

Atlantic Richfield Company

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4:32 pm, Nov 01, 2012

Alameda County
Environmental Health

October 31, 2012

Re: Work Plan for Monitoring Well Installation and Vapor Intrusion Assessment
Former Richfield Oil Company Station #402
1450 Fruitvale Avenue, Oakland, California
ACEH Case #RO0000307

I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,



Shannon Couch
Operations Project Manager

Attachment



**WORK PLAN FOR
MONITORING WELL INSTALLATION
AND
VAPOR INTRUSION ASSESSMENT
Former Richfield Oil Company Station #402
1450 Fruitvale Avenue
Oakland, Alameda County, California
ACEH Case #RO0000307**

Prepared for:

Ms. Shannon Couch
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

Prepared by:

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October 31, 2012

08-88-602



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October 31, 2012

Project #08-88-602

Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583
Submitted via ENFOS

Attn.: Ms. Shannon Couch

Re: Work Plan for Monitoring Well Installation and Vapor Intrusion Assessment
Former Richfield Oil Company Station #402, 1450 Fruitvale Ave., Oakland, Alameda County
ACEH Case #RO0000307

Dear Ms. Couch:

Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Work Plan for Monitoring Well Installation and Vapor Intrusion Assessment* (Work Plan) on behalf of Atlantic Richfield Company (a BP affiliated company), for Former Richfield Oil Company Station #402 located at 1450 Fruitvale Avenue, Oakland, Alameda County, California (Site). This Work Plan presents a description of proposed activities to install monitoring wells and perform a vapor intrusion assessment in order to evaluate residual onsite petroleum hydrocarbon contamination. This Work Plan supersedes the previously submitted *Monitoring Well Installation Work Plan* (Broadbent, June 19, 2012).

As this project is just beginning the assessment phase anew, this work plan is not being provided with the Low-Threat UST Case Closure Policy Checklist discussed at the September 11, 2012 meeting with ACEH. Broadbent intends to submit the Low-Threat UST Case Closure Policy Checklist with the report generated subsequent to this investigation.

Should you have any questions or require additional information please do not hesitate to contact us at (530) 566-1400.

Sincerely,
BROADBENT & ASSOCIATES, INC.

Thomas A. Venus, P.E.
Senior Engineer



cc: Ms. Dilan Roe, P.E., Alameda County Environmental Health (submitted via ACEH ftp site)
Mr. Bill Phua, Fruitvale-Farnum Associates, LLC, 638 Webster St., #300, Oakland, CA 94607
Mr. Hugh K. Phares, III, Attorney at Law, 911 Paru St., Alameda, CA 94501-4033
Electronic copy uploaded to GeoTracker

**WORK PLAN FOR
MONITORING WELL INSTALLATION
AND
VAPOR INTRUSION ASSESSMENT**

Former Richfield Oil Company Station #402
1450 Fruitvale Avenue
Oakland, Alameda County, California

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- Appendix A: Historic Soil Data
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**WORK PLAN FOR
MONITORING WELL INSTALLATION
AND
VAPOR INTRUSION ASSESSMENT**

Former Richfield Oil Company Station #402
1450 Fruitvale Avenue
Oakland, Alameda County, California

1.0 INTRODUCTION

Broadbent & Associates, Inc. (Broadbent) has prepared this *Work Plan for Monitoring Well Installation and Vapor Intrusion Assessment* (Work Plan) on behalf of the Atlantic Richfield Company (ARC) – a BP affiliated company, for Former Richfield Oil Company Station #402 located at 1450 Fruitvale Avenue in Oakland, Alameda County, California (Site). A Site Location Map has been provided as Drawing 1.

In a letter dated October 16, 2008 Alameda County Environmental Health (ACEH) requested the completion of a soil and groundwater investigation. The *Work Plan – Monitoring Well Installation, 1450 Fruitvale Avenue, Oakland, California* (AEI Consultants, Inc., 3/3/2005), originally prepared for Fruitvale-Farnam Associates, LLC, was previously approved by the ACEH in a letter dated June 22, 2006. This work plan had proposed installing four additional groundwater monitoring wells on and off the Site, replacing the three onsite monitoring wells that had been lost or destroyed as a result of property redevelopment activities at the Site. ARC had repeatedly attempted without success to collectively implement the approved scope of work with the other co-Responsible Parties (RPs) listed in the ACEH letters. ARC was finally able to negotiate a property access agreement with Mr. Phua / Fruitvale-Farnam Associates, LLC, on April 11, 2012.

This Work Plan proposes the installation of four new onsite groundwater monitoring wells to provide sampling locations to assist with the evaluation of residual hydrocarbon contamination. In addition, a Vapor Intrusion Assessment is proposed to determine whether there is a vapor intrusion risk associated with the historic release. This Work Plan provides a discussion of the Site Description and Background, Proposed Activities, and Proposed Schedule.

This Work Plan supersedes the *Monitoring Well Installation Work Plan*, submitted by Broadbent on June 19 2012, which proposed installation of groundwater monitoring wells without concurrently performing an active soil gas vapor intrusion assessment.

2.0 SITE DESCRIPTION AND BACKGROUND

The Site is currently occupied by the Fruitvale Commercial Center office building located on the northeast corner of Farnam Street and Fruitvale Avenue in Oakland, Alameda County, California (Drawing 2). A restaurant and large Laundromat occupy the first floor of this three-story building. A health & dental clinic occupy the second floor, while a tax preparation service and real estate mortgage company occupy the third floor of the building. The open space of the Site not occupied by the building footprint is covered by cement concrete with exception of thin landscape planters located along the western and southern property boundaries.

The Site was reportedly developed as a gas station in 1950 by Richfield Oil Company and operated until 1983 (Richfield Oil Company sold the property to Curtis & Joyce Thomas in 1976, however ACEH was not satisfied with the proof Broadbent provided that Mr. Thomas was the last operator of the USTs at the Site). Four underground storage tanks (USTs) were supposedly located along the southern boundary of the Site. The fuel dispenser island was located on the northwestern portion of the former parking lot. AEI Consultants (AEI) conducted research at the City of Oakland Fire and Building Departments for records relating to the location of the USTs and associated piping. Although formal tank removal records were not available, it was determined that the former UST basin was along Farnam Street, as depicted in Drawing 2 (AEI, 10/11/1999).

Following an inconclusive geophysical survey, AEI conducted three excavations in May 1999 in order to confirm the presence or absence of USTs remaining onsite. The approximate locations of these excavations are depicted on Drawing 2. No tanks were found and soils removed from the larger excavation appeared to be consistent with imported fill material commonly used to backfill former tank basins. A total of six soil samples and one groundwater sample (labeled AEI GW 8') were collected from the larger excavation. The analytical results obtained from the collected samples indicated very low to non-detect concentrations of petroleum hydrocarbons. Historic soil and groundwater laboratory analytical results from this investigation are summarized in Appendices A and B, respectively (AEI, 6/11/1999).

According to AEI, a previous subsurface investigation performed by Glenfos had revealed a release. However, AEI concluded that it was apparent that the USTs had been removed and that the release that had occurred did not take place in the former UST basin but rather within the vicinity of the product piping or dispenser island (AEI, 10/9/2002).

Between July 1998 and June 2002, a total of 22 soil borings (GP-1 through GP-8 and AEI-9 through AEI-22) were advanced, and three monitoring wells (MW-1 through MW-3) installed. A Site Map with Historic Boring and Monitoring Well Locations is provided as Drawing 2. Historic soil data are presented in Appendix A, historic groundwater data are provided in Appendix B, and historic soil boring/well construction logs and a geologic cross-section are provided in Appendix C.

On September 26, 2002, AEI advanced an additional three shallow soil borings (AEI-23 through AEI-25) with a hand auger in the vicinities of the former dispenser (AEI-23), product piping (AEI-24), and beneath the proposed building (AEI-25). The purpose of these borings was to confirm the absence of hydrocarbon impacts within the shallow soil and to collect a soil sample for grain size analysis. Reportedly, soil sample analytical data did not reveal significant presence of source material remaining within the vadose zone (AEI, 10/9/2002).

Within the *Site Summary and Risk Evaluation Report* (AEI, 10/9/2002), AEI included an analysis of groundwater, soil, and vapor exposure pathways present at the Site and the results of a conduit survey. A comparative analysis of Site groundwater and soil analytical data with Regional Water Quality Control Board risk-based screening levels and City of Oakland screening levels was included within the report. Based on the results of this evaluation, AEI recommended formal case closure. The ACEH did not grant closure and requested that additional groundwater investigation activities be conducted following redevelopment of the property.

On March 7, 2005, AEI submitted a *Work Plan – Monitoring Well Installation*, proposing the installation of four additional monitoring wells to further assess the extent of the hydrocarbon contaminant plume. However, the work activities proposed within this Work Plan were not conducted.

A total of eight groundwater monitoring/sampling events were conducted at the Site between October 2000 and September 2002 utilizing the three original onsite wells MW-1, MW-2, and MW-3. These three wells appear to have been paved over with cement concrete or otherwise abandoned, although a record of proper destruction/decommissioning was not on file with the ACPWA.

3.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

According to the East Bay Plain Groundwater Basin Beneficial Use Evaluation Report (California Regional Water Quality Control Board – San Francisco Bay Region/SFRWQCB, June 1999), the Site is located within the Oakland Sub-Area of the East Bay Plain of the San Francisco Basin. The Oakland Sub-Area contains a sequence of alluvial fans. The alluvial fill thickness ranges from 300 to 700 feet deep. There are no well-defined aquitards such as estuarine muds. The largest and deepest wells in this sub-area historically pumped one to two million gallons per day at depths greater than 200 feet. Overall, sustainable yields are low due in part to low recharge potential. The Merritt sand in West Oakland was an important part of the early water supply for the City of Oakland. It is shallow (up to 60 feet), but before the turn of the last century, septic systems contaminated the water supply wells.

Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of groundwater flow is from east to west or from the Hayward Fault to the San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east to west direction.

Based on the eight monitoring events, depth-to-water (DTW) measurements have ranged from approximately 8 to 18 feet below ground surface (bgs). The groundwater gradient direction associated with the Site has varied, but the predominant direction was to the southeast. Historic groundwater monitoring data including gradient magnitude and direction is provided in Appendix B.

Based on review of geologic boring logs, soil beneath the Site generally consists of mixed silty, sandy, and gravely clays, which have been encountered up to the maximum boring depth of 35 feet bgs. Soils observed between 10 and 12 feet bgs are predominantly clay while sand and gravel content increase with depth. Lenses of sand have been observed ranging from several inches to several feet thick in several borings in the 10 to 15 feet bgs range.

4.0 PROPOSED MONITORING WELL INSTALLATION ACTIVITIES

As previously mentioned, the historic wells onsite have been abandoned and/or paved over, thus warranting additional monitoring well installation activities onsite in order to properly assess current residual hydrocarbon impacts to soil and groundwater within the vicinity of the Site. Accordingly, Site evaluation activities will be facilitated through installation of four monitoring wells MW-4, MW-5, MW-6, and MW-7 on-Site (Drawing 3). The proposed monitoring well locations are tentative, and are subject to change due to access and utility clearance.

4.1 Preliminary Activities, Local Permitting, and Notification

Prior to initiating field activities, Broadbent will obtain the necessary well permits from ACPWA, prepare a site-specific Health and Safety Plan (HASP) for the proposed work, and clear the proposed boring locations of conflicts with subsurface utilities. The utility clearance will include notifying Underground Service Alert (USA) of the pending work a minimum of 48 hours prior to initiating the field investigation, and procuring the services of a private utility locating company to confirm the absence of underground utilities at each boring location. Boreholes will be physically cleared to 6.5 feet bgs using hand auger or air knife methods consistent with BP's and Broadbent's Defined Practice for Ground Disturbance.

The Site-specific HASP will be prepared for use by field personnel implementing this Work Plan. The HASP will address hazards associated with drilling activities and potential exposure pathways and media which project personnel may encounter during proposed replacement well installation. A copy of the HASP will be available on-site during work. The subcontractor(s) performing field activities will be provided with a copy of the HASP prior to initiating work, and daily safety tailgate meetings will also be conducted to review hazards and drilling safety associated with execution of the work.

4.2 Soil Borings

The borings will be completed under the direct supervision of Broadbent field personnel. A California C-57 licensed drilling company will provide a hollow-stem auger rig for well installation. The borings will be advanced to an approximate total depth of 25 ft bgs. Each boring will be continuously cored to assist with detailed lithologic logging and identification of potential contamination. Select soil samples collected above groundwater will be submitted for laboratory analysis (4 ft bgs, 6 ft bgs, and possibly 8 ft bgs). Soil cuttings will be classified according to the Unified Soil Classification System (USCS), and will be examined using visual and manual methods for parameters including odor, staining, color, grain size, and moisture content. Field screening for hydrocarbons will include visual and olfactory observations and portable photo-ionization detector (PID) measurements.

Collected soil sample cores will be sealed with Teflon sheets, capped and placed in a chilled cooler. Samples will be then be submitted to a state-certified analytical laboratory under standard chain-of-custody protocol. Soil samples will be analyzed for Gasoline-Range Organics (GRO, C6-C12) by EPA Method 8015M and for Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX) and Methyl Tertiary Butyl Ether (MTBE) by EPA Method 8260B.

Investigation-derived residuals will be temporarily stored on-site in 55-gallon drums, pending characterization for proper disposal. Broadbent will coordinate the transportation and disposal of surplus soils and liquids to the appropriate California-regulated facilities.

4.3 Groundwater Monitoring Well Construction

New onsite monitoring wells MW-4 through MW-7 will be constructed of four-inch diameter, Schedule 40 poly-vinyl chloride (PVC) threaded casing. The screened intervals will consist of 0.010-inch machine-cut slots extending from approximately five feet bgs to approximately 25 feet bgs (total depth drilled). This screen interval should span the water table that has historically fluctuated between 8 to 18 ft bgs. A filter pack consisting of No.2/12 sand will be installed in the annular space from total depth drilled to one foot above the casing screen interval. A one-foot Bentonite clay seal will be placed above the filter

pack with neat cement grout completing the seal. The well will be completed with a traffic-rated locking vault which will be set in cement concrete to protect the well head.

4.4 Groundwater Monitoring Well Development, Surveying, and Sampling

The wells will be developed no sooner than 48 hours after installation. The well development process will consist of surging and bailing each well to remove fine-grained sediments from the well and sand filter pack. A minimum of three and a maximum of ten wetted casing volumes of groundwater will be removed until water quality parameters have stabilized. Periodic measurements of the water quality parameters pH, temperature, and conductivity will be recorded during the development to establish baseline values for groundwater. Purge water generated during development activities will be temporarily stored on-site in 55-gallon drums, pending characterization for proper disposal. Broadbent will coordinate the transportation and disposal of purge water to the appropriate California-regulated facilities.

After installation, the monitoring wells will be surveyed in accordance with State Water Resource Control Board's standards for the GeoTracker database. Consistent with California Department of Water Resources (DWR) and ACPWA requirements, the licensed C-57 well driller will prepare a Well Completion Report (DWR Form 188) for each new monitoring well. The completed well reports shall be submitted to the DWR, ACPWA, and the ACEH (within the resultant investigation report).

The wells will be sampled no sooner than 48 hours after well development. Groundwater samples will be submitted to a state-certified analytical laboratory under standard chain-of-custody protocol. Groundwater samples will be analyzed for GRO (hydrocarbon chain lengths between C6-C12) by EPA Method 8015M and for BTEX and MTBE by EPA Method 8260B.

5.0 PROPOSED VAPOR INTRUSION ASSESSMENT ACTIVITIES

Vapor Intrusion Assessment is proposed to determine whether there is a vapor intrusion risk associated with the historic release.

5.1 Preliminary Activities, Local Permitting, and Notification

Concurrent with the groundwater monitoring well installation preliminary activities, Broadbent will obtain the necessary permits for soil gas monitoring implants from ACPWA, include the proposed work in the site-specific HASP, and clear the proposed installation locations of conflicts with subsurface utilities. The utility clearance will include notifying Underground Service Alert (USA) of the pending work a minimum of 48 hours prior to initiating the field investigation, and procuring the services of a private utility locating company to confirm the absence of underground utilities at each soil gas monitoring implant location. Soil gas monitoring implant locations will be physically cleared using a hand auger consistent with BP's and Broadbent's Defined Practice for Ground Disturbance.

5.2 Soil Gas Monitoring Implant Borings

The soil gas monitoring implant borings will be installed by a C-57 licensed drilling contractor using hand augers under the direct supervision of Broadbent field personnel. The first soil gas boring location (SG-1) is proposed to be located approximately five feet from the front side of the building, between the

former USTs/pump island and the portion of the building occupied by the coin-operated Laundromat. The second soil gas boring location (SG-2) is proposed to be located approximately five feet from the northwest corner of the building, near the portion of the building used for the stairwell and elevator. The third soil gas boring location (SG-3) is proposed to be located approximately five feet from the eastern property boundary near newly proposed groundwater monitoring well MW-6. This location in the southeastern portion of the property is near the adjacent occupied residence at 3216 Farnam Street. The fourth soil gas boring location (SG-4) is proposed to be located approximately five feet from the eastern property boundary near newly proposed groundwater monitoring well MW-7. This location in the northeastern portion of the property is near an area of the adjacent residential property that is not currently developed but could be at some time in the foreseeable future.

Two soil gas implants will be installed at each location: An "A" soil gas implant will be constructed with the probe installed at 3.5 ft bgs, and a "B" soil gas implant will be constructed with the probe installed at 5.5 ft bgs. However, in lieu of nested multi-level wells, each soil gas boring will be constructed to a specific depth within its own boring, thus minimizing the potential for short-circuiting. Therefore there will be a SG-1A and SG-1B in front of the building, a SG-2A and SG-2B by the northwest stairwell and elevator, a SG-3A and SG-3B in the southeast portion of the property, and a SG-4A and SG-4B in the northeast portion of the property. Each "A" and "B" implant will be horizontally separated by at least three feet. Proposed soil gas implant boring locations are shown in Drawing 3.

5.3 Soil Gas Implant Construction

Soil gas implants will be constructed by attaching a 6-inch long soil gas probe tip to a 0.125-inch diameter nylon tubing (i.e. NylaFlow) extending approximately two feet above the surface. The soil gas probe tips will be constructed of double-woven stainless steel wire screen with a 0.057-inch pore diameter, equipped with stainless-steel end fittings. Each soil gas implant will be embedded within the middle of a one-foot thick sand filter pack of #2/12 sorted sand, topped with one-half foot of dry powdered Bentonite clay below a minimum of one-half foot of hydrated powdered Bentonite clay, and completed with a traffic-rated well vault at the surface set with neat cement concrete surface seal to match the existing grade. Care will be taken to prevent the tubing and Swagelok fittings at their ends from being damaged or kinked when coiled back into the well vaults.

5.4 Soil Gas Implant Sampling

Sampling will occur at least one month after installation of the soil gas monitoring implants to allow them time for the concrete to cure and the disturbed subsurface conditions to equilibrate. In addition, soil gas sampling shall not be performed during or immediately after a rainfall event of 0.5 inches or more. If a rainfall event of this magnitude occurs within 24 hours of the scheduled soil gas sampling activities, the field work shall be rescheduled.

After setting up a secure and barricaded work area, the soil gas sampling train will be assembled. The Swagelok fitting at the end of the implant's tubing will be connected to an inline vacuum gauge with a tee then to a 100-cubic centimeter (cc) calibrated syringe with three-way valve at the tip. Coming off the tee for the sample will be a one-liter Summa canister, supplied by the laboratory under high vacuum (-30 inches Mercury, in.Hg), leak checked and batch-certified to be free of contaminants. With the valve of the soil gas monitoring implant closed and the valve to the Summa canister closed, the sampling train will be checked for leaks during a "shut-in" leak test by applying with the calibrated syringe a vacuum of -15 in.Hg for a period of five minutes (-15 in.Hg is fifty percent above the standard threshold of -10 in.Hg

considered representative of “No Flow” conditions). When the applied vacuum does not drop during the shut-in test, the sampling train assembly will be considered leak-tested tight.

After the shut-in leak test, the closed valve of the soil gas monitoring implant will be opened and the sampling train slowly purged of one calculated interior volume using the calibrated syringe. The calculated interior volume shall include the aboveground tubing and appurtenances and below-ground tubing and probe tip, but not the pore space within the filter pack. The main purpose in waiting to sample for at least one month after installation is to allow the soil gas in the fine sand filter pack to equilibrate to the soil gas in the undisturbed soil surrounding the implant location. In the tight permeability soils anticipated to be encountered at this Site, the first soil gas drawn in from outside the implant tubing will be most representative and likely contain higher concentrations than would be encountered through excessive purging.

Following the completion of purging, a clear-plastic shroud will be setup over the sampling train to contain the chemical tracer/leak-check compound (i.e. Helium gas) that will be released within. The shroud will be placed to completely cover the soil gas sampling implant wellhead, its aboveground tubing, and the tubing, fittings, and sample Summa canister that will make up the sampling train. Once setup, Helium gas will be released via tubing under the shroud. A Radiodetection Model MGD-2002 Helium detector (or equivalent) will be used to monitor the concentration within the shroud by placing its sensor probe within. Prior to and during sampling, a positive-pressure concentration of approximately 20 percent Helium will be maintained within the shroud using the compressed gas cylinder’s flow regulator. Helium concentrations within the shroud will be recorded in the field notes at one-minute intervals.

Once a positive-pressure Helium atmosphere is created under the shroud, the valve to the Summa canister will be opened and the sample collected. The sampling rates into the Summa canisters will be fixed by laboratory-supplied critical orifice assemblies (i.e. mini flow regulators) with a 0.0060 inch orifice allowing approximately 200 standard cc per minute (cc/min). Samples will be collected into the Summa canisters until the vacuum has dropped from the initial laboratory-supplied vacuum of -30 in.Hg to -5 in.Hg. Sample start times, end times, starting vacuums, ending vacuums, and Helium concentrations during sampling will be recorded in the field notes.

5.5 Laboratory Analysis of Soil Gas Samples

Collected samples will be submitted to a state-certified analytical laboratory under standard chain-of-custody protocol. At the laboratory, soil gas samples will be analyzed for GRO by EPA Method TO-3 and for BTEX and MTBE by EPA Method TO-15. Soil gas samples will also be analyzed for Oxygen (O₂) and Argon, Carbon Dioxide (CO₂), Methane (CH₄), and Helium (tracer/leak-check compound) by Modified ASTM D-1946. Laboratory analyses for soil gas samples will be performed in accordance with EPA standard holding times for Summa canisters.

6.0 INVESTIGATION REPORTING

Upon completion of field activities described above and compilation of field data, reports will be prepared and submitted to ACEH and the State GeoTracker database (including the required individual GeoTracker upload files). A *Monitoring Well Installation and Quarterly Groundwater Monitoring Event Report* will be prepared summarizing the monitoring well installation and sampling activities.

Separately, a *Vapor Intrusion Assessment Report* will be prepared summarizing installation and sampling of the soil gas monitoring implants. Each report will document fieldwork and analytical data and will include the following information:

- Scope of Work
- Lithologic boring/well construction logs (GEO_BORE files)
- Site map showing monitoring well and soil gas implant locations (GEO_MAP file)
- Location survey data for the wells and soil gas implants (GEO_XY and GEO_Z files)
- Text and tabulated investigation results (GEO_WELL files)
- Laboratory reports and chain of custody records (EDFs)
- Significance of detected petroleum hydrocarbons
- Recommendations for future activities, if warranted

7.0 PROPOSED SCHEDULE

The proposed schedule for the work described above shall proceed as follows:

- Monitoring Well Installation – Monitoring well installation activities will begin immediately and are anticipated to be completed within 75 calendar days following approval of this work plan.
- Monitoring Well Installation and Initial Quarterly Sampling Event Report – A summary report of well installation activities combined with the first round of quarterly sampling results is proposed to be submitted within 45 calendar days following completion of the well installation activities, above (i.e. within 120 calendar days of work plan approval).
- Vapor Intrusion Assessment – Soil gas monitoring implant installation and sampling activities will begin immediately and are anticipated to be completed within 75 calendar days following approval of this work plan.
- Vapor Intrusion Assessment Report – A summary report of soil gas monitoring implant installation and sampling activities is proposed to be submitted within 45 calendar days following completion of the soil gas implant installation activities, above (i.e., within 120 calendar days of work plan approval).

8.0 LIMITATIONS

Broadbent will do its best to alert the client of matters which, in the opinion of Broadbent, require immediate attention to protect public health, safety, and the environment. Broadbent will make every effort to advise the client of matters which should be reported to government regulatory agencies. However, the client is solely responsible for reporting such matters, and Broadbent shall not be held liable in the event that the proper agency is not notified. Our services will be performed in accordance with generally accepted practice at the time work commences. Results and recommendations will be based on review of available documentation and written or verbal correspondence with appropriate regulatory agencies, laboratory results, observations of field personnel, and the points investigated. No warranty is expressed or implied.

9.0 REFERENCES

ACEH, June 22, 2006. *Fuel Leak Case No. RO0000307, ARCO #402/Parking Lot, 1450 Fruitvale Avenue, Oakland, CA*. Letter from Mr. Steven Plunkett (ACEH) to Mr. Bill Puha (Fruitvale-Farnam Associates, LLC), Mr. Ken Phares (Jay Phares Corporation), and Mr. Paul Supple (BP West Coast Products, LLC).

ACEH, December 20, 2006. *Fuel Leak Case No. RO0000307, ARCO #402/Parking Lot, 1450 Fruitvale Avenue, Oakland, CA – Work Plan Approval*. Letter from Mr. Steven Plunkett (ACEH) to Mr. Bill Puha (Fruitvale-Farnam Associates, LLC), Mr. Ken Phares (Jay Phares Corporation).

ACEH, October 16, 2008. *Fuel Leak Case No. RO0000307 and Geotracker Global ID T06019734265, ARCO #0402, 1450 Fruitvale Avenue, Oakland, CA 94601*. Letter from Mr. Paresh Khatri (ACEH) to Bill Puha (Fruitvale-Farnam Associates, LLC), Curtis & Joyce Thomas, Ken Phares (c/o Jay Phares Corporation), and Paul Supple (Atlantic Richfield Company).

AEI Consultants, Inc., June 11, 1999. *Subsurface Investigation, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Jay-Phares Corporation.

AEI Consultants, Inc., October 11, 1999. *Phase II Subsurface Investigation, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Jay-Phares Corporation, and forwarded to ACEH.

AEI Consultants, Inc., November 22, 2000. *Monitoring Well Installation and Sampling Report, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Jay-Phares Corporation, and forwarded to ACEH.

AEI Consultants, Inc., April 5, 2002. *Quarterly Groundwater Monitoring Report, 1450 Fruitvale Avenue, Oakland, California*.

AEI Consultants, Inc., July 5, 2002. *Groundwater Investigation Report, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Fruitvale-Farnam Associates, LLP, and forwarded to ACEH and Mr. Bill Phua care of Jay-Phares Corporation.

AEI Consultants, Inc., October 9, 2002. *Site Summary and Risk Evaluation Report, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Fruitvale-Farnam Associates, LLP, and forwarded to ACEH.

AEI Consultants, Inc., March 3, 2005. *Work Plan – Monitoring Well Installation, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Fruitvale-Farnam Associates, LLP, and forwarded to ACEH on March 7, 2005.

Glenfos, Inc., July 27, 1998. *Limited Phase I and Phase II Environmental Site Assessment, 1450 Fruitvale Avenue, Oakland, California*. Prepared for Glendale Federal Bank.

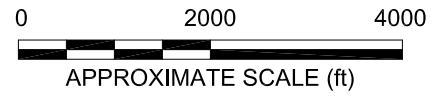
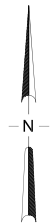
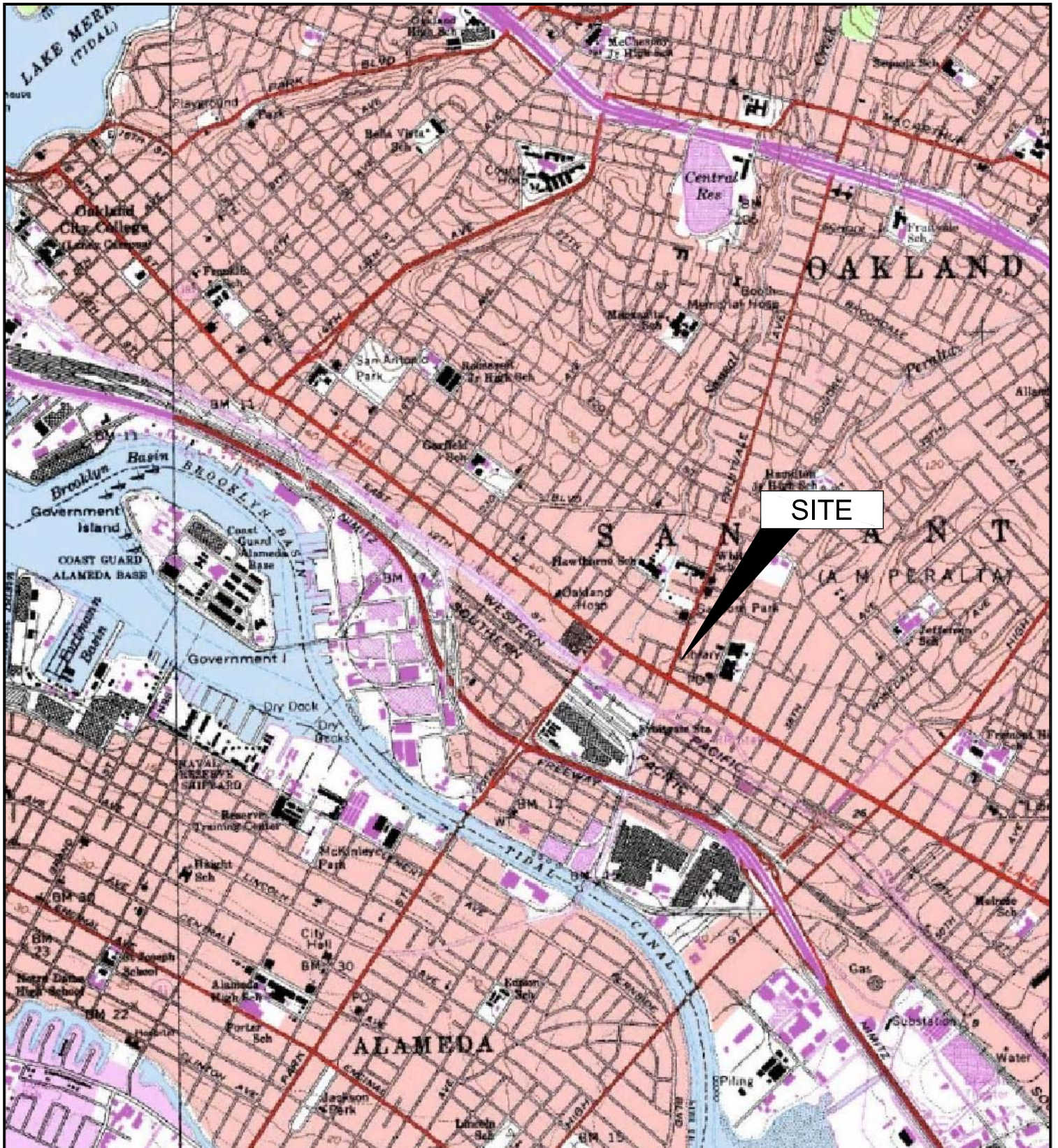
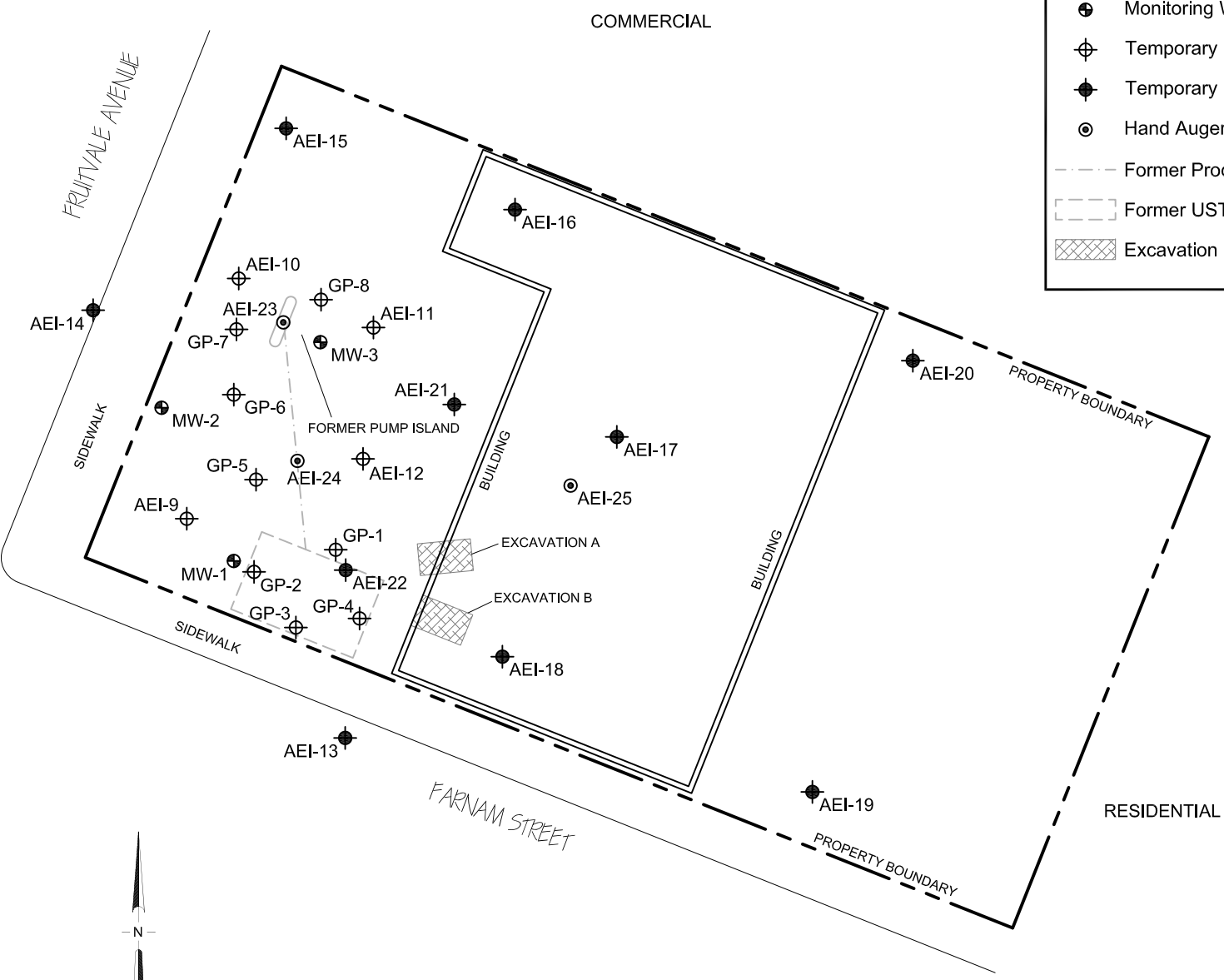


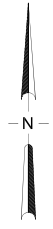
IMAGE SOURCE: USGS



LEGEND

- Monitoring Well Location
- Temporary Boring Location: 1998 - 1999
- Temporary Boring Location: June 2002
- Hand Auger Boring Location: September 2002
- Former Product Lines
- Former UST Basin
- Excavation

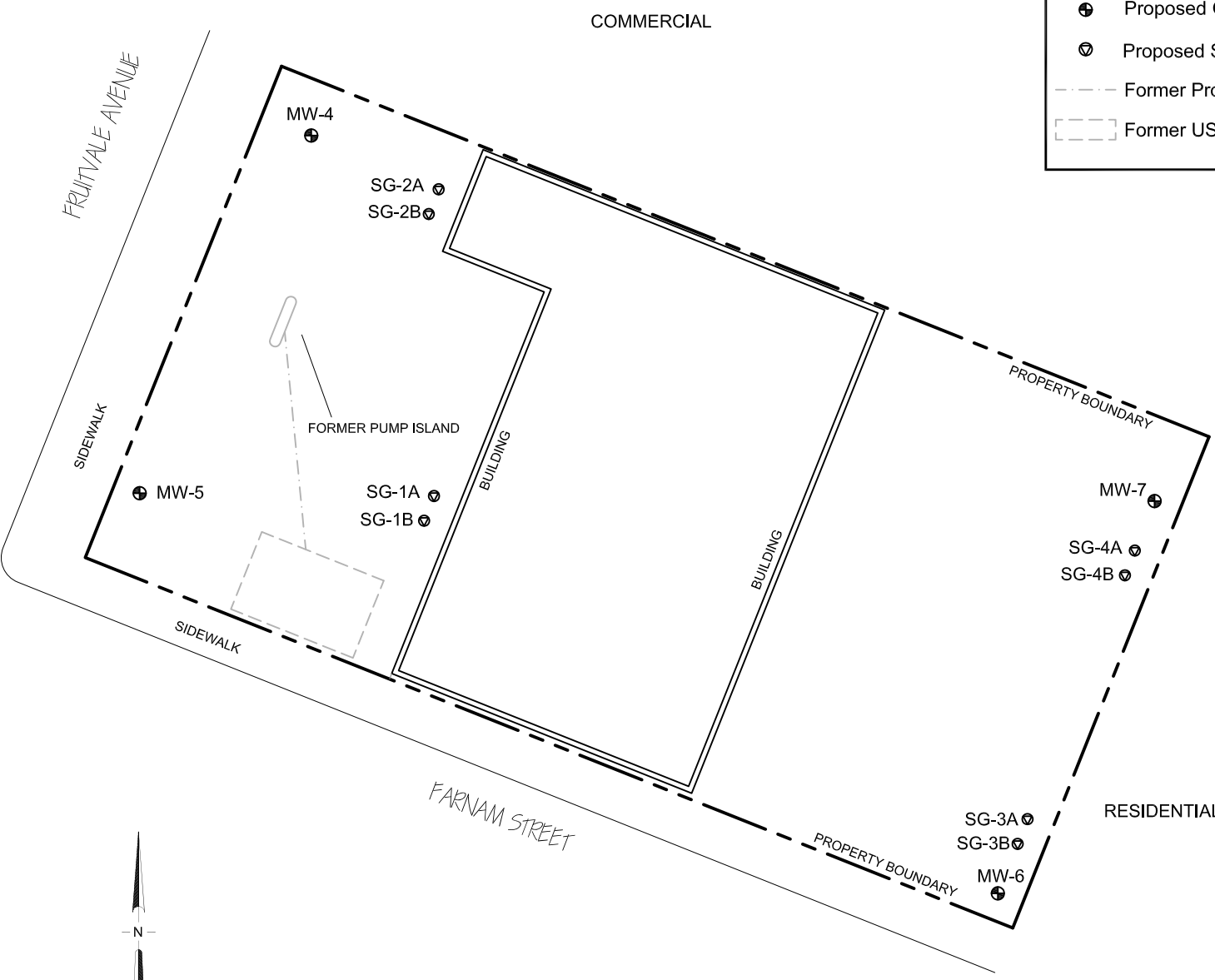
NOTE: SITE MAP ADAPTED FROM AEI CONSULTANTS FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



BROADBENT & ASSOCIATES, INC.
 ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
 1324 Mangrove Ave. Suite 212, Chico, California 95926
 Project No.: 08-88-602 Date: 6/14/2012

Former Station #402
 1450 Fruitvale Avenue
 Oakland, California

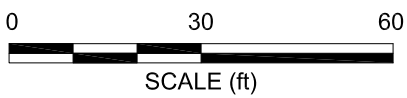
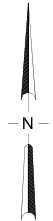
Site Map with Historic Boring and
 Monitoring Well Locations



LEGEND

- Proposed Groundwater Monitoring Well
- Proposed Soil Gas Monitoring Implant
- Former Product Lines
- Former UST Basin

NOTE: SITE MAP ADAPTED FROM AEI CONSULTANTS FIGURES
SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 08-88-602 Date: 09/06/2012

Former Station #402
1450 Fruitvale Avenue
Oakland, California

Site Map with Proposed
Sampling Locations

APPENDIX A

Historic Soil Data

Table 1 - Soil Sample Analytical Data
1450 Fruitvale Avenue, Oakland, CA - AEI Project # 10460

Sample ID	Consultant	Sample Date	TPH-g mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Xylenes mg/kg	Total Lead mg/kg
GP-1 10'	Glenfos	7/9/1998	10	-	<0.005	0.022	0.015	<0.01	-
GP-2 10'	Glenfos	7/9/1998	1.5	-	0.017	<0.005	<0.005	<0.01	-
GP-2 15'	Glenfos	7/9/1998	27	-	0.017	0.056	0.052	0.51	-
GP-2 30'	Glenfos	7/9/1998	2.5	-	<0.005	<0.005	<0.005	<0.01	-
GP-3 10'	Glenfos	7/9/1998	95	-	0.59	0.42	1.1	1.5	7.3
GP-3 15'	Glenfos	7/9/1998	2.5	-	0.055	0.018	0.055	0.26	-
GP-3 20'	Glenfos	7/9/1998	1.6	-	0.02	<0.005	0.02	0.032	-
GP-3 25'	Glenfos	7/9/1998	<1	-	<0.005	<0.005	<0.005	<0.01	-
GP-4 10'	Glenfos	7/9/1998	2.5	-	0.017	<0.005	0.003	0.021	4.1
GP-5 10'	Glenfos	7/9/1998	6.5	-	<0.005	0.022	0.018	0.041	-
GP-5 15'	Glenfos	7/9/1998	19	-	0.077	0.016	0.43	0.49	-
GP-5 20'	Glenfos	7/9/1998	<1	-	<0.005	<0.005	<0.005	<0.01	-
GP-6 5'	Glenfos	7/9/1998	<1	-	<0.005	<0.005	<0.005	<0.01	-
GP-6 10'	Glenfos	7/9/1998	7.7	-	0.008	0.015	0.012	0.047	6.2
GP-6 15'	Glenfos	7/9/1998	190	-	0.34	0.53	2.3	4.7	-
GP-6 20'	Glenfos	7/9/1998	28	-	0.083	0.081	0.052	0.19	-
GP-7 10'	Glenfos	7/9/1998	86	-	<0.005	0.088	0.09	0.5	-
GP-7 15'	Glenfos	7/9/1998	2.7	-	0.008	0.012	<0.005	0.031	-
GP-8 10'	Glenfos	7/9/1998	24	-	0.022	0.061	0.071	0.45	-
GP-8 15'	Glenfos	7/9/1998	5.8	-	0.021	0.014	0.022	0.06	-
GP-8 20'	Glenfos	8/23/1999	<1	-	<0.005	<0.005	<0.005	<0.01	-
AEI-9 10'	AEI	8/23/1999	<1	<0.05	<0.005	<0.005	<0.005	<0.005	-
AEI-9 20'	AEI	8/23/1999	<1	<0.05	<0.005	<0.005	<0.005	<0.005	-
AEI-10 10'	AEI	8/23/1999	77	<0.05	<0.005	<0.005	0.078	<0.005	-
AEI-10 15'	AEI	8/23/1999	69	0.071	0.1	0.21	0.23	<0.005	-
AEI-11 10'	AEI	8/23/1999	<1	<0.05	<0.005	<0.005	<0.005	<0.005	-
AEI-11 15'	AEI	8/23/1999	210	<0.40	<0.020	1.1	1.2	2.4	-
AEI-12 10'	AEI	8/23/1999	24	<0.05	<0.005	0.12	<0.005	<0.005	-
AEI-12 15'	AEI	8/23/1999	120	<0.40	<0.020	<0.020	1.6	1.6	-
MW-1 6.5'	AEI	9/25-26/00	<1.0	<.05	<.005	<.005	<.005	<.005	-
MW-1 11.5'	AEI	9/25-26/00	15.0	<.05	<.005	0.31	<.005	0.011	-
MW-2 6.5'	AEI	9/25-26/00	<1.0	<.05	<.005	<.005	<.005	<.005	-
MW-2 11'	AEI	9/25-26/00	73.0	<.05	<.005	0.044	0.0080	0.040	-
MW-3 6.5'	AEI	9/25-26/00	<1.0	<.05	<.005	<.005	<.005	<.005	-
MW-3 16'	AEI	9/25-26/00	360.0	<1.0	0.42	2.1	6.5	11.0	-
MDL			1.0	0.05	0.005	0.005	0.005	0.005	

MDL = Method Detection Limit

mg/kg = milligrams per kilogram (ppm)

- Sample not analyzed for this chemical

TPH-g = Total petroleum hydrocarbons as gasoline

Table 1 - Soil Sample Analytical Data: Continued
1450 Fruitvale Avenue, Oakland, CA - AEI Project # 10460

Sample ID	Date	TPH-g mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Xylenes mg/kg
AEI-13 10'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-14 10'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-15 10'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-16 10'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-16 19'	610-12/02	41	<0.2	<0.02	<0.02	0.038	0.079
AEI-17 10'	610-12/02	<1	<0.5	<0.005	<0.005	<0.005	<0.005
AEI-17 20'	610-12/02	290	<0.05	0.84	1.3	1.8	2.8
AEI-18 4'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-18 14'	610-12/02	290	<0.02*	<0.2	0.91	2.3	2.9
AEI-19 15'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-20 10'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-20 20'	610-12/02	42	<0.5	<0.05	0.20	0.12	0.15
AEI-21 5'	610-12/02	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-21 13'	610-12/02	12	<0.05	<0.005	0.090	0.028	<0.005
AEI-22 10'	610-12/02	74	<0.1	0.0086	0.58	0.11	0.26
AEI-22 20'	610-12/02	5	<0.05	0.30	0.016	0.26	0.42
AEI-23 2.5'	9/27/2002	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-24 2.5'	9/27/2002	<1	<0.05	<0.005	<0.005	<0.005	<0.005
AEI-25 2.5'	9/27/2002	<1	<0.05	<0.005	<0.005	<0.005	<0.005
MDL		1.0	0.05	0.005	0.005	0.005	0.005

MDL = Method Detection Limit

mg/kg = milligrams per kilogram (ppm)

- Sample not analyzed for this chemical

TPH-g = Total petroleum hydrocarbons as gasoline

* MTBE by EPA method 8260, all others by 602/8020

**Table 5 - Sample Analytical Data: Exploratory Excavation Project
1450 Fruitvale Avenue, Oakland, CA - AEI Project # 10460**

Sample ID	Location	TPH-g mg/kg	TPH-d mg/kg	TOG mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Xylenes mg/kg	Total Lead mg/kg
AEI EBA 6'	Exc. A - Bottom	<1.0	<1.0	<50.0	<0.05	<0.005	<0.005	<0.005	<0.005	6.9
AEI EBB 6'	Exc. B - Bottom	<1.0	<1.0	<50.0	<0.05	<0.005	<0.005	<0.005	<0.005	9.1
AEI EBW 8'	Exc. C - West	<1.0	<1.0	-	<0.05	<0.005	<0.005	<0.005	<0.005	9.4
AEI EBE 8'	Exc. C - East	11	<1.0	-	<0.05	<0.005	0.059	0.028	0.042	32
AEI EBN 8'	Exc. C - North	<1.0	<1.0	-	<0.05	<0.005	<0.005	<0.005	<0.005	8.7
AEI EBS 8'	Exc. C - South	<1.0	<1.0	-	<0.05	<0.005	<0.005	<0.005	<0.005	80

APPENDIX B

Historic Groundwater Data

**Table 2 - Groundwater Sample Analytical Data: Temporary Borings
1450 Fruitvale Avenue, Oakland, CA - AEI Project # 10460**

Sample ID	Consultant	Date	TPH-g µg/L	MTBE µg/L	Benzene µg/L	Toluene µg/L	Ethyl- Benzene µg/L	Xylenes µg/L
GP 1	Glenfos	7/9/1998	170	-	0.53	<0.5	1.2	2.0
GP 4	Glenfos	7/9/1998	210	-	<0.5	<0.5	0.58	<1
GP 5	Glenfos	7/9/1998	17,000	-	42	24	820	110
GP 8	Glenfos	7/9/1998	20,000	<10	1,000	19	420	290
AEI GW 8'	AEI	5/27/1999	<50	<5.0	<0.5	<0.5	<0.5	<0.5
AEI-9W	AEI	8/23/1999	690	3.8	72	0.79	29	24
AEI-13 W	AEI	610-12/02	<50	<5.0	<0.5	<0.5	<0.5	<0.5
AEI-14 W	AEI	610-12/02	830	<5.0	0.56	2.7	1.2	2.9
AEI-15 W	AEI	610-12/02	<50	14*	<0.5	<0.5	<0.5	<0.5
AEI-16 W	AEI	610-12/02	190	<5.0	0.86	1.0	0.75	1.3
AEI-17 W	AEI	610-12/02	1,700	<0.5*	56	2.5	89	69
AEI-18 W	AEI	610-12/02	780	<5.0	10	1.1	41	20
AEI-19 W	AEI	610-12/02	<50	<5.0	<0.5	<0.5	<0.5	<0.5
AEI-20 W	AEI	610-12/02	170	<5.0	0.81	0.55	7.7	3.1
AEI-21 W	AEI	610-12/02	2,200	2.8*	36	<5.0	110	58
AEI-22 W	AEI	610-12/02	25000	<12*	3800	290	1100	1900

MDL = Method Detection Limit

ND = Not detected above the Method Detection Limit (unless otherwise noted)

µg/L = micrograms per liter (ppb)

- Sample not analyzed for this chemical

TPH-g = Total petroleum hydrocarbons as gasoline

* MTBE by EPA method 8260, all others by 602/8020

Table 3 - Groundwater Elevation Data
1450 Fruitvale Avenue, Oakland, CA - AEI Project # 10460

Well ID (Screen - ft bgs)	Date	Well Elevation (ft msl)	Depth to Water (ft)	Groundwater Elevation (ft msl)
MW-1 (15-30)	10/16/00	42.13	17.72	24.41
	1/19/01	42.13	9.15	32.98
	4/26/01	42.13	9.40	32.73
	8/3/01	42.13	12.38	29.75
	11/5/01	42.13	16.22	25.91
	3/29/02	42.13	7.96	34.17
	6/11/02	42.13	12.18	29.95
	9/16/02	42.13	11.35	30.78
MW-2 (15-30)	10/16/00	42.08	14.98	27.10
	1/19/01	42.08	9.00	33.08
	4/26/01	42.08	8.34	33.74
	8/3/01	42.08	11.70	30.38
	11/5/01	42.08	15.08	27.00
	3/29/02	42.08	8.96	33.12
	6/11/02	42.08	12.49	29.59
	9/16/02	42.08	10.52	31.56
MW-3 (15-30)	10/16/00	42.55	17.98	24.57
	1/19/01	42.55	10.90	31.65
	4/26/01	42.55	9.21	33.34
	8/3/01	42.55	12.67	29.88
	11/5/01	42.55	15.90	26.65
	3/29/02	42.55	9.20	33.35
	6/11/02	42.55	11.83	30.72
	9/16/02	42.55	11.42	31.13

Episode #	Date	Average Water Table (ft msl)	Change from Previous Episode	Flow direction (gradient)
1	10/16/00	25.36	-	E/SE (0.116)
2	1/19/01	32.57	+7.21	E/NĒ (0.041)
3	4/26/01	33.27	+0.70	SE (0.034)
4	8/3/01	30.00	-3.27	ESE (0.024)
5	11/5/01	26.52	-3.48	SE (0.033)
6	3/29/02	33.55	+7.03	NW (0.032)
7	6/11/02	30.09	-3.46	SW (0.040)
8	9/16/02	31.16	+1.07	SE (0.028)

Notes:

All well elevations are measured from the top of the casings
ft msl = feet above mean sea level

**Table 4 - Groundwater Monitoring Well Analytical Data
1450 Fruitvale Avenue, Oakland, CA - AEI Project # 10460**

Well/Sample ID	Date Collected	Consultant/Lab	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			µg/L EPA 8015	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	10/16/00	AEI/MAI	4,500	<20	560	14	53	62
	01/19/01	AEI/MAI	13,000	<100	790	46	1,100	210
	04/26/01	AEI/MAI	7,500	<30	470	23	720	120
	08/03/01	AEI/MAI	4,500	<10	440	11	55	6.6
	11/05/01	AEI/MAI	1,700	<10	100	6.0	4.6	2.1
	03/29/02	AEI/MAI	9,500	ND<100	880	32	400	59
	06/11/02	AEI/MAI	3,400	<50	620	9.7	75	11
	09/16/02	AEI/MAI	3,800	<10	190	15.0	14	7.7
MW-2	10/16/00	AEI/MAI	4,600	<300	380	3.8	95	33
	01/19/01	AEI/MAI	4,200	<10	450	4.7	120	50
	04/26/01	AEI/MAI	5,600	<20	810	12	210	65
	08/03/01	AEI/MAI	2,900	<20	360	3	97	46
	11/05/01	AEI/MAI	2,400	<85	280	3.2	76	25
	03/29/02	AEI/MAI	7,100	ND<100	930	11	220	39
	06/11/02	AEI/MAI	4,400	<150	680	8.1	160	38
	09/16/02	AEI/MAI	7,400	<250	360	8.4	150	38
MW-3	10/16/00	AEI/MAI	12,000	<10	570	32	680	1,200
	01/19/01	AEI/MAI	27,000	<200	3,400	110	2,200	2,700
	04/26/01	AEI/MAI	33,000	<200	3,300	190	2,800	3,400
	08/03/01	AEI/MAI	23,000	<50	2,300	52	1,800	1,400
	11/05/01	AEI/MAI	30,000	<200	1,900	58	2,000	1,600
	03/29/02	AEI/MAI	29,000	ND<100	2,100	57	2,500	1,700
	06/11/02	AEI/MAI	22,000	<50	2,100	44	2,300	1,600
	09/16/02	AEI/MAI	25,000	<220	2,000	47	2,200	1,100
MRL			50.0	5.0	0.5	0.5	0.5	0.5

Fuel Oxygenates

Well/Sample ID	Date Collected	DIPE	ETBE	MTBE	TAME	TBA	EDB	1,2-DCA
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	06/11/02	-	-	2.4	-	-	-	-
	09/16/02	0.56	<0.5	<3.0	<0.5	<0.5	<0.5	<0.5
MW-2	06/11/02	-	-	23	-	-	-	-
	09/16/02	7.30	<1.2	92	<1.2	<1.2	<1.2	<1.2
MW-3	06/11/02	-	-	<2.5	-	-	-	-
	09/16/02	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MRL		0.5	0.5	0.5	0.5	5.0	0.5	0.5

MRL = Method Reporting Limit, unless otherwise shown

µg/L = micrograms per liter

AEI = AEI Consultants

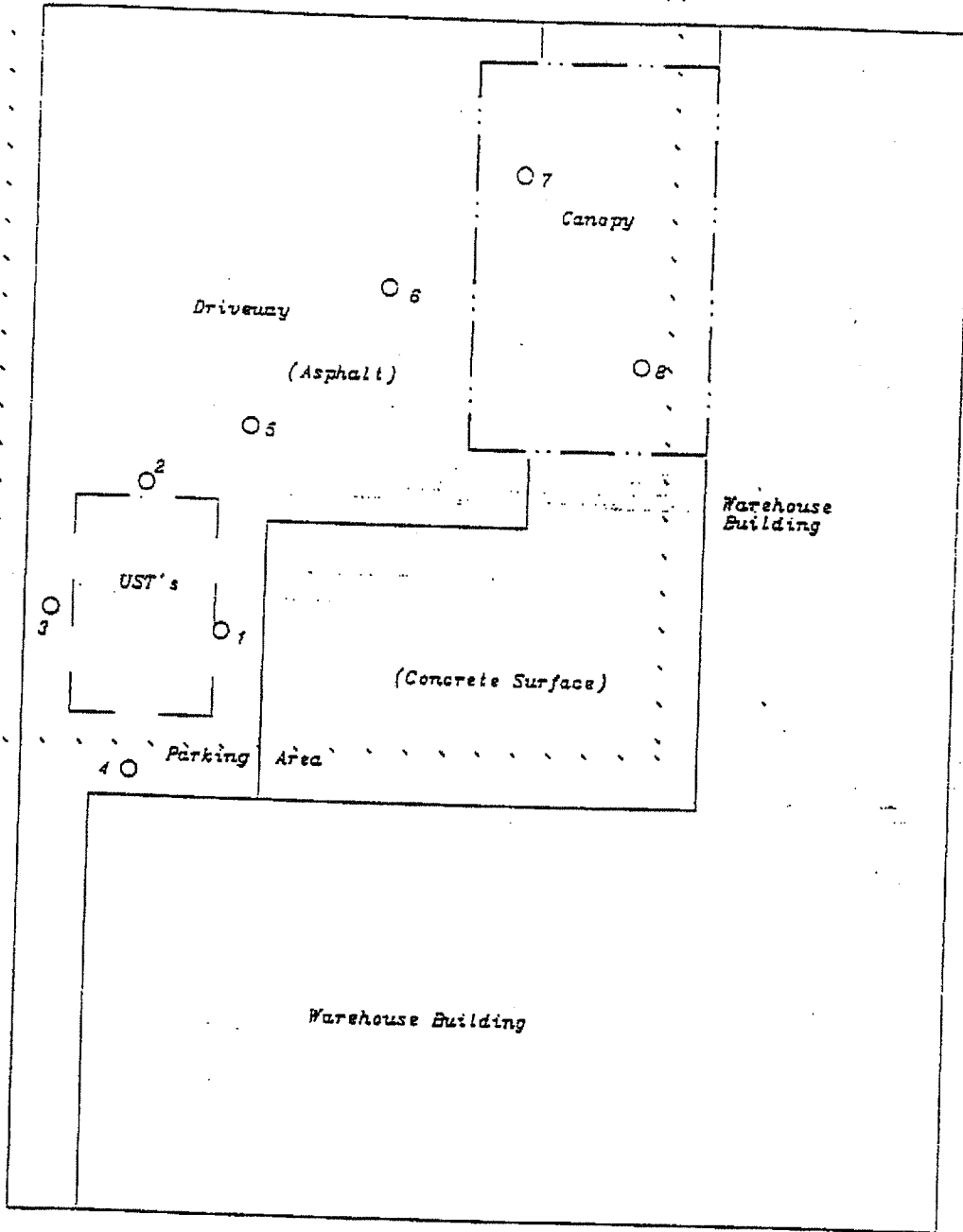
MAI = McCampbell Analytical, Inc.

TPHg = total petroleum hydrocarbons as gasoline

MTBE = methyl tertiary butyl ether

FRUITVALE AVENUE

FAYHAM STREET



150 Fruitvale Avenue
Sacramento, CA 94601
94601-081798

LENFOS, Inc.
20 TOPANGA CANYON PLACE SUITE F
DARTMOUTH, CA 91311

FACILITY
LAYOUT
MAP



NOT TO SCALE


FIGURE
2

APPENDIX C

Soil Boring/Well Construction Logs and Geologic Cross-Section

SOIL BORING LOG

Drilling Company: Gregg Drilling	Station Name:	Boring Number: GP-1
Drillers:	Address: 1450 Fruitvale	Date Drilled: July 9, 1998
Rig Type: Geoprobe GII-40	City: Oakland	Depth Drilled: 12 feet
Rig Number:	State, Zip: CA, 94601	Boring Diameter: 2 inches
Sampling Tech.: Hydraulic Push	Nearest X-Street: Fruitvale	Casing Diameter: NA
Logged By: BB Mitchell		

DEPTH BELOW SURFACE (ft.)	SAMPLE INTERVAL	GVA READING (ppm)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
					GC	1-inch asphalt, no base Fill-Clayey Gravel, some fine to coarse sand, light brown, moist, no odors
5	X	0				Same, no odor
10	X	0		TD = 12 feet		Same, soil saturated, no Hydrocarbon odor
15						
20						
25						
30						
35						
40						
45						
50						
55						

Note: Collected groundwater sample GP-1. Groundwater appears clean, and perched in the UST tank pit.

CLIENT NAME: Glendale Federal Bank	GLENFOS, INC.
PROJECT NAME: 1450 Fruitvale	Global Environmental Focus
PROJECT NUMBER: P1/P2-94601-081798	9620 Topanga Canyon Place
	Chatsworth, CA 91311

SOIL BORING LOG

Drilling Company: <u>Greer Drilling</u>	Station Name:	Boring Number: <u>GP-1</u>
Drillers:	Address: <u>1450 Fruitvale Avenue</u>	Date Drilled: <u>July 9, 1998</u>
Rig Type: <u>Geosrobe GJH-40</u>	City: <u>Oakland</u>	Depth Drilled: <u>30 feet</u>
Rig Number:	State, Zip: <u>CA 94601</u>	Boring Diameter: <u>1 inches</u>
Sampling Tech: <u>Hydraulic Push</u>	Nearest X-Street: <u>Fruitvale Street</u>	Casing Diameter: <u>NA</u>
Logged By: <u>Bill Mitchell</u>		

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	OVA READING (psi)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
0					ML	1-inch asphalt, no base.
5	X	0			ML	Clayey silt, greyish brown, moist, no Hydrocarbon odor
10	X	0			ML	Same as above, moist, no Hydrocarbon odor
15	X				ML	Same, except streaks of dark grey, and a slight odor.
20					CL	Silty clay, dark brown to grey, moist, slight to moderate Hydrocarbon odor
25						
30	X	0				
35					TD = 30 feet	Same - no Hydrocarbon odor
40						
45						
50						
55						

Notes: Groundwater not encountered.

CLIENT NAME: <u>Glendale Federal Bank</u>	<u>GLENFOS, INC.</u>
PROJECT NAME: <u>1450 Fruitvale</u>	<u>Global Environmental Focus</u>
PROJECT NUMBER: <u>P1/P2-94601-061798</u>	<u>9620 Topanga Canyon Place</u>
	<u>Chatsworth, CA 91311</u>

SOIL BORING LOG

Drilling Company: Greig Drilling	Station Name:	Boring Number: GP-1
Drillers:	Address: 1450 Fruitvale	Date Drilled: July 9, 1998
Rig Type: Geoprobe GH-60	City: Oakland	Depth Drilled: 18 feet
Rig Number	State, Zip: CA 94601	Boring Diameter: 1.5 inches
Sampling Tech: Hydraulic Push	Nearest X-Street: Carnegie Avenue	Casing Diameter: NA
Logged By: Bill Mitchell		


DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	OVA READING (ppm)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
						1-inch asphalt no base
5	X	0				Clayey silt, greenish brown, moist, no Hydrocarbon odor
10	X	210			ML	Same, moist no Hydrocarbon odor.
15	X	2				Same, moist, slight to moderate Hydrocarbon odor
20	X	39				Same, moderate Hydrocarbon odor
25	X	1			GP	Sandy Gravel, some clay, light brown, moist, no Hydrocarbon odor.
30					TD = 28 feet	
35						
40						
45						
50						
55						

Note: Groundwater not encountered

CLIENT NAME: Glendale Federal Bank	GLENFOS, INC.
PROJECT NAME: 1450 Fruitvale	Global Environmental Focus
PROJECT NUMBER: P1/P2-94601-061798	9620 Topanga Canyon Place Chatsworth, CA 91311

SOIL BORING LOG

Drilling Company: <u>Gregg Drilling</u>	Station Name: _____	Boring Number: <u>GP-4</u>
Drillers: _____	Address: <u>1450 Fruitvale Avenue</u>	Date Drilled: <u>July 9, 1998</u>
Rig Type: <u>Geoprobe GJH-40</u>	City: <u>Oakland</u>	Depth Drilled: <u>28 feet</u>
Rig Number: _____	State, Zip: <u>CA, 94601</u>	Boring Diameter: <u>2 inches</u>
Sampling Tech: <u>Hydraulic Pist</u>	Nearest X-Sheet: <u>Ferrous</u>	Casing Diameter: <u>NA</u>
Logged By: <u>Bill Mitchell</u>		

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	DVA READING (inches)	BLOW COUNTS	GRAZING LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
5	X	0			GC	1- inch asphalt, no base. Fill- Clayey Gravel, some fine to coarse sand, light brown, moist, no Hydrocarbon odor
10	X	468			ML TD = 12 feet	Sandy Silt, some gravel, light brown with streaks of greenish grey, strong Hydrocarbon odor
15						
20						
25						
30						
35						
40						
45						
50						
55						

Note: Groundwater collected at a depth of 10 feet. Obtained sample GP-4 Groundwater had no Hydrocarbon odor and appears to have been perched UST pit.

CLIENT NAME: <u>Glendale Federal Bank</u>	GLENFOS, INC.
PROJECT NAME: <u>1450 Fruitvale</u>	Global Environmental Focus
PROJECT NUMBER: <u>P1/P2-94601-061798</u>	9620 Topanga Canyon Place Chatsworth, CA 91311

SOIL BORING LOG

Drilling Company: Grege Drilllog	Station Name:	Boring Number: CP-3
Drillers:	Address: 1450 Fruitvale	Date Drilled: July 9, 1998
Rig Type: Geoprobe GII-40	City: Oakland	Depth Drilled: 11 feet
Rig Number	State, Zip: CA 94601	Boring Diameter: 2 inches
Sampling Tech.: Hydraulic Puck	Nearest X-Sect: Farasm	Casing Diameter: NA
Logged By: Bill Mitchell		

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	GVA READING (psf)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
						1-inch asphalt, no base Clayey silt, greyish brown, moist, no Hydrocarbon odor
5	X				ML	Same, moist, no Hydrocarbon odor.
10	X					
15	X				CL	Clayey silt, greyish brown to grey, with black streaks, moist moderate Hydrocarbon odor.
20	X				ML	Silty clay, dark brown to grey, moist moderate Hydrocarbon odor.
					TD = 22 feet	Clayey silt, some fine gravel, greyish brown with black streaks, moist slight Hydrocarbon odor.
25						
30						
35						
40						
45						
50						
55						

CLIENT NAME: Glendale Federal Bank	GLENFOS, INC.
PROJECT NAME: 1450 Fruitvale	Global Environmental Focus
PROJECT NUMBER: P1/P2-94601	9620 Topanga Canyon Place Chatsworth, CA 91311

SOIL BORING LOG

Drilling Company: Gregg Drilling	Station Name:	Boring Number: CP-4
Drillers:	Address: 1450 Fruitvale	Date Drilled: July 9, 1994
Rig Type: Geoprobe CH-40	City: Oakland	Depth Drilled: 22 feet
Rig Number:	State, Zip: CA 94601	Boring Diameter: 1.625 inches
Sampling Tool: Hydraulic Probe	Nearest X-Street: Fruitvale	Casing Diameter: NA
Logged By: Bill Mitchell		

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	OYA READING (ft)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
0						1-inch asphalt, no base
5	X	0			ML	Clayey silt, greyish brown, moist, no Hydrocarbon odor
10	X	15				Same, moist, no Hydrocarbon odor
15	X	14			CL	Clayey silt, greyish brown with black streaks, moist, moderate Hydrocarbon
20	X	1			GP	Silty Clay, dark brown to grey, moist, moderate Hydrocarbon odor
25						Clayey silt, some fine gravel, greyish brown with black streaks, moist, slight Hydrocarbon odor
30						
35						
40						
45						
50						
55						

TD = 22 feet

Notes: Groundwater encountered at 20 feet, rose to 9 feet in 10 minutes. Collected sample GP-4. Strong Hydrocarbon odor, and a petroleum sheen observed.

CLIENT NAME:	Glendale Federal Bank	GLENFOS, INC.
PROJECT NAME:	1450 Fruitvale	Global Environmental Focus
PROJECT NUMBER:	P1/P2-94601-061798	9620 Topanga Canyon Place
		Chatsworth, CA 91311

SOIL BORING LOG

Drilling Company: <u>Gregg Drilling</u>	Station Name: _____	Boring Number: <u>GP-7</u>
Drillers: _____	Address: <u>1458 Fruitvale</u>	Date Drilled: <u>July 9, 1998</u>
Rig Type: <u>Geoprobe CH-40</u>	City: <u>Oakland</u>	Depth Drilled: <u>21 feet</u>
Rig Number: _____	State, Zip: <u>CA 94601</u>	Boring Diameter: <u>3 inches</u>
Sampling Tech: <u>Hydraulic Pasa</u>	Nearest X-Sect: <u>Fairfax</u>	Casing Diameter: <u>NA</u>
Logged By: <u>Bill Mitchell</u>		

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	OVA READING (ppm)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
5	X	100			ML	1-inch asphalt, no base Clayey silt, greyish brown, moist, no Hydrocarbon odor
10	X	323			ML	Same, moist, strong Hydrocarbon odor Sandy silt, some gravel, light brown with streaks of greenish grey, moist, strong Hydrocarbon odor
15	X	25			ML	Silty Clay, dark brown to grey, moist, moderate Hydrocarbon odor
20		136			TD = 16 feet	Sandy gravel, some clay, light brown, moist, moderate Hydrocarbon odor
25						
30						
35						
40						
45						
50						
55						

note: Groundwater not encountered

CLIENT NAME: <u>Glendale Federal Bank</u>	GLENFOS, INC.
PROJECT NAME: <u>1450 Fruitvale</u>	Global Environmental Focus
PROJECT NUMBER: <u>P1/P2-94601-081798</u>	9520 Topanga Canyon Place Chatsworth, CA 91311

SOIL BORING LOG

Drilling Company: Gregg Drilling	Station Name:	Boring Number: GP-5
Driller:	Address: 1450 Fruitvale	Date Drilled: July 9, 1998
Rig Type: Geoprobe CH-40	City: Oakland	Depth Drilled: 16 feet
Rig Number:	State, Zip: CA 94601	Boring Diameter: 2 inches
Sampling Tech.: Hydraulic Push	Nearest X-Sect: Ferrous	Casing Diameter: NA
Logged By: Bill Mitchell		

DEPTH BELOW SURFACE (ft.)	SAMPLE INTERVAL	OYA READING (feet)	BLOW COUNTS	GRAPHIC LOG	SOIL CLASSIFICATION	SOIL DESCRIPTION <small>Color, Texture, Moisture</small>
						0.5 inch concrete, no base Clayey silt, grayish brown, moist, no Hydrocarbon odor
5	X	5			ML	Same, moist, slight Hydrocarbon odor
10	X	85			ML	Sandy silt, some gravel, light brown with streaks of grey, strong Hydrocarbon odor
15	X	38				Same, moist, slight to moderate Hydrocarbon odor
20	X				GP	
					TD = 22 feet	
25						
30						
35						
40						
45						
50						
55						

Note: Groundwater not encountered

CLIENT NAME: Glendale Federal Bank	GLENFOS, INC.
PROJECT NAME: 1450 Fruitvale Avenue	Global Environmental Focus
PROJECT NUMBER: P1/P2-94601-061798	9620 Topanga Canyon Place Chatsworth, CA 91311

Project No: 3397


































Sheet: 1 of 1

Project Name: FRUITVALE

Log of Borehole: AEI-9

Client: JAY-PHARES CORP

Location: WESTERN CORNER

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
1		ASPHALT						
2		CLAY Silty and sandy clay						
3								
4								
5			AEI-9 5'	SS		100	No hydrocarbon odor	
6								
7								
8								
9								
10		Sandy clay with gravel up to 2 cm	AEI-9 10'	SS		100	No hydrocarbon odor	
11								
12								
13								
14								
15		Stiff silty clay	AEI-9 15'	SS		45	Groundwater after 15 min. No hydrocarbon odor	
16								
17								
18								
19								
20			AEI-9 20'	SS		80	Strong hydrocarbon odor	
21								
22								
23								
24								
25		GRAVEL Coarse sandy gravel up to 3 cm, clast supported						
26								
27								
28								
29								
30		CLAY Silty clay with gravel up to 2.5 cm	AEI-9 30'	SS		90	No hydrocarbon odor Groundwater initially observed	
31								
32								
33		End of Borehole						
34								
35								
36								

Drill Date 9/28/99

Reviewed by: JPD

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Lafayette, CA 94549
(800) 801-3224

Drill Method: DIRECT PUSH

Logged by: PJM

Total Depth: 32 ft.

Depth to Water: 14 ft.

Project No: 3397

Sheet: 1 of 1

Project Name: FRUITVALE

Log of Borehole: AEI-10

Client: JAY-PHARES CORP

Location: SOUTHERN PORTION, NEAREST EXCAVATION

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
0		CONCRETE						
1		CLAY						
1		Silty clay, moderately plastic						
5			AEI-10 5'	SS		100	Moderate hydrocarbon odor	
10		Stiff silty clay with fine sand	AEI-10 10'	SS		100	Moderate hydrocarbon odor	
15			AEI-10 15'	SS		100	Mild hydrocarbon odor	
20		Sandy clay, damp	AEI-10 20'	SS		100	No hydrocarbon odor	
25			AEI-10 25'	SS		50	No hydrocarbon odor	
30		Stiff silty clay	AEI-10 30'	SS		100	No hydrocarbon odor	
33		End of Borehole					No groundwater generation	

Drill Date 9/28/99
 Drill Method: DIRECT PUSH
 Total Depth: 33 ft.
 Depth to Water: NA

Reviewed by: JPD
 Logged by: PJM

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Project No: 3397

Sheet: 1 of 1

Project Name: FRUITVALE

Log of Borehole: AEI-11

Client: JAY-PHARES CORP

Location: SOUTH EAST OF FORMER DISPENSERS

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
0	XXXX	ASPHALT						
1	XXXX	CLAY						
1	XXXX	Silty clay, moderately plastic						
4	XXXX	Gravel present at 5%	AEI-11 5'	SS		60	No hydrocarbon odor	
10	XXXX	Stiff silty clay	AEI-11 10'	SS		100	No hydrocarbon odor	
15	XXXX		AEI-11 15'	SS		100	Strong hydrocarbon odor	
20	XXXX		AEI-11 20'	SS		5	No sample recovery	
24	XXXX	Stiff sandy clay, locally damp						
30	XXXX		AEI-11 30'	SS		20	No hydrocarbon odor Not sufficient soil collected	
33		End of Borehole					No groundwater generation	

Drill Date 9/28/99

Reviewed by: JPD

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Drill Method: DIRECT PUSH

Logged by: PJM

Total Depth: 33 ft.

Depth to Water: NA

Project No: 3397

Sheet: 1 of 1

Project Name: FRUITVALE

Log of Borehole: AEI-12

Client: JAY-PHARES CORP

Location: NORTH OF FORMER DISPENSERS

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
0		CONCRETE						
1		CLAY						
1		Stiff clay with minor sand						
5			AEI-12 5'	SS		60	No hydrocarbon odor	
10		Sandy clay w/ coarse gravel up to 2.5 cm, unconsolidated	AEI-12 10'	SS		90	Mild hydrocarbon odor	
15		Stiff silty clay, dry	AEI-12 15'	SS		85	Moderate hydrocarbon odor	
20			AEI-12 20'	SS		15	No sample recovery	
22		Silty clay						
30							Groundwater sample exposed between 30 and 34 feet bgs.	
34							No groundwater generation	
34		End of Borehole						

Drill Date 9/28/99

Reviewed by: JPD

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Drill Method: DIRECT PUSH

Logged by: PJM

Total Depth: 34 ft.

Depth to Water: NA

Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-13

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			<i>Hand Auger</i> Black, earthy soils						Slight HC odor
4									PID <1 ppm
6			<i>Clay</i> Sandy, grey color	AEI-13 5'	SS				
8									
10			<i>Clay</i> Firm clay, less sand, redish/grey mottled appearance	AEI-13 10'	SS				Slight HC odor
12									PID <1 ppm
14									
16			<i>Clay</i> Stiff, tan color, very few sands	AEI-13 15'	SS				
18									
20			<i>Clay</i> Gravelly, sandy						PID <1 ppm
22									
24			<i>Clay</i> Stiff, tan color, 10-20 % sands	AEI-13 20'	SS				PID <1 ppm
26									
28									
30			<i>Sand</i> Silty w/ lots of gravels	AEI-25'	SS				Slight HC odor
32			End of Borehole	AEI-13 30'	SS				
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 30
 Depth to Water: 14.5

Reviewed by:
 Logged by: AW

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Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-14

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			Hand Auger Black, earthy soils						
4									
6			Clay Sandy, brown color						
8									
10			Clay Stiff, olive green color, some gravels	AEI-14 10'	SS				PID 2 ppm
12			Clay Firm, very sandy, green/brown mottled appearance						Slight HC odor
14									PID 1 ppm
16			Clay Stiff, olive green color	AEI-14 15'	SS				
18									Slight HC odor
20			Clay Gravelly, 30% gravels, olive color	AEI-14 20'	SS				PID 4 ppm
22									
24									No HC odor
26				AEI-14 25'	SS				
28			Clay Soft, very wet, tan color						
30				AEI-14 30'	SS				
32			Sand Clayey w/ some gravels, wet and dry layers						
34									

Drill Date 6/10/02

Reviewed by:

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Drill Method: Direct Push

Logged by: AW

Total Depth: 35

Depth to Water: 32

Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-15

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			Sand Clayey, some gravels, black color						No HC odor
4									
6			Clay Very sandy, some gravels, tan color	AEI-15 5'	SS				PID <1ppm
8									
10				AEI-15 10'	SS				
12			Clay Gravelly, black color						
14									
16			Sand Black color, gravelly	AEI-15 15'	SS				PID <1 ppm
18									
20			Clay Dry, sandy, gravelly, brown color	AEI-15 18'	SS				No HC odor PID <1 ppm
22									
24					AEI-15 24'	SS			
26			Gravel Mixed with firm brown clays and some sands						
28									
30			End of Borehole	AEI-15 30'	SS				
32									
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 30
 Depth to Water: 23

Reviewed by:
 Logged by: AW

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Project No: 5183

Sheet 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-16

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2	[Diagonal Hatching]		Clay Stiff, gravelly 10-20%, black					No HC odor	
4									
6	[Diagonal Hatching]		Clay Firm, gravel 50%, brown color	AEI-16 5'	SS			PID <1ppm	
8									
10				AEI-16 10'	SS				
12									
14	[Diagonal Hatching]		Clay Stiff, tan color	AEI-16 15'	SS			PID <1 ppm HC odor	
16									
18	[Diagonal Hatching]		Clay Stiff, olive green color, minor gravels	AEI-16 19'	SS			PID 309 ppm	
20									
22	[Diagonal Hatching]		Clay Stiff, sandy, brownish/green mottled color					PID 17 ppm	
24									
26	[Diagonal Hatching]		Clay Gravelly, sandy, wet	AEI-16 25'	SS				
28			Clay Mottled grey/green/bron appearance, gravelly, wet						
30			End of Borehole						
32									
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 30
 Depth to Water: 28

Reviewed by:
 Logged by: AW

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Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-17

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			Soil Firm, clayey, black color						No HC odor
4			Clay Firm, green color, some gravels and sands 20-30%						No HC odor
6									Strong HC odor
8			Sand Brown, gravelly, some clay	AEI-17 10'	SS				Slight HC odor
10									
12			Clay Stiff, olive green color, minor gravels	AEI-17 15'	SS				
14									
16			Clay Stiff, green color	AEI-17 20'	SS				
18									
20			Clay Stiff, green color	AEI-17 25'	SS				
22									
24			Clay Stiff, green	AEI-17 30'	SS				
26									
28			Clay Tan, saturated						
30									
32									
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 35
 Depth to Water: 23.5

Reviewed by:
 Logged by: AW

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Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-18

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			Soil Firm, black color, 20% gravels						
4			Clay Stiff, brownish, 20% sand	AEI-18 4'	SS				PID 112 ppm
6									Slight HC odor
10			Clay Stiff, green color	AEI-18 10'	SS				Strong HC odor
12									PID 112 ppm
14			Clay Stiff, 40% sand and gravels, olive green/orange mottled appearance	AEI-18 14'	SS				PID 181 ppm
16									Slight HC odor
20			Clay Firm, brownish color, slightly wet						PID 46 ppm
22									Strong HC odor
24				AEI-18 25'	SS				
26			Clay Stiff, green						
28			Silt Isolated lens						
30				AEI-18 30'	SS				PID <1 ppm
32			Clay Stiff, brown, 40% gravels						
34									

Drill Date 6/10/02

Reviewed by:

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Drill Method: Direct Push

Logged by: AW

Total Depth: 35

Depth to Water: 25.3

Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-19

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			<i>Soil</i> Firm, black color, 20% gravels						
4									
6									
8			<i>Clay</i> Stiff, brownish, 20% gravels						No HC odor
10				AEI-19 10'	SS				PID <1 ppm
12									
14									
16				AEI-19 15'	SS				PID <1 ppm
18			<i>Clay</i> Stiff, green color, fine grained						HC odor
20				AEI-19 20'	SS				PID 9 ppm
22									
24			<i>Clay</i> Firm, brown, 20% gravels						PID 3 ppm
26			End of Borehole	AEI-19 25'	SS				
28									
30									
32									
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 25
 Depth to Water: 20.5

Reviewed by:
 Logged by: AW

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Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-20

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			<i>Soil</i> Firm, black color, sandy						
4									
6				AEI-20 5'	SS			PID <1 ppm	
8									
10			<i>Clay</i> Soft, brown, 30% sand	AEI-20 10'	SS			PID 2 ppm	
12								Slight HC odor	
14									
16			<i>Clay</i> Stiff, green color	AEI-20 15'	SS			PID 4 ppm	
18			<i>Clay</i> Firm, brown, 30% sand					HC odor	
20			<i>Clay</i> Stiff, green color, 40% gravels	AEI-20 20'	SS			PID 12 ppm	
22								▼	
24								HC odor	
26				AEI-20 25'	SS			PID 13 ppm	
28			<i>Clay</i> Stiff, green/grey color w/ some orange sands						
30								PID 8 ppm	
32								Slight HC odor	
34			<i>Sand</i> Firm, wet, clayey	AEI-20 33'	SS				

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 35
 Depth to Water: 22

Reviewed by:
 Logged by: AW

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 Lafayette, CA 94549
 (925) 283-8000

Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-21

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			Soil Firm, black color, 30% sand					Slight HC odor	
4			Clay Firm, olive green color, 5% sand	AEI-21 5'	SS			HC odor	
6									
8									
10			Clay Stiff, olive green color, 20% gravels	AEI-21 9'	SS				
12									
14			Clay Stiff, olive green color, fine grained, 5% sands	AEI-21 13'	SS			Strong HC odor	
16				AEI-21 15'	SS			PID 239 ppm	
18									
20			Gravels Isolated layer	AEI-21 20'	SS			PID 38 ppm	
22									
24			Sand Firm, grey color, clayey	AEI-21 24'	SS			PID 124 ppm	
26			Clay Very sandy w/ gravels, brown color						
28			End of Borehole						
30									
32									
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 28
 Depth to Water: 13

Reviewed by:
 Logged by: AW

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Project No: 5183

Sheet: 1 of 1

Project Name: Fruitvale

Log of Borehole: SB-22

Client: PHUA

Location: Oakland, CA

Depth	USCS		Subsurface Description	Sample Data				Well Data	Remarks
	Symbol	Label		Sample Label	Type	Blow/ft	Recovery		
0			Ground Surface						
2			<i>Soil</i> Firm, sands and gravels present						
4			<i>Clay</i> Stiff w/ fine sands and silts, dk brown	AEI-22 5'	SS				
6									
8			<i>Clay</i> Stiff, olive green color, 10% gravels	AEI-22 10'	SS				HC odor
10									
12									
14			<i>Clay</i> Stiff, olive green color, gravel locally	AEI-22 15'	SS				
16									
18			<i>Clay</i> Stiff, olive green color, gravel locally	AEI-22 20'	SS				Slight HC odor
20									
22			End of Borehole	AEI-22 25'	SS				
24									
26									
28									
30									
32									
34									

Drill Date 6/10/02
 Drill Method: Direct Push
 Total Depth: 25
 Depth to Water: 19

Reviewed by:
 Logged by: AW

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Project No: 3581

Sheet: 1 of 1

Project Name: Jay Phares Corp.

Log of Borehole: MW-1

Client: Ken Phares

Location: 1450 Fruitvale Avenue

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0 0		Ground Surface						
1 1		CLAY						
2 2								
3 3								
4 4								
5 5								
6 2		dark silty clay	MW-1	SS			PID= 3 ppm, no odor	
7 7								
8 8								
9 9								
10 3								
11 11								
12 12		sandy clay w/coarse gravel	MW-1	SS			PID= 193 ppm, grey green staining, strong odor	
13 13								
14 4								
15 15								
16 5								
17 17								
18 18								
19 19								
20 6								
21 21								
22 22		SAND	MW-1	SS			PID= 29 ppm, wet grey	
23 7		sandy gravel						
24 24								
25 25								
26 8								
27 27								
28 28								
29 9								
30 30								
31 31		End of Borehole						
32 32								

Drill Date 09/25/00

Reviewed by: PM

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Drill Method: HS

Logged by: NW

Total Depth: 30'

Depth to Water: ~15'

Project No: 3581




Sheet: 1 of 1

Project Name: Jay Phares Corp.

Log of Borehole: MW-2

Client: Ken Phares

Location: 1450 Fruitvale Avenue

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
1		CLAY dark silty clay						
2								
3								
4								
5								
6								
7		sandy clay, coarse gravel	MW-2	SS			PID= 0 ppm, no odor	
8								
9								
10								
11		SAND gravelly sand	MW-2	SS			PID= 368 ppm, strong odor green staining, tree roots present	
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22			MW-2	SS			PID= 10 ppm, wet noticeable odor, green staining	
23								
24								
25								
26								
27								
28								
29								
30								
31		End of Borehole						
32								

Drill Date 09/25/00

Reviewed by: PM

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Drill Method: HS

Logged by: NW

Total Depth: 30'

Depth to Water: ~15'

Project No: 3581

Sheet: 1 of 1

Project Name: Jay Phares Corp.

Log of Borehole: MW-3

Client: Ken Phares

Location: 1450 Fruitvale Avenue

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
1		CLAY brown silty clay w/ organic matter to 5'						
2								
3								
4								
5								
6								
7		silty clay, stiff	MW-3	SS			PID= 20 ppm, dark green staining, strong odor	
8								
9								
10								
11		silty gravelly clay intermixed w/coarse gravel	MW-3	SS			PID= 220 ppm, green staining strong odor	
12								
13								
14								
15								
16		stiff silty clay	MW-3	SS			PID= 522 ppm, light grey green staining, strong odor	
17								
18								
19								
20								
21								
22		gravelly sandy clay / light brown clayey sand	MW-3	SS			PID= 19 ppm, light odor	
23								
24								
25								
26								
27		gravelly sandy silt, light brown	MW-3	SS			no odor or staining	
28								
29								
30								
31		End of Borehole						
32								

Drill Date 09/25/00

Reviewed by: PM

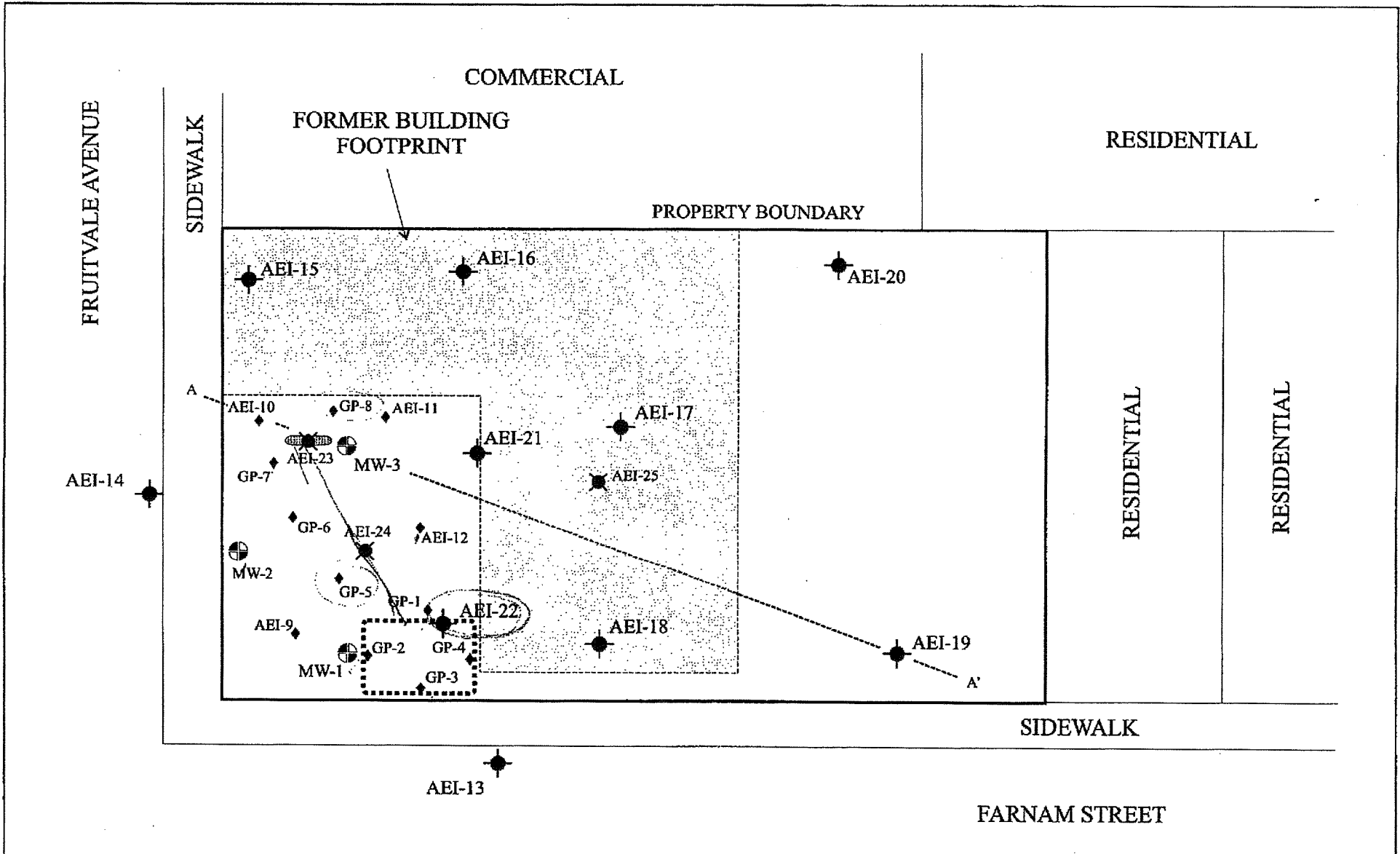
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Lafayette, CA 94549
(925) 283-6000

Drill Method: HS

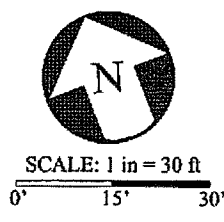
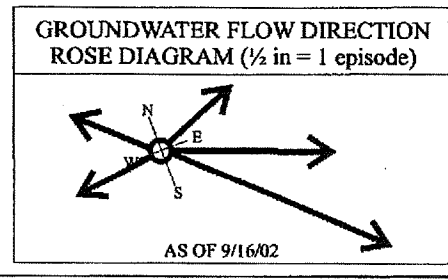
Logged by: NW

Total Depth: 30'

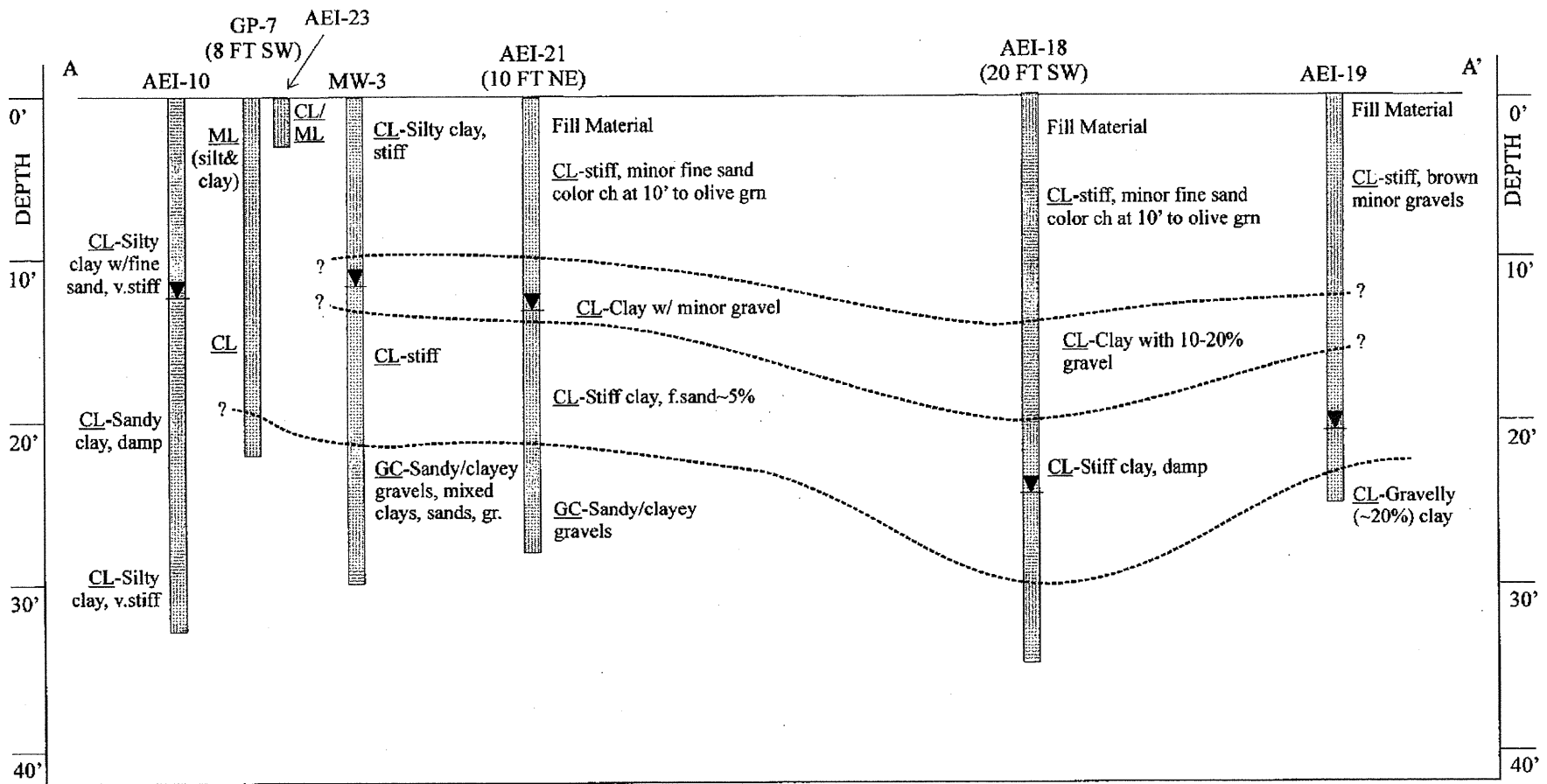
Depth to Water: ~15'



KEY	
	Existing 2" Monitoring Wells
	Temporary Borings: 1998-1999
	Temporary Borings: June 2002
	Hand Auger Borings: Sept. 2002



AEI CONSULTANTS 3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA	
BORING AND WELL LOCATIONS	
1450 FRUITVALE AVENUE OAKLAND, CALIFORNIA	FIGURE 4 AEI PROJECT NO 5624



--- APPROXIMATE SOIL TYPE BOUNDARY

▼ WATER LEVEL MEASURED IN WELLS OR TEMPORARY BORINGS

VERTICAL SCALE: 1 in = ~ 10 ft
HORIZONTAL SCALE: 1 in = ~20 ft

Abbreviations
ML = Silts
GC = Clayey Gravel
CL = Clay, silty, sandy, or gravelly clay

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CROSS SECTION A-A'

1450 FRUITVALE AVENUE
OAKLAND, CALIFORNIA

FIGURE 6
AEI PROJECT NO 10460