 9 years old and may not be representative of current site conditions. Lithology below is not adequately characterized.	Ten soil borings will be drilled to a total depth of 20 feet bgs. Soil samples will be collected at 12 feet, 15 feet, and 20 feet bgs from soil borings SB-4 through SB-10. Soil samples will not be collected from soil borings SB-1, SB-2, and SB-3 which are located across MLK north of the site, as there is no reason to suspect an off-site soil contamination source in this area. Borings will be logged using the Unified Soil Classification System. Grab groundwater samples will be collected from the first encountered groundwater at each soil boring.	Soil samples will be collected starting at 12 feet bgs. Shallow soil on site is to be excavated for disposal during the construction of the underground parking garage. Excavation will be conducted to a depth of about 12 feet bgs. Soil borings will be located as shown in the work plan figure: Source area borings: At the former locations of USTs 1, 2 and 3. One boring north of the site on the side walk of MLK Way. One boring between USTs 1 and 2 and the pump island (potential leakage from conveyance piping). One boring at the approximate location of UST 3 (in addition to the soil samples to be collected from the monitoring well to be installed at this location). One boring in the vicinity of the ramps and pit in the southern portion of the site (in addition to soil samples to be collected from the monitoring well in this area). Step out borings: Step out boring SB-5 to be completed proximal to the UST #3 source area. GP4 Area: Benzene was previously detected at 25,000 µg/kg at location GP4 (Carver, 2006). Two step-out borings will be completed in this area to further characterize soils at depth.	TPH-g, BTEX, EDB, EDC. Boring SB-4 (on sidewalk of MLK near UST 1): PAHs

Table 5-1
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
3	There is no data on the presence and usage of wells in the vicinity of the site.	Obtain a well survey.	Identify irrigation and other wells in the site vicinity.	N/A
4	PAHs are potential COCs at the northern boundary of the site.	See soil borings – Item 2. PAHs will be analyzed at select locations as described in Item 2.	Item 2	Item 2
5	There is a potential source area in the vicinity of the ramps and pit.	A monitoring well will be installed in this area. It will also serve as the upgradient well for the site. See Item 2. A soil boring will also be completed in this area.	Item 2	Item 2
6	Determine size and contents of the three USTs that were removed from the site	Review prior reports.	Tanks #1 and #2 were identified as 650-gallon gasoline tanks. Tank #3 was a 500-gallon gasoline tank [Tank Removal Report – 1995]. Tanks #2 and #3 were observed to be badly deteriorated with holes due to corrosion.	NA
7	Confirm whether TPH-g and BTEX were detected during construction of the adjacent residential unit	Review prior reports.	The URS site investigation conducted in 2004 found no detections of TPH-g [<1,000 µg/kg] or BTEX [<5.0 µg/kg] in the borings completed to 14 feet bgs.	NA

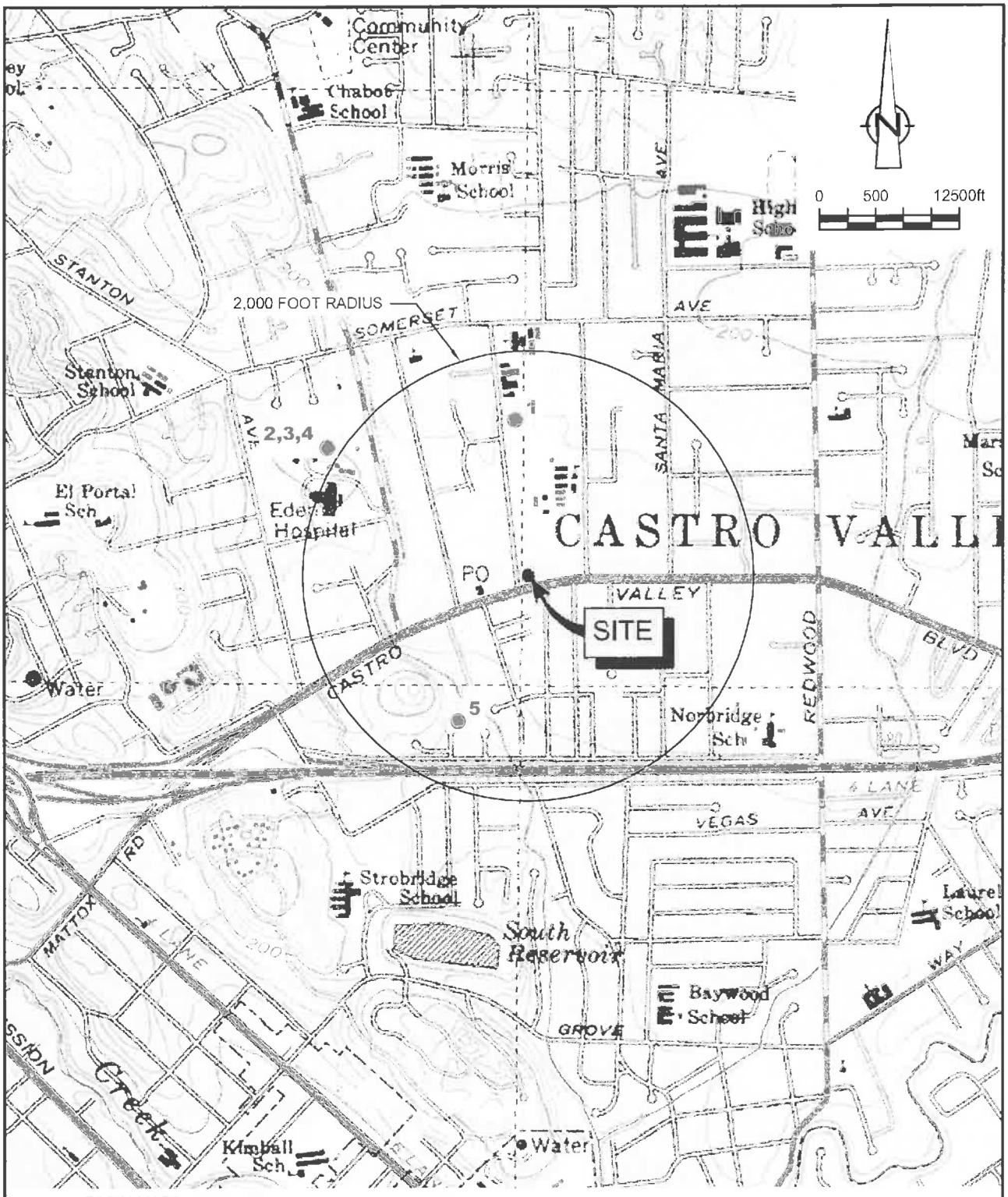
Table 5-1
Data Gaps Summary and Proposed Investigation (Continued)

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
8	Review data from the nearby service stations (Arco)	Review prior reports.	The former Arco station (731 West MacArthur Blvd.) is about 0.5 miles crossgradient of the 3884 MLK site. The BTEX levels are lower than those at the subject site; the Arco site does not appear to be contributing to on site TPH or BTEX contamination. Groundwater elevation data from this site was used to calculate groundwater flow direction, since there are currently no wells at the 3884 MLK site.	NA

ATTACHMENT B

WELL SURVEY RESULTS
CHEVRON STATION 9-6991
2920 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

Owner	*Well Address* *Street*	*City*	*Total Well Depth (ft)*	*Date Installed*	*Distance/Direction from Site (ft) (approx)*	*Well Use*
vate	20036 Anita Avenue	Castro Valley	51	2/19/1953	1,400 N	Domestic
ownship	Lake Chabot Road 1,000' south of					
pital	Williams	Castro Valley	150	9/30/1953	2,000 NW	Test well
ownship	Eden Township					
pital	Hospital	Castro Valley	250	9/9/1952	2,000 NW	Domestic
ownship	Eden Township					
pital	Hospital	Castro Valley	60	7/11/1952	2,000 NW	Cooling system return
Wallace	Tyee Court	Castro Valley	52	7/3/1953	1,400 S-SW	Domestic



SOURCE: TOPO! MAPS.

LEGEND

● APPROXIMATE WELL LOCATION

WELL SURVEY MAP
CHEVRON SERVICE STATION 9-6991
2920 CASTRO VALLEY BOULEVARD
Castro Valley, California

APPENDIX B
SUMMARY OF SITE HISTORY

APPENDIX B

SUMMARY OF SITE HISTORY

The following Site history was directly excerpted from the report "*Additional Site Assessment"* prepared by Delta in 2009 for the 76 Service Station #11128 (ConocoPhillips Site #2611128) at 4707 First Street, Livermore, California (Delta, 2009).

1972 *- Three gasoline Underground Storage Tanks (USTs) existed at the subject site. The tanks consisted of one 10,000-gallon unleaded fuel, one 8,000-gallon super unleaded fuel tank, one 6,000-gallon regular fuel tank and one 280-gallon waste oil tank.*

1985-1986 *Nineteen wells were installed on behalf of Chevron at the Chevron service station site, at the subject site, and in the intersection. According to Chevron, no soil samples were collected or analyzed during well installation. Chevron indicated that the USTs at the Chevron station were replaced in January 1985.*

1986-2007 *Chevron monitored and sampled groundwater at the subject site, at the intersection, and at the Chevron site from 1986 to 2005. In 1991, Chevron shifted from quarterly to semiannual monitoring for some wells. ACEH (1992) indicated that semiannual monitoring was not acceptable, and Chevron resumed quarterly sampling in 1992.*

A field investigation was conducted at the subject site on October 7, 1987 and consisted of soil sampling and supervision of the removal of the four USTs mentioned above (installed in 1972). All the tanks were steel and appeared to be in good condition. Soil sampling beneath the tanks was performed on the same day as tank removal. The subsurface soils exposed in the excavations consisted primarily of clayey sand. Excavated soil was stockpiled on the site for further sampling. Sample A1 collected at 15 ft bgs from the tank pit had a TPH level of 260 parts per million (ppm). The TPH level in all other samples from the tank pit ranged from non-detectable to 2.3 parts per million (ppm). Sample WO-1 from the waste oil tank pit had non-detectable levels of all constituents except methylene chloride (4 ppm) and toluene (0.17 ppm). Approximately 500 cubic yards of stockpiled soil at the referenced site were sampled, analyzed and disposed of properly in November 1987.

In ***1987****, one 10,000-gallon super-unleaded UST, one 10,000-gallon regular UST, one 12,000-gallon unleaded UST, and one 1,000-gallon waste oil UST (all tanks fiberglass and double-walled) were installed at the subject site. Additional Site Assessment Work Plan, October 17, 2008, ConocoPhillips Site No. 2611129 Page 3.*

In ***1990****, Chevron (adjacent site) apparently installed a groundwater remediation air stripping unit to an extraction well installed at the subject site (BP site). The system did not appear to have been installed with BP's permission. The system apparently only operated from March 26 to December 6, 1990. ACEH indicated in 1992 that extracting groundwater from the BP well*

could "exasperate" the extent of the problem by pulling the contaminants away from the Chevron site and toward the subject site. ACEH required that Chevron, at a minimum, "engineer and install a system capable of meeting [the] goal" of controlling the further migration of its plume from the site. In 1992, ACEH stated that passive monitoring of contaminant levels was not appropriate.

***1993** Chevron has completely removed the groundwater extraction system and the air stripping unit that was previously located at the subject site (4707 North First Street). Despite previous agency requests for further groundwater remediation, no evidence of resumed efforts to remediate groundwater at the intersection was found in BP or agency files. Letters from ACEH to Chevron indicated that Chevron was responsible for cleanup of contamination at the intersection. The agency required that groundwater remediation be initiated by Chevron, but no treatment system has been installed.*

*In **1994**, it was noted in a "Baseline Assessment Report" for the subject site that the service bays were formerly used for auto repair. It also noted that the Chevron station (adjacent site) had a confirmed release of approximately 4,000 gallons of gasoline in 1985, and that Chevron was responsible for the cleanup at the intersection of South Front Road and First Street (ACEH, 1992). In 1992, a UNOCAL service station was located north of the site across First Street, and a mall and restaurant were located northwest of the site across First Street. A drainage culvert is located west of the site, and a new road was under construction south of the site in July 1994. On October 21, 1994, EMCON conducted supplemental assessment activities at the subject site. These activities consisted of advancing three exploratory soil borings (THP-1 through THP-3) near the pump islands, UST complex, and waste oil UST, and checking the fuel dispensers for the presence of spill containment boxes and for indications of possible leakage. Spill containment boxes were not observed beneath the four dispensers on site. Stained pea gravel backfill material was observed below the southwest dispenser. PID readings up to 151 ppm were obtained from pea gravel backfill material below each dispenser. Two soil samples from borings THP-1 through THP-3 were selected for laboratory analysis of TPH-G, TPH-D, TPH-O, and BTEX. None of these constituents were detected in the analyzed soil samples. Groundwater samples collected from borings THP-1 and THP-3 were analyzed. Ethylbenzene (0.8 ppb) and xylenes (4 ppb) were detected in the groundwater sample collected from THP-1. Additional Site Assessment Work Plan, October 17, 2008, ConocoPhillips Site No. 2611129 Page 4 TPH-G (up to 79 ppm), TPH-D (up to 360 ppm), and one or more BTEX constituents (up to 0.14 ppm toluene, 0.11 ppm ethylbenzene, and 0.80 ppm xylenes) were detected in soil grab samples TD1 through TD4 collected below the fuel dispensers.*

*In **1995**, one 1,000-gallon double-walled, fiberglass waste oil UST was removed from the site. The UST was installed in 1987 and was operational until September 1995. The excavation contained no standing water, and no stained soils were observed. The soil was dark gray-black*

clay. Two soil samples were collected approximately 2 feet below the bottom of the UST pit excavation at a total depth of approximately 9 feet bgs. Other soil samples were collected from a depth of approximately 3 feet bgs from the former hydraulic lift sump excavations and a soil sample was collected from a depth of approximately 4 feet bsg [sic] from the former wastewater separator excavation. Analytical results for some soil samples reported concentrations of Di-n-butyl phthalate at 1.2 mg/kg, 0.98 mg/kg, and 1.3 mg/kg, and of 1,1-Dichlorobenzene and 1,2-Dichlorobenzene at 16 mg/kg and 20 mg/kg, respectively.

1999 *The product piping was removed on September 23, 1999. A visual inspection of the piping revealed that no holes or cracks were seen in the piping and that the integrity of the trench was to LPFD standards. The LPFD required no soil samples to be taken.*

2007 *On August 21, 22, 23 and 27, 2007, six soil borings designated B-1, B-2, B-3, B-4, B-5 and B-6 were advanced in the vicinity of the existing fuel USTs and dispensers using Geoprobe drilling equipment by ATC. Borings were advanced to depths of 25 feet bgs (B-3, B-4 and B-6) and 35 feet bgs (B-1 and B-2) while boring B-5 was terminated at approximately nine feet bgs due to Geoprobe refusal. Soil samples were collected at approximate five-foot intervals (when subsurface conditions allowed) for lithological description, field screening using a PID, and for possible laboratory analysis. No soil samples were collected from boring B-5. Groundwater samples were collected from borings B-1, B-2, B-3, B-4 and B-6 after each boring was advanced between three to five feet into groundwater.*

- *Lead was detected at concentrations of 6.20 milligrams per kilogram (mg/kg), 5.43 mg/kg, 4.99 mg/kg, 5.15 mg/kg and 2.68 mg/kg in soil samples collected at approximately 30 feet bgs from boring B-1, 31 feet bgs from boring B-2, 20 feet bgs from boring B-3, 21 feet bgs from boring B-4, and 19 feet bgs from boring B-6, respectively.*
- *Toluene was detected at concentrations of 0.007 mg/kg and 0.009 mg/kg in soil samples collected at approximately 31 feet bgs from boring B-2 and 20 feet bgs from boring B-3, respectively.*
- *Total xylenes were detected at a concentration of 0.006 mg/kg in the soil sample collected at approximately 20 feet bgs from boring B-3.*
- *Methylene chloride was detected at a concentration of 0.005 mg/kg in the soil sample collected at approximately 20 feet bgs from boring B-3.*
- *TPH-DRO was detected at a concentration of 80 mg/kg in the soil sample collected at approximately 21 feet bgs from boring B-4.*
- *No other analytes were detected in excess of their respective laboratory method Limit of Quantitation (LOQ) in any of the soil samples submitted for analysis. Laboratory analytical results for the groundwater samples selected for analysis indicated the following: TPH-DRO was detected al concentrations of 1,100 µg/L, 4,600 µg/L, 6,300 µg/L and 7,300 µg/L in the groundwater samples collected from borings B-1, B- 2, B-3*

and B-6, respectively. • No other analytes were detected in excess of their respective laboratory method LOQ in the groundwater sample submitted for analysis.

Additional Assessment (not summarized)

2007 DELTA REQUEST FOR ENVIRONMENTAL CASE CLOSURE

***In 2007**, TPH-DRO was detected at a concentration of 80 mg/kg in the soil sample collected at approximately 21 feet bgs from boring B-4 and at concentrations of 1,100 µg/L, 4,600 µg/L, 6,300 µg/L and 7,300 µg/L in the groundwater samples collected from borings B-1, B-2, B-3 and B-6, respectively. However, **in 2009** all concentrations detected in soil and groundwater, Benzene in soil (0.0013 and 0.0015 mg/kg), TPH-DRO in soil (between 1.8 – 5.0 mg/kg), or TPH-DRO in groundwater (between 19 - 39 µg/L) are well below their most stringent Environmental Screening Levels (ESLs) for residential use/drinking water source of 440 mg/kg for Benzene in soil, 83 mg/kg for Diesel in soil, or 100 µg/L for Diesel in groundwater.*

It is our professional opinion that based on site specific geological data, site history of non-diesel use, and investigation data collected between 1972-2009, the subject site qualifies for environmental case closure and, on behalf of ConocoPhillips, we respectfully request that a "no further action" letter be issued by the lead agency.

The 2009 assessment was the last investigation conducted prior to closure of the Site in 2010 by ACDEH.

APPENDIX C

DATA QUALITY OBJECTIVES AND QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

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Evaluation of laboratory analytical results and supporting quality assurance/quality control (QA/QC) data will be based on laboratory-supplied information, including: sample shipping and preservation information, chain of custody forms, laboratory reports, method blank analyses, duplicate grab-groundwater sample analyses, surrogate spike recovery data, laboratory control samples, matrix spikes, and field QC samples.

C.1 Sample Shipping and Preservation

A chain-of-custody record will be used to track the possession of the samples from the time they are shipped, until they are received at the laboratory. Samples will be properly preserved and delivered on ice to the laboratory. The samples will be stored by the laboratory at the required temperature of less than <6°C.

C.2 Laboratory Method Blank Analyses

The laboratory will prepare and analyze method blanks to assess the potential for contamination introduced during the laboratory analytical procedures.

C.3 Laboratory Control Sample Analyses

The laboratory will prepare and analyze Laboratory Control Samples (LCS) to assess the analytical methods used by the laboratory. Relative percent differences (RPDs) will be used to evaluate analytical precision.

C.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

Laboratory QA/QC includes analyzing samples spiked at the laboratory with a known concentration of the analyte of concern as matrix spike/matrix spike duplicate (MS/MSD) samples. The RPD between the MS and MSD will be used to assess analytical precision.

C.5 Field QA/QC Samples

Duplicate grab-groundwater samples will be collected in the field to evaluate analytical and sampling consistency. Duplicate samples will be collected immediately after the primary sample using the same equipment and procedure.

Additionally, one trip blank per cooler will be supplied by the laboratory and analyzed to evaluate the potential for introduction of contaminants between sample containers during shipping and handling of the samples.

Field duplicate QA/QC grab-groundwater samples will be collected at an approximate rate of ten percent (10%) of the total number of samples collected.

C.6 Analyte Reporting

Sample results will be reported to the laboratory's reporting limit (RL) for each analyte. Laboratory RLs will be below Commercial ESLs for the above-listed analytes.

C.7 Laboratory Analyte Qualifiers

Data analyte qualifiers will be described in the laboratory report, as needed.