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December 12, 2016

Ms. Karel Detterman
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Transmittal, Work Plan, Additional Site Investigation
3635 13th Avenue, Oakland, California 94610
Toxics Case No. RO0000159

Dear Ms. Detterman:

Enclosed is the *Work Plan, Additional Site Investigation* prepared at your request for activities at the subject site.

I declare under penalty of perjury, that the information and/or recommendations contained in the attached report for the above-referenced site are true and correct to the best of my knowledge.

If you have any questions or need additional information, please do not hesitate to contact Mr. Trent Weise of AEI Consultants at (925) 746-6000.

Sincerely,

Mr. Kia Sumner

A handwritten signature in black ink, appearing to read "Kia Sumner", written in a cursive style.

Enclosures



AEI Consultants

Environmental & Engineering Services

December 12, 2016

Work Plan, Additional Site Investigation

Property Identification:

3635 13th Avenue
Oakland, California 94610

AEI Project No. 338841
ACHCSA Case No. RO0000159

Prepared for:

Mr. Kia Sumner
1069 Oak Hill Road
Lafayette, California 94549

Prepared by:

AEI Consultants
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Industrial Hygiene

National Presence

Regional Focus

Local Solutions

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SIGNATURES

This document was prepared by, or under the direction, of the undersigned:



Wayne Hung, E.I.T.
Staff Engineer



Trent A. Weise, P.E.
Principal Engineer



1. INTRODUCTION

On behalf of Mr. Kia Sumner, AEI Consultants (AEI) has prepared this work plan describing the proposed soil, soil vapor, and groundwater investigation to be performed at 3635 13th Avenue in Oakland, California ("the Site"). A call was held between Mr. Kia Sumner, Alameda County Environmental Health (ACEH), the State Water Resources Control Board, and AEI on October 12, 2016 (collectively the Joint Execution Team [JET]) to discuss the August 23, 2016 *Soil and Soil Vapor Investigation Report and Updated Site Conceptual Model*. The purpose of the investigation is to address the data gaps identified by during the call. The data gaps identified included:

- Collecting a groundwater sample down gradient of monitoring well MW-7 to further define the lateral extent of petroleum hydrocarbons in groundwater. This additional data will allow for the completion of the conceptual site model (CSM) and define the length of the benzene plume in groundwater.
- Collecting an additional round of soil gas samples from the existing soil gas probes at the Site to: 1) confirm the results of the initial sampling and whether there is communication with the atmosphere during sampling, and 2) provide temporal soil gas concentration data.
- Collect two additional soil samples in the vicinity of SG-3 to confirm that the direct contact and outdoor air exposure routes are protected and collect additional soil samples in the vicinity of the former waste-oil underground storage tank (UST) for analysis of polycyclic aromatic hydrocarbons (PAHs).

AEI's proposed scope of work and methodologies are presented below.

2. SCOPE OF WORK

AEI proposes to perform the following additional soil, soil gas, and groundwater sampling to close the identified data gaps, including:

- Collecting another round of soil gas samples from existing soil gas probes.
- Collecting additional shallow soil samples near former 250-gallon waste-oil UST and SG-5.
- Collecting one grab groundwater sample near SB-14 and down-gradient of MW-7.

These activities are presented below.

3. PRELIMINARY FIELD ACTIVITIES

Prior to performing the proposed investigation, AEI will perform the following preliminary field activities:

- Obtain a soil boring permit from the Alameda County Department of Public Works
- Notifying the ACEH of the proposed work and schedule.
- Updating the site-specific health and safety plan for these activities, as needed.
- Notifying Underground Service Alert (USA) of the proposed subsurface activities a minimum of 48-hours prior performing the activities.

The activities and sampling details is described below.

3.1 Soil Gas Sampling

AEI will collect each soil gas samples from each of the existing soil gas probes including: SG-1 through SG-9 completed at five-feet below ground surface (bgs) and SG-1, SG-2 and SG-3 completed at ten-feet bgs. Soil gas samples will be collected in general accordance with the *Advisory – Active Soil Gas Investigation, July 2015*, issued by the California Department of Toxic Substances Control, and San Francisco and Los Angeles California Regional Water Quality Control Boards (“the Advisory”).

Prior to collecting the samples, a shut-in test will be performed by placing a vacuum on the above-ground sampling train and vacuum canisters. The vacuum will be observed for approximately one minute and verified to not change, which would be indicative of a potential leak in the sampling apparatus.

Prior to sampling, vapor in the sampling lines and approximately three volumes of the sand pack and dried bentonite will be purged. Soil vapor samples will be collected through a laboratory-supplied, certified clean, regulator at approximately 150 milliliters per minute. After approximately five minutes (depending on the down-hole vacuum), or -5 in Hg vacuum in the canister, each canister will be closed and removed from the sampling line and the final canister vacuum will be recorded. During sampling, the above-ground sampling equipment and soil gas well-head will be enclosed within a shroud. Helium will be added to the atmosphere in the shroud as a leak check compound. Prior to sampling, a helium meter will be used to measure if helium is entering the sample train. The final sample will also be analyzed for helium. This approach, as was used in the previous sampling event, will provide direct data whether there is a leak in the soil gas probe.

Upon completion of sampling the vacuum canister sample will be sealed with a vapor tight cap, appropriately labeled, and entered onto a chain of custody manifest for delivery to McCampbell Analytical in Pittsburg, California. A total of nine soil vapor samples will be collected. Collected soil vapor samples will be transported to a State-of-California certified laboratory for chemical analysis under chain-of-custody protocol. Each collected soil vapor sample will be analyzed for:

- Total petroleum hydrocarbons as gasoline (TPHg); Benzene, toluene, ethylbenzene, xylenes (collectively BTEX); and methyl-tert butyl ether (MTBE) using US EPA Testing Method TO-15
- Total petroleum hydrocarbons as diesel (TPHd) and naphthalene using US EPA Testing Method TO-17
- O₂ and CO₂, and helium using ASTM D1946

3.2 Soil and Groundwater Sampling

AEI proposes to advance three soil borings at and in the vicinity of the Site to collect soil and/or groundwater samples to closed the identified data gaps. The soil borings locations are shown on Figure 1. The soil boring locations were chosen as follows:

- Soil boring SB-14B location was chosen to collect a groundwater sample in the vicinity of SB-14, where a groundwater sample could not be collected previously to complete the lateral characterization of petroleum hydrocarbons in groundwater. Soil boring SB-14B will be advanced to a depth of approximately 15-feet bgs, or to first encountered groundwater.
- Soil boring SB-16 will be advanced to a depth of five-feet bgs adjacent to soil gas probe SG-5 to collect soil samples confirm that the direct contact and outdoor air exposure routes are protected.

- Soil boring SB-17 will be advanced to a depth of five-feet bgs in the vicinity of the former waste oil tank to collect soil samples to confirm that the direct contact and outdoor air exposure routes are protected and provide additional soil data on PAHs.

Each soil boring will be advanced with a direct-push drilling rig (GeoProbe or similar) using 2.25-inch diameter drilling rods. AEI will contract a State of California licensed drilling contractor (C-57) to advance the soil borings. Soil will be continuously collected from each boring in approximately 4-foot long, 2-inch diameter acrylic liners. The soil core collected will be described using the Unified Soil Classification System (USCS). Soil samples will be cut from the liners at intervals of approximately two feet, or more frequently based on field observations and organic vapor measurements collected in the field.

A sub-sample of each sample collected for potential chemical testing will be placed into a zip-top bag and screened for the presence of organic vapors with a photo-ionization detector (PID). Samples will be selected for analysis based on PID readings, sensory observations of impact, and changes in soil types. Selected soil samples will be sealed with Teflon tape and end caps, labeled with a unique identifier, and placed in an ice-chilled cooler for transport to the laboratory.

AEI proposed to collect a total of four soil samples will be collected, two soil samples each from soil borings SB-16 and SB-17, collected at two and four-feet bgs. The collected soil samples will be sealed, labeled, and transported on ice under proper chain of custody protocol to McCampbell Analytical for the following analyses:

- Total petroleum hydrocarbons as motor oil (TPHmo), diesel (TPHd), and TPH as gasoline (TPHg) using US EPA Testing Method 8015M, with silica gel clean-up
- BTEX, MTBE, and Naphthalene using US EPA Testing Method 8260B
- PAH using US EPA Testing Method 8270C
- Lead using US EPA Testing Method 6020

A total of one groundwater sample will be collected from soil boring SB-14B. The collected groundwater sample will be analyzed for (consistent with the current groundwater monitoring program):

- Total petroleum hydrocarbons as motor oil (TPHmo) and diesel (TPHd) using US EPA Testing Method 8015B, with silica gel clean-up.
- Volatile organic compounds (VOCs), fuel oxygenates and total petroleum hydrocarbons as gasoline (TPHg) using US EPA Testing Method 8260B.

3.3 Reporting

Following receipt of all laboratory analytical, a technical report will be prepared. The report will detail the results of soil sample analyses. The final report will include figures, data tables, logs of each soil boring, an updated Site Conceptual Model, an updated comparison to the LTCP, and make recommendations for next steps or closure. The technical report will be uploaded to the ACEH FTP site and GeoTracker.

4. REFERENCES

The regulatory record for this Site can be found on the State of California GeoTracker Website at http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=SL0608532731.

California Department of Toxic Substances Control (DTSC). 2011. *Vapor Intrusion Mitigation Advisory, Revision 1, Final (VIMA)*

_____. 2015. *Advisory – Active Soil Gas Investigation*. July.

California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board). 2009. *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites*. July 31.

_____. 2013. *User's Guide: Derivation and Application of Environmental Screening Levels – Interim Final*. December.

_____. 2014. *Draft Interim Framework for Assessment of Vapor Intrusion at TCE-Contaminated Sites in the San Francisco Bay Region*. October 16.



AEI Consultants

Environmental & Engineering Services

TABLES

Table 1
 Summary of Soil Sample Data
 3635 13th Avenue, Oakland, California

Location ID	Date	Depth (feet bgs)	TPH-g (mg/kg)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	Naphthalene (mg/kg)	Lead (mg/kg)
T1-N	12/15/1992	7	<1.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	--	--
T1-S	12/15/1992	6	27	--	--	5.5	5.7	8.8	34	--	--	--	--
T2-N	12/15/1992	7	<1.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	--	--
T2-S	12/15/1992	7	1.0	--	--	<5.0	5.0	8.0	15	--	--	--	--
W/OB	12/15/1992	5.5	290	--	--	140	730	820	2,800	--	--	--	--
T1-STKP	12/15/1992	--	5.1	--	--	<5.0	<5.0	5.6	30	--	--	--	--
T2-STKP	12/15/1992	--	28	--	--	5.2	7.7	8.9	39	--	--	--	--
W/O-STKP	12/15/1992	--	24	--	--	8.4	46	25	37	--	--	--	--
EB-19	9/13/1993	19	<1.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	--	6.9
SWE	9/13/1993	NM	400	--	2,100	1,000	1,500	1,600	5,100	--	--	--	6.2
SWN	9/13/1993	NM	<1.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	--	9.1
SWS	9/13/1993	NM	9.4	--	--	24	36	38	120	--	--	--	4.7
SWW	9/13/1993	NM	<1.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	--	8.4
HLN	9/13/1993	NM	--	--	--	--	--	--	--	--	--	--	--
HLS	9/13/1993	NM	--	--	--	--	--	--	--	--	--	--	--
STKP (1-4)	9/13/1993	NM	6	--	--	15	23	24	77	--	--	--	8.7
STKP (5-8)	9/13/1993	NM	19	--	--	48	71	76	240	--	--	--	6.7
STKP (9-12)	9/13/1993	NM	27	--	--	68	100	110	340	--	--	--	15
STKP (13-16)	9/13/1993	NM	17	--	--	43	64	68	220	--	--	--	12
SB1-10	8/97-1/98	10	8.2	15	--	0.17	0.031	0.097	0.069	<2.0	--	--	--
SB2-10	8/97-1/98	10	1.3	<1.0	--	0.061	0.016	0.03	0.014	<0.05	--	--	--
SB3	8/97-1/98	5	1.6	--	--	0.048	0.044	0.016	0.046	<0.05	--	--	--
		10	590	160	--	8.6	15	10	48	<6.0	--	--	--
		15	1,000	--	--	8.3	8.8	15	52	<10	--	--	--
		20	<1.0	--	--	0.006	0.009	<0.005	0.017	<0.05	--	--	--
		25	<1.0	--	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SB4-10	8/97-1/98	10	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SB5-15	8/97-1/98	15	2.0	4.9	--	0.08	<0.005	0.045	0.012	<0.05	--	--	--
SB6-15	8/97-1/98	15	2.2	<1.0	--	0.058	0.008	0.007	0.073	<0.05	--	--	--
SB7-15	8/97-1/98	15	7.9	2.3	--	<0.005	0.016	<0.005	0.073	<0.05	--	--	--
SB8-10	8/97-1/98	10	33	11	--	0.25	0.089	0.30	0.29	<0.23	--	--	--
SB9-10	8/97-1/98	10	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--

Table 1
 Summary of Soil Sample Data
 3635 13th Avenue, Oakland, California

Location ID	Date	Depth (feet bgs)	TPH-g (mg/kg)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	Naphthalene (mg/kg)	Lead (mg/kg)
SB-10	8/21/2003	12	100	38	--	0.39	<0.10	0.88	1.4	<1.0	--	--	--
		19	66	6.3	--	<0.005	0.075	0.047	0.13	<0.05	--	--	--
SB-11	8/21/2003	8	1.8	1.1	--	0.10	0.012	<0.005	<0.005	<0.05	--	--	--
		12	1.3	2.1	--	0.05	<0.005	<0.005	<0.005	<0.05	--	--	--
		19	150	27	--	0.13	0.11	0.25	0.18	<0.50	--	--	--
SB-12	10/9/2003	12	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
		18	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SB-13	10/10/2003	20	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SB-14	10/10/2003	16	74	98	--	<0.050	<0.005	<0.050	0.12	<0.50	--	--	--
		23	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SB-15	10/10/2003	15	660	100	--	<0.20	5.6	1.3	1.9	<2.0	--	--	--
		19	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SB-16	4/23/2007	10	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		16	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		20	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		24	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-17	4/23/2007	10	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		15	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		20	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	0.0052	<0.05	--	--
SB-18	4/23/2007	10	27	17	--	0.068	<0.005	0.018	<0.005	<0.005	<0.05	--	--
		15	2.7	<1.0	--	0.078	<0.005	0.014	<0.005	<0.005	<0.05	--	--
		19	<1.0	<1.0	--	0.013	<0.005	<0.005	<0.005	0.022	0.052	--	--
		25	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	0.011	<0.05	--	--
SB-19	4/20/2007	9	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		15	12	9.8	--	0.085	<0.010	0.26	0.020	0.085	<0.10	--	--
		20	160	40	--	0.12	<0.010	0.28	0.082	0.061	<0.10	--	--
SB-20	4/20/2007	14	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	0.0085	<0.05	--	--
		18	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	0.0095	<0.05	--	--
		25	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		30	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-21	4/20/2007	6	<1.0	4.7	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		10	1,300	300	--	<0.20	<0.20	5.2	1.0	<0.20	<2.0	--	--
		15	3.8	<1.0	--	0.56	<0.025	0.086	0.056	<0.025	<0.025	--	--
		26	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
		35	<1.0	<1.0	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	--	--
SB-22	4/20/2007	11	4,900	1,400	--	78	280	150	830	<10	<100	--	--
		16	200	1.20	--	1.4	0.28	0.27	1.2	<0.10	<1.0	--	--
		20	4.4	<1.0	--	1.5	<0.10	<0.10	<0.10	<0.10	<1.0	--	--
SB-23	4/20/2007	7.0	<1.0	210	--	<0.20	<0.20	4.8	11	<0.20	<2.0	--	--
		11	1,800	350	--	3.4	1.2	11	56	<0.50	<5.0	--	--
		15	520	210	--	7.3	6.5	10	53	<0.50	<5.0	--	--
		21	6.9	31	--	1.2	<0.10	0.12	<0.10	<0.10	<1.0	--	--
SG-1-10	11/3/2008	10	<1.0	<1.0	<5.0	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SG-2-10	11/3/2008	10	<1.0	<1.0	<5.0	<0.005	<0.005	<0.005	<0.005	<0.05	--	--	--
SG-3-10	11/3/2008	10	1,700	1,200	<100	3.1	<1.0	17	44	<10	--	--	--

Table 1
Summary of Soil Sample Data
3635 13th Avenue, Oakland, California

Location ID	Date	Depth (feet bgs)	TPH-g (mg/kg)	TPH-d (mg/kg)	TPH-mo (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	Naphthalene (mg/kg)	Lead (mg/kg)
EW-12	9/21/2013	12	<1.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	--	--
STKP (1-4)	9/21/2013	NM	39	--	--	10	15	19	63	--	--	--	--
STKP (5-8)	9/21/2013	NM	25	--	--	6.5	9.6	12	40	--	--	--	--
SG-4	6/22/2016	2	<1.0	2.2	6.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	26
	6/22/2016	4	<1.0	1.4	25	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	4.0
	6/22/2016	6	<1.0	2.1	21	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	15
	6/22/2016	8	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	2.9
	6/22/2016	9.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	7.0
SG-5	6/22/2016	2	<1.0	<1.0	15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	3.5
	6/22/2016	4	<1.0	14	1,300	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	17
	6/22/2016	6	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	3.3
	6/22/2016	8	<1.0	51	800	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	7.8
	6/22/2016	9.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	2.8
SG-6	6/22/2016	2	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	12
	6/22/2016	4	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	9.2
	6/22/2016	6	<1.0	<1.0	9.4	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	6.5
	6/22/2016	8	<1.0	1.2	16	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	10
	6/22/2016	9.5	<1.0	<1.0	20	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	9.8
SG-7	6/22/2016	2	<1.0	<1.0	6.4	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	6.2
	6/22/2016	4	<1.0	<1.0	11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	7.5
	6/22/2016	6	<1.0	<1.0	5.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	8.4
	6/22/2016	8	<1.0	<1.0	9.1	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	6.8
	6/22/2016	9.5	41	11	32	<0.0050	<0.0050	0.029	<0.0050	<0.0050	--	<0.0050	8.1
SG-8	6/22/2016	2	<1.0	11	190	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	31
	6/22/2016	4	<1.0	<1.0	23	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	21
	6/22/2016	6	<1.0	<1.0	5.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	7.4
	6/22/2016	8	16	3.9	11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	11
	6/22/2016	9.5	47	2.0	<5.0	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.010	7.3
SG-9	6/22/2016	2	<1.0	<1.0	7.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	9.8
	6/22/2016	4	<1.0	2.4	150	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	8.0
	6/22/2016	6	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	6.8
	6/22/2016	8	<1.0	<1.0	13	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	13
	6/22/2016	9.5	<1.0	<1.0	<5.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	6.0

Comparison Values:

Tier 1 ESL	100	230	5,100	0.044	2.9	1.4	2.3	0.023	0.075	0.033	80
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Notes:

mg/kg	milligrams per kilogram
bgs	Below ground surface
MTBE	Methyl tertiary butyl ether
TPH-g	Total Petroleum Hydrocarbons as gasoline
TPH-d	Total Petroleum Hydrocarbons as diesel
TPH-mo	Total Petroleum Hydrocarbons as motor oil
TBA	Tert butyl alcohol
PAH	Polyaromatic hydrocarbons
--	Not Analyzed
NM	Not Measured
<	Less than
<MRL	Value less than method detection limit and comparison values
Bold	Value exceeds applicable screening level

Comparison Values:

Tier 1 ESL San Francisco Bay Regional Water Quality Control Board (RWQCB) Tier 1 Environmental Screening Levels (ESLs), Summary of Soil ESLs, February 2016

Table 2
 Summary of Soil Vapor Sample Data
 3635 13th Avenue, Oakland, California

Sample Location	Date	Depth (feet bgs)	TPH-g ($\mu\text{g}/\text{m}^3$)	TPH-d ($\mu\text{g}/\text{m}^3$)	MTBE ($\mu\text{g}/\text{m}^3$)	Benzene ($\mu\text{g}/\text{m}^3$)	Toluene ($\mu\text{g}/\text{m}^3$)	Ethylbenzene ($\mu\text{g}/\text{m}^3$)	Total Xylenes ($\mu\text{g}/\text{m}^3$)	Naphthalene ($\mu\text{g}/\text{m}^3$)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	He Shroud Concentration (%)	He Detected (%)
SG-1-5	02/15/13	5	<1,800	--	<7.3	<6.5	<7.7	<8.8	<27	--	--	--	--	--	--
	06/30/16	5	<520	<5,000	<4.6	<4.1	<4.8	<5.5	<5.5	<5.0	15	5.2	<0.00026	26.7	<0.13
SG-1-10	02/15/13	10	4,600	--	13	<6.5	<7.7	<8.8	<27	--	--	--	--	--	--
	06/30/16	10					Not sampled, soil vapor well saturated with groundwater.								
SG-2-5	02/15/13	5	<1,800	--	<7.3	<6.5	<7.7	<8.8	<27	--	--	--	--	--	--
	06/30/16	5	<560	<5,000	<4.9	<4.4	<5.2	<5.9	<5.9	<5.0	13	5.3	0.00065	23.6	<0.14
SG-2-10	02/15/13	10	<1,800	--	<7.3	<6.5	<7.7	<8.8	<27	--	--	--	--	--	--
	06/30/16	10					Not sampled, soil vapor well saturated with groundwater.								
SG-3-5	02/15/13	5	6,400,000	--	<2,000	6,400	<2,000	<2,000	<2,000	--	--	--	--	--	--
	06/30/16	5	<440	<5,000	9.4	7.1	20	<4.7	5.1	<5.0	15	5.7	<0.00022	14.8	<0.11
SG-3-10	02/15/13	10					Not sampled, soil vapor well saturated with groundwater.								
	06/30/16	10					Not sampled, soil vapor well saturated with groundwater.								
SG-4	06/30/16	5	<530	<5,000	5.7	<4.2	12	<5.7	<5.7	<5.0	19	2.0	<0.00026	15.4	<0.13
SG-5	06/30/16	5	<560	<5,000	<4.9	<4.4	<5.1	<5.9	<5.9	<5.0	19	1.1	<0.00027	26.2	<0.14
SG-6	06/30/16	5	2,200	<5,000	9.1	<3.9	36	6.3	25	<5.0	17	3.6	<0.00024	21.3	0.13
SG-7	06/30/16	5	<540	<5,000	<4.7	<4.2	29	15	101	<5.0	17	3.9	<0.00026	25.7	<0.13
SG-8	06/30/16	5	780	<5,000	<4.9	10	150	24	93	<5.0	17	3.8	<0.00027	20.1	<0.14
SG-9	06/30/16	5	780	<5,000	5.4	17	170	34	158	<5.0	19	1.2	<0.00027	38.5	<0.13
Comparison Values:															
Tier 1 ESL			50,000	68,000	5,400	48	160,000	560	52,000	41	--	--	--	--	--

Notes:

- $\mu\text{g}/\text{m}^3$ micrograms per cubic meter
- bgs below ground surface
- TPH-g Total Petroleum Hydrocarbons as gasoline
- TPH-d Total Petroleum Hydrocarbons as diesel
- MTBE Methyl tert butyl ether
- No established comparison value
- % Percent volume of targeted analyte
- Bold** Value exceeds applicable screening level

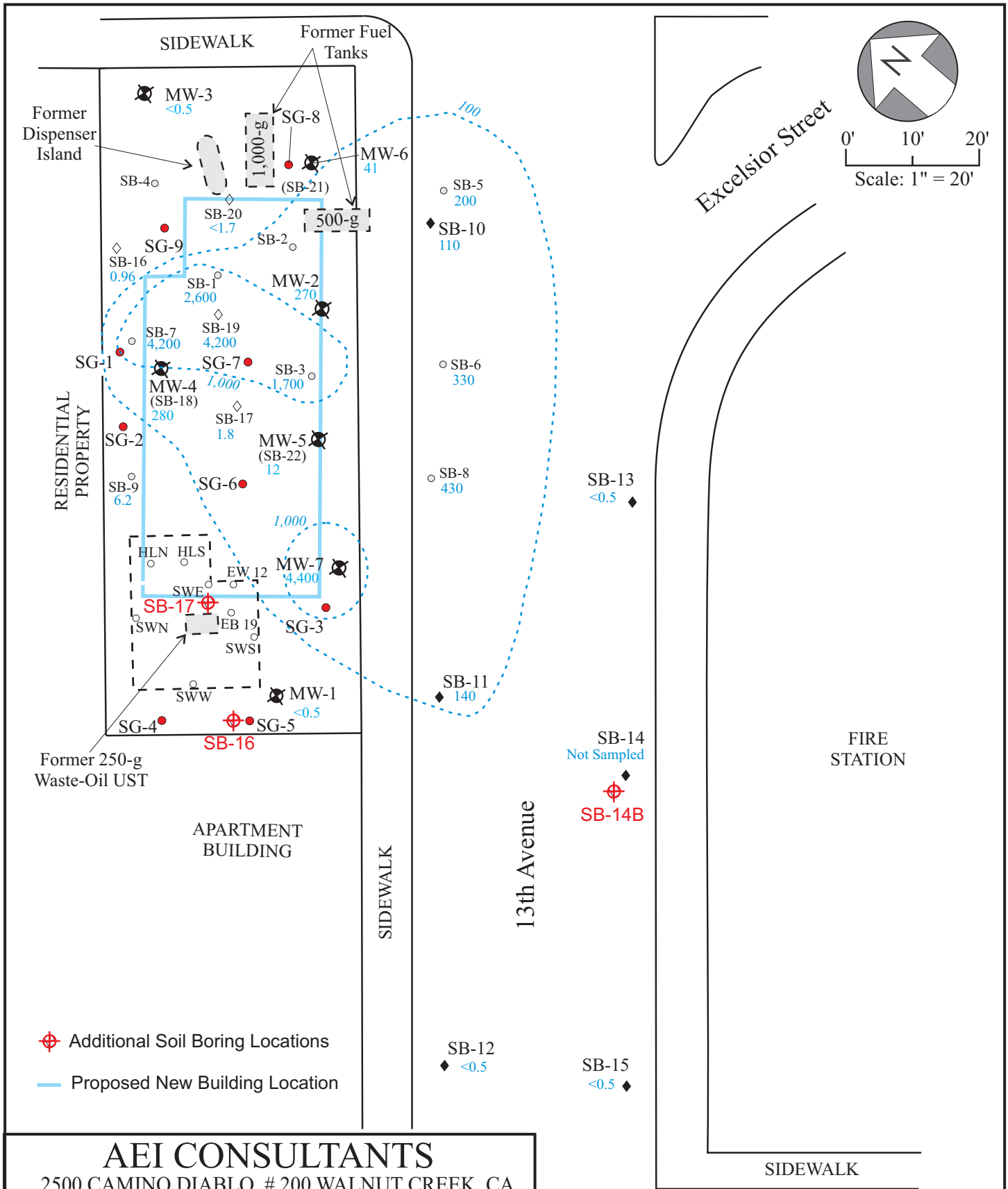
Comparison Values:
 Tier 1 ESL San Francisco Bay Regional Water Quality Control Board (RWQCB) Tier 1 Environmental Screening Levels (ESLs), Summary of Vapor ESLs, February 2016



AEI Consultants

Environmental & Engineering Services

FIGURE



AEI CONSULTANTS

2500 CAMINO DIABLO, # 200 WALNUT CREEK, CA

Benzene Concentration in Groundwater November 2016

3635 13th Avenue
Oakland, California

FIGURE 1
AEI Project # 338841

LEGEND

(REV. 1/15)

- Monitoring Well
- Soil Boring 11/97 & 1/98
- Soil Boring 8/21 & 10/9-10 2003
- Soil Boring 4/07
- Soil Gas Probe
- Benzene Concentration (µg/L)
- Benzene Concentration Contour (µg/L)