January 31, 2018

Mr. Mark Detterman
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: **Submittal Acknowledgement Statement**
Work Plan, Data Gap Investigation
Wash Time Laundromat
1815 Park Boulevard
Oakland, California 94606
AEI Project No. 379623
Toxics Case No. RO0002895

Dear Mr. Detterman:

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 State Water Resources Control Board's Geotracker website.

If you have any questions or need additional information, please do not hesitate to call the undersigned at (510) 761-3333, or Mr. Peter McIntyre at AEI Consultants, (925) 746-6004.

Sincerely,

Hoi Phua
141 Woodland Way,
Piedmont, CA 94611

cc: Mr. Peter McIntyre, AEI Consultants, 2500 Camino Diablo, Walnut Creek, CA 94597

AEI Consultants

February 7, 2018

WORK PLAN, DATA GAP INVESTIGATION

Property Identification:
Wash Time Laundromat
1815 Park Boulevard
Oakland, California 94606

AEI Project No. 379623

Prepared for:
Mr. Mark Detterman
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Prepared by:
AEI Consultants
2500 Camino Diablo
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Environmental Due Diligence

Building Assessments

Site Investigation & Remediation

Energy Performance & Benchmarking

Industrial Hygiene

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AEI Consultants

February 7, 2018

Mr. Mark Detterman
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: **Work Plan, Data Gap Investigation**
Wash Time Laundromat
1815 Park Boulevard, Oakland, California 94606
SCP Case No. RO0002895
AEI Project No. 379623

Dear Mr. Detterman:

On behalf of Hoi Phua and Linll Lee, AEI Consultants (AEI) has prepared this work plan to further characterize the nature and extent of tetrachloroethylene (PCE) in the subsurface at the request of the Alameda County Department of Environmental Health (ACDEH) in their letter dated August 24, 2017 for the Wash Time Laundromat located at 1815 Park Boulevard in Oakland, California 94606 ("the Site"). The letter followed the August 3, 2017 meeting between Mr. Mark Detterman (ACDEH), Ms. Dilan Roe (ACDEH), Mr. Bill Phua (owner) and Mr. Peter McIntyre (AEI) where a general scope of work for further investigation was discussed for the Site.

The August 24, 2017 letter requested the following items:

- A figure depicting the land use of adjacent properties, including adjacent commercial suites in the subject Site building.
- The history of the Site dry cleaning use, including previous dry cleaning operations and equipment configurations, if known.
- The collection of paired sub-slab and indoor air vapor samples, and an outdoor ambient air sample, with collection focused at the presumed source area and sufficient for further lateral characterization (grid or other approach), including along the identified sanitary sewer line servicing the Site.
- Investigation and survey of the sanitary sewer utility locations to the extent feasible, running beneath the Site and surrounding area and the collection of a sewer grab air sample from sewer laterals.
- The location and layout of utilities and other potential preferential pathways on- and off-site, inclusive of the depth of installation.

- Collection of grab groundwater samples at the presumed source area and laterally, as needed to further characterize the lateral extent of dissolved PCE concentrations in groundwater.

- Prepare contour maps for PCE, trichloroethene (TCE) and vinyl chloride (VC) contour maps of groundwater, soil and soil vapor, and a Site Conceptual Model (SCM).

1.0 SITE SETTING AND BACKGROUND

The Site is located on the north side of Park Boulevard, east of 18th Street in a mixed commercial and residential area of Oakland, California. The Site, one suite (approximately 3,000 square feet) is located in the southwestern portion of a one-story, slab on-grade, cement block and wood frame commercial building with five suites consisting of a total of approximately 9,800 square feet. The Site is currently occupied by Wash Time Super Laundry a coin operated laundromat. Three commercial businesses (Apple Beauty Massage, 1819 Park Boulevard; Personal Touch Hair Salon, 1821 Park Boulevard; and ACE Print and Design, 1825 Park Boulevard) and one currently vacant suite (1823 Park Boulevard) occupy the four other suites located in the commercial building. Commercial businesses and parking lots surround the Site. An asphalt paved parking lot is located to the north, commercial businesses are located to the northeast and southwest, and public sidewalks and Park Boulevard are located to the south. A parking lot is located south of Park Boulevard. The Site location and vicinity is shown on Figure 1. Figure 2 presents the Site plan which shows the land use of adjacent properties, including adjacent commercial suites within the subject Site building. The reported former location of the dry cleaner machine previously located on the Site is also shown on the Figure 2.

The Site is located on the East Bay Plane which consists of a series of coalescing alluvial fans derived from the erosion of the East Bay Hills. In the vicinity of the Site young marine terraces were deposited when sea level was at a higher elevation than currently exist. Based on the available soil logs, the geological observations reported in AllWest's *Subsurface Investigation and Sensitive Receptor Survey Report* dated January 12, 2006, and known Site history, surface soils at the Site consist of non-native fill materials in the upper two-feet below ground surface (bgs). The underlying sediments generally consist of soft clays with interbedded lenses of fine grained sand to the maximum depth explored of 15 feet below ground surface (bgs). A total of 17 soil borings have been located at and in the vicinity of the Site. The soil borings logs are presented in Attachment 1. As shown in Attachment 1 (Soil Boring Logs), the depth of the borings range from eight feet bgs to 15 feet bgs. A distinct color change with in the fine-grained sediments [or clay] was observed from a brown to blueish gray occurs at an approximate depth of five feet bgs at the depth groundwater was first observed. Depth to groundwater in the soil boring locations has ranged from 4.3 to 6 feet bgs. Previous borings installed at the Site yielded water, which was dependent on the amount of sand present, with some borings rapidly yielding water and others with more clay content yielding water slowly.

According to AllWest's January 12, 2006 report, the Site is located in a well-defined northeast/southwest trending historic drainage swale or drainage channel. The trace of the historic channel corresponds to the approximate location of Park Boulevard and drains the area to the northeast of the property and empties into Lake Merritt to the west. Based on the well-defined topographical channel it is presumed the local groundwater flow direction will be concurrent with the trace of the channel. The LUFT site (Yuen's Exxon 1901 Park Boulevard)

located approximately 250 feet northeast of the Site, identified the groundwater flow direction as predominately west to west-southwest following the drainage swale or historic drainage channel.

Tables 1, 2, and 3 present a summary of sample results for PCE and its degradation products for soil, groundwater, and soil gas, respectively. Isoconcentration contours of dissolved PCE, TCE and vinyl chloride concentrations in groundwater are depicted in Figures 3, 4 and 5, respectively. These isoconcentration contours were derived based on the available historical groundwater analytical data. The highest concentration of PCE in groundwater was detected in soil boring SB-4, advanced in March 2005, observed at a concentration of 230 micrograms per liter (µg/L). The highest concentration of vinyl chloride in groundwater was detected in soil boring AWB-8 with a reported concentration of 23 µg/L (November 2005). The presence of separate phase or dense non-aqueous phase liquid (DNAPL), such as PCE, has not been reported and is not likely present based on the observed PCE concentrations in groundwater.

The Environmental Screening Level (ESL) for shallow groundwater that is protective of the vapor intrusion pathway under a commercial/industrial (C/I) for PCE of 26 µg/L was exceeded in four soil borings (AWB-1, AWB-2, AWB-8, and SB-4). The ESL for vinyl chloride of 0.53 µg/L was exceeded in seven soil borings (AWB-1, AWB-2, AWB-7, AWB-8, AWB-9, AWB-10, and SB-4). No other ESLs were exceeded in the groundwater samples previously collected.

A total of 11 soil samples have been collected at the Site to-date. PCE was detected in eight of the 11 samples, observed at a maximum concentration of 3.1 milligrams per kilogram (mg/kg). The ESL assuming direct exposure human health risk levels for shallow soil exposure under a C/I land use scenario for PCE of 2.7 milligrams per kilogram (mg/kg) was exceeded in one soil boring (SB-4-4) from a depth of four feet bgs with a concentration of 3.1 mg/kg. Soil concentrations of PCE are depicted in Figure 6. No other ESLs were exceeded in the soil samples previously collected. It should be noted that the ESL for soil is not protective of the vapor intrusion pathway, discussed further below.

A total of three soil gas samples (AWSG-1, AWSG-2, and AWSG-3) have been collected on the Site. Due to the high groundwater table, approximately 5 feet bgs, the soil gas samples were collected from a depth of 3.5 to 4 feet bgs. PCE was observed in each of the three of the soil gas samples collected, observed at a maximum concentration of 59,000 micrograms per cubic meter (ug/m3) in AWSG-1. The ESL for sub- slab/soil gas vapor intrusion human health risk levels on a C/I land use scenario for PCE of 2,100 micrograms per cubic meter (µg/m^3) was exceeded in AWSG-1 and AWSG-3. The ESLs was not exceeded in the soil gas sample previously collected from AWSG-2. PCE and TCE soil vapor concentrations are depicted in Figures 7 and 8, respectively.

2.0 SCOPE OF WORK

A Site Conceptual Model (SCM) for the Site is presented in Table 4. The SCM describes the geology and hydrogeology, surface water bodies, nearby wells, release source and volume, release occurrence, constituents of concern, nature and extent of impacts, migration pathways, and potential receptors. The associated data gaps are presented in Table 5 (Data Gaps Summary

and Proposed Investigation). The data gaps, proposed investigation, rationale, and analyses (if applicable) are shown on Table 5.

The Data Gap Summary and Proposed Investigation consists of the following:

- Complete a current well survey to identify groundwater uses within 2,000-feet of the Site.
- Install 10 soil borings at the Site and adjacent properties for the collection of soil and groundwater samples for laboratory analyses.
- Collect six sub-slab vapor samples within the Site perimeter and the collection of a sewer grab air sample from the sewer laterals for laboratory analyses.
- Collect three indoor air samples at locations paired with three of the sub-slab vapor samples for laboratory analyses.
- Trace out underground line locations, to the extent feasible, running beneath the Site and surrounding area.
- Conduct sewer gas sampling.

Standard Quality Assurance/Quality Control (QA/QC) measures will be implemented during the sample collection, transport, and chemical analysis process. The QA/QC measures will consist of preparing and submitting a trip blank and a duplicate sample for potential chemical analysis, as well as evaluating laboratory performance of surrogate spike recovery, matrix spike/matrix spike duplicate (MS/MSD), method blank, and laboratory control spike (LCS) analyses. Additionally, as part of the data acquisition for analytical work, the laboratory detection/reporting limits for each constituent of concern we be at or below the comparable environmental screening level. The primary objective of the QA/QC measures is to ensure that resulting analytical data are reproducible, are of adequate quality for their intended use, and are representative of actual conditions.

2.1 Pre-Field Activities

A Site-specific health and safety plan will be prepared, reviewed by on-site personnel, and kept on-site for the duration of the fieldwork. Drilling permits will be obtained from Alameda County Public Works Agency (ACPWA) for this investigation. The public underground utility locating service Underground Service Alert (USA) will be notified to identify public utilities in the work area at least 48 hours prior to drilling activities. In addition, a private utility locating company will be used to clear each of the proposed drilling locations for utilities. The locating service will be prepared to trace out underground line locations, to the extent feasible, running beneath the Site and surrounding area. This will include a trace and if needed a survey of the sanitary sewer.

2.2 Soil Boring Advancement

AEI proposes to advance a total of 10 soil borings at and around the Site with a track- or dolly mounted direct push drill rig (depending upon access limitations) to a total depth of approximately 10-feet bgs at the locations shown on Figure 9 to provide additional soil and groundwater data. The soil borings will be advanced using dual walled direct push techniques to allow for a groundwater sample to be collected. The estimated depth to water is five feet bgs. As shown on

Figure 9, seven borings will be located on the Site property and three will be located down gradient from the Site.

Each soil boring will be advanced using a track- or dolly-mounted direct-push drill rig using dual walled tooling, to a total depth of 10-feet bgs. During soil boring advancement a soil core will be collected continuously for lithologic logging and sampling. The collected core will be described using the Unified Soil Classification System (USCS) and Munsell Soil Color Chart. At select locations the soil will be screened for the presence of VOCs using a photoionization detector (PID). The USCS description, PID measurement, and other notable features will be recorded on field boring logs.

2.3 Collection of Soil and Groundwater Samples

At select locations, and where elevated PID readings are observed, soil samples will be collected for potential analysis. Soil samples will be collected using En Core®, or equivalent, type samplers. Each sample will be labeled with a unique identifier and placed in an ice-chilled cooler for transport to the laboratory. A selection of the collected soil samples will be analyzed for VOCs using US EPA Testing Method 8260B.

Upon reaching the boring terminus, a groundwater sample will be collected. The groundwater sample will be collected by placing new, disposable temporary well casing with a five-foot screened section inside the outer drill casing and retracting the outer drill casing one to two-feet to allow water to collect in the borehole. Groundwater samples will be collected after initially purging the borehole at a rate to limit turbidity using either a peristaltic pump or new disposable bailer, as appropriate based on depth. During purging, if slow recharge is observed, a grab groundwater sample will immediately be collected. The sample will be decanted into laboratory-supplied, appropriately-preserved, bottles. Collected groundwater samples will be sealed, labeled, and placed in an ice-chilled cooler for transport to the laboratory. Each groundwater sample collected will be analyzed for VOCs using US EPA Testing Method 8260B.

2.4 Collection of Additional Soil Vapor Samples

AEI proposes six sub-slab vapor probes within the Site perimeter at the locations shown on Figure 10. AEI will utilize hand drilling equipment to advance the sub-slab samples through the floor slab. The probes will be constructed by placing a gas sampler into the subsurface just below the slab, by vacuum testing and purging the probes, and using helium as a tracer compound. The soil gas samples will be collected through a calibrated flow controller and into one-liter laboratory-supplied evacuated canisters. Depending on findings of utility survey and existing data analyses, several additional locations may be proposed offsite to address identified data gaps. In three (3) of the locations of sub-slab samples, paired indoor air samples will be collected from locations within building(s) adjacent to the sub-slab locations. The indoor air sample locations are shown on Figure 10. One (1) additional air sample will be collected of the ambient air outside of the building. AEI recommends the air samples be collected over a period of eight-hours. The air samples will be collected using laboratory-supplied six-liter evacuated canisters with calibrated flow controllers. Indoor air samples will be collected, sealed, labeled, and entered onto chain-of-

custody documentation. The sub-slab and air samples will be analyzed for VOCs using US EPA Testing Method TO-15 with appropriate detection limits.

2.5 Sewer Gas Assessment

AEI proposes one (1) sewer grab air sample from sewer laterals using methods similar to those described in the San Francisco Regional Water Quality Control Board July 2015 Active Soil Gas Investigation Advisory; and pending DTSC guidance. The protocol for sample collection, purging, and leak check of sewer line sampling will consist of the following: AEI will collect one sewer gas sample from on-site shallow sewer laterals.

- AEI will collect one grab sample from sewer laterals using methods similar to those described in the Advisory. The sample location is depicted on Figure 10.
    - The sample will be collected using a one liter summa canister with flow controller calibrated to approximately 150 milliliters per minute.
    - Sewer gas will be isolated from atmospheric gas by extending sample tubing into toilets beyond the J-trap.
    - To ensure representative sewer gas samples, a total of 10 manifold volumes will be purged prior to sampling to ensure that any ambient atmosphere which is inadvertently introduced is removed to the extent feasible.
    - Helium will be used as a leak check compound. The sample manifold and toilet bowl will be encased in a shroud to create a roughly 20% helium atmosphere. After purging, but prior to sampling, atmosphere within the sample train will be screened using a hand held helium detector to ensure that ambient atmosphere is not being introduced to the sample train.

2.6 Equipment Decontamination

Sampling equipment, including sampling barrels, augers, and other equipment used to sample during the well installation and sampling activities will be decontaminated between samples using a triple rinse system containing Alconox™ or similar detergent.

2.7 Soil Boring Destruction

Following sample collection and removal of drill tooling, each soil borings will be destroyed by filling the soil boring with neat cement grout in accordance with the requirements of the permit with the ACPWA.

2.8 Investigation Derived Waste Storage

Drill cuttings, other investigation-derived waste (IDW), purged groundwater, and equipment rinse water will be stored in sealed and labeled 55-gallon drums. Solids and liquids will be stored in separate drums. All drums will be located on-site in a secure location, pending the results of sample analyses. Upon receipt of results, the waste will be profiled and disposal arranged to a proper facility; disposal documentation will be provided.

2.9 Reporting

AEI will prepare a report following the receipt of analytical data. The report will detail the investigation methods along with the analytical results and will be used to update the conceptual site model. The report will include soil boring logs and cross-sections, tables summarizing the analytical results, figures presenting the data, and copies of laboratory analytical reports. Additionally, a 2,000-foot radius well search will be completed with the results reported in a table as requested. The SCM will be updated as the investigation proceeds and the data gaps are filled in.

3.0 SCHEDULE

Sampling activities are anticipated to commence within one month of receiving approval from the DEH. A report of the sampling activities will be provided within 60-days following receipt of all analytical data.

4.0 CLOSING

AEI appreciates working with the DEH to complete the characterization and move this Site actively towards closure and trust that this work plan meets with your approval. Please contact the undersigned at (925) 746-6004 if you have any questions or comments.

Sincerely,
AEI Consultants

Mark C. Gray, PG (license #8964)
Senior Geologist

Peter McIntyre, PG
Executive Vice President

AEI Consultants
2500 Camino Diablo
Walnut Creek, California, 94597
925-746-6000

2/7/18

TABLES

TABLE 1: SOIL SAMPLE DATA SUMMARY
1815 Park Boulevard, Oakland, CA

Location ID	Date	Depth (feet bgs)	PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)	Chloroform (mg/kg)	Vinyl Chloride (mg/kg)
AWB-1-4	5/24/2005	4	0.490	<0.016	<0.016	<0.016	<0.016
AWB-1-8	5/24/2005	8	<0.005	<0.005	<0.005	<0.005	<0.005
AWB-2-4	5/24/2005	4	2.200	<0.250	<0.250	<0.250	<0.250
AWB-2-8	5/24/2005	8	<0.005	<0.005	<0.005	<0.005	<0.005
AWB-10-2-3-S	11/14/2005	2-3	0.0430	<0.005	<0.005	<0.005	<0.005
SB-1-4	1/12/2005	4	<0.005	<0.005	<0.005	<0.005	<0.005
SB-2-5	1/12/2005	5	0.086	<0.005	<0.005	<0.005	<0.005
SB-3-4	1/12/2005	4	0.0063	<0.005	<0.005	<0.005	<0.005
SB-4-4	3/14/2005	4	**3.1**	<0.20	<0.20	<0.20	<0.20
SB-5-4	3/14/2005	4	0.51	<0.033	<0.005	<0.005	<0.005
SB-6-3	3/14/2005	3	0.023	<0.005	<0.005	<0.005	<0.005
	Comparison Values:						
	RWQCB ESL C/I		2.7	8	90	1.3	15

Notes:

bgs	below ground surface
mg/kg	milligrams per kilogram
PCE	Tetrachloroethene
TCE	Trichloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene

Comparison Values:

RWQCB ESL C/I — San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels assuming direct exposure human health risk levels for shallow soil exposure under a commercial/industrial (C/I) land use scenario (RWQCB, February 2016, rev. 3, Table S-1).

TABLE 2: GROUNDWATER SAMPLE DATA SUMMARY
1815 Park Boulevard, Oakland, CA

Location ID	Date	PCE (ug/L)	TCE (ug/L)	cis-1,2-DCE (ug/L)	Chloroform (ug/L)	Vinyl Chloride (ug/L)
AWB-1W	5/24/2005	**67**	13	14	<0.50	**1.3**
AWB-2W	5/24/2005	**77**	4.2	7.1	<0.50	**9.6**
AWB-3W	5/24/2005	1.2	<0.50	0.86	4.8	<0.50
AWB-4W	5/24/2005	<0.50	<0.50	<0.50	<0.50	<0.50
AWB-5W	5/24/2005	<0.50	<0.50	<0.50	<0.50	<0.50
AWB-6W	5/24/2005	<0.50	<0.50	<0.50	<0.50	<0.50
AWB-7W	11/14/2005	25	0.62	0.89	<0.5	**1.1**
AWB-8W	11/14/2005	**70**	1.7	3.4	<0.5	**23**
AWB-9W	11/14/2005	3.6	0.50	1.2	<0.5	**1.2**
AWB-10W	11/15/2005	1.8	<0.5	<0.5	<0.5	**1.9**
AWB-11W	11/14/2005	<0.5	<0.5	0.54	<0.5	<0.5
SB-1W	1/12/2005	<0.5	<0.5	<0.5	<0.5	<0.5
SB-2W	1/12/2005	13	<0.5	<0.5	<0.5	<0.5
SB-3W	1/12/2005	<0.5	<0.5	<0.5	<0.5	<0.5
SB-4W	3/14/2005	**230**	14	25	<0.50	**7.6**
SB-5W	3/14/2005	7.9	<0.5	<0.5	<0.5	<0.5
SB-6W	3/14/2005	1.5	<0.5	0.54	<0.5	<0.5
Comparison Value RWQCB ESL C/I:		26	49	950	20	0.53

Notes:

bgs	below ground surface
ug/L	micrograms per liter
PCE	Tetrachloroethene
TCE	Trichloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene

Comparison Values:

RWQCB ESL C/I — San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels assuming vapor intrusion human health risk levels (shallow groundwater) exposure under a commercial/industrial (C/I) land use scenario (RWQCB, February 2016, rev. 3, Table GW-3).

TABLE 3: SOIL GAS SAMPLE SUMMARY DATA
1815 Park Boulevard, Oakland, CA

Location ID	Date	Depth (feet bgs)	1,3-Butadiene (µg/m³)	Acetone (µg/m³)	Chloromethane (µg/m³)	cis 1,2-DCE (µg/m³)	PCE (µg/m³)	TCE (µg/m³)	Vinyl Chloride (µg/m³)	Toluene (µg/m³)	2-Butanone (µg/m³)	Ethyl Benzene (µg/m³)	Xylenes (µg/m³)	4-Ethyltoluene (µg/m³)	1,2,4-Trimethylbenzene (µg/m³)	1,3,5-Trimethylbenzene (µg/m³)	2-propanol (µg/m³)
AWSG-1	11/15/2005	5	<91	<390	<340	<160	**59,000**	1,200	<100	1,800	<120	<180	500	220	260	<200	<400
AWSG-2	11/15/2005	5	8.5	88	<25	<12	78	<16	<7.6	2,500	10	<26	166	41	52	17	58
AWSG-3	11/15/2005	5	<17	89	<25	<12	**9,400**	<42	<7.6	30	<23	<34	<34	<38	<38	<38	<77
	Comparison Values: RWQCB ESL C/I-VI		NL	140,000,000	44,000,000	35,000	2,100	3,000	160	1,300,000	22,000,000	4,900	440,000	NL	NL	NL	NL

Notes:

bgs	below ground surface
µg/m³	micrograms per cubic meter
PCE	Tetrachloroethene
TCE	Trichloroethene
NL	not applicable; comparison value not established

Comparison Values:

RWQCB ESL C/I-VI San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels for subslab/soil gas vapor intrusion human health risk levels under a commercial/industrial land use scenario (RWQCB, February 2016, rev. 3, Table SG-1)

Table 4 - Site Conceptual Model
Wash Time Laundromat
1815 Park Boulevard
Oakland, CA 94606

SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap Item #	Resolution
Geology & Hydrogeology	Regional	The subject property is located in a mixed commercial and residential area of Oakland, California. As described by AllWest (2006) the subject property is located in the Coast Range Geologic/Geomorphic Province, a series of parallel and sub-parallel structural mountains and valleys that have undergone a complex history of sedimentation, vulcanism, subduction, faulting, uplift, and erosion. Tectonics in the area are controlled by the right lateral Hayward Fault located approximately 2-1/2 miles to the northwest and the San Andreas Fault located 13 miles to the southeast. The San Andreas Fault is the master fault of the Coast Range and markes the junction of the northward moving Pacific Plate, located west of the fault and the American Plate, located east of the fulat and moving to the southeast. Locally, the subject property is located on the East Bay Plane which consists of a series of coalescing alluvial fans derived from the erosion of the East Bay Hills. These sloping fans are located at slightly higher elevations and east of the property. In the vicnity of the site, young marine terraces were deposited when sea level was at a higher elevation that currently exists. Based on a review of the United States Geological Survey (USGS) Oakland Lake Merritt Quadrangle Geologic Map, the area surrounding the subject property is underlain by Artifical Fill and Marine Terrace Deposits. According information contained on the USGS East and West Oakland Quadrangle Topographic Maps, the elevation of the subject property ranges between 10 to 20 feet above mean sea level. The local topography slopes toward the northwest.	AllWest Subsurface Investigation and Sensitive Receptor Survey Report Dated January 12, 2006	None	n/a
	Site	**Geology:** Evaluation of historical geologic logs from borings indicate that the near surface sediments generally consist of soft clays with interbedded lenses of fine grained sand to the maximum depth explored of 15 feet below ground surface (bgs). Some fill was observed in the upper two feet of the ground surface. A distinct color change from a brown to a dark blueish gray occurred at an approximate depth of five feet. **Hydrogeology:** Groundwater was first observed at an approximate depth of five feet. As previosly mentioned, a distinct soil color change occurred at this depth. The borings yeilded water depending on the amount of sand present, with some borings rapidly yeilding water to the borehole and others with more clay content slowly yeilding water before the boring filled with water. The property is located in a well defined historic northeast/southwest trending drainage swale or drainage channel. The trace of the channel corresponds to the approximate location of Park Boulevard and drains the area to the northeast of the property and empties into Lake Merritt to the west. Based on the well defined topographical channel it is presumed the local groundwater flow direction will be concurrent with the trace of the channel. The Yuen's Exxon LUFT Site (1901 Park Boulevard) located approximately 250 feet northeast of the Site, identified the groundwater flow direction as predominately west to west-southwest following the drainage swale or drainage channel.	See Soil Boring Logs (Attachment 1) & Groundwater Gradient Maps for Yuen's Exxon	None	n/a
Surface Water Bodies		The nearest surface water is Lake Merritt, located approximately 0.22 mile (1,165 feet) to the west northwest of the subject property.	See Figure 1	None	n/a

Table 4 - Site Conceptual Model
Wash Time Laundromat
1815 Park Boulevard
Oakland, CA 94606

SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap Item #	Resolution
Nearby Wells		Well Search: AllWest contacted the California Department of Water Resources (DWR), RWQCB and the Alameda County Department of Public Work Division to obtain information regarding the existence and construction details of water wells within 2,000 feet of the property in November 2005. The November 2005 search did not identify any well types present within the search radius: irrigation, cathodic protection,and monitoring. No private or municipal drinking water supply wells were identified in the November 2005 search. No known well search has been completed in the area of the Site since November 2005. As a result, AEI recommends that a 2,000-foot radius well search be requested from the Alameda County Department of Public Works (ACDPW) and the California Department of Water Resources (DWR) to evaluate potential impacts to groundwater users within 1.2-mile of the Site and that the results of this work be provided to Alameda County Environmental Health Department (ACEHD).	N/A	1	Complete Current Well Search to identify groundwater users within 2,000 feet of the Site
Release Source and Volume	On Site	Former Dry Cleaning Facility: The property is currently developed with the Wash Time Laundromat. Between 1967 through 1990's, the site was occupied by a dry cleaning facility. An environmental dislosure document dated 1989 confirmed the presence of a dry-cleaning facility and use of solvents on the site. No detailed information was obtained on the layout. According to a representative who use to work at the facility, the dry cleaning machine was located towards the back of the unit (Figure 2). The suite was remodeled and subsequently used as a coin operated laundromat. A release of PCE was discovered as part of an onsite Phase II subsurface investigation conducted by AEI in January and March of 2005. The volume of the release is not known. The Subsurface Investigation and Sensitive Receptor Survey Report prepared by AllWest dated January 12, 2006 concluded historic operations at a former dry cleaner resulted in a release of PCE that impacted subsurface conditions at the Site and no on-going source is present. The report also concluded a spatially limited chlorinated solvent plume exists beneath the current structure and it lateral extent has been reasonably defined with the highest concentration centered on the location of the former dry cleaning operation.	See Figure 2 for approximate location of former dry cleaning machine and AllWest Report Dated January 12, 2006.	None	n/a
	Off Site	No known off-site sources of contamination which are currently impacting the subject have been identified. The previous Phase I ESA conducted in 2004 (AEI Project No. 10203) researched historical city directories and Oakland Building Department permits and identified a dry cleaning facilty located on the site from approximately 1967 to at least 1992. Off-site sources were not identified in the historical sources researched (city directories and Sanborn Fire Insurance Maps) or regulatory agency records reviewed as part of the 2004 Phase I ESA.	See Previous Reports	None	n/a

Table 4 - Site Conceptual Model
Wash Time Laundromat
1815 Park Boulevard
Oakland, CA 94606

SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap Item #	Resolution
Release Occurrence	Former Dry Cleaning Facility Located On Site	A release of tetrachloroethylene (PCE) occurred at the former dry cleaners location some time between 1967 and the 1990's when dry cleaning operation occurred at the site and drycleaning solvents were used. ACEHD records, city directories, building department records, fire department records, Sanborn Fire and Insurance Maps researched as part of a December 2004 Phase I ESA conducted by AEI did not reveal the location of the dry cleaning machine with the Site building. In January 2005 three soil borings (SB-1 to SB-3) were installed, temporary monitoring wells were completed in the soil borings and soil and groundwater samples were collected for analyses. PCE was detected in two of the soil samples and one of the groundwater samples. In March 2005 three soil borings (SB-4 to SB-6) were installed, temporary wells were completed in the soil borings and soil and groundwater samples were collected for analyses. PCE was detected in all three of the soil samples and all three of the groundwater samples collected. igher elevations and east of the property. In the vicnity of the site, young marine terraces were deposited when sea level was at a higher elevation that currently exists. Based on a review of the United States Geological Survey (USGS) Oakland Lake Merritt Quadrangle Geologic Map, the area surrounding the subject property is underlain by Artifical Fill and Marine Terrace Deposits. According information contained on the USGS East and West Oakland Quadrangle Topographic Maps, the elevation of the subject property ranges between 10 to 20 feet above mean sea level. The local topography slopes toward the northwest. rations. AllWest installed six soil borings (AWB-1 to AWB-6) in May 2005 for the collection of soil and groundwater grab samples. Two temporary monitoring wells were installed on the Site (AWB-1 and AWB-2) and four temporary wells were installed off-Site (AWB-3, AWB-4, AWB-5, and AWB-6). Five temporary monitoring wells (AWB-7, AWB-8, AWB-9, AWB-10, and AWB-11) were installed on-Site in November 2005. Three soil gas samples (AWSG-1, AWSG-2, and AWSG-3) were installed on-Site in November 2005.	See Previous Reports	None	n/a

Table 4 - Site Conceptual Model
Wash Time Laundromat
1815 Park Boulevard
Oakland, CA 94606

SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap Item #	Resolution
Constituents of Concern		Based on historical investigations conducted at the Site the following COCs have been detected at the Site: tetrachloroethene (PCE) detected in the soil at the Site; PCE , trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), chloroform and vinyl chloride detected in the groundwater; and PCE and TCE detected in the soil gas. Only PCE exceeded the ESL in the soil samples collected. PCE and vinyl chloride exceeded the ESLs in the groundwater samples collected. Only PCE exceeded the ESL in the soil gas samples collected. The primary contaminants of concern at the Site are PCE and its degradation product Vinyl chloride (VC). The presence of these contaminants in site media are the result of a release of PCE from dry cleaning operations formerly conducted on the Site.	Table 1 (Soil Sample Summary Data); Table 2 (Groundwater Sample Summary Data); and Table 3 (Soil Gas Sample Summary Data).	None	n/a
Nature and Extent of Impacts	Soil	Soil beneath the Site predominately consist of fill to a depth of two feet. The underlying sediments generally consist of soft clays with interbedded lenses of fine grained sand to the maximum depth explored of 15 feet bgs. PCE was detected in one soil sample (SB-4-4) located immediately south of the reported former dry cleaning machine location at concentration of 3.1 milligrams per kilogram (mg/kg) which exceeded the ESL for PCE of 2.7 mg/kg. No other soil samples exceeded the ESL for PCE or any of the daughter products.	Table 1 and Figure 6 (PCE Soil Isoconcentration Contours)	2. Additional soil data required (See Figure 9 Proposed Soil/Groundwater Boring Locations).	See data gaps table. Additional soil borings will be advanced
	Groundwater	The depth to groundwater at the Site is approximately 5 feet bgs. Groundwater samples collected have yielded PCE at concentrations of up to 230 micrograms per liter (µg/L) beneath the Site in SB 4. Four groundwater samples (SB-4W, AWB-1W, AWB-2W, and AWB-8W) collected south of the reported former dry cleaning machine exceeded the ESL for PCE of 26 µg/L. Seven groundwater samples (SB-4W, AWB-1W, AWB-2W, AWB-7W, AWB-8W, AWB-9W, and AWB-10W) collected south of the reported former dry cleaing machine location exceeded the ESL for VC of 0.53 µg/L. No other VOCs detected in the groundwater exceeded the ESLs.	See Table 2 and Figure 3 (PCE Groundwater Isoconcentrations), Figure 4 (TCE Groundwater Isoconcentrations), and Figure 5 (Vinyl Chloride Groundwater Isoconcentrations)	2. Additional groundwater data required (See Figure 9 Proposed Soil/Groundwater Boring Locations).	See data gaps table. Additional groundwater samples will be collected
	Soil Gas	Soil gas samples collected have yielded PCE at concentrations of up to 59,000 micrograms per cubic meter (µg/m^3) in AWSG-1 and 9,400 µg/m^3 in AWSG-3 exceeding the ESL for PCE of 2,100 µg/m3 in November 2015. These results suggests a potential risk to indoor air quality. No other VOCs exceeded the soil gas ESLs.	See Table 3 and Figure 7 (PCE Soil Vapor Isoconcentration Contours) and Figure 8 (TCE Soil Vapor Isoconcentration Contours)	3. Additional soil gas data required (See Figure 10 Proposed Sub-Slab and Sewer Gas Sampling Locations).	See data gaps table. Addtional sub-slab vapor samples will be collected.
	Indoor Air	Indoor Air samples have not been collected at the Site.	See Previous Reports	4. Indoor Air quality unknown	See data gaps table. Collect indoor air samples.
Migration Pathways	Preferential Pathways / Conduits	To AEI's knowledge, all undergound utilities at the site were installed to depths that are above the depth to groundwater. According to AllWest's Subsurface Investigation and Sensitive Receptor Survey Report dated January 12, 2006, a magnetometer sweep was conducted by a private underground utility locator (Subtronics of Concord, California). The lateral line was located at an approximate depth of 1.5 to 2 feet bgs and sloped south where it connected with the main sewer line running under the sidewalk along Park Boulevard. No construction activities related to the installation of new utilities on the property are currently planned.	See Previous Reports	5. Utility survey required.	See data gaps table. Complete underground ultility line locate.

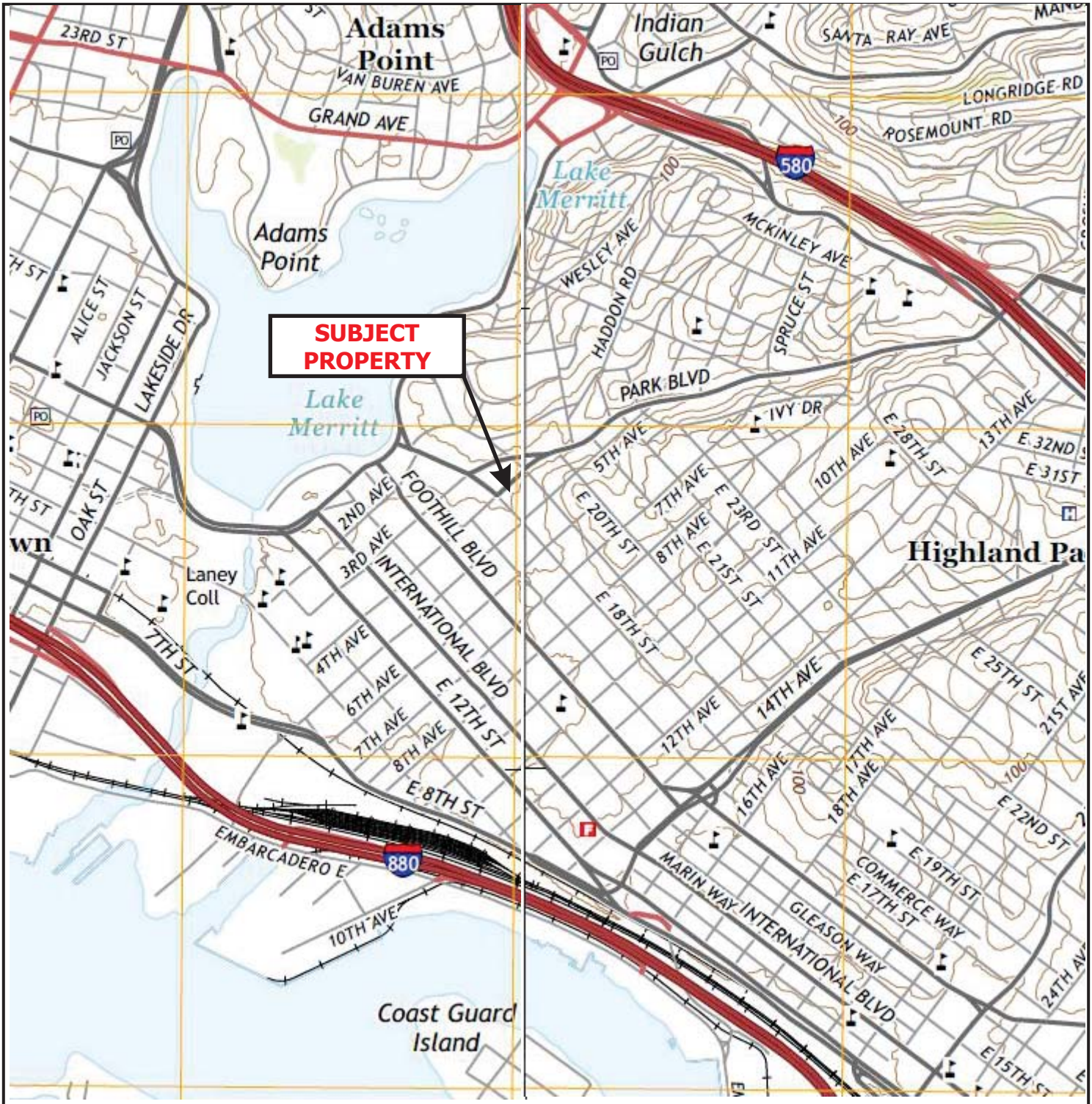
Table 4 - Site Conceptual Model
Wash Time Laundromat
1815 Park Boulevard
Oakland, CA 94606

SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap Item #	Resolution
Potential Receptors & Risks	On Site	A dry cleaning operation previously operated on the Site from approximately 1967 to the 1990's. A laundromat currently occupies the Site. Potable water is currently provided by a municipal source. There is no known plan to change from a municipal water source in the foreseeable future. Therefore the direct contact exposure pathway for groundwater was not considered to be complete. However, there are known impacts to soil gas and groundwater on the property and low levels of residual soil contamination is likely present adjacent to the reported former dry cleaning machine location. As a result, potential receptors at the site include: future construction workers via direct contact with soil; and current and future occupants at the Site via inhalation of indoor air.	n/a	None	n/a
	Off Site	Adjacent commmerical suites in the Site building consist of the following: Apple Beauty Massage (1819 Park Blvd.); Personal Touch Hair Salon (1821 Park Blvd); A vacant suite (1823 Park Blvd.); and Ace Print and Design (1825 Park Blvd). Adjacent properties land use consist of the following: A parking lot (north); Apple Beauty Supply (east); Park Blvd. (south), followed by a parking lot further south; and commercial businesses (west). Potenital receptors off-site include: future construction works via direct contact with soil; and current and future occupants off-Site via inhalation of indoor air.	Figure 2	6. Sewer gas sampling in accordance with DTSC and RWQCB guidance (See Figure 10 Proposed Sub-Slab and Sewer Gas Sampling Locations).	See data gaps table. Complete sewer gas sampling.

Data Gaps Summary and Proposed Investigation - Table 5
Wash Time Laundromat
1815 Park Boulevard
Oakland, CA 94606

Item	Data Gap Item #	Proposed Investigation	Rationale	Analyses
1	The most recent well survey is more than 12 years old and may not be representative of current conditions.	Obtain a well survey.	Identify wells in the Site vicinity	N/A
2	The current soil and groundwater data sets are 12 to 13 years old and may not be representative of current site conditions.	Ten soil borings will be advanced to a planned depth of 10 feet below ground surface (bgs) using dual-walled direct push drilling techniques to allow for groundwater sample to be collected (estimated to be five feet bgs). Each soil boring will be logged; soil core will logged and described in general accordance with United Soil Classification System (USCS); soils will be screened with a portable organic vapor meter (OVM) or photo-ionizatino detector (PID) and for sensory perception. Grab groundwater samples will be collected from the first encountered groundwater in each soil boring.	Soil samples will be collected at select intervals for potential laboratory analysis. Soil samples will be collected to further characterize subsurface soil contamination. Grab groundwater samples will be collected at the source and laterally as appropriate, to further characterize groundwater contamination.	Soil and Groundwater samples: Volatile Organic Compounds (VOCs) 8010 list (US EPA Method 8260).
3	The current soil gas data sets are 12 years old and may not be representative of current site conditions.	Six sub-slab vapor samples will be collected within the Site perimeter. Hand drilling equipment will be utilized to advance the sub-slab probes throught the floor slab. The probes will be constructed by placing a gas sampler into the subsurface just below the slab, by vacuum testing and purging probes, and using helium tracer compound. The soil gas samples will be collected through calibrated flow controller and into one-liter laboratory supplied evcauated canisters. Depending on findings of utility survey and existing data analyses, several additional locations may be proposed offsite to address identified data gaps.	Sub-slab vapor samples will be collected within the Site perimeter to protect on- and potentially off-site vapor intrusion concerns. Additionally, a sewer grab air sample willl be collected from sewer laterals. The collection will be focused on the source, the lateral extent, and including along the identified santiary sewer line servicing the Site.	Sub-slab vapor samples: VOCs by US EPA Testing Method TO-15.
4	Indoor Air Quality unknown	Three indoor air samples at paired locations within the Site building collected adjacent to three of the sub-slab vapor sample locations.	The indoor air samples will be collected at paired locations adjacent to sub-slab vapor sample locations to quantify indoor air quality.	Indoor Air Samples: VOCs by US EPA Testing Method TO-15 LL/SIM
5	Utility Survey	Locating service will be prepared to trace out underground line locations, to the extent feasible, running beneath the Site and surrounding area, including a trace and if needed a survey of the sanitary sewer.	Identify undergound utilty locations at the Site and surrounding area, including investigation of the off-site sanitary sewer utility locations. Potential preferential pathways on- and off-site will be located.	None
6	Sewer Gas Survey and Sampling	Sewer gas sampling in accordance with pending regulatory guidance by the Department of Toxic and Substances (DTSC) and the San Francisco Bay Regional Water Quality Control Board (RWQCB).	Delineation of soil vapor impacts including sewer line impacts	Sewer gas samples: VOCs by US EPA Testing Method TO-15.

FIGURES



LEGEND

0 500 1,000
SCALE: 1" = 1,000'

Map: Oakland West
Date: 2015
Source: USGS

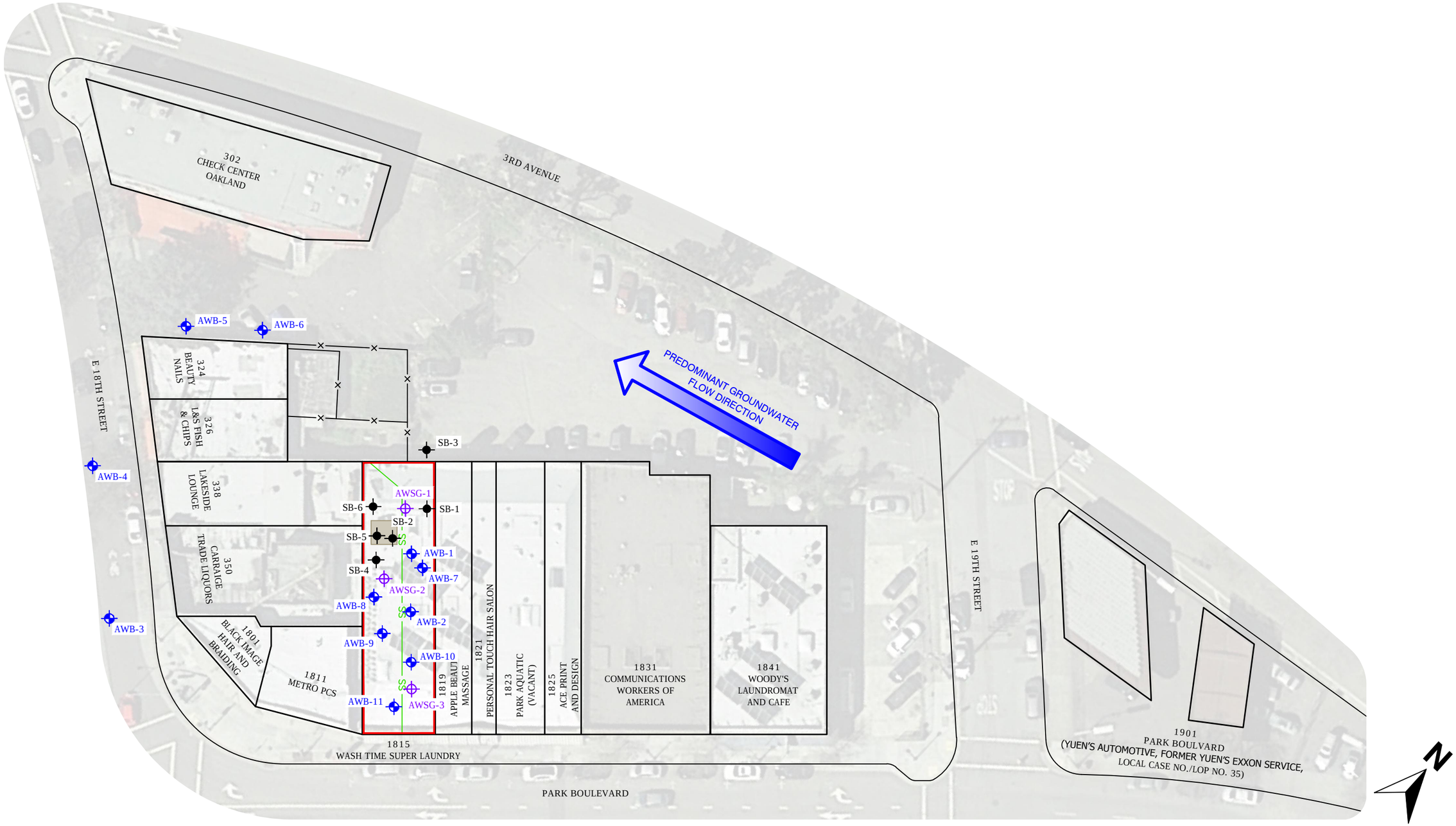
N

AEI Consultants
2500 Camino Diablo, Walnut Creek, California

SITE LOCATION MAP

1815 Park Boulevard,
Oakland, Calfornia

FIGURE 1
Project No. 379623



LEGEND

- AWB-3 — AllWest Soil Boring (May-November 2005)
- AWSG-2 — AllWest Soil Gas Probes (November 2005)
- SB-5 — AEI Consultants Soil Boring (January-March 2005)
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Groundwater Flow Direction West to West-Southwest based on Tank Protection Engineering Groundwater Gradient Maps: 4/22/94; 10/21/94: 1/20/95; 7/31/95; & 2/26/9

0 40 80 APPROXIMATE SCALE IN FEET

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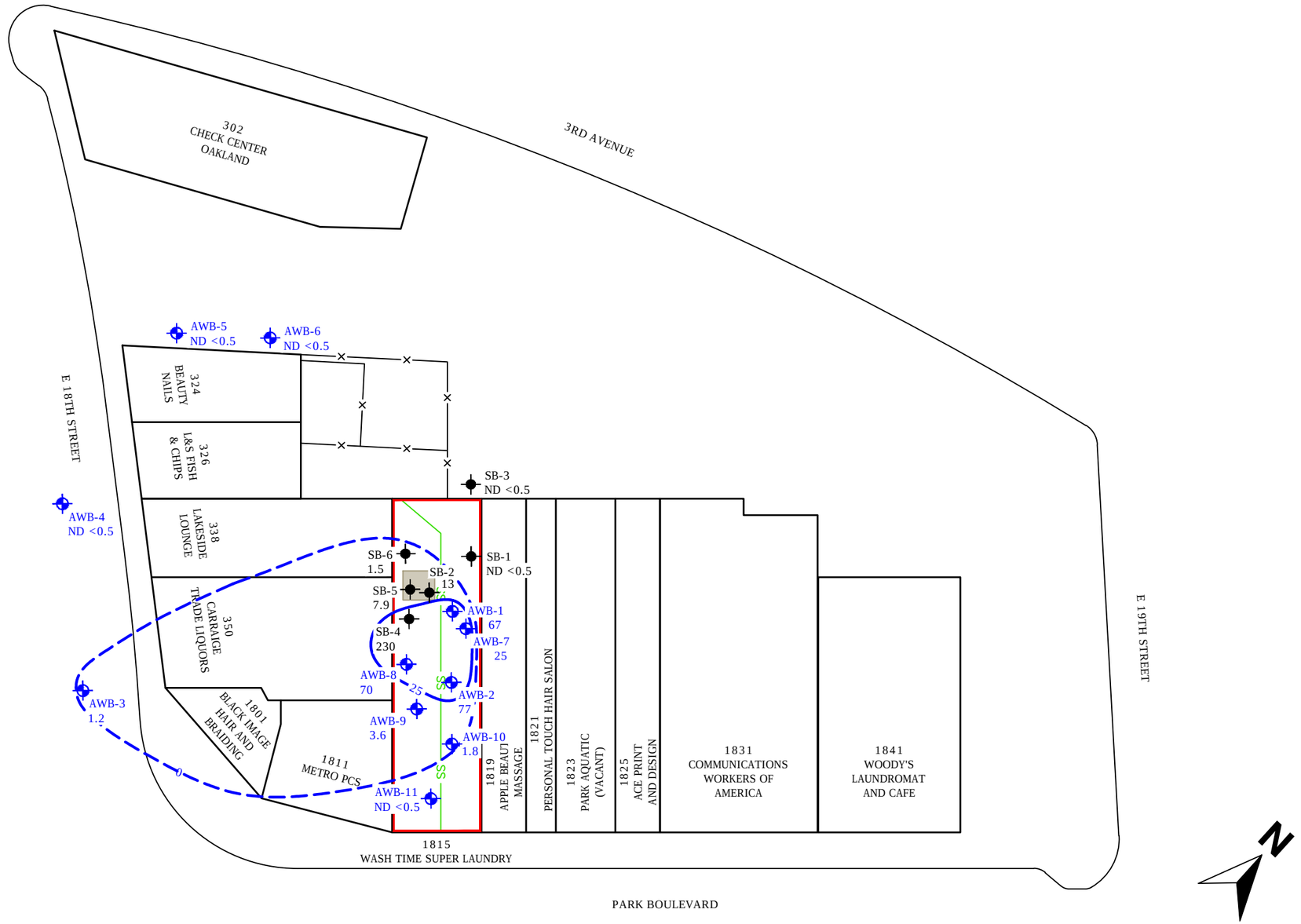
2500 Camino Diablo, Walnut Creek, California

Site Plan

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 2
Project No. 379623



LEGEND

- AWB-3 — AllWest Soil Boring (May-November 2005)
- SB-5 — AEI Consultants Soil Boring (January-March 2005)
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Contour
- ND = Not Detected

0 40 80 APPROXIMATE SCALE IN FEET

Micrograms/Liter (µg/L)

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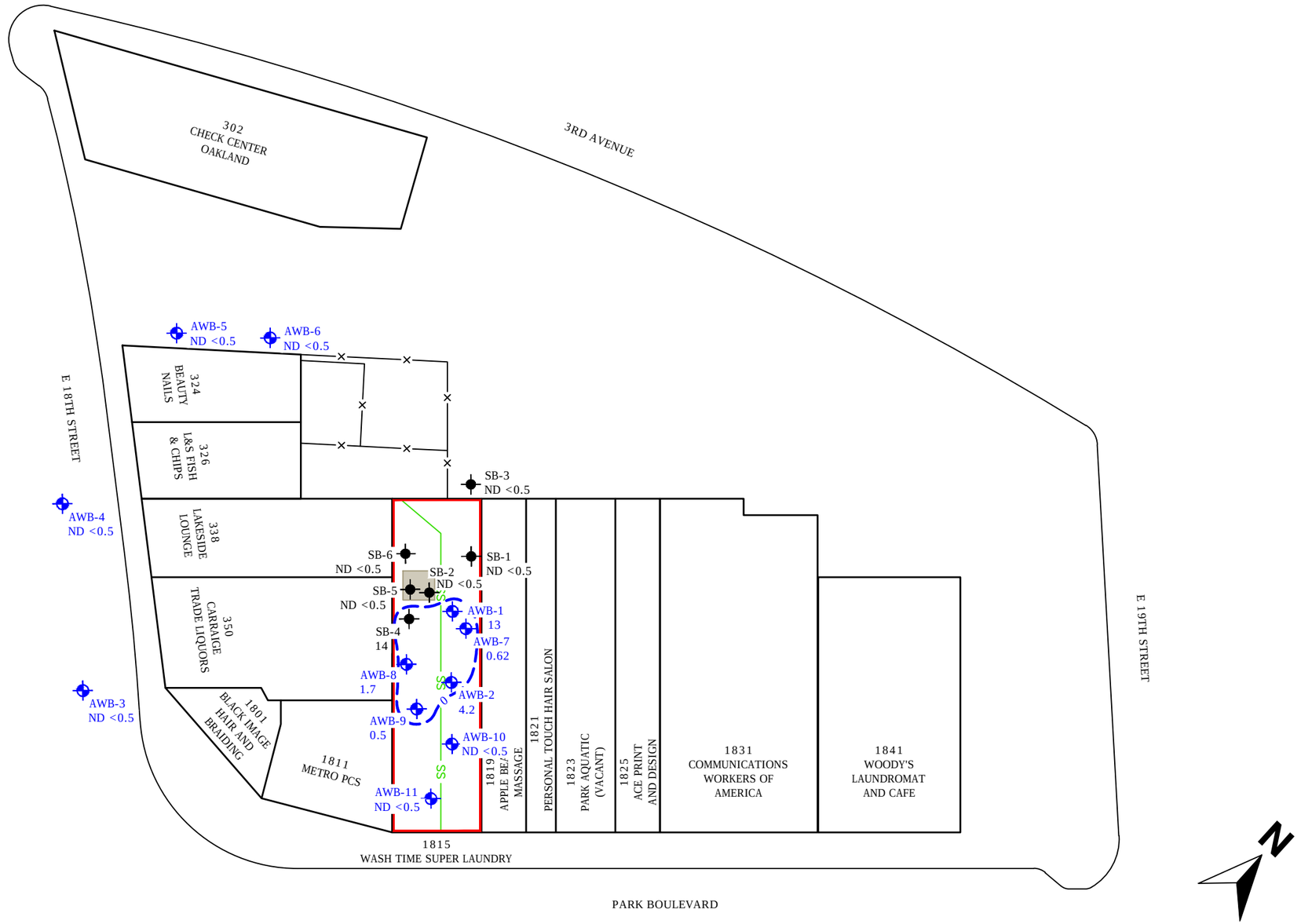
PCE Groundwater Isoconcentration Contours

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 3
Project No. 379623



LEGEND

- AWB-3 — AllWest Soil Boring (May-November 2005)
- SB-5 — AEI Consultants Soil Boring (January-March 2005)
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Contour
- ND = Not Detected

0 40 80 APPROXIMATE SCALE IN FEET

Micrograms/Liter (µg/L)

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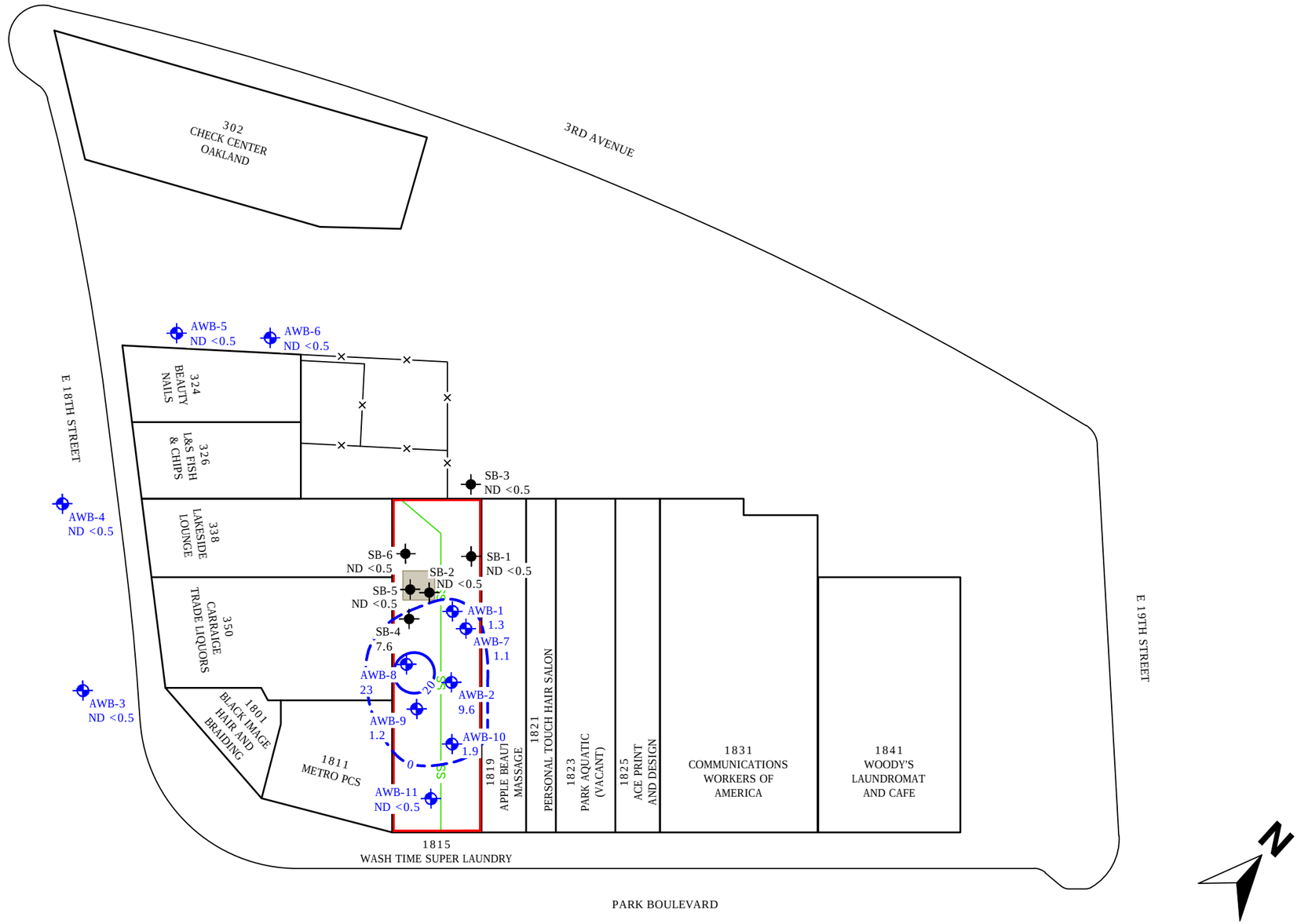
TCE Groundwater Isoconcentration Contours

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 4
Project No. 379623



LEGEND

- AWB-3 — AllWest Soil Boring (May-November 2005)
- SB-5 — AEI Consultants Soil Boring (January-March 2005)
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Contour
- ND = Not Detected

0 40 80 APPROXIMATE SCALE IN FEET

Micrograms/Liter (µg/L)

AEI Consultants

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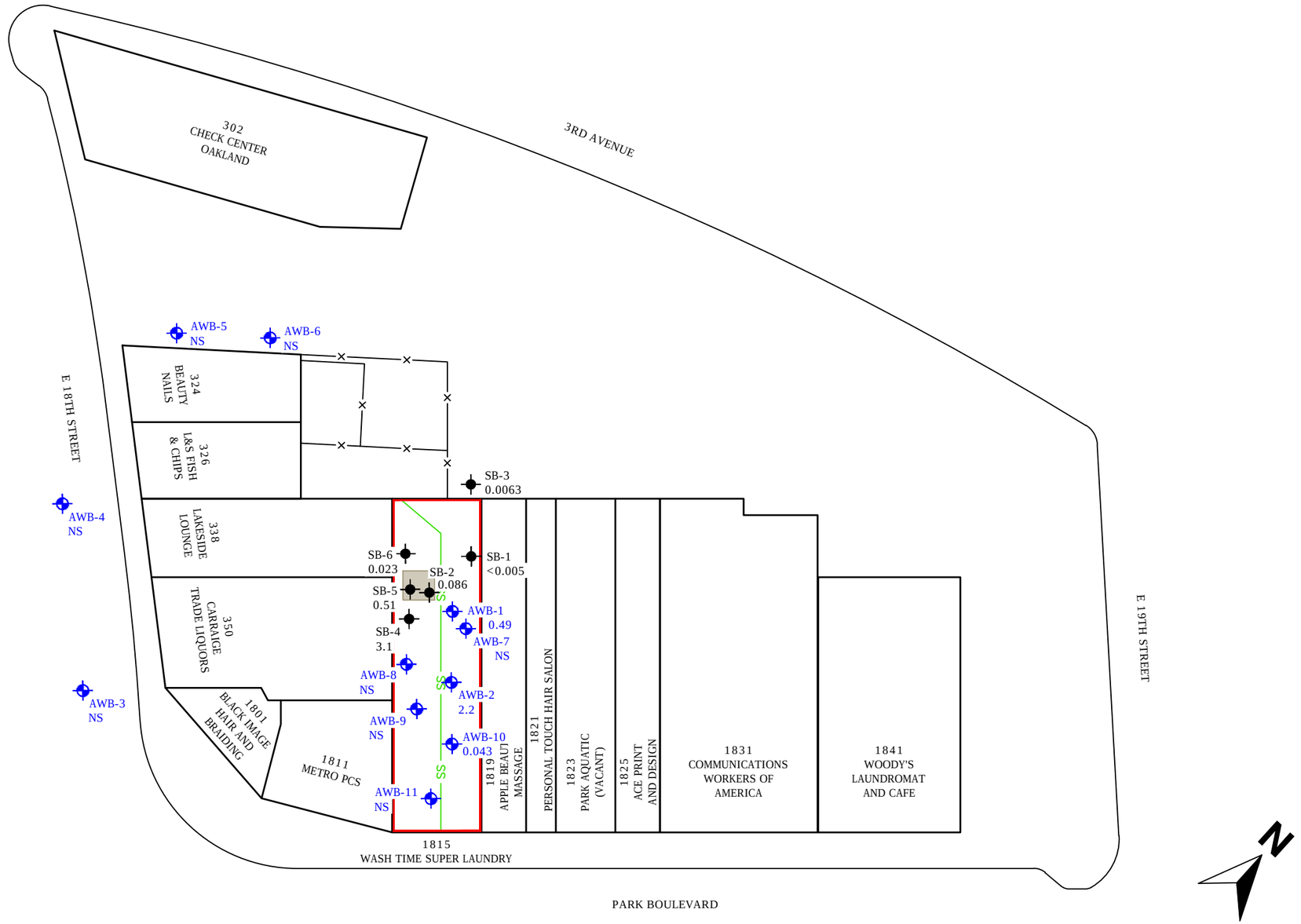
Vinyl Chloride Groundwater Isoconcentation Contours

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 5
Project No. 379623



LEGEND

- AWB-3 — AllWest Soil Boring (May-November 2005)
- SB-5 — AEI Consultants Soil Boring (January-March 2005)
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Contour
- NS = Not Sampled

0 40 80 APPROXIMATE SCALE IN FEET

Milligrams/Kilogram (mg/kg)

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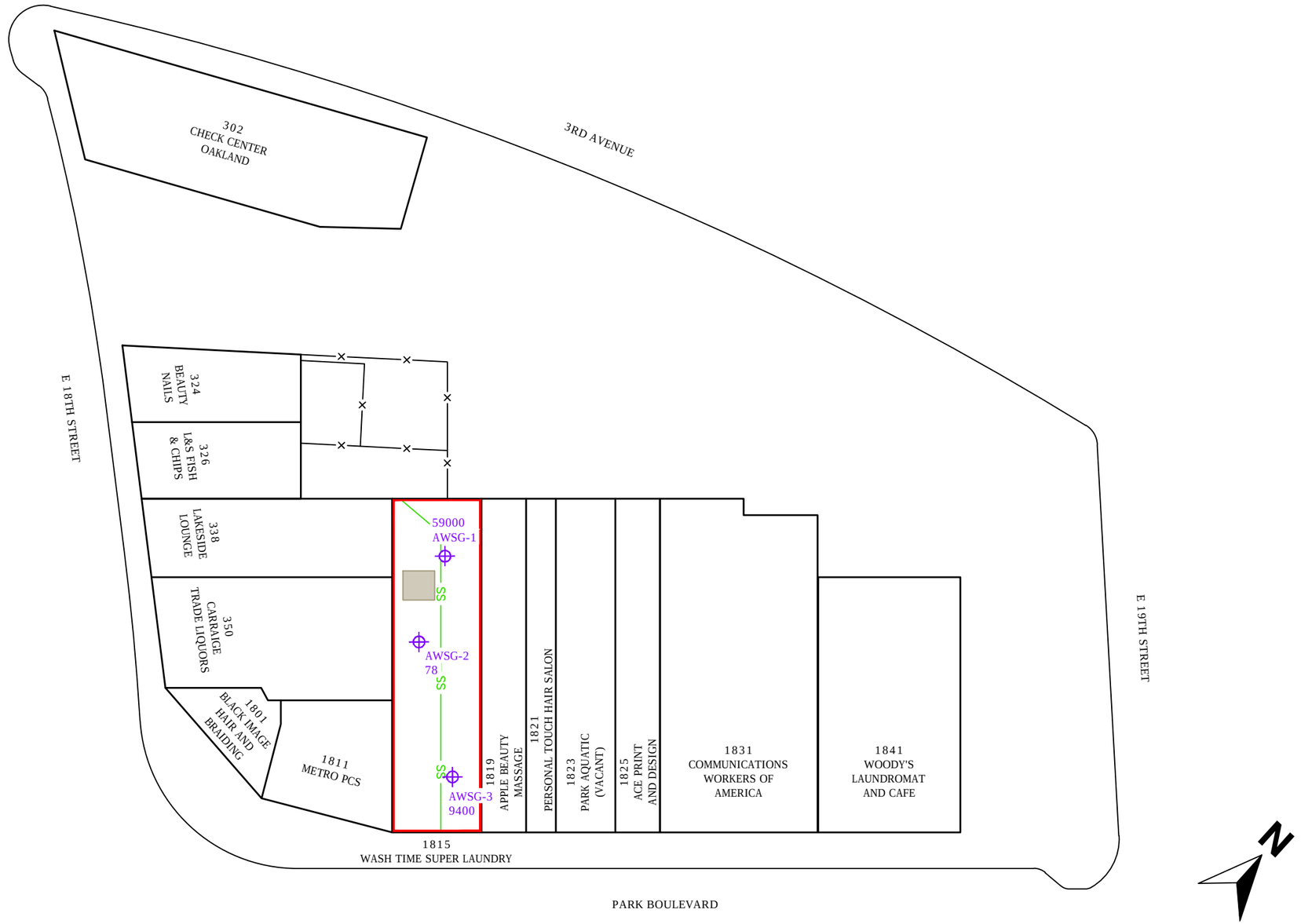
PCE Soil Concentrations

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 6
Project No. 379623



LEGEND

AWSG-2 AllWest Soil Gas Probes (November 2005)

Former Dry Cleaner Location

Reported Former Dry Cleaner Machine Location

SS Sanitary Sewer Line

Contour

0 40 80 APPROXIMATE SCALE IN FEET

Micrograms/Meter Cubed (µg/m ^{3})

AEI Consultants

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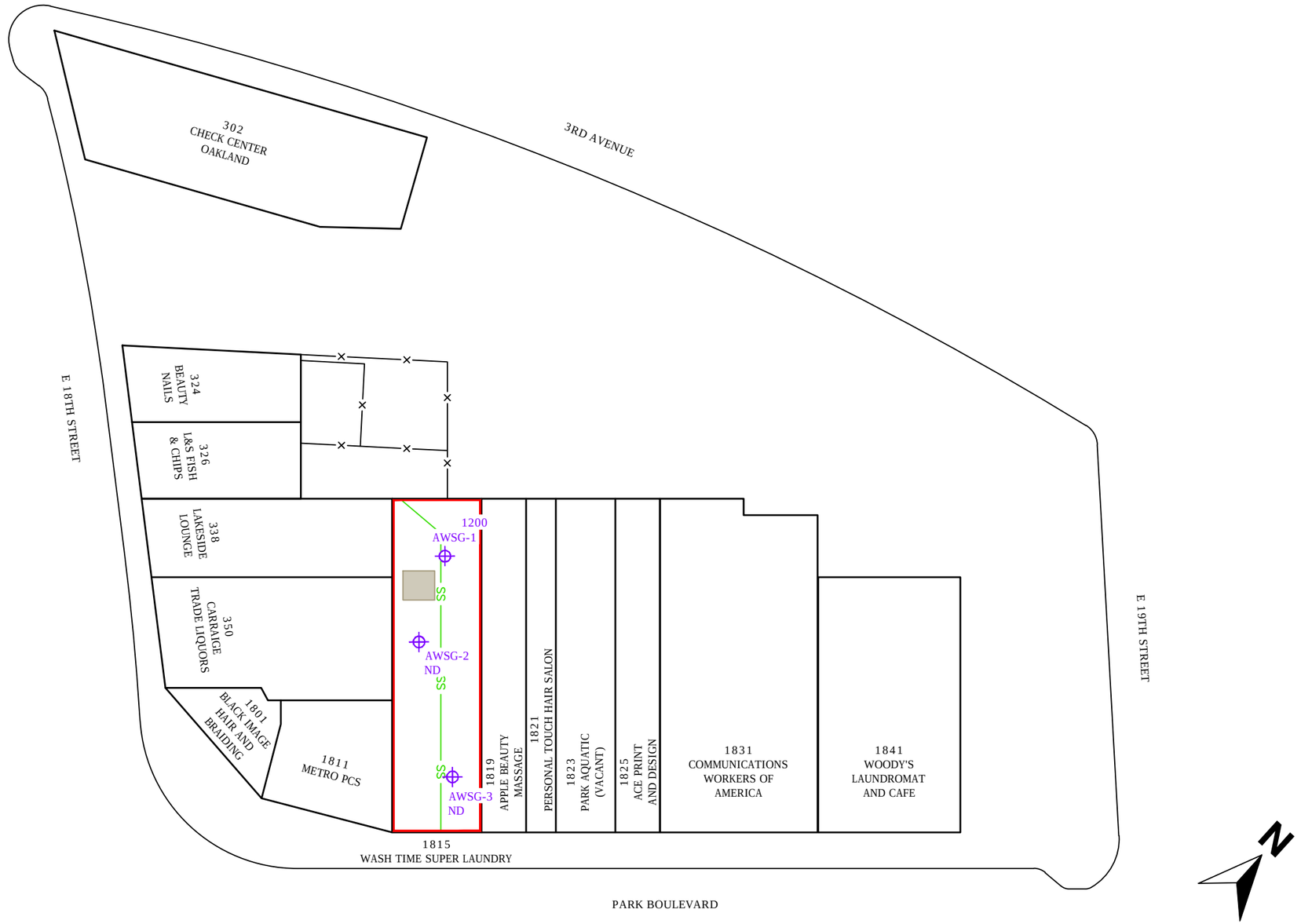
PCE Soil Vapor Concentrations

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 7
Project No. 379623



LEGEND

AWSG-2 — AllWest Soil Gas Probes (November 2005)

Former Dry Cleaner Location

Reported Former Dry Cleaner Machine Location

SS — Sanitary Sewer Line

Contour

ND = Not Detected

0 40 80 APPROXIMATE SCALE IN FEET

Micrograms/Meter Cubed (µg/m ^{3})

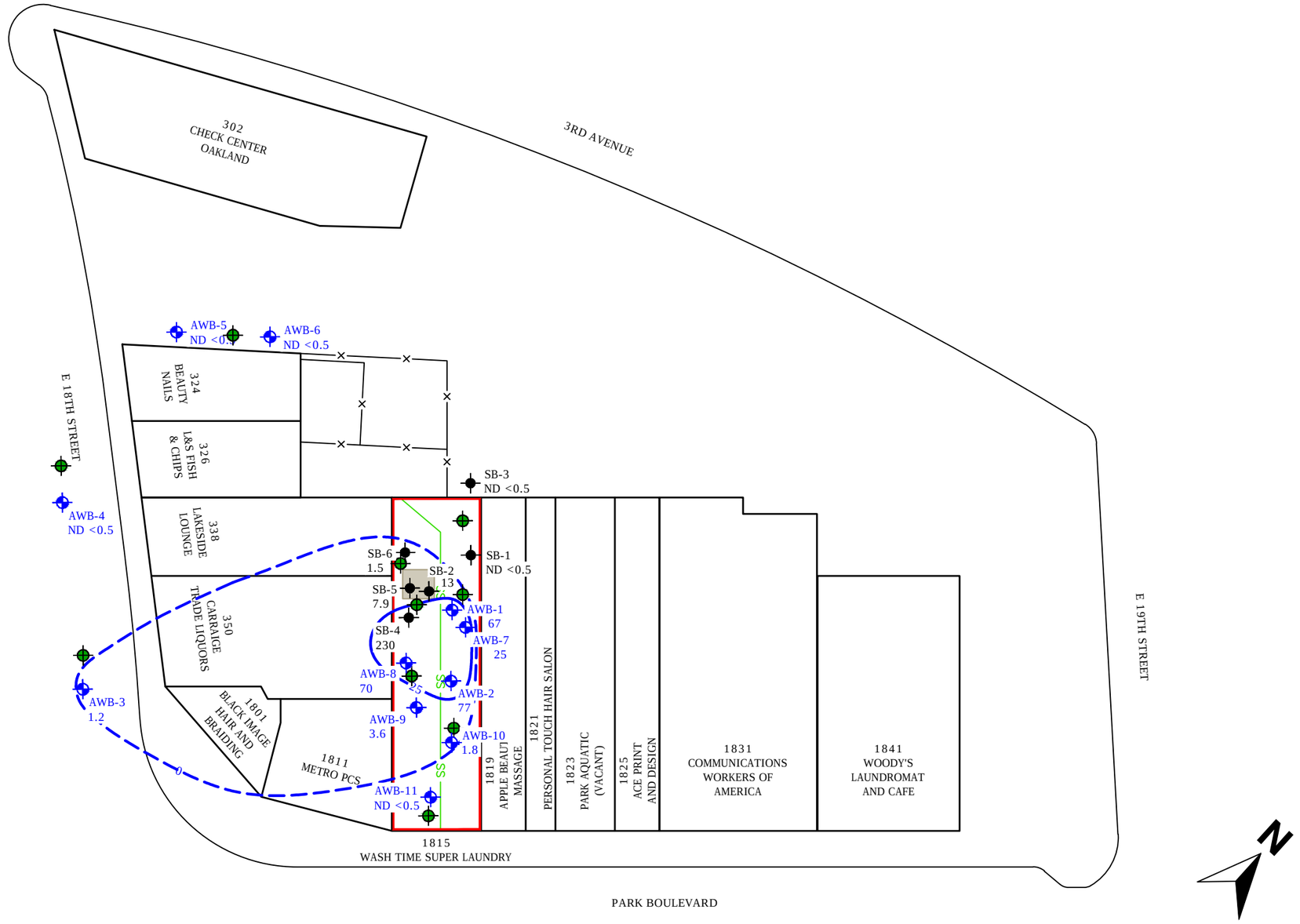
AEI Consultants

2500 Camino Diablo, Walnut Creek, California

TCE Soil Vapor Concentrations

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 8
Project No. 379623



LEGEND

- AWB-3 — AllWest Soil Boring (May-November 2005)
- SB-5 — AEI Consultants Soil Boring (January-March 2005)
- Proposed Soil/Groundwater Boring
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Contour
- ND = Not Detected

0 40 80 APPROXIMATE SCALE IN FEET

PCE Groundwater Concentrations
Micrograms/Liter (µg/L)

AEI Consultants

2500 Camino Diablo, Walnut Creek, California

Proposed Soil/Groundwater Boring Locations

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 9
Project No. 379623

LEGEND

- AWSG-2 — AllWest Soil Gas Probes (November 2005)
- Proposed Sub-Slab Location
- Sewer Gas Sample Location
- Proposed Indoor Air Sample Location
- Former Dry Cleaner Location
- Reported Former Dry Cleaner Machine Location
- SS — Sanitary Sewer Line
- Contour

0 40 80 APPROXIMATE SCALE IN FEET

PCE Soil Vapor Concentrations
Micrograms/Meter Cubed (µg/m 3)

AEI Consultants

2500 Camino Diablo, Walnut Creek, California

Proposed Sub-Slab, Indoor Air, and Sewer Gas Sampling Locations

Wash Time Laundromat
1815 Park Boulevard
Oakland, California

FIGURE 10
Project No. 379623

ATTACHMENT 1

BORING LOGS

Project: W. Phua
Project Location: 1815 Park Boulevard, Oakland
Project Number: 10316

Log of Boring SB-1

Sheet 1 of 1

Date(s) Drilled: **January 12, 2005**	Logged By: **Peter McIntyre**	Checked By: **Robert Flory**
Drilling Method: **Direct Push**	Drill Bit Size/Type	Total Depth of Borehole: **15 feet bgs**
Drill Rig Type: **GeoProbe**	Drilling Contractor	Approximate Surface Elevation
Groundwater Level and Date Measured: **11.5 feet ATD, 4.3 feet after 30 min**	Sampling Method(s): **Tube**	Well Permit
Borehole Backfill: **Cement Slurry**	Location	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
	0					Concrete		
				CL		Clay with rock / concrete debris at 2.5'		
				CL		Clay, gravel and sand present, brown, moist below 5', soft		
			SB-1 4'				<0.1	
						(after 30 min) ▼		
	5		SB-1 7'				<0.1	
				CL		Clay, olive with black mottling, soft, organic smell, greyish tan below 10'		
	10					(ATD) ▽		
			SB-1 12'	SP-SC		Very fine to medium sand, clay locally, saturated	<0.1	
				CL		Clay, light olive, medium stiffness		
	15					Bottom of Boring at 15 feet bgs		
	20							

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Figure

Project: W. Phua
Project Location: 1815 Park Boulevard, Oakland
Project Number: 10316

Log of Boring SB-2

Sheet 1 of 1

Date(s) Drilled: **January 12, 2005**	Logged By: **Peter McIntyre**	Checked By: **Robert Flory**
Drilling Method: **Direct Push**	Drill Bit Size/Type	Total Depth of Borehole: **12 feet bgs**
Drill Rig Type: **GeoProbe**	Drilling Contractor	Approximate Surface Elevation
Groundwater Level and Date Measured: **10.5 feet ATD, 5.5 feet after 10 min**	Sampling Method(s): **Tube**	Well Permit.
Borehole Backfill: **Cement Slurry**	Location	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
	0					Concrete		
				CL		Clay with rock / concrete debris at 2.5'		
				CL		Tan clay, wet sand & gravel stringer at 6.5'		
	5		SB-2 5'			(after 10 min) ▼	<0.1	
				CL		Soft olive-grey clay, black mottling, grading downward to gravelly and sandy clay, saturated below 10.5'		
	10		SB-2 9'			(ATD) ▼	<0.1	
						Bottom of Boring at 15 feet bgs	<0.1	
	15							
	20							

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Project: W. Phua
Project Location: 1815 Park Boulevard, Oakland
Project Number: 10316

Log of Boring SB-3

Sheet 1 of 1

Date(s) Drilled **January 12, 2005**	Logged By **Peter McIntyre**	Checked By **Robert Flory**
Drilling Method **Direct Push**	Drill Bit Size/Type	Total Depth of Borehole **12 feet bgs**
Drill Rig Type **GeoProbe**	Drilling Contractor	Approximate Surface Elevation
Groundwater Level and Date Measured **8.5 feet ATD, 5 feet after 5 min**	Sampling Method(s) **Tube**	Well Permit.
Borehole Backfill **Cement Slurry**	Location	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
	0			CL		Asphalt Gravelly clay		
			SB-3 4'	CL		Sandy clay, medium stiff, tan, soft below 5'	<0.1	
	5					(after 5 min) ▼		
			SB-3 8'				<0.1	
				SP-SC		Fine to medium sand with clay locally, saturated, olive grey (ATD) ▼		
	10			CL		Clay, very soft, calcarious fragments		
						Bottom of Boring at 12 feet bgs		
	15							
	20							

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Project: Bill Phua
Project Location: Park Blvd., Oakland
Project Number: 10316

Log of Boring SB-4

Sheet 1 of 1

Date(s) Drilled **March 14, 2005**	Logged By **Adrian Angel**	Checked By **Peter McIntyre**
Drilling Method **Direct Push**	Drill Bit Size/Type	Total Depth of Borehole **12 feet bgs**
Drill Rig Type **Geoprobe 5410**	Drilling Contractor **ECA**	Approximate Surface Elevation
Groundwater Level and Date Measured **10.5 feet ATD, 6 feet after 15 min**	Sampling Method(s) **Tube**	Well Permit.
Borehole Backfill **Cement Slurry**	Location	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
	0			Asphalt		Concrete		
				CL		Clay, tan, firm, concrete debris down to 2.5'		
			SB-4 2.5'					
				CL		Clay, tan, sand and gravelly locally moist	<1	
			SB-4 4'				<1	
	5					(after 15 min) ▼		
			SB-4 8'	CL		Clay, olive-grey, soft, black mottling, bi-valve fragments, saturated below 10.5	1.4	
			SB-4 9'				<1	
	10					(ATD) ▽		
			SB-4 12'			Bottom of Boring at 12 feet bgs	<1	
	15							
	20							

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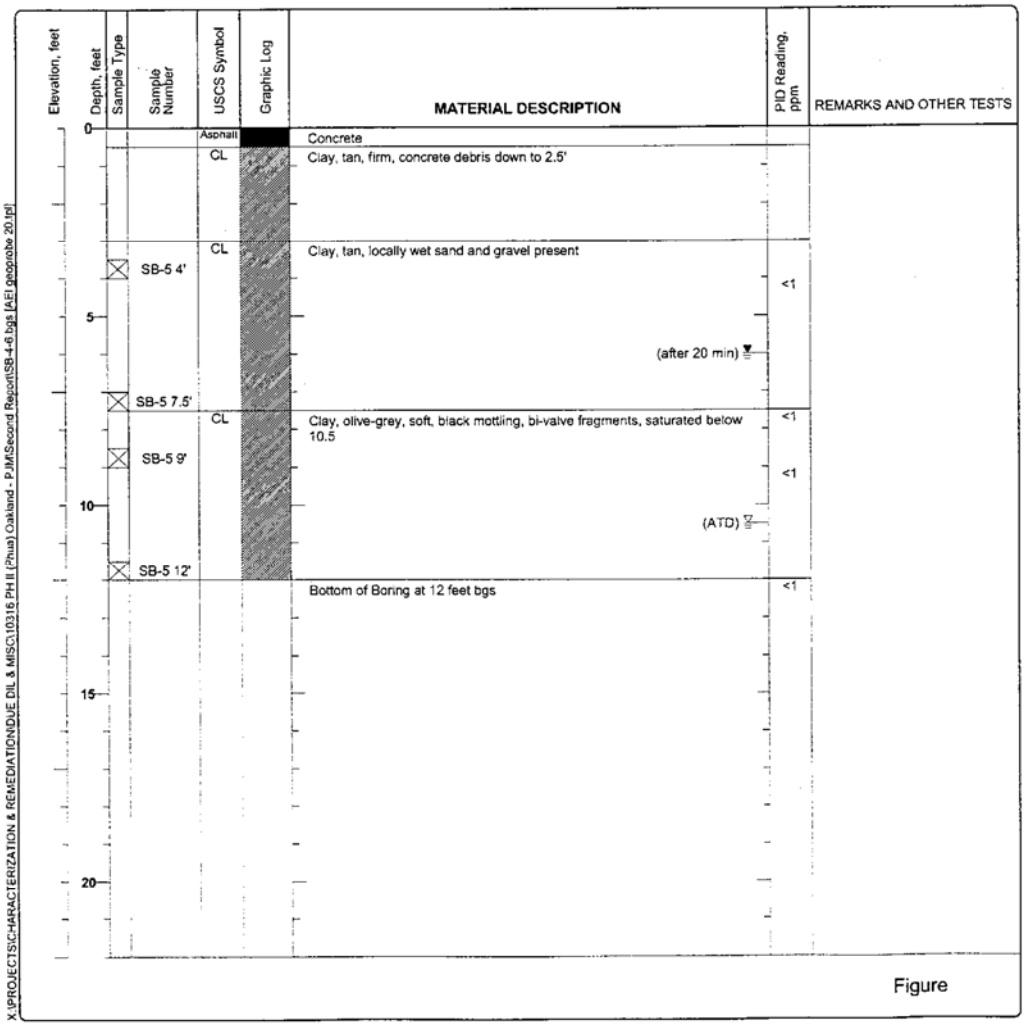
Figure

Project: Bill Phua Project Location: Park Blvd., Oakland Project Number: 10316	**Log of Boring SB-5** Sheet 1 of 1

Date(s) Drilled **March 14, 2005**	Logged By **Adrian Angel**	Checked By **Peter McIntyre**
Drilling Method **Direct Push**	Drill Bit Size/Type **2 3/4 inch**	Total Depth of Borehole **12 feet bgs**
Drill Rig Type **Geoprobe 5410**	Drilling Contractor **ECA**	Approximate Surface Elevation
Groundwater Level and Date Measured **10.5 feet ATD, 6 feet after 20 min**	Sampling Method(s) **Tube**	Well Permit.
Borehole Backfill **Cement Slurry**	Location	



Figure

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Project: Bill Phua
Project Location: Park Blvd., Oakland
Project Number: 10316

Log of Boring SB-6

Sheet 1 of 1

Date(s) Drilled: **March 14, 2005**	Logged By: **Adrian Angel**	Checked By: **Peter McIntyre**
Drilling Method: **Direct Push**	Drill Bit Size/Type:	Total Depth of Borehole: **12 feet bgs**
Drill Rig Type: **Geoprobe 5410**	Drilling Contractor: **ECA**	Approximate Surface Elevation:
Groundwater Level and Date Measured: **10 feet ATD, 5.5 feet after 10 min**	Sampling Method(s): **Tube**	Well Permit:
Borehole Backfill: **Cement Slurry**	Location:	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
	0			Asphalt		Concrete		
				CL		Clay, tan, concrete debris down to 2.5'		
			SB-6 3'					
				CL		Clay, tan, locally wet sand and gravel present	<1	
	5		SB-6 5'			(after 10 min) ▼	<1	
			SB-6 8'					
				CL		Clay, olive-grey, soft, black mottling, bi-valve fragments, saturated below 10	<1	
	10					(ATD) ▼		
			SB-6 12'					
						Bottom of Boring at 12 feet bgs	<1	
	15							
	20							

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\DOE DIL & MISC\10316 (PH II (Phua) Oakland - PJM\Second Report\SB 4-6 bgs [AEI geoprobe 20.lgp]

AllWest

Log of Boring: AWB-1

Project Address: 1815 PARK BLVD, OAKLAND, CA

Project Number: 25087.23

Drilling Date: MAY 24, 2005

Drilling Contractor: ECA

Drill Rig: DIRECT PUSH GEOPROBE

~~Auger~~: 2"

Sampler: J. KONIUTO 1" Polytube

Hammer:

Logged By: J. KONIUTO

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
						CONCRETE
	Not Collected		1		CL (Fill)	CLAY - light brown, rocks and concrete debris (Fill)
			2			
		AWB-1-4'	3		CL	CLAY - brown, soft and moist, with some sand and gravel.
			4			
			5		SC	SAND - dark brown, wet, some clay sand is fine to medium grained
			6			
		AWB-1-8'	7		CL	CLAY - dark gray, moist, some sand, plastic.
			8			TOTAL DEPTH 8 FEET
			9			- Boring backfilled with neat cement grout.
			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By: ML SIENIEDA

Drawn By:

AllWest

Log of Boring: AWB-2

Project Address: 1815 PARK BLVD, OAKLAND, CA

Project Number: 25087.23

Drilling Date: MAY 24, 2005

Drilling Contractor: ECA

Drill Rig: DIRECT PUSH GEOPROBE

~~Auger~~: 2"

Sampler: J. KONIUTO 1" POLYTUBE

Hammer:

Logged By: J. KONIUTO

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
	Not Collected		0			CONCRETE
			1		CL (Fill)	CLAY - gray, rocks and concrete debris (Fill)
			2			
		AWB-2-4'	3		CL	CLAY - light brown, dry with some sand and gravel
			4			
			5		SC	SAND - dark brown, wet, some clay sand is fine to medium grained
			6			
		AWB-2-8'	7			
			8			SAND - dark gray, moist, some clay sand is fine to medium grained
			9		SC	
			10			
		AWB-2-12'	11			
			12			TOTAL DEPTH 12 FEET
			13			- Boring backfilled with neat cement grout.
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By: ML SIENIEGA

Drawn By:

AllWest

Log of Boring: AWB-3

Project Address: 1815 PARK BLVD, OAKLAND, CA

Project Number: 25087.23

Drilling Date: MAY 24, 2005

Drilling Contractor: ECA

Drill Rig: DIRECT PUSH GEOPROBE

~~Auger~~: 2"

Sampler: J. KONIUTO 1" Poly tube

Hammer:

Logged By: J. KONIUTO

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
						CONCRETE
	Not Collected		1		SP (Fill)	SAND - light brown, with gravel and concrete (Fill)
			2			
		AWB-3-4'	3		SP	SAND - brown, slightly moist, some gravel, no fines sand is medium to coarse grained
			4			
			5		SC	SAND - dark brown, slightly moist, some clay sand is fine to medium grained
			6			
		AWB-3-8'	7			
			8			TOTAL DEPTH 8 FEET
			9			- boring backfilled with neat cement grout
			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By: ML SIENIEDA

Drawn By:

AllWest

Log of Boring: AWB-4

Project Address: 1815 PARK BLVD, OAKLAND, CA

Project Number: 25087.23

Drilling Date: MAY 24, 2005

Drilling Contractor: ECA

Drill Rig: DIRECT PUSH GEOPROBE

~~Auger~~: 2"

Sampler: J. KONIUTO 1" polytube

Hammer:

Logged By: J. KONIUTO

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
			0			CONCRETE
			1		SP (Fill)	SAND - light brown, with gravel and concrete (Fill)
			2			
		AWB-4-4'	3		SP	SAND - brown, moist, some gravel, no fines sand is medium to coarse grained
			4			
			5		SC	SAND - dark brown to gray, very moist, some clay sand is fine to medium grained
			6			
		AWB-4-8'	7			
			8			TOTAL DEPTH 8 FEET
			9			- boring backfilled with neat cement grout.
			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By: ML SIEMIENIEDA

Drawn By:

AllWest

Log of Boring: AWB-5

Project Address: 1815 PARK BLVD, OAKLAND, CA

Project Number: 25087.23

Drilling Date: MAY 24, 2005

Drilling Contractor: ECA

Drill Rig: DIRECT PUSH GEOPROBE

~~Auger~~: 2"

Sampler: J. KONIUTO 1" polytube

Hammer:

Logged By: J. KONIUTO

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
	Not Collected		1			~~ASPHALT~~
			1		CL (Fill)	CLAY - dark brown, with sand and gravel (Fill)
			2			
			3		SC	SAND - dark brown, slightly moist, some clay. sand is fine to medium grained
		AWB-5-4'	4			
			5			
			6		CL	CLAY - dark brown to gray, moist, some sand, plasti
		AWB-5-8'	7			
			8			TOTAL DEPTH 8 FEET
			9			- boring backfilled with neat cement grout.
			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By: ML SIENIEDA

Drawn By:

AllWest

Log of Boring: AWB-6

Project Address: 1815 PARK BLVD, OAKLAND, CA

Project Number: 25087.23

Drilling Date: MAY 24, 2005

Drilling Contractor: ECA

Drill Rig: DIRECT PUSH GEOPROBE

Auger:

Sampler: J. KONIUTO 1" poly tube

Hammer:

Logged By: J. KONIUTO

Blow Count	OVM Reading	Sample Interval	Depth in Feet	Well Profile	USCS Code	Soil Description
			1			ASPHALT
			2		SP (Fill)	SAND - light brown, with rocks and gravel (Fill) sand is coarse grained
		AWB-6-4'	3 4 5 6		SP	SAND - brown to grayish brown, moist and soft sand is fine to medium grained
		AWB-6-8'	7 8		SC	SAND - dark gray, moist and firm, some clay sand is fine grained
		AWB-6-12'	9 10 11		CL	CLAY - dark gray, moist, some sand, plastic
			12 13 14 15 16 17 18 19 20 21			TOTAL DEPTH 8 FEET - boring backfilled with neat cement grout.

Notes:

Reviewed By: ML SIENIEDA

Drawn By:

AllWest
AllWest Environmental, Inc.

Log of Boring: AWB-7
Project Address: 1815 Park Boulevard, Oakland CA
Project Number: 25255.23
Drilling Date: 11/14/05

Drilling Contractor: Vironex
Drill Rig: Direct Push Geoprobe
Location: WashTime Laundromat

Sampler: 1½" polytube
Logged By: Michael L. Siembieda RG-4007

Sample Time	OVM Reading	Sample Interval	Depth in Feet	Sample Number	USCS Code	Soil Description
3:25			1			Concrete 4-5"
						Fill
			2	Poor recovery	CL	CLAY - brown, moist, soft
			3			
			4			- some sand + gravel (poor recovery)
			5			
			6			
			7			CLAY - Dark bluish gray, soft, wet
			8	7'-8'	CL	- some sand + gravel
			9		TD9'	TD 9' - boring backfilled w/ cement grout
			10			
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By: 1

Drawn By: J. K. M. Tingin

AllWest
AllWest Environmental, Inc.

Log of Boring: AWB - 8
Project Address: 1815 Park Boulevard, Oakland CA
Project Number: 25255.23
Drilling Date: 11/14/05

Drilling Contractor: Vironex
Drill Rig: Direct Push Geoprobe
Location: WashTime Laundromat

Sampler: 1½" polytube
Logged By: Michael L. Siembieda RG-4007

Sample Time	OVM Reading	Sample Interval	Depth in Feet	Sample Number	USCS Code	Soil Description
3:00			1			Concrete 4-5"
						Fill
			2	Poor recovery		
			3		CL	CLAY - brown, soft, very moist - some sand + gravel (poor recovery)
			4			
			5			- some large gravel
			6			
			7		CL	CLAY - Very dark bluish gray, Wet, soft - some sand + gravel
			8	7-8		
			9		TD 9'	Boring backfilled with cement grout
			10			Groundwater @ 6.2'
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By:

Drawn By: J. K. M. Tingin

AllWest
AllWest Environmental, Inc.

Log of Boring: AWB-9
Project Address: 1815 Park Boulevard, Oakland CA
Project Number: 25255.23
Drilling Date: 11/14/05

Drilling Contractor: Vironex
Drill Rig: Direct Push Geoprobe
Location: WashTime Laundromat
Sampler: 1½" polytube
Logged By: Michael L. Siembieda RG-4007

Sample Time	OVM Reading	Sample Interval	Depth in Feet	Sample Number	USCS Code	Soil Description
2:25			1			Concrete 5"
						Fill
			2			
			3	poor recovery	CL	CLAY- brown, mottled dark brown soft, moist, sandy, some gravel
			4			(poor recovery)
			5			
			6			
			7			Very soft
			8		CL	CLAY - Dark Gray, very soft, wet
			9		TD-9'	
			10			Boring back Filled with cement grout.
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By:

Drawn By: J. K. M. Tingin

AllWest
AllWest Environmental, Inc.

Log of Boring: AWB-10
Project Address: 1815 Park Boulevard, Oakland CA
Project Number: 25255.23
Drilling Date: 11/14/05

Drilling Contractor: Vironex
Drill Rig: Direct Push Geoprobe
Location: WashTime Laundromat

Sampler: 1½" poly tube
Logged By: Michael L. Siembieda RG-4007

Sample Time	OVM Reading	Sample Interval	Depth in Feet	Sample Number	USCS Code	Soil Description
1155			1			CONCRETE - 5"
			2			Fill
			3		CL	CLAY - Dark brown, soft, sandy
			4	4-5		- some gravel, wet
			5			
			6			
			7		CL	CLAY - Dark bluish grey - soft, wet
			8			- some gravel to 1"
			9		TD-9'	Boring backfilled with cement grout
			10			Groundwater @ 5.7' Feet
			11			
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By:

Drawn By: J. K. M. Tingin

AllWest
AllWest Environmental, Inc.

Log of Boring: AWB - 11
Project Address: 1815 Park Boulevard, Oakland CA
Project Number: 25255.23
Drilling Date: 11/14/05

Drilling Contractor: Vironex
Drill Rig: Direct Push Geoprobe
Location: WashTime Laundromat

Sampler: 1½" polytube
Logged By: Michael L. Siembieda RG-4007

Sample Time	OVM Reading	Sample Interval	Depth in Feet	Sample Number	USCS Code	Soil Description
						concrete 5"
1:20			1			Fill
			2	Poor recovery	CL	CLAY - brown, moist, soft, sandy, silty (poor recovery)
			3			
			4	1		
			5	0		(No recovery - blocked sampling shoe)
			6	1		
			7	8-9'	CL	CLAY - Dark bluish gray - soft, wet plastic, slight Fetid odor
			8			
			9		TD 9'	
			10			Boring back Fill with cement grout
			11			Groundwater @ 5.2'
			12			
			13			
			14			
			15			
			16			
			17			
			18			
			19			
			20			
			21			

Notes:

Reviewed By:

Drawn By: J. K. M. Tingin