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By Alameda County Environmental Health 2:33 pm, Oct 21, 2016

October 19, 2016

Ms. Karel Detterman
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

I, Speed Thomas, hereby authorize ERAS Environmental, Inc. to submit the Work Plan for Limited Phase II Subsurface Investigation for 0 29th Avenue in Oakland, California, dated October 19, 2016 to the Alameda County Health Care Services Agency.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Signature: _____

Printed Name: Speed Thomas

Mr. Speed Thomas
Education for Change
510.904.6368
sthomas@efcps.net

ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

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WORK PLAN FOR LIMITED PHASE II SUBSURFACE INVESTIGATION

AT

0 29th AVENUE
OAKLAND, CALIFORNIA

ERAS PROJECT NUMBER: 16-004
GLOBAL ID: T10000001070
LOC Case Number: RO0002960

Prepared for

Mr. Speed Thompson
Education for Change
303 Hegenberger Road, Suite 301
Oakland, CA 94621

October 19, 2016

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CERTIFICATION

This **Work Plan for Limited Phase II Subsurface Investigation** at 0 29th Avenue in Oakland, California, has been prepared by ERAS Environmental, Inc. (ERAS) under the professional supervision of the Registered Professional Geologist whose signature appears hereon.

This work plan was prepared in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies.

Our firm has prepared this work plan for the Client's exclusive use for this particular project and in accordance with generally accepted professional practices within the area at the time of our investigation. No other representations, expressed or implied, and no warranty or guarantee is included or intended.

This work plan may be used only by the client and only for the purposes stated within a reasonable time from its issuance. Land use, site conditions (both on-site and off-site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify ERAS of such intended use. Based on the intended use of report, ERAS may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release ERAS from any liability resulting from the use of this report by any unauthorized party.

Sincerely,
ERAS Environmental, Inc.

Andrew Savage
Project Geologist

Curtis Payton
California Registered Professional Geologist 5608

October 19, 2016

1.0 INTRODUCTION

The following is a work plan for the collection of soil and groundwater samples at a site located at 0 29th Avenue in Oakland, California (the "Property"). The Property is listed with the Alameda County Health Care Services Agency (ACHCSA) as Open Site Assessment under the name Pacific Thomas Corp. The ACHCSA requested this work plan during a meeting attended by ERAS on July 6, 2016.

The purpose of the work proposed herein is to evaluate environmental conditions at the Property for potential redevelopment for commercial uses.

1.1 BACKGROUND

The location of the Property is shown on **Figure 1**. The Property extends from 29th Avenue on the northwest to Derby Avenue on the southeast. The northwestern portion of the Property is a vacant undeveloped lot. The southeastern section of the Property is developed with commercial buildings used for storage. The layout of the Property is shown on **Figure 2**. A review of a 1950 Sanborn Fire Insurance Map indicates that the Property previously contained two sets of railroad lines.

Subsurface Investigation

Phase 2 subsurface investigations were performed for the adjacent site at 3001-3015 East 12th Street by Tec Accutite (TEC) in 2007. The investigations also included investigation on the Property which appear to have been owned by the same party at that time. The results of the subsurface investigation were summarized in a "Workplan for Site Characterization, 3001-3015 East 12th Street, Oakland California" dated June 23, 2008. Note that reports available regarding these investigations include documents entitled "3001-3007 East 12th Street.

A total of five borings were drilled during the investigations, B-1 and B-2 at 3001-3005 East 12th Street and B-3, B-4 and B-5 on the Property. Soil samples were collected from these borings from depths between 8 and 14 feet below the ground surface (bgs). Groundwater was collected only from B-1 and B-2 and was encountered at depths of approximately 24 feet in B-1 and 28 feet in B-2 below ground surface (bgs). No groundwater samples were collected on the Property.

The locations of the borings are shown on the Figure 2 from the 2008 TEC workplan that is attached to this report in **Appendix A**. The attachment also includes tables of analytical data for soil and groundwater and boring logs for the deeper borings that encountered groundwater.

Laboratory Results

Soil and groundwater samples were submitted for laboratory analysis for total petroleum hydrocarbons quantified as gasoline range organics (TPH-gro[1]), diesel range organics (TPH-dro),

[1] TPH-gro, TPH-dro, and TPH-oro are methods that compare analytical results to standards for gasoline, diesel and motor oil, respectively. Therefore, analytical results are estimates of quantities based on what would be expected for the range of hydrocarbon results for the standard. Gasoline range organics (gro) are those hydrocarbon compounds that are in the range of C6 to C10, diesel range organics (dro) are those hydrocarbon compounds that are in the range of C10 to C23, and oil range organics (oro) are those hydrocarbon compounds that are in the range of C18 to C36. There can be overlap in reporting methods as well as identification of compounds that fall within the standard that may not necessarily be derived from gasoline, diesel, or oil.

and oil range organics (TPH-oro), volatile organic compounds (VOCs), semi volatile compounds (PCP and PAHs), polychlorinated biphenyls (PCBs) and a variety of metals.

No concentrations of fuel hydrocarbons or VOCs were detected in the soil samples.

Cadmium and nickel were reported at concentrations above the ESL. Cadmium was detected in the soil sample from B-3 at a concentration of 2.7 milligrams per kilogram (mg/Kg). Nickel was detected in the soil sample from B-4 at a concentration of 180 mg/Kg.

The concentration of cadmium detected (2.7 mg/Kg) is outside of the range of background values for this element in California (Kearney, 1996). This isolated detection (of 5 total samples collected) should be considered an anomaly but whether the anomaly is anthropogenic cannot be identified with the current data set.

The concentration of nickel detected above the ESL (180 mg/Kg) is within the upper quartile of the range of background concentrations (Kearney, 1996) detected and within 2 standard deviations of the mean. Based on this concentration being in the background range and the other concentrations detected also being in the upper quartile of the range of background concentrations for California, it can reasonably be concluded that the nickel concentrations detected are not anthropogenic.

The remaining concentrations of metal in soil were below the February 2016 Regional Water Quality Control Board Environmental Screening Levels (ESLs) and also appeared to be within the typical range of background soil concentrations.

Only one (non-metal) contaminant in soil was detected at a concentration above the ESLs. The soil sample from boring B-4, collected at a depth of 14 feet below the ground surface, was reported to contain 0.272 milligrams per kilogram (mg/Kg) of PCB (Aroclor 1016), slightly above the ESL for residential land use of 0.22 mg/Kg but below the ESL of 0.74 mg/Kg for commercial/industrial use.

Groundwater from Boring B-1 contained a concentration of nickel at 11 micrograms per cubic liter (µg/L) above the Aquatic Habitat ESL of 8.2 µg/L. Groundwater from Borings B-1 and B-2 contained silver at concentrations of 3 and 2 µg/L, above the ESL of 0.19 µg/L.

Summary

The Property is a former rail line that appears to have been later used as a storage yard by Caltrans. Five borings were drilled in 2007 on the Property and adjacent site at 3001-3005 East 12th Street. According to TEC Boring B-1 was located in the vicinity of a former parking garage and B-2 in the area of a former hay and fuel yard. Borings B-3 and B-5 on the Property appear to be located on one of the former rail lines and Boring B-4 was located near the second rail line (TEC, December 2007).

Soil samples were collected for laboratory analysis from depths of 8-14 feet. It was not specified why these depths for sampling were selected.

The only contaminant found at concentrations above the commercial/industrial ESLs was silver that was found in groundwater from the now adjacent site at 3001-3005 East 12th Street. PCBs were detected in a sample from one boring on the Property (B-4) below the commercial/industrial ESL. In general, the ESLs derived for California are based on models that include some very conservative assumptions, including:

1. the concentrations detected in soil are in contact with groundwater

2. the concentrations detected are ubiquitous and of the same magnitude across the site being modeled

3. the concentrations in groundwater radiate infinitely in all directions until they come into contact with a surface body of water at which point an aquatic receptor pathway becomes complete.

Since the concentrations of PCBs in the other two soil samples (B-3 & B-5) were below the ESL or not detected above the reporting limit, the first assumption is not valid. Since the soil sample from B-4 was collected approximately 14 feet below ground surface (10 feet above the nearest reported groundwater elevation), the second assumption is not valid. Since the nearest surface body of water is the tidal channel of the Oakland Harbor approximately ½ mile from the Property, the third assumption is also very likely to be invalid based on attenuation of contaminants in the groundwater table which is very typical of transport mechanisms in the groundwater table.

The previous subsurface investigations at the Property indicated that no detectable contaminants above the commercial/industrial ESLs are present. No petroleum hydrocarbons or volatile organic compounds were detected. It appears that contamination of the Property is unlikely to have a complete exposure pathway for human or ecological receptors.

However, the sampling was limited to only few potential contaminants and former rail lines are considered to be potential sources of contamination. Boring logs for B-1 and B-2 indicate that the Property may contain up to 20 feet of fill which is from an unknown source.

2.0 REGIONAL GEOLOGY/HYDROLOGY

The Property is in the southern part of the City of Oakland in the San Francisco Bay area. The San Francisco Bay area occupies a broad alluvial valley that slopes gently northward toward Oakland Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west. Surface topography in the immediate vicinity of the Property is gently sloping down to the south west towards tidally influenced Brooklyn Basin Tidal Canal.

The Property is at an elevation of approximately 40 feet above Mean Sea Level according to the United States Geological Survey (USGS) Oakland East Quadrangle California 7.5 Minute Series topographic map.

Materials underlying the site are unconsolidated deposits of near shore and beach sediments, deposited in Oakland Bay at higher sea level stands. At shallow depths beneath these sediments are chert, greywacke, serpentine and shale bedrock that are a part of the Cretaceous to Jurassic-aged Franciscan Formation. Bedrock is exposed to the west and north on the upland surfaces.

The subject site is located on the San Francisco Bay Plain in the northernmost part of the Santa Clara Valley Groundwater Basin, (DWR, 1967), the surface of which slopes gently down toward the north.

The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. The regional groundwater flow direction in the area of the Property is estimated to be toward the southwest toward the Brooklyn Basin Tidal Canal. Groundwater monitoring at an adjacent leak site (1112 29th Avenue), indicated that the flow direction has been determined to be to the southwest.

Based on borings drilled on the adjacent site, the subsurface sediments consist of clayey sand to depths of 18-20 feet underlain by clay to the total depths explored. The sandy clay contained sand, silt and clay and 15% of medium gravel, according to TEC. This material does not appear to be native material and may be artificial fill brought in for the former rail line.

3.0 SITE CONCEPTUAL MODEL

A Site Conceptual Model Table and Data Gap Summary are included as **Appendix B**.

3.1 HYDROGEOLOGIC SETTING

Shallow groundwater is at roughly 24 to 28 feet bgs. No groundwater monitoring has been conducted on the Property but based on nearby leak cases with active groundwater monitoring the groundwater has been determined to flow toward the southwest at a gradient of about 0.01 foot/foot.

The shallow water-bearing zone at the Property is found in the clayey sand (containing sand, silt, clay and gravel). Groundwater is generally under water-table conditions, but may be locally confined by the clay underlying the fill.

3.2 EXTENT OF CONTAMINATION

3.2.1 Results in Soil

No concentrations of fuel hydrocarbons or VOCs were detected in the soil samples collected on the Property.

With the exception of cadmium and nickel, concentrations of metals in soil were below the ESLs. With the exception of cadmium, concentrations of metals appeared to be within the typical range of background soil concentrations. The concentration of cadmium detected (2.7 mg/Kg) is outside of the range of background values for this element in California (Kearney, 1996). This isolated detection (of 5 total samples collected) should be considered an anomaly but whether the anomaly is anthropogenic cannot be identified with the current data set.

Only one (non-metal) contaminant in soil was detected at a concentration above the ESLs. The soil sample from boring B-4, collected at a depth of 14 feet below the ground surface, was reported to contain 0.272 mg/Kg of PCB (Aroclor 1016), slightly above the ESL for residential land use of 0.22 mg/Kg but below the ESL of 0.74 mg/Kg for commercial/industrial use.

3.2.2 Results in Groundwater

No groundwater samples have been collected from the Property.

4.0 WORK PLAN

4.1 SCOPE OF PROPOSED INVESTIGATION

ERAS proposes a scope of work for this investigation as follows.

- Obtain a permit for drilling from the Alameda County Public Works Department (ACPWD).
- Clear the boring location for the presence of utilities by notifying Underground Service Alert and employing a private underground locating/clearance service.
- Advance seven borings using a direct push sample rig to depths of approximately 4 feet. These borings will be continuously logged.
- Collect soil samples from the borings for laboratory analysis. Samples will be collected from 3.5-4 feet bgs unless signs of contamination are observed.
- Vapor points will then be set in each boring location for the collection of soil gas samples.
- Analyze the soil samples for TPH-dro, total petroleum hydrocarbons quantified as oil range organics (TPH-oro) by EPA Method 8015, and TPH-gro by EPA Method 8015, MTBE, oxygenates, and VOCs by EPA 8260, polychlorinated biphenyls (PCBs) by EPA Method 8082, semi-volatile organic compounds (SVOCs) by EPA Method 8270, and CAM 17 metals.
- Analyze the soil gas samples for VOCs by EPA Method TO-15.
- Prepare a report detailing the field procedures and results of the investigation.

4.2 FIELD WORK COORDINATION

ERAS will procure a drilling permit from the ACPWD prior to drilling activities.

The boring locations will be painted and Underground Service Alert notified at least 48 hours in advance to give owners of underground utilities an opportunity to mark their lines. Prior to drilling, each boring location will be cleared using a private underground utility locator.

4.3 BORING LOCATIONS AND SAMPLING

The locations of the borings are shown on **Figure 2**. The Standard Operating Procedures for direct-push sampling is included in **Appendix C**.

The borings will be advanced using a direct push sample rig to about 4 feet bgs. These borings will be continuously logged.

A soil sample will be collected from each boring from approximately 3.5-4 feet bgs unless signs of

contamination are observed. Evidence to warrant the selection of the soil sample shall include discoloration of soil, odor, or elevated reading on the photoionization detector (PID).

The soil samples will be kept refrigerated pending transport under chain-of-custody procedures to a California certified environmental analytical laboratory.

The soil samples will be analyzed for TPH-dro, TPH-oro by EPA Method 8015, and TPH-gro by EPA Method 8015, MTBE, oxygenates, and VOCs by EPA 8260, PCBs by EPA Method 8082, SVOCs by EPA Method 8270, and CAM 17 metals. These analysis were agreed upon during a meeting attended by ERAS on July 6, 2016 to assess the fill from an unknown source located on the Property.

Vapor points will then be set in each boring location for the collection of soil gas samples. The Standard Operating Procedures for soil gas sampling sampling is included in **Appendix C**.

The soil gas samples will be transport under chain-of-custody procedures to a California certified environmental analytical laboratory. The soil gas samples will be analyzed for VOCs by EPA Method TO-15. This analysis was agreed upon during a meeting attended by ERAS on July 6, 2016.

4.4 FIELD AND REPORT SCHEDULE

The field work will be scheduled as soon as possible following approval of this work plan by the ACHCSA. A final report will be submitted within 30 working days of the completion of field activities.

5.0 REFERENCES

Alameda County Department of Environmental Health, Remedial Action Completion Certificate, Fuel Leak Case, RO0000397 and Geotracker Global ID T0600101631, Caltrans South Oakland, Maintenance Station, 1102 29th Avenue, CA 94601, July 25, 2011.

California Department of Water Resources, Evaluation of Ground Water Resources South Bay, Appendix A: Geology, Bulletin 118-1, August 1967.

California Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Region (2), December 1986.

Goldman, Harold B., Geology of San Francisco Bay prepared for San Francisco Bay Conservation and Development Commission, February 1967.

Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., Flatland Deposits of the San Francisco Bay Region, California - their geology and engineering properties and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 1974.

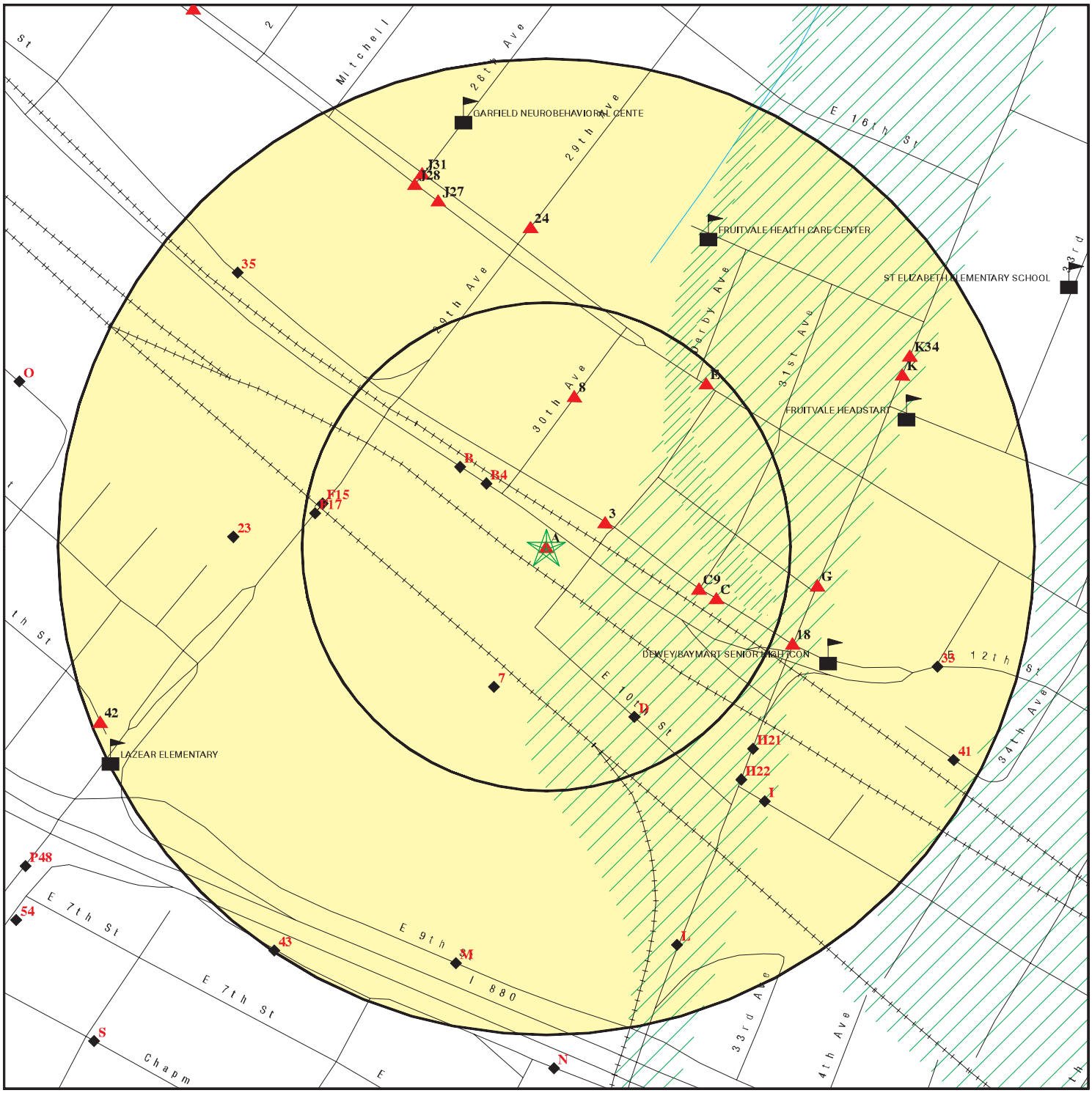
Kearney Foundation. (1996). Background Concentrations of Trace and Major Elements in California Soils, Kearney Foundation Special Report. Kearney Foundation of Soil Science, Division of Agricultural and Natural Resources, University of California at Riverside. March.

Tec Accutite (TEC), Workplan for Site Characterization, 3001-3015 East 12th Street, Oakland, California, 94601, June 23, 2008.

Tec Accutite (TEC), Limited Subsurface Investigation Report, 3001-3015 East 12th Street, Oakland, California, 94601, June 22, 2007.

Tec Accutite (TEC), Addendum to Limited Subsurface Investigation Report, 3001-3015 East 12th Street, Oakland, California, 94601, December 3, 2007.

FIGURES



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

FIGURE 1
PROPERTY LOCATION MAP
0 29th AVENUE, OAKLAND

FIGURE 2
PROPOSED BORING LOCATIONS
0 29th Avenue, Oakland
ERAS PO# 16012

1 inch = 100 feet

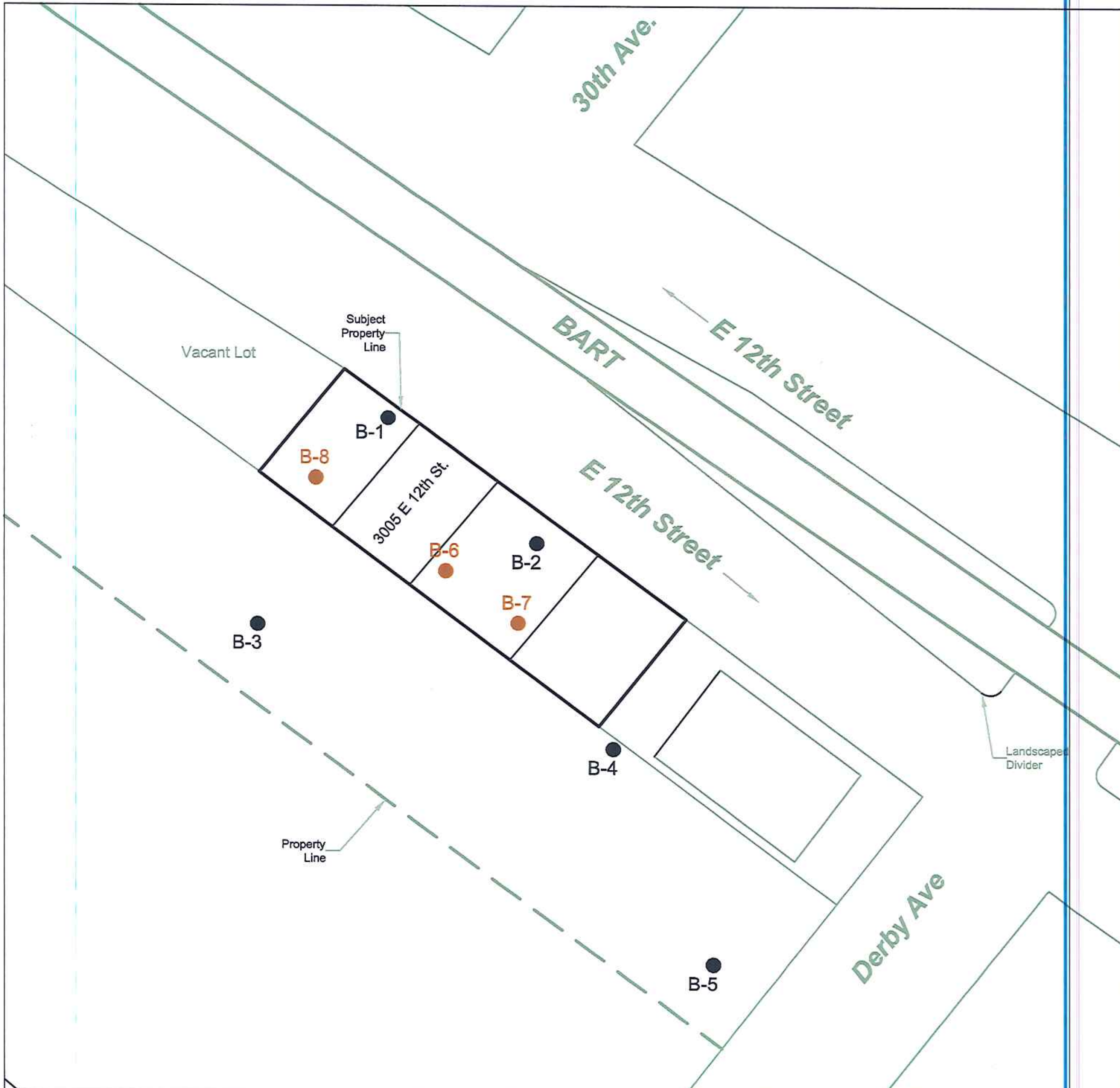
N

Proposed Boring Location

Boring Locations-TEC,2007

APPENDIX A

Previous Investigation Maps and Tables



N

0 25 50
SCALE (ft)

LEGEND

- B-2 ● Former Boring Locations (June 2007)
- B-8 ● Proposed Boring Locations

SITE
3001 - 3015 E 12th Street
Oakland, California

FIGURE
2

Site Map and Proposed Boring Locations

Revision:	
Date:	06/13/2008
Drafted By:	LC

TEC ACCUTITE
262 Michelle Court
So. San Francisco, CA 94080
Main: (650) 616-1200
Fax: (650) 616-1244

Table 1
Summary of Historical Soil Analytical Data
3001 - 3015 East 12th Street
Oakland, California

Sample ID	Depth (feet)	Date	TPHg	TPHd	TPHmo	BTEX	VOC's	PCP & PAH's	PCB's	Metals						
										Cd	Cr	Cu	Pb	Ni	Ag	Zn
			Concentrations in mg/Kg													
ESL			*83*	*83*	*370*	*var*	*var*	*var*	*0.22*	*1.7*	*---*	*230*	*200*	*150*	*20*	*600*
B-1 @ 8fbg	8	6/6/2007	<0.1	<2.0	<4.0	ND	ND	ND	ND	<1.0	65	28	12	110	<1.0	64
B-2 @14fbg	14	6/6/2007	<0.1	<2.0	<4.0	ND	ND	ND	ND	<1.0	80	32	8.3	110	<1.0	51
B-3 @12fbg	12	6/6/2007	<0.1	<2.0	10.7	ND	ND	ND	ND	**2.7**	62	73	45	81	<1.0	140
B-4 @14fbg	14	6/6/2007	<0.1	<2.0	<4.0	ND	ND	ND	**0.272***	<1.0	95	33	6.9	**180**	<1.0	52
B-5 @ 8fbg	8	6/6/2007	<0.1	<2.0	<4.0	ND	ND	ND	ND	<1.0	41	28	12	92	<1.0	55

Notes:
BOLD = Concentration exceeds ESL
(fbg) = feet below surface grade
TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015.
TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015.
TPHmo = Total petroleum hydrocarbons as motor oil by EPA Method 8015.
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes by EPA Method 8260B.
VOC's = volatile organic compounds including 1,2-Dibromoethane, 1,2-Dichloroethane, Ethyl tert Butyl Ether, Isopropyl ether, Methyl tert-butyl ether, t-Butyl alcohol, tert-amyl methyl ether by EPA Method 8260B.
PCPs & PAH's = semi-volatile compounds by EPA Method 8270C.
PCB's = semi-volatile compounds by EPA Method 8082.
Metals: Cd = Cadmium, Cr = Chromium, Cu = Copper, PB = Lead, Ni = Nickel, Ag = Silver, and Zn = Zinc by EPA Method 6010B.
ND = all individual analytes not detected at or above laboratory detection limits for this method
* = Aroclor 1016 (PCB) detected by EPA Method 8082; all other analytes ND for this method.
ESL = Environmental Screening Level for subsurface soil (< 3M BGS), Table A-1, groundwater IS a current or potential drinking water resource, residential land use (CRWQCB Interim Final – November 2007 (revised May 2008)).

Table 2
Summary of Historical Grab Groundwater Analytical Data
3001 - 3007 E 12th Street
Oakland, California

Sample ID	Date	TPHg	TPHd	TPHmo	BTEX	VOC's	PCP & PAH's	PCB's	Metals						
									Cd	Cr	Cu	Pb	Ni	Ag	Zn
		Concentrations in µg/L													
ESL		***100***	***100***	***100***	***var***	***var***	***var***	***0.014***	***0.25***	***50***	***3.1***	***2.5***	***8.2***	***0.19***	***81***
B-1	6/6/2007	<58	<77	<14	ND	ND	ND	<1.0	<0.2	<2.0	<3.0	<2.0	**11**	**3****	8.6
B-2	6/6/2007	<57	<42.4	<21.2	ND	ND	ND	<1.0	<0.2	2**	<3.0	<2.0	7**	**2****	20

Notes:
BOLD = Concentration exceeds ESL
TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015.
TPHd = Total petroleum hydrocarbons as diesel by EPA Method 8015.
TPHmo = Total petroleum hydrocarbons as motor oil by EPA Method 8015.
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes by EPA Method 8260B.
VOC's = volatile organic compounds including 1,2-Dibromoethane, 1,2-Dichloroethane, Ethyl tert Butyl Ether, Isopropyl ether, Methyl tert-butyl ether, t-Butyl alcohol, tert-amyl methyl ether by EPA Method 8260B.
PCPs & PAH's = semi-volatile compounds pentachlorophenol and polycyclic aromatic hydrocarbon by EPA Method 8270C.
PCB's = semi-volatile compound polychlorinated biphenyls by EPA Method 8082.
Metals: Cd = Cadmium, Cr = Chromium, Cu = Copper, BP = Lead, Ni = Nickel, Ag = Silver, and Zn = Zinc by EPA Method 6010B.
ND = all individual analytes not detected at or above laboratory detection limits for this method
** = considered an estimated value (reported between Maximum Detection Limit and Reporting Limit)
var = variable ESL's, unique for each constituent.
ESL = Environmental Screening Level for Groundwater, groundwater IS a current or potential drinking water resource, Table F-1a (CRWQCB Interim Final – November 2007 (revised May 2008)).

APPENDIX B

Site Conceptual Model and Data Gap Summary

Site Conceptual Model

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Regional	The Property is in the southern part of the City of Oakland in the San Francisco Bay area. The San Francisco Bay area occupies a broad alluvial valley that slopes gently northward toward Oakland Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west. Surface topography in the immediate vicinity of the Property is gently sloping down to the south west towards tidally influenced Brooklyn Basin Tidal Canal. The Property is at an elevation of approximately 40 feet above Mean Sea Level according to the United States Geological Survey (USGS) Oakland East Quadrangle California 7.5 Minute Series topographic map. Materials underlying the site are unconsolidated deposits of near shore and beach sediments, deposited in Oakland Bay at higher sea level stands. At shallow depths beneath these sediments are chert, greywacke, serpentine and shale bedrock that are a part of the Cretaceous to Jurassic-aged Franciscan Formation. Bedrock is exposed to the west and north on the upland surfaces. Based on borings drilled on the adjacent site, the subsurface sediments consist of clayey sand to depths of 18-20 feet underlain by clay. The subject site is located on the San Francisco Bay Plain in the northernmost part of the Santa Clara Valley Groundwater Basin, (DWR, 1967), the surface of which slopes gently down toward the north. The regional groundwater flow follows the topography, moving from areas of higher elevation to areas of lower elevation. The regional groundwater flow direction in the area of the Property is estimated to be toward the southwest toward the Brooklyn Basin Tidal Canal. Groundwater monitoring at an adjacent leak site (1112 29th Avenue), indicated that the flow direction has been determined to be to the southwest.	None	NA

Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Site	Shallow groundwater is at roughly 24 to 28 feet bgs. No groundwater monitoring has been conducted on the Property but based on nearby leak cases with active groundwater monitoring the groundwater has been determined to flow toward the southwest at a gradient of about 0.01 foot/foot. The shallow water-bearing zone at the Property is found in the clayey sand (containing sand, silt, clay and gravel). Groundwater is generally under water-table conditions, but may be locally confined by the clay underlying the fill. The base of the shallow water bearing zone has not been determined.	1. There are no monitoring wells on Property to establish site specific groundwater depth, flow direction, and gradient.	N/A
Surface Water Bodies		The closest surface water body is Sausal Creek, which is approximately 850 feet northeast of the Property.		N/A
Nearby Wells		A well survey has not been conducted for the Property		N/A
Release Source and Volume		The release source and volume are unknown. It is suspected that the fill imported to level the Property may have been impacted prior to placement on the Property. The fill which is present on the Property is from an unknown source. A review of a 1950 Sanborn Fire Insurance Map indicates that the Property contained two sets of railroad lines. Phase 2 subsurface investigations were performed for the adjacent site at 3001-3015 East 12th Street by Tec Accutite (TEC) in 2007. A total of five borings were drilled during the investigations, B-1 and B-2 at 3001-3005 East 12th Street and B-3, B-4 and B-5 on the Property. Soil samples were collected from these borings from depths between 8 and 14 feet below the ground surface (bgs). Groundwater was collected only from B-1 and B-2 and was encountered at depths of approximately 24 feet in B-1 and 28 feet in B-2 below ground surface (bgs). No groundwater samples were collected on the Property.	2. The extent and source of TPH-dro, TPH-oro, TPH-gro, MTBE, oxygenates, VOCs, PCBs, SVOCs, and CAM 17 metal are unknown.	Additional soil borings will be advanced for the collection of soil and soil gas samples to determine the distribution of contamination on the Property.

Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
LNAPL		There are currently no groundwater monitoring wells located on the Property. There is no evidence that LNAPL would be present on the Property.		
Source Removal Activities		The source and extent has not been determined,	2. The extent and source of TPH-dro, TPH-oro, TPH-gro, MTBE, oxygenates, VOCs, PCBs, SVOCs, and CAM 17 metal are unknown.	Additional soil borings will be advanced for the collection of soil and soil gas samples to determine the distribution of contamination on the Property.
Contaminants of Concern		Based on the historical investigations and the records reviewed ERAS has determined that the samples need to be analyzed for the following: The soil samples will be analyzed for TPH-dro, TPH-oro by EPA Method 8015, and TPH-gro by EPA Method 8015, MTBE, oxygenates, and VOCs by EPA 8260, PCBs by EPA Method 8082, SVOCs by EPA Method 8270, and CAM 17 metals. The soil gas samples will be analyzed for VOCs by EPA Method TO-15.	2. The extent and source of TPH-dro, TPH-oro, TPH-gro, MTBE, oxygenates, VOCs, PCBs, SVOCs, and CAM 17 metal are unknown.	Additional soil borings will be advanced for the collection of soil and soil gas samples to determine the distribution of contamination on the Property.
Contaminants of Concern in Soil		No concentrations of fuel hydrocarbons or VOCs were detected in the soil samples collected on the Property. The concentration of cadmium detected (2.7 mg/Kg) is outside of the range of background values for this element in California (Kearney, 1996). This isolated detection (of 5 total samples collected) should be considered an anomaly but whether the anomaly is anthropogenic cannot be identified with the current data set. The remaining concentrations of metals in soil were below the ESLs and also appeared to be within the typical range of background soil	2. The extent and source of TPH-dro, TPH-oro, TPH-gro, MTBE, oxygenates, VOCs, PCBs, SVOCs, and CAM 17 metal are unknown.	Additional soil borings will be advanced for the collection of soil and soil gas samples to determine the distribution of contamination on the Property.

Site Conceptual Model (Continued)

CSM Element	CSM Sub-Element	Description	Data Gap Item #	Resolution
		concentrations. Only one (non-metal) contaminant in soil was detected at a concentration above the ESLs. The soil sample from boring B-4, collected at a depth of 14 feet below the ground surface, was reported to contain 0.272 mg/Kg of PCB (Aroclor 1016), slightly above the ESL for residential land use of 0.22 mg/Kg but below the ESL of 0.74 mg/Kg for commercial/industrial use.		
Contaminants of Concern in Groundwater		No groundwater samples have been collected from the Property.		
Risk Evaluation		The Site is zoned for commercial land use. The data available at this point is not sufficient to prepare a risk evaluation. Further evaluation of direct contact, vapor intrusion and outdoor air exposure risks will be evaluated once sufficient data is obtained.	2. The extent and source of TPH-dro, TPH-oro, TPH-gro, MTBE, oxygenates, VOCs, PCBs, SVOCs, and CAM 17 metal are unknown.	Additional soil borings will be advanced for the collection of soil and soil gas samples to determine the distribution of contamination on the Property.

Data Gaps Summary and Proposed Investigation

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
1	There are no monitoring wells on Property to establish site specific groundwater depth, flow direction, and gradient.	None at this time	The local groundwater depth, flow direction, and gradient are well known based on nearby leak sites	N/A
2	The extent and source of TPH-dro, TPH-oro, TPH-gro, MTBE, oxygenates, VOCs, PCBs, SVOCs, and CAM 17 metal are unknown.	Advance seven borings to 4 feet for the collection of soil and soil vapor samples. Collect soil samples from the borings for laboratory analysis. Samples will be collected from 3.5-4 feet bgs unless signs of contamination are observed. Vapor points will then be set in each boring location for the collection of soil gas samples.	These samples are needed to determine potential impact to the subsurface. The data provided by the previous assessment provided insufficient data,	Analyze the soil samples for TPH-dro, TPH-oro by EPA Method 8015, and TPH-gro by EPA Method 8015, MTBE, oxygenates, and VOCs by EPA 8260, PCBs by EPA Method 8082, SVOCs by EPA Method 8270, and CAM 17 metals. Analyze the soil gas samples for VOCs by EPA Method TO-15. These analysis were agreed upon during a meeting attended by ERAS on July 6, 2016.

APPENDIX C

Standard Operating Procedures

STANDARD OPERATING PROCEDURE – DIRECT PUSH BORINGS

SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, all boreholes will be hand dug to a depth of 4-5 feet below ground surface (bgs) to check for underground utilities.

Soil and groundwater samples are collected for lithologic and chemical analyses using a direct driven soil coring system. A hydraulic hammer drives sampling rods into the ground to collect continuous soil cores. As the rods are advanced, soil is driven into an approximately 2.5-inch-diamter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 4 to 5 feet into the ground, the rods are removed from the borehole. The sleeve containing the soil core is removed from the sample barrel, and can then be preserved for chemical analyses, or used for lithologic description. This process is repeated until the desired depth or instrument refusal is reached.

A soil core interval selected for analyses is cut from the sleeve using a pre-cleaned hacksaw. The ends of the tube are covered with aluminum foil or Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the bore number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools (e.g. hacksaw) are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in 55-gallon drums at the project site.

GROUNDWATER SAMPLING FROM DIRECT PUSH BORINGS

After the targeted water-bearing zone has been penetrated, the soil-sample barrel is removed from the borehole. Small-diameter well casing with 0.010-inch slotted well screen may be installed in the borehole to facilitate the collection of groundwater samples. Threaded sections of PVC are lowered into the borehole. Groundwater samples may then be collected with a bailer, peristaltic pump, submersible or other appropriate pump until adequate sample volume is obtained. Perstaltic pumps are not used in applications requiring a lift of greater than 1 foot of net head.

Groundwater samples are preserved, stored in an ice-filled cooler, and are delivered, under chain-of-custody, to a laboratory certified by the California Department of Health Services (DHS) for hazardous materials analysis.

BOREHOLE GROUTING FOR DIRECT PUSH BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout to the surface. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.

STANDARD OPERATING PROCEDURE
–SOIL GAS SAMPLING

The collection of soil gas samples will not be conducted in the event of precipitation or heavy irrigation. 5-days of dry weather and the lack or heavy irrigation is required prior to the collection of the vapor samples.

The installation of the sample probes and the sampling procedures follows the Department of Toxic Substances Control, California Environmental Protection Agency, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air Vapor Intrusion Guidance document dated October 2011. Along with the California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Regional Water Quality Control Board, Advisory for Active Soil Gas Investigations dated April 2012.

Sample rods are driven to the desired depth. A soil-gas sampling tubing system is inserted into the rods and connected to an expandable point. The rods are retracted a desired 6-inch interval and the expandable drive point on the bottom of the rods is opened. Hydrated bentonite is placed around where the drill rod exits the ground and where the tubing enters the rods in order to prevent surface air migrating down the inner and outer portion of the rods. The bentonite will be allowed to hydrate and expand for at least 30 minutes prior to purging the sample line.

The soil gas sample is collected into a Summa canister. A summa canister is a stainless steel vessel which has had the internal surfaces specially passivated using a “Summa” process. The Summa canister arrives pre-cleaned from the laboratory and with an internal vacuum between 25” Hg and 30” Hg. Prior to use, the pressure in the summa canister is checked by the sampler with a pressure gauge to ensure a vacuum of at least 25” Hg for quality control purposes.

A sampling manifold is connected to the sample tubing which originated from the target depth for the sample collection. The sample manifold is connected to a purge Summa canister and a sample Summa canister. The sample manifold contains a gauge to display the vacuum remaining in the canister, valves to isolate the sample train, a particulate filter, and a flow controller to maintain a low purge rate.

A leak test is performed on the sampling manifold prior to sample collection. A vacuum is applied and required to stabilize and remain at the same pressure for a time period of 30 minutes. Once the leak test has been performed a vacuum is applied to the tubing to purge at least three volumes of air from the sample tubing at a purge rate from 100 to 200 ml/min.

The valve on the summa canister is opened, and the soil-gas sample is drawn into the canister. The sample tubing will be checked for water. If observed, the sample will be discarded. The sample collection will be stopped with about 5-inches Hg remaining in the Summa canister. The soil-gas samples will be transferred under chain-of-custody procedures to a state certified laboratory for analyses.

As a leak detector aerosol dust removal containing 1,1-Difluoroethane (1,1-DFA) will be used in a shroud during sample collection. Analysis of the sample for 1,1-Difluoroethane will indicate if ambient air entered the sample. A sample of the shroud will also be collected and analyzed for 1,1-DFA.