

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, SUITE 250  
ALAMEDA, CA 94502  
(510) 567-6700  
FAX (510) 337-9335

December 28, 2017

Kelle Lynch McMahon  
Peralta Community College District  
333 East 8<sup>th</sup> Street  
Oakland, CA 94606  
(Sent via E-mail to:  
[klynchmcmahon@peralta.edu](mailto:klynchmcmahon@peralta.edu))

Subject: Request for Technical Reports, Fuel Leak Case No. RO0000384 and GeoTracker Global ID T0600100983, Peralta College District, 501 5th Avenue, 333 East 8<sup>th</sup> Street, and 286 East 10<sup>th</sup> Street, Oakland, CA 94606

Dear Ms. McMahon:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file for the above-referenced site and met with Peralta Community College District (PCCD) representatives and your technical consultants on 31 October 2017 and 12 December 2017. At both meetings, we discussed preparation of a Conceptual Site Model (CSM) and evaluation of data gaps which must be filled to validate the CSM. In September 2017, PCCD and the ACDEH agreed that a CSM is needed to appropriately focus future site investigation activities. Once your CSM and data gap analysis report is approved, then a workplan will be requested. We also discussed the need for site history information and identification and sampling of groundwater monitoring wells at the site.

ACDEH Case No. RO0000384 includes the property bounded to the north by East 10<sup>th</sup> Street, to the west by the Lake Merritt Tidal Channel, to the south by a former Union Pacific Railroad right of way (which crosses the tidal channel underneath the Nimitz Freeway), and to the east by 5<sup>th</sup> Avenue. The site includes multiple addresses and assessor parcel numbers (APNs). The site is bisected by East 8<sup>th</sup> Street. A 1992 subsurface investigation report shows subsurface contamination extending from PCCD's northern parcels, beneath East 8<sup>th</sup> Street, and onto the south parcel. A second subsurface contamination plume reportedly extends from the Laney college athletic track, crosses underneath the baseball diamond and child care facility, and terminates east of the Lake Merritt Tidal Channel. Twelve underground storage tanks (USTs) were removed from the south parcel between 1992 and 1998.

This letter describes (1) technical comments that you must address in your submittals, and (2) technical reports that you are required to submit to the ACDEH.

**TECHNICAL COMMENTS**

ACDEH requests that you address the following technical comments in your submittals:

1. **Conceptual Site Model.** Site data has been collected over a period of years through multiple iterative investigations. Site land uses changed during the investigation period. A CSM compiles all available data pertaining to: site operational history, geology, contaminant distribution and migration, current site use, and anticipated future site use(s). The CSM connects subsurface investigation and monitoring results to specific sources, explains contaminant fate and transport, and evaluates potential exposure pathways and potential receptors that may exist at the site. At a minimum, a CSM must include:
  - a. Local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.) extent of contamination, direction and rate of groundwater flow, potential preferential pathways, and locations of receptors;
  - b. Geologic cross section maps that illustrate subsurface features, man-made conduits, and lateral and vertical extent of contamination;
  - c. Plots of chemical concentrations over time and distance from the source;
  - d. Summary tables of chemical concentrations in different media (i.e. soil, groundwater, and soil vapor); and
  - e. Well logs, boring logs, and well survey maps;
  - f. Discussion of contaminant fate and transport.

We request that you prepare the CSM in a tabular format to facilitate future updates of the CSM. Included for your reference is ACDEH guidance for preparation of an initial, site-specific CSM in tabular format. The attached guidance highlights the major CSM elements common to most CSMs (Attachment A).

2. **Site History Information.** The current site uses include community college classrooms and administrative offices, a child care center, and athletic facilities. The current uses were preceded by automotive fueling and repair operations and a range of industrial uses. A Phase I Environmental Site Assessment (ESA) describes the site history, and includes review of site setting and historical information, a regulatory database search, documentation of current site operations, interviews with former and current facility occupants and owners, and identification of areas where potential site contamination needs to be assessed or further investigated. The ACDEH and PCCD agreed during the 12 December 2017 meeting that a Phase I ESA is needed to provide information necessary to complete the CSM.
3. **Semi-Annual Groundwater Monitoring.** The most recent site groundwater monitoring results were submitted to the ACDEH in August 1999. The 23 August 1999 Groundwater Monitoring Report prepared by ACC Environmental, on your behalf, summarizes historical groundwater data for wells MW-1, MW-2, MW-3, and MW-4. The report states that wells MW-2 and MW-3 were destroyed prior to the 1999 sampling event.

Semi-annual groundwater monitoring is required at this site until further notice from the ACDEH. All groundwater monitoring wells must be gauged, inspected for free product, and sampled during each monitoring event. Monitoring well locations must be surveyed and coordinates must be uploaded to GeoTracker. The next groundwater monitoring event must be conducted no later than

31 March 2018 and the first Semi-Annual Monitoring Report (SAMR) must be submitted no later than 30 April 2018. Subsequent groundwater monitoring events shall be conducted during the 3<sup>rd</sup> month of the 1<sup>st</sup> and 3<sup>rd</sup> Quarters of each year, and reports must be submitted no later than the last day of the first month of the subsequent quarter. Written notice to the ACDEH via e-mail 72 hours prior to groundwater sampling is required prior to each monitoring event.

#### **TECHNICAL REPORT REQUEST**

Please upload technical reports to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- 28 February 2018 – Conceptual Site Model and Data Gap Evaluation Report  
File to be named: RO-384\_CSM\_R\_yyyy-mm-dd
- 30 April 2018 – Phase I ESA Report  
File to be named: RO-384\_PHASE1\_R\_yyyy-mm-dd
- 30 April 2018 – Groundwater Monitoring Report – 1<sup>st</sup> Half 2018  
File to be named: RO-384\_GWM\_R\_yyyy-mm-dd
- 30 April and 31 October Each Year – Semi-Annual Groundwater Monitoring Report  
File to be named: RO-384\_GWM\_R\_yyyy-mm-dd

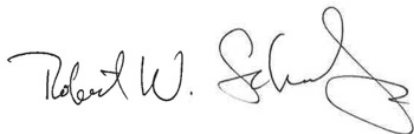
#### **SUBMITTAL ACKNOWLEDGEMENT STATEMENT**

ACDEH requires a Submittal Acknowledgement Statement, signed by the Responsible Party (RP), as a cover letter to technical reports and submittals. The requirement is described in Attachment 1. 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 the State Water Resources Control Board's GeoTracker website."*

If you have any questions, please call me at (510) 567-6721 or send me an electronic mail message at [robert.schultz@acgov.org](mailto:robert.schultz@acgov.org). Online case files are available for review at the following website: <http://www.acgov.org/aceh/index.htm>.

Sincerely,



Robert W. Schultz, CHG  
Senior Hazardous Materials Specialist

Attachment: Attachment 1 - Responsible Party(ies) Legal Requirements/Obligations

Ms. McMahon  
RO0000384  
December 28, 2017  
Page 4

cc: Atheria Smith, Peralta Community College District, 333 E. 8<sup>th</sup> Street, Oakland, CA 94606 (Sent via E-mail to: [atheriasmith@peralta.edu](mailto:atheriasmith@peralta.edu))  
Kimberly Bunting, ACC Environmental, 7977 Capwell Drive, Oakland, CA 94621 (Sent via E-mail to: [kbunting@accenv.com](mailto:kbunting@accenv.com))  
Thomas Smith, Garcia Hernández Sawhney LLP, (Sent via E-mail to: [tsmith@ghslaw.com](mailto:tsmith@ghslaw.com))  
Paresh Khatri, ACDEH (Sent via E-mail to: [paresh.khatri@acgov.org](mailto:paresh.khatri@acgov.org))  
Dilan Roe, ACDEH (Sent via E-mail to: [dilan.roe@acgov.org](mailto:dilan.roe@acgov.org))  
GeoTracker, eFile

<b>Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)</b>	<b>REVISION DATE:</b> December 14, 2017
	<b>ISSUE DATE:</b> July 25, 2012
	<b>PREVIOUS REVISIONS:</b> September 17, 2013, May 15, 2014, December 12, 2016
<b>SECTION:</b> ACDEH Procedures	<b>SUBJECT:</b> Responsible Party(ies) Legal Requirements / Obligations

**REPORT & DELIVERABLE REQUESTS**

Alameda County Department of Environmental Health (ACDEH) Cleanup Oversight Programs, Local Oversight Program (LOP) and Site Cleanup Program (SCP) require submission of all reports in electronic form to the State Water Board's (SWB) GeoTracker website in accordance with California Code of Regulations, Chapter 30, Division 3, Title 23 and Division 3, Title 27.

Leaking Underground Fuel Tank (LUFT) Cases

Reports and deliverable requests are 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 (RP) in conjunction with an unauthorized release from a petroleum underground storage tank (UST) system.

Site Cleanup Program (SCP) Cases

For non-petroleum UST cases, reports and deliverables requests are pursuant to California Health and Safety Code Section 101480.

ELECTRONIC SUBMITTAL OF REPORTS

A complete report submittal includes the PDF report and all associated electronic data files, including but not limited to GEO\_MAP, GEO\_XY, GEO\_Z, GEO\_BORE, GEO\_WELL, and laboratory analytical data in Electronic Deliverable Format™ (EDF). Additional information on these requirements is available on the State Water Board's website ([http://www.waterboards.ca.gov/water\\_issues/programs/ust/electronic\\_submittal/](http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/))

- Do not upload draft reports to GeoTracker
- Rotate each page in the PDF document in the direction that will make it easiest to read on a computer monitor.

GEOTRACKER UPLOAD CERTIFICATION

Each report submittal is to include a GeoTracker Upload Summary Table with GeoTracker valid values<sup>1</sup> as illustrated in the example below to facilitate ACDEH review and verify compliance with GeoTracker requirements.

**GeoTracker Upload Table Example**

Report Title	Sample Period	PDF Report	GEO_MAPS	Sample ID	Matrix	GEO_Z	GEO_XY	GEO_BORE	GEO_WELL	EDF
<b>2016 Subsurface Investigation Report</b>	2016 S1	✓	✓	Effluent	SO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
<b>2012 Site Assessment Work Plan</b>	2012	✓	✓			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2010 GW Investigation Report</b>	2008 Q4	✓	✓	SB-10	W	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
				SB-10-6	SO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓
				MW-1	WG	✓	✓	✓	✓	✓
				SW-1	W	✓	✓	✓	✓	✓

<sup>1</sup> GeoTracker Survey XYZ, Well Data, and Site Map Guidelines & Restrictions, CA State Water Resources Control Board, April 2005

<b>Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)</b>	<b>REVISION DATE:</b> NA
	<b>ISSUE DATE:</b> December 14, 2017
	<b>PREVIOUS REVISIONS:</b> September 17, 2013, May 15, 2014, December 12, 2016
<b>SECTION:</b> ACDEH Procedures	<b>SUBJECT:</b> Responsible Party(ies) Legal Requirements / Obligations

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 the State Water Board's GeoTracker website." This letter must be signed by the Responsible Party, or legally authorized representative of the Responsible Party.

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 and include the professional registration stamp, signature, and statement of professional certification. 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

For LUFT cases, RP's non-compliance with these regulations may result in ineligibility to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse the cost of cleanup. Additional information is available on the internet at: [https://www.waterboards.ca.gov/water\\_issues/programs/ustcf/](https://www.waterboards.ca.gov/water_issues/programs/ustcf/)

AGENCY OVERSIGHT

Significant delays in conducting site assessment/cleanup or report submittals may result in referral of the case to the Regional Water 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.

# 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:
  - o Beneficial resources (e.g., groundwater classification, wetlands, surface water bodies, natural resources, etc.)
  - o Subpopulation types and locations (e.g., schools, hospitals, day care centers, elder care facilities, etc.)
  - o 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**

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Regional	<p>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:</p> <ul style="list-style-type: none"> <li>• 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).</li> <li>• 5 to 20 feet bgs: very dark-brown silty clay grades to a greenish-gray silty clay and brown silty clay and gravelly clay.</li> </ul> <p>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.</p>	None	NA

**Table 4-1  
Site Conceptual Model (Continued)**

<b>CSM Element</b>	<b>CSM Sub-Element</b>	<b>Description</b>	<b>Data Gap Item #</b>	<b>Resolution</b>
Geology and Hydrogeology	Site	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.
Surface Water Bodies		The closest surface water body is the San Francisco Bay, which is 1.5 miles west of the site.		
Nearby Wells		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
Release Source and Volume		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)**

<b>CSM Element</b>	<b>CSM Sub-Element</b>	<b>Description</b>	<b>Data Gap Item #</b>	<b>Resolution</b>
		The area around the ramps and pit in the southern area of the site is considered a potential source area.		
LNAPL		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.
Source Removal Activities		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.
Contaminants of Concern		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)**

<b>CSM Element</b>	<b>CSM Sub-Element</b>	<b>Description</b>	<b>Data Gap Item #</b>	<b>Resolution</b>
		former shop building, and in the northwestern area of the Site.		
Petroleum Hydrocarbons in Soil		<p>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.</p> <p>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.</p>	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.
Petroleum Hydrocarbons in Groundwater		<p>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</p>	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 Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		<p>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.</p>		
Risk Evaluation		<p>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.</p> <p>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.</p> <p>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.</p>		

**Table 4-1  
Site Conceptual Model (Continued)**

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		<p>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.</p>		





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

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
2	<p>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.</p>	<p>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.</p>	<p>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:</p> <p>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).</p> <p>Step out borings: Step out boring SB-5 to be completed proximal to the UST #3 source area.</p> <p>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.</p>	<p>TPH-g, BTEX, EDB, EDC.</p> <p>Boring SB-4 (on sidewalk of MLK near UST 1): PAHs</p>

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

<b>Item</b>	<b>Data Gap Item #</b>	<b>Proposed Investigation</b>	<b>Rationale</b>	<b>Analyses</b>
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 [ $<1,000 \mu\text{g}/\text{kg}$ ] or BTEX [ $<5.0 \mu\text{g}/\text{kg}$ ] in the borings completed to 14 feet bgs.	NA

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

<b>Item</b>	<b>Data Gap Item #</b>	<b>Proposed Investigation</b>	<b>Rationale</b>	<b>Analyses</b>
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