October 13, 2017

RECEIVED
By Alameda County Environmental Health 11:11 am, Oct 16, 2017

Mark Detterman
Senior Hazardous Materials Specialist
Alameda County Health Services Agency
Department of Environmental Health Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: Data Gap Investigation Work Plan and Focused Conceptual Site Model
Haig's Delicacies, 25673 Nickel Place, Hayward, California
Fuel Leak Case No. RO0003243
Geotracker Global ID T10000010739

Dear Mr. Detterman:

Applied Water Resources (AWR) has prepared the attached report in response to your August 4, 2017 letter. I have read and acknowledge the content, recommendations, and/or conclusions contained in the attached document or report submitted on my behalf to ACCDEH's FTP server and the SWRCB's Geotracker Website.

Sincerely,

Steve Cherezian, Haig's Delicacies

October 13, 2017

Mark Detterman
Senior Hazardous Materials Specialist
Alameda County Health Services Agency
Department of Environmental Health Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: Data Gap Investigation Work Plan and Focused Conceptual Site Model
Haig's Delicacies, 25673 Nickel Place, Hayward, California
Fuel Leak Case No. RO0003243
Geotracker Global ID T10000010739

Dear Mr. Detterman:

Applied Water Resources, Corp. (AWR) has prepared this Data Gap Investigation Work Plan and Focused Conceptual Site Model in response to your letter dated August 4, 2017. This work has been done on behalf of Haig's Delicacies, the current property owner and occupant. The property is in a light industrial area within the City of Hayward, California. The site is a light industrial office/warehouse property currently occupied by Haig's Delicacies, which produces Hummus and other similar types of dips and spreads.

Previous Reports

A Phase I ESA was prepared for the subject site in 2008 by ERAS Environmental, Inc. That report concluded, "No evidence was discovered during this assessment to indicate that activities currently or historically conducted on or near the Property have contributed fuel or solvent contamination to soil or groundwater in the surrounding area. Recognized environmental conditions were not identified for soil or groundwater conditions at the Property. Therefore ERAS recommends no further action regarding environmental conditions at 25673 Nickel Place in Hayward, California."

A second Phase I ESA was prepared by ADR Environmental Group on behalf of Citibank, dated September 20, 2016. That report identified the following:

> "Based on historical information, the subject Property has been utilized for light industrial operations from 1975 to the present. From at least the mid-1980s to 2000, the Orlimar Golf Co. operations included the use and storage of hazardous materials (i.e., petroleum products, lacquer thinner, and halogenated solvents), the operation of a degreaser, and the generation of hazardous waste as a function of their business. There

are potential environmental risks associated with these operations including the release of hazardous materials to the subsurface during a time of lesser environmental awareness. Inspection reports from the 1980s and 1990s indicated that these materials were stored inside and outside the subject Property building and did not have secondary containment."

The 2016 ADR Phase I ESA recommended a subsurface investigation to determine if the past tenants have environmentally impacted the site.

AWR, on behalf of Haig's Delicacies, conducted limited soil, soil vapor, and grab groundwater sampling at the site in November 2016 at the request of a potential lender as recommended in the September 2016 ESA. The results of the November 2016 sampling were presented in a report dated December 2, 2016. The results of that sampling led to installation and sampling of a monitoring well and indoor air sampling, the results of which were presented in a report dated March 17, 2017.

Copies of the 2008 ERAS Phase I ESA, the 2016 ADR Phase I ESA and the December 2016 and March 2017 AWR Sampling reports have been provided to Alameda County Environmental Health and uploaded to the California Geotracker system. The August 2017 directive letter was issued in response to the submitter reports. As noted above, this report has been prepared to present the information requested in that letter.

Data Gap Investigation Work Plan

The Directive letter requested and/or noted the following items. Our response is in italics.

- Provide an extended site map with a bar scale using aerial photograph as a base with a bar scale to depict the site and surrounding area. *See Figure 1.*
- Provide a detailed site plan showing chemical and waste storage areas for former site occupants. *The only figures we have seen that depict the former site layout are included as Figure 3 (2008 Site Map) and Figure 5 (a site sketch from a 1993 Hazardous Material Management Plan obtained from the Hayward Fire Department for the 2016 Phase I ESA). Both have limited detail and are not to scale, but to the best of our knowledge, these are the only figures publicly available. The current owner/occupant has only been involved with the site since 2007-2008 and their only knowledge of former site operations is what was in the Phase I ESA reports.*
- Prepare a site conceptual model in tabular form. *See attached.*
- There has only been one sample collected from one groundwater well at the site. Additional well sampling events and locations are needed to better quantify the extent of the impacts and any concentration trends. *Our proposed work scope includes the installation of two additional monitoring wells and additional sampling events.*
- Site specific groundwater flow information is not known. *Our proposed work scope includes the installation of two additional monitoring wells and additional sampling events to evaluate site specific groundwater conditions.*

- Silica Gel Cleanup was not used for previous sampling events. *Silica gel cleanup will be requested for future sampling events.*
- There may be a regional TCE plume underlying the site. *The proposed additional monitoring well installation and sampling will provide additional evaluation for this issue. In addition, AWR will do a more thorough evaluation of offsite releases for the conceptual site model.*
- There could potentially be impacts to or from the adjacent commercial/light industrial properties and buildings. Soil vapor monitoring on the site near these adjacent buildings would provide additional information. *The proposed investigation includes three additional grab 5 foot soil vapor locations and the installation of six subslab soil vapor sample collection points (three in the building and three outside the building) to evaluate the soil vapor conditions on the site and allow better evaluation of any source and extent of the soil vapor plume.*
- The former waste water sump identified in the 2008 ERAS Phase I Report has not been evaluated as a potential source. *Based on the location shown on the 2008 ERAS map (attached as Figure 3), the former sump appears to be in what is now the refrigerated food preparation area. AWR will collect grab groundwater and soil vapor samples close to the former sump area without entering the actual food preparation area. Although this is not right at the former sump, it will provide additional data on the concentrations to determine if the former sump is a source.*
- Claim site on Geotracker and upload the work plan and previous reports. *The site has been claimed and the previous reports uploaded. This work plan and future reports, future analysis reports, future soil and well logs, and future well gauging data will be uploaded in a timely manner.*
- Future reports should include a cover letter signed by the responsible party stating, "I have read and acknowledge the content, recommendations, and/or conclusions contained in the attached document or report submitted on my behalf to ACCDEH's FTP server and the SWRCB's Geotracker Website." *This will be done.*

In addition, the following data gaps were identified in the conceptual site model:

- Local and regional geology and hydrogeology should be better defined including surface geology, subsurface geology, and hydrogeology. The conceptual model requests a structural contour map and isopatch map for aquitards, cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.
- Hydraulic Flow Systems including rose diagrams for groundwater gradients including evaluation for potential seasonal precipitations and groundwater pumping as well as evaluation of the potential interconnection between shallow and deep aquifers and hygrographs of all monitoring wells.
- Further evaluation of potential release sources is needed.

- Soil gas and groundwater plume should be defined and evaluated. As part of this a preferential pathway and sensitive preceptor study is required.
- Summary tables with graphs of contaminant concentrations versus time are needed.
- Location of historic site operations/processes is not fully known
- A better evaluation of contaminant releases in the vicinity of the site. The two Phase I reports included a search of local, state, and federal databases but this information should be updated and expanded with regards to this particular issue.
- Land use and exposure scenarios on the facility and the adjacent properties should be evaluated.

Proposed Additional Investigation

The following additional work is proposed to address the requested information and data gaps.

Task 1 - Utility Location, Permitting, and Health and Safety Plan

As described below, investigation activities will include installing and sampling two new groundwater monitoring wells at the Site as well as one soil boring for soil lithology evaluation and three soil vapor grab samples. Well installation and drilling permits will be obtained from Alameda County Public Works Agency.

Underground Services Alert (USA) was notified and the monitoring well installation location was cleared for underground utilities.

As required by the Occupational Health and Safety Administration (OSHA) 29 CFR 1910.120, Hazardous Waste Operations and Emergency Responses, a site Health and Safety Plan (HSP) will be prepared for use while conducting proposed field sampling activities.

Task 2 - Installation and Sampling of Monitoring Wells

<u>Monitoring Well Installation and Sampling</u>

AWR will coordinate with a licensed well driller for installation of two additional monitoring wells at the locations shown on Figure 6.

The wells will be installed in 15-foot deep 6”diameter borings with 2”PVC perforated screen surrounded by #2/12 Monterey sand filter pack from 7 to 15 feet and 2”PVC blank pipe surrounded by 2’of hydrated bentonite and 5’ of neat cement grout for the upper seven feet. The wells will be installed at grade with a permanent well box. Alameda County Public Works will be present at the site to observe and approve the installation of the monitoring wells.

Monitoring Well Development and Sampling

The two new wells will be developed. The two new wells and the existing well will be gauged, purged, and sampled. The samples will be collected using a low flow peristaltic pump and placed into new, laboratory supplied VOAs, preserved with HCl, and placed in a cooler for transportation to a certified laboratory for analysis of VOCs by EPA Method 8260.

Soil Sampling and Analysis

Grab soil samples will be collected from 2 feet and 7 feet in the borings advanced for the monitoring wells installation. The soil samples will be analyzed for the complete list of volatile organic compounds (VOCs) by EPA Method 8260, and total petroleum hydrocarbons in the C12-C22, C22-C32, and C32-C40 ranges. Silica Gel Cleanup will be requested for the hydrocarbon analysis.

Sample Preservation and Transport

All samples for laboratory analysis will be collected into containers supplied by the laboratory. Following collection, all samples will be appropriately labeled with the sample ID, date and time of collection, and sampler's initials. The soil and water samples will be placed on ice within an ice chest and all samples will be transported to the laboratory under standard chain-of-custody procedures.

Waste Disposal

All soil cuttings, purge water, and other investigation derived waste will be placed in drums, labeled, and tested for appropriate disposal.

Well Surveying

The monitoring wells will be surveyed by a licensed surveyor as required by Alameda County Environmental Health Department and the RWQCB. The well locations and elevations will be recorded and uploaded to Geotracker.

Task 3 – Soil Boring for Lithology

One soil boring will be advanced to 30 feet below the surface to provide additional information on site specific soil lithology. Soil samples will be collected from 2 feet, 7 feet, and the base of the boring for laboratory analysis. Additional samples will be collected for soil lithology evaluation.

Sample Preservation and Transport

All samples for laboratory analysis will be collected into containers supplied by the laboratory. Following collection, all samples will be appropriately labeled with the sample ID, date and time of collection, and sampler's initials. The soil samples will be placed on ice within an ice chest and all samples will be transported to the laboratory under standard chain-of-custody procedures.

Waste Disposal

All soil cuttings, purge water, and other investigation derived waste will be placed in drums, labeled, and tested for appropriate disposal.

Task 4 – Grab Soil Vapor Sampling

AWR will collect three 5 foot grab soil vapor subslab samples and install and sample a total of 6 at grade subslab soil vapor sample collection points at the locations shown on Figure 6. The samples will be collected in 1-Liter suma canisters using AWR's standard protocol included in Appendix B. The samples will be analyzed for volatile organics using EPA Method TO-15.

Sample Preservation and Transport

All samples for laboratory analysis will be collected into containers supplied by the laboratory. Following collection, all samples will be appropriately labeled with the sample ID, date and time of collection, and sampler's initials. The samples will be transported to the laboratory under standard chain-of-custody procedures.

Waste Disposal

All soil cuttings, purge water, and other investigation derived waste will be placed in drums, labeled, and tested for appropriate disposal.

Task 5- Additional Research

As noted above, there are several gaps in the information regarding the site history and site vicinity. AWR will perform research and evaluation of known releases in the area. AWR will also conduct a *preferential pathway and sensitive preceptor study* as specified in the August 2017 directive letter. AWR will also contact the Hayward Building, Planning, and Fire Departments to determine if there are any other historical site records that were not included in the two Phase I ESA reports provided to AWR.

Task 6 – Report Preparation and Upload

AWR will prepare a report presenting the findings of the investigation, an updated conceptual site model updated with the information obtained during this investigation, updated tables and monitoring data, and updated recommendations. The letter will also include the cover letter language and RP signature as requested in the August 2017 directive letter. AWR will upload the report to both the Alameda County FTP site and Geotracker.

Please feel free to contact us if you have any questions or need any additional information.

Very truly yours,
APPLIED WATER RESOURCES, CORPORATION

Kendall W. Price CEG, REA
Principal Consultant/Regional Manager

Enclosures:

Figure 1 – Site Location Map
Figure 2 – Site Map
Figure 3 - Site Map from 2008 ENSR Report
Figure 4 – Site Map from 2016 Phase I ESA
Figure 5 – Site Sketch from 1993 HMMP
Figure 6 – Proposed Sample Locations

Appendix A – Conceptual Site Model
Appendix B – AWR Soil Vapor Sample Collection Protocol
Appendix C – August 2017 Directive Letter

CC: Mr. Steve Cherezian, Haig's Delicacies

FIGURES

NOTE: Base photo from City of Hayward GIS System

FIGURE 1 – Site Location Map

25673 Nickel Place
Hayward, California

APPLIED WATER RESOURCES

NOTE: Base photo from Google Earth

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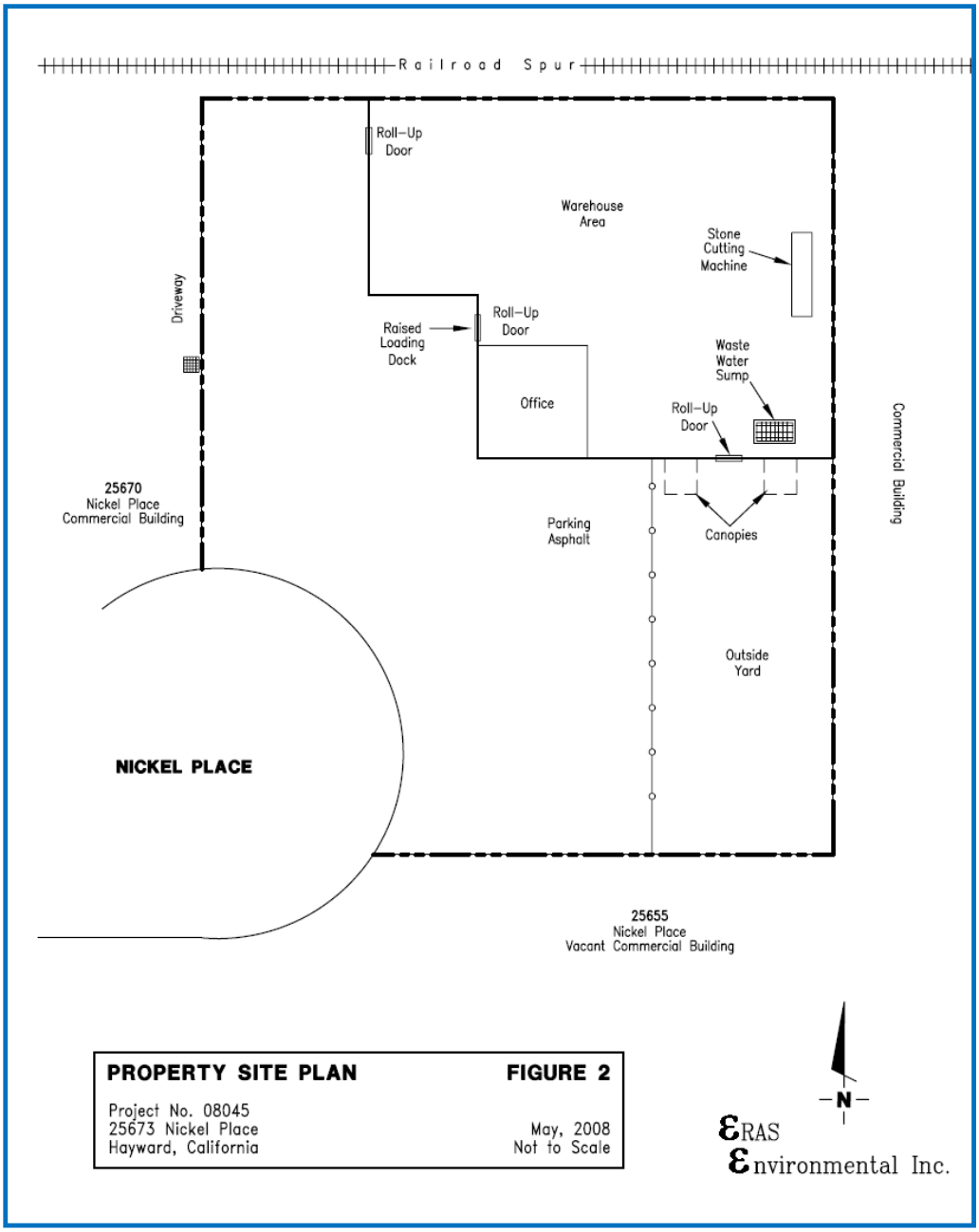
FIGURE 2 – Site Map
25673 Nickel Place
Hayward, California

APPLIED WATER RESOURCES

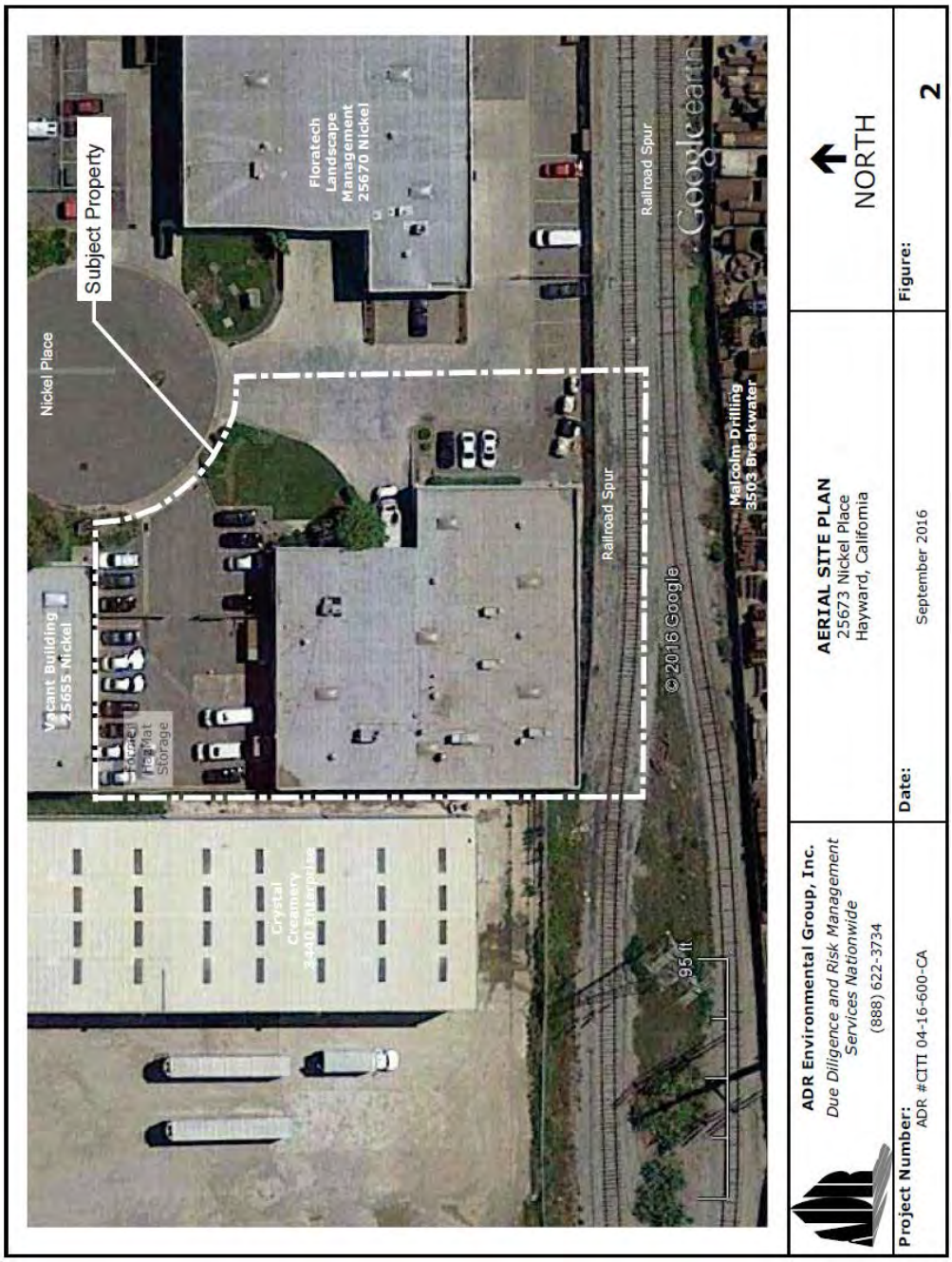


NOTE:FIGURE COPIED DIRECTLY FROM ERAS MAY 2008 REPORT.
NORTH ARROW ON ERAS FIGURE IS INCORRECT
NOT TO SCALE

FIGURE 3 – Site Map from 2998 ERAS Phase I ESA

25673 Nickel Place
Hayward, California

APPLIED WATER RESOURCES

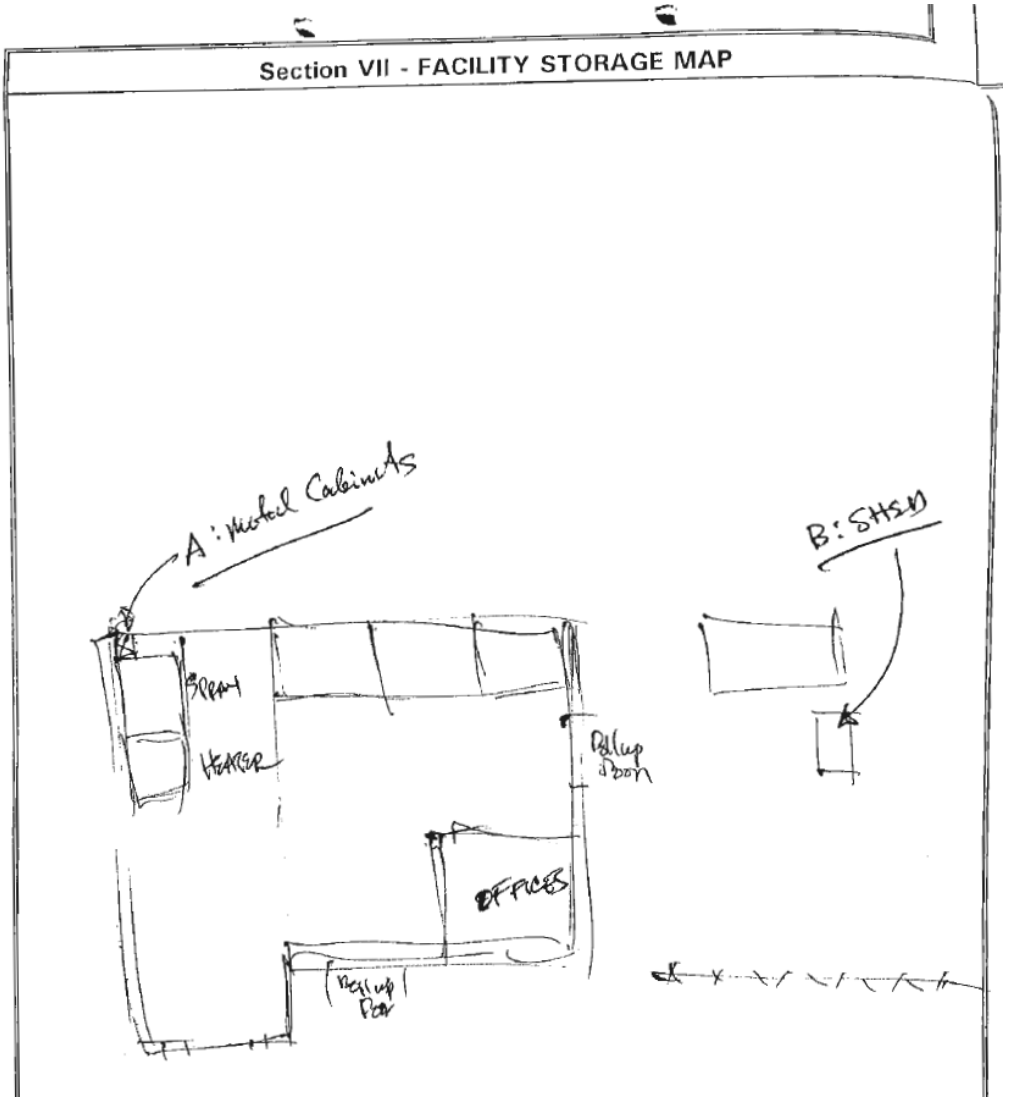


NOTE:FIGURE COPIED DIRECTLY FROM ADR 2016 REPORT.

FIGURE 4 – Site Map from 2016 ADR Phase I ESA

25673 Nickel Place
Hayward, California

APPLIED WATER RESOURCES



NOTE: Figure copied directly from 2016 ADR Phase I ESA which in turn copied this from Hayward Fire Department records reviewed of a Hazardous Materials Management Plan (HMMP) prepared in 1993 by then current occupant, Orlimar Golf Company. This is the only figure included in the 2016 Phase I ESA in the information from the Hayward Fire Department. Based on the information provided elsewhere in the 1993 HMMP records, the chemicals used by Orlimar Golf Company were stored in metal cabinets inside in Area A and in the outside metal shed identified as B on the figure.

No scale is provided on sketch and no other figures are presented in previous reports showing former chemical storage areas.

FIGURE 5 – Site Sketch from 1993 HMMP copied from 2016 ADR Phase I ESA

25673 Nickel Place
Hayward, California

APPLIED WATER RESOURCES

- Existing Monitoring Well
- Past Soil Vapor Sample Location
- Past Air Sample Location
- Past Soil Sample Location
- Proposed Monitoring Well
- Proposed Soil Vapor Sample Location
- Proposed Subslab Soil Vapor Location
- Proposed Soil Lithology Sample Location

NOTE: Base photo from Google Earth

FIGURE 6 – AWR Past and Proposed Sample Locations

25673 Nickel Place
Hayward, California

APPLIED WATER RESOURCES

Appendix A

Conceptual Site Model

SITE CONCEPTUAL MODEL

CSM Element	CSM Subelement	Description	Data Gap Item	Resolution
Geology and Hydrogeology	Regional	According to the 2008 ERAS ESA, the site is in an area known as the Bay Plain, which is a sub area of the Santa Clara Valley Groundwater Basin (Department of Water Resources, 1967). The Bay Plain is characterized by thin interbeds of sand, silt and clay deposited in flat lying marshland and shallow low energy alluvial channels. Groundwater occurs at shallow depths in thin discontinuous fine sand beds within deposits of mostly silt and clay. The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. Based upon the low elevation and close proximity of the Property to San Francisco Bay it is likely that the groundwater in the vicinity is affected by tidal variations and there is not one dominant flow direction. The depth to groundwater is estimated to be less than 10 feet. The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. Based upon the local topography and the nearby site information, the groundwater flow direction is to the southwest.	None	N/A

CSM Element	CSM Subelement	Description	Data Gap Item	Resolution
Geology and Hydrogeology	Regional (continued)	The 2016 ESA reported According to information provided by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), the soil underlying the subject Property is identified as Willows clay. The Willows soil is a very deep, poorly drained soil on basin rims. It formed in alluvium that derived mainly from sedimentary rocks. Typically, the surface layer is black, moderately alkaline clay about 19 inches thick. The next layer is a mottled, dark gray, moderately alkaline clay about 10 inches thick. The underlying material consists of mottled, grayish brown, calcareous clay and extends to a depth of more than 60 inches. Permeability is very slow. It should be noted that the characterization previously described is extrapolated from available regional soil data. In actuality, the subsurface of the subject Property has likely been modified by cuts and fills for building foundations and underground utilities. The 2016 ESA also states According to the 1979 United States Geologic Survey Professional Paper 947, Flatland Deposits of the San Francisco Bay Region, California, Their Geology and Engineering Properties and Their Importance to Comprehensive Planning, prepared by E. J. Helley	none	N/A

SITE CONCEPTUAL MODEL

CSM Element	CSM Subelement	Description	Data Gap Item	Resolution
Geology and Hydrogeology	Site	The depth to water at the site has been measured at 5-8 feet below the surface.	1. There is only one monitoring well at the site so thelocal groundwater flow gradient is not known. 2. Soil conditions on the site	Install two additional monitoring wells (three total) to calculate groundwater flow direction, advance one deeper soil boring
Surface Water Bodies		The closest water bodies are approximately 1/2-mile south and west of the site and are marshlands and salt evaporating ponds connected to the San Francisco Bay.		
Nearby Wells		There is one monitoring well on the site. The location of nearby offsite wells has not been established.	3. The location and status of nearby wells is not known.	The proposed work includes research into nearby wells.
Release Source and Volume		The release source is not known including whether or not the release originated on the site or off of the site.	4. The source and volume of the release is not known.	The proposed work includes additional sample locations on the site to define the plume and bettter evaluate potential sources including determining if the release is a result of past site operations or a release originating off the site.
LNAPL/DNAPL		No free product has been detected at the site but with the source unknown it is possible areas of greater impact including potential free product may be present at the site.	5. The plume has not been defined and highest concentrations at the site may not have been discovered yet.	The proposed work includes additional sample locations on the site to define the plume and bettter evaluate potential sources and worst case conditions at the site.

SITE CONCEPTUAL MODEL

CSM Element	CSM Subelement	Description	Data Gap Item	Resolution
Contaminants of Concern		Sampling at the site has reveraled total petroleum hydrocarbons in the diesel and motor oil range (TPHd and TPHmo respectively) in soil and groundwater samples at the site. Trichloroethylene (TCE) and cis-1,2-Dichloroethene (cis-1,2-DCE) were detected in concentrations exceeding residential but less than commercial/industrial environmental screening levels (ESLs).	None	N/A
Risk Evaluation		The concentrations detected at the site appear to be relativley low threat but higher concentrations may be present elsewhere at the site. In addition, offsite potential receptors have not been fully evaluated.	5. The plume has not been defined and highest concentrations at the site may not have been discovered yet. 6. Potential offsite impacts have not been defined.	The proposed work includes additional sample locations on the site to define the plume and bettter evaluate worst case conditions at the site and potential offsite impacts. In addition, the preoposed work includes a preferntial pathway and sensitive preceptor study to evaluate onsite and offsite risks.

Appendix B

AWR Soil Vapor Sample Collection Protocol

APPLIED WATER RESOURCES
CORPORATION

2363 Mariner Square Dr., Suite 245, Alameda CA, 94501
510-671-2090

SOIL GAS WELL INSTALLATION AND SOIL GAS SAMPLING

STANDARD OPERATING PROCEDURES

Table of Contents

This document describes Applied Water Resources' standard operating procedures (SOPs). These procedures are based on guidance from the soil gas investigations advisory (DTSC, 2012), but are also subject to local regulatory requirements. Specific field procedures are summarized below.

Soil Gas Well Construction

Construction of permanent or temporary soil gas wells is the preferred method for collecting soil gas samples to assess potential vapor intrusion. Permanent sampling wells are installed so that repeated sampling can be conducted, as necessary. Temporary sampling wells are typically used for one or two sampling events and then decommissioned in accordance with the local regulating agency requirements and the methods described in the Well Abandonment Section. Construction methods, as described below, are the same for permanent and temporary wells. However, all permanent sampling wells will be installed in traffic rated well boxes designed to shed surface water, or above grade monuments.

Soil gas wells are typically installed using direct push drilling equipment, but can be installed using hollow or solid stem augers, or a hand auger. Borehole diameter for soil gas well construction should be a minimum of 2 inches. The Soil gas wells can be constructed in an open hole, if soil conditions are

stable. If soil conditions are unstable, the hole should be cased prior to well construction. The following steps should be implemented once the desired soil gas sampling depth has been reached:

1. A bed of sand should be poured in the bottom of the well prior to placement of the tubing to insure the minimum 2" from the bottom of the well.
2. A 3/4-inch PVC casing should be placed from ground surface to the base of the well to insure placement of the sample tubing in the center of the borehole.
3. A small diameter (1/8 to 1/4 inch, inside diameter) sample tubing with a filter at the base is placed through the PVC casing to the bottom of the well. Tubing should be made of material which will not react with site contaminants (i.e. Teflon, stainless steel). At least one foot of tubing should remain above ground surface to enable sample collection.
4. A sand pack is installed to minimize disruption of airflow to the sampling tip. The sand pack will be a minimum of six inches thick from the total depth of the well. Tremie pipe should be used for soil gas wells deeper than 15 feet to avoid bridging or segregation during placement of the sand pack and bentonite seal.
5. At least six inches of dry granular bentonite will be placed above the sand pack. Following the dry bentonite, the borehole is then filled to the surface with hydrated bentonite. The bentonite is hydrated in a container at the surface and then slowly poured into the borehole. Alternatively, bentonite can be hydrated from the surface after placement. In this case, the amount of water should be measured prior to hydration to insure that the sand zone is not inundated.
6. The PVC centering the sample tubing is removed once the all the annular material has been placed.
7. The top of the tubing is capped with a gas-tight valve or fitting and the well is secured and completed to prevent water infiltration into the subsurface.

Soil Gas Sampling Preparation

Subsurface conditions are disturbed during drilling and probe placement. To allow for the subsurface to equilibrate back to representative conditions, the purge volume test, leak test and soil gas sampling will not be conducted for at least two hours following soil gas well installation. Soil gas sampling will not be conducted during a rainfall event and not until at least five days after a significant rainfall event (greater than ½ inches of rain over 24 hours). Soil gas samples will be free of water, and no sample should be collected if water is observed during purging. Purge volume tests, leak tests and soil gas sampling methods are based on the soil gas investigations advisory (DTSC, 2012).

Purge Volume Test

The purpose of a purging is to ensure that stagnant air is removed from the sampling system and that samples are representative of subsurface conditions. The purge volume test is used to determine the appropriate amount of air to remove prior to sampling. A purge volume test will be conducted on permanent soil gas wells that will be used for routine monitoring. If there are multiple wells at a site, the purge volume test will be conducted at the location with the highest estimated concentrations of the target compound. For temporary soil gas wells, no purge volume test is required and a default of three purge volumes will be used.

The purge volume test is conducted by collecting and analyzing a sample for target compounds after removing one, three and ten purge volumes. The purge volume test samples should be analyzed with the same analytical method as the constituents of concern and bioattenuation indicators as applicable.

One purge volume includes the following volumes:

- The internal volume of tubing;
- The void space of the sand pack around the probe tip; and
- The void space of the dry bentonite in the annular space.

Sample Vacuum and Train Shut in Tests

Pressure readings from the sample trains will be recorded prior removing the hardware to connect to the sample tubing to note possible leaks in the sample trains. After sample purging, and prior to sample collection, the valve should be switched to the off position and pressure reading should be noted in the train. If a significant change in pressure is observed (greater than 5 inches Hg over 5 minutes), fittings should be tightened and the train should be re-tested for leaks. A new sample train should be used if a change in pressure continues.

Additionally, a dedicated pressure gauge should be used to record pressure in each sample canister for a minimum of five minutes prior to sampling. If a significant change in pressure is observed, a different sample canister should be used for sample collection.

Sample Purging

Samples will be purged using a 6-liter summa canister, centrifugal air pump or vacuum pump. Volume of air will be calculated based on the flow rate indicated on the air pump or summa can flow reducer, or the change in pressure observed in the summa canister. Once the appropriate volume has been purged, the train will be switched to the sample port.

Soil Gas Screening

A temporary soil gas well should be installed as described above and purged using a centrifugal or vacuum pump. After each case volume is removed, soil gas should be measured with a meter designed to measure the target analytes (i.e. photoionization detector, 4-Gas meter, or Flame Ionization Detector). Screening data should be collected for a period of approximately 30 seconds. The maximum concentration from the meter should be recorded for each case volume removed from the well. The well should be purged and monitored until concentrations appear to stabilize after three consecutive measurements. The meter can either be hooked in line with the pump while purging, or tedlar bags can be filled and screened with the meter.

Soil Gas Sampling with Helium Shrouds

Soil gas sampling is then conducted as described in the field manual provided by Curtis and Tompkins Laboratory (Appendix A). If applied correctly, the helium gauges should indicate whether a leak is present in the train or the well seal prior to sample collection. If a leak is detected during the purging of the well, corrective measures should be implemented such as hydrating or molding the bentonite seal, tightening the fittings, or repairing any holes in the tubing. Helium per ASTM method D1946 will be analyzed in all samples to determine the presence of leaks in the sample train or the well seal.

Unshrouded Soil Gas Sampling with Leak Check Compound

Soil gas sampling trains are connected to the downhole tubing with a nut and ferrule fitting. Once the sample canister is connected and air is flowing based on the train pressure readings, a clean paper towel soaked in the liquid leak check compound (i.e. acetone, isopropyl alcohol) is applied to the fittings and the top of the well seal. Once the sample train pressure gauge reads less than 4 inches of mercury, disconnect the sample canister from the train and store as decribed in the following section.

The leak check compound should be selected based on the target analytical compounds for the site. The compound should not interfere with the target analytes. Verify with the proposed analytical laboratory the appropriateness of a leak check compound prior to sampling and request that the compound is reported in addition to the target analytes.

Recording, Labeling, Storage, Handling, and Transport

All samples should be labeled with a unique sample identification, the location of the sample, date and time of collection. Purge and sample volume, flow rates, helium concentrations, vacuum check and shut in test data shall be recorded in the field form for soil gas sampling (Appendix B). Samples should be

stored away from direct sunlight in coolers or boxes and transported under standard chain of custody procedures to a NELAP certified analytical laboratory.

Well Abandonment

When sample collection ceases at a soil gas well, the well will be abandoned with concurrence from the local regulating agency. Unless otherwise directed by the regulatory agency, the following steps should be followed when decommissioning a soil gas well:

1. Either pull or cut the well tubing as far below grade as possible;
2. Fill any void space hole with either hydrated bentonite or neat cement to within one foot of the surface grade;
3. Fill the last foot of the hole with compacted native material; and,
4. Restore pavement and vegetation to original conditions, or as requested by the land owner.

If the soil gas well penetrates a confining clay unit, overdrilling rather than abandoning in place is recommended in order to prevent potential contaminant migration across distinct lithologic zones. During overdrilling of deeper soil gas wells (greater than 10 feet bgs) appropriate measure should be applied to prevent lateral drifting of the drill bit while advancing down hole. All overdrilled holes will be grouted in accordance with local regulatory specifications.

References

DTSC, California EPA, and RWQCB San Francisco and Los Angeles, *Advisory, Active Soil Gas Investigations*, April 2012

Curtis and Tompkins, *Field Guide for the Use of Helium Shrouds*, 2012

Appendix C

August 2017 Directive Letter

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

August 4, 2017

Haig's Delicacies, LLC
Attn: Mr. Steven Cherezian
25673 Nickel Place
Hayward, CA 94545
(Sent via electronic mail to: steven@haigsdelicacies.com)

Subject: Conditional Work Plan Addendum Approval, Fuel Leak Case No. RO0003243 and GeoTracker Global ID T10000010739, Haig's Delicacies, 25673 Nickel Place, Hayward, CA 94545

Dear Mr. Cherezian:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file including the *Phase I Environmental Site Assessment,* generated by ERAS Environmental, Inc (ERAS; dated May 19, 2008), the *Phase I Environmental Site Assessment,* generated by ADR Environmental Group, Inc (dated September 20, 2016), the *Groundwater, Soil & Soil Vapor Sampling Results,* generated by Applied Water Resources Corporation (AWR), (dated December 2, 2016), and the *Monitoring Well Installation and Sampling and Indoor Air Report*, generated by AWR, and dated March 17, 2017. The reports were all submitted on your behalf by AWR. Thank you for their submittal and for entering into a Voluntary Remedial Action Program with ACDEH.

The 2016 Phase 1 report recommended a subsurface investigation due to the former use of volatile organic compounds (VOCs) at the site, the presence of a waste water sump in the northern portion of the building, and a hazardous materials storage compound in the northwestern corner of the parcel. The first subsurface site investigation report (*Groundwater, Soil & Soil Vapor Sampling Results)* documented the installation of soil bores SB-1 to SB-3, and soil vapor point SV-1, and the collection of soil, grab groundwater, and a soil vapor sample. Relatively low concentrations of Total Petroleum Hydrocarbons as diesel (TPHd) and TPH as motor oil (TPHmo) were detected in soil samples (up to 1.7 milligrams per kilogram [mg/kg] TPHd and 30 mg/kg TPHmo), but also detected concentrations of TPHd up to 150 micrograms per liter (µ/l) and of TPHmo up to 3,100 µ/l in grab groundwater sample SB-2-GW. Silica Gel Cleanup (SGC) does not appear to have been conducted on the extractable hydrocarbon analysis. A concentration of 64 µ/l Trichloroethene (TCE) was also detected in grab groundwater sample SB-2-GW, located in proximity to the reported location of the former hazardous materials storage compound. Among other chemicals, TCE was also detected in soil vapor sample SV-1 at a very low concentration of 3.1 micrograms per cubic meter ($\mu g/m^3$). Sample SV-1 was collected at the southern edge of the parcel, a substantial distance from the location of SB-2.

Due to the detection of these chemicals, a followup investigation was conducted in February 2017. Groundwater monitoring well MW-1 was installed at the reported location of the former hazardous material compound, and two indoor and one outdoor vapor samples were collected.

The indoor air samples were all below applicable Environmental Screening Levels (ESLs) for commercial indoor air "Direct Exposure Human Health Risk Levels" as promulgated by the San Francisco Bay Regional Water Quality Control Board (RWQCB), but were above the residential "Direct Exposure Human Health Risk Levels" ESLs. The general vicinity is commercial.

Soil samples collected during the installation of MW-1 detected up to 1,336 mg/kg TPHmo at a depth of two feet below grade surface (bgs). Similar to the previous report, SGC was not used. In groundwater collected from well MW-1, concentrations up to 44.9 µ/l TCE and 11.4 µ/l cis-1,2-Dichloroethene (cis-1,2-DCE) were detected. Both concentrations are below applicable commercial "Groundwater Vapor Intrusion Human Health Risk Levels" ESLs; however, only a single groundwater sampling event has been conducted at the site, and it is uncertain the groundwater sample is representative of worst-case concentrations. This may be important due to the immediate presence of two adjacent commercial buildings on adjacent parcels. It is also uncertain if a regional TCE groundwater plume may be present in the site vicinity.

Therefore, based on ACDEH staff review of the case file, we request that you address the following technical comments and send us the reports described below.

TECHNICAL COMMENTS

1. **Data Gap Investigation Work Plan and Focused Site Conceptual Model** – Please prepare a Data Gap Investigation Work Plan to address the technical comments above, and those below. 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 identified data gaps.

   Please include a site map with a bar scale showing the location of all former waste storage and use areas 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*. Please sequence activities in the proposed Data Gap Investigation scope of work to enable efficient data collection in the fewest mobilizations possible.

   In addition to previous Technical Comments summarized above, additional comments are provided below.

   a. **Groundwater Delineation** – As noted above, it has not been established if the suspected source area is the source of the TCE and cis-1,2-DCE, or if a regional TCE plume is present in the area. See also Technical Comment 1d below.

   b. **Groundwater Monitoring** – Please place well MW-1 on a quarterly groundwater monitoring schedule to allow the quick gathering of groundwater contaminant concentration trends. It may be possible to reduce this interval depending on the stability of groundwater contaminant concentrations over several quarters.

   c. **Soil Vapor** – Due to the immediate presence of two adjacent, and presumed downgradient or crossgradient commercial offsite buildings, it appears reasonable to attempt to determine the risk of vapor intrusion to these buildings by using onsite soil vapor concentrations collected in proximity to the buildings as a proxy. You may wish to collect additional groundwater samples prior to proceeding, and may wish to consider a soil vapor probe as a contingency thereafter in the requested work plan.

   d. **Waste Water Sump** – A waste water sump inside the onsite building was identified in the 2008 ERAS Phase 1 which has not been investigated. If the sump processed VOC laden waste water, it would be appropriate to investigate with soil, grab groundwater, and potentially soil vapor, samples as it may represent a(nother) source.

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.

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

- **September 15, 2017** – Claim Site in GeoTracker and Upload All Site Reports
- **October 13, 2017** – Work Plan
  (File to be named: RO3225_WP_R_yyyy-mm-dd)

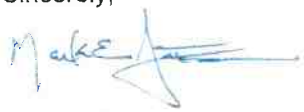
These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance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

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

If your email address does not appear on the cover page of this notification, ACDEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

Thank you for your cooperation. Should you have any questions or concerns regarding this correspondence or your case, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,



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

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

Attachment A – *Site Conceptual Model Requisite Elements*

Cc: Kendall Price, Applied Water Resources Corporation, 1046 West Taylor Street, Suite 209, San Jose, CA 95126, (Sent via electronic mail to: kprice@awrcorp.net)

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

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Regional	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 Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
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)

CSM Element	CSM 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.		
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)

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