

July 17, 2000

Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

6419

Subject: Well Installation Workplan
1450 Fruitvale Avenue
Oakland, California
AEI Project No. 3581

Dear Mr. Chan:

Enclosed is the workplan for the installation of three wells at the above referenced site.

Please call me at (925) 283-6000 if you have any questions.

Sincerely,



Peter McIntyre
Project Geologist

o need a well near GP-8 near existing & proposed buildings

July 17, 2000

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: **Workplan**
1450 Fruitvale Avenue
Oakland, California
Project No. 3581

Dear Mr. Chan:

The following workplan has been prepared in response to your request for groundwater investigation at the above referenced site. The workplan describes activities to install three groundwater monitoring wells. AEI is providing environmental consulting and engineering services to the Jay-Phares Corporation, the property owner, and is submitting this letter on their behalf.

Site Description and Background

The property is located on the eastern corner of Fruitvale Avenue and Farnam Street in a residential and commercial area of the city of Oakland. The property is approximately 11,000 square feet in size and is developed with a three-story building that occupies two-thirds of the parcel. The western corner of the parcel is improved with an asphalt parking lot. The property is currently vacant.

Glenfos, Inc performed an environmental site assessment (ESA) on the property in July 1998. The ESA indicated that the property was developed as a gas station in 1950 by Richfield Oil (currently known as ARCO) and operated until at least 1983. There were four underground storage tanks located in the southwest corner of the current parking lot. The fuel dispenser island was located on the northeast corner of the current parking lot. The gas station was demolished and the existing warehouse was constructed after 1983.

This ESA included the advancement of eight (8) shallow soil borings to between 15 and 30 feet below ground surface (bgs) and the collection of soil and groundwater samples (refer to Figure 3 for boring locations). Soil sample analysis indicated that Total Petroleum Hydrocarbons (TPH) as gasoline and benzene were present along the former product piping at 190 mg/kg and 0.34 mg/kg, respectively. Groundwater sample analysis revealed impacted groundwater beneath the area of the former dispensers with TPH as gasoline up to 20,000 µg/L and benzene up to 1,000 µg/L. A geophysical survey was

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also performed on the property as part of the ESA, and based on the results of the survey, Glenfos concluded that, "the USTs may still be present".

On May 27, 1999, AEI was contracted to excavate the locations of the suspected USTs and remove them if necessary. Three excavations were opened on the site in the locations shown in Figure 2. No underground storage tanks or any remaining product piping were encountered during the excavation activities. No significant concentrations of petroleum hydrocarbons were detected in the confirmation soil samples analyzed. The excavations were backfilled with the excavated soil.

Please refer to the *Subsurface Investigation* report issued by AEI on June 11, 1999 for the results of the excavation and sampling activities as well as an appended copy of the *Glenfos* report.

On July 21, 1999, AEI reviewed building records at the Oakland Building Department (OBD) for information regarding the former locations of the USTs and product dispensers. According to a site plan of the former gasoline station, four USTs were located on the southern corner of the lot, just outside of the building, oriented perpendicular to Farnam Street. The dispensers were located on the northern corner of the property, beneath the canopy.

At the request of the Alameda County Health Care Services Agency (ACHCSA), AEI performed an additional subsurface investigation at the site in August 1999. This investigation revealed TPH as gasoline present in the soil up to 210 mg/kg, with no significant concentrations of benzene or MTBE. Groundwater samples analyzed during this investigation contained TPH as gasoline at 690 µg/L and benzene at 72 µg/L. Soil sample analytical results indicate that the release occurred along the product piping or from the dispensers, no significant concentrations of petroleum hydrocarbons have been detected around the former tank hold. Please refer to the Figure 3 and Tables 1 & 2 for previous AEI and Glenfos sampling locations and analytical results.

Based on the results of the August 1999 investigation and the groundwater samples analyzed by Glenfos, the ACHCSA requested the installation of a minimum of three groundwater monitoring wells to confirm the groundwater flow direction beneath the site and assess the stability of the dissolved hydrocarbon plume.

Geologic Conditions

The native soil beneath the site encountered during the previous subsurface investigations consisted generally of stiff silty and sandy clay. Gravel was encountered locally in some of the borings. Groundwater was encountered at between 10 and 30 feet below ground surface (bgs). Groundwater was not encountered in several borings. The vicinity of the

site is generally flat, however the regional topography slopes gently to the south/southwest. The nearest surface water is the Brooklyn Basin Tidal Canal, located 3,400 feet south/southwest of the site. Groundwater beneath the site is expected to flow to the south/southwest.

Scope of Work

AEI proposes to advance three soil borings (AEI MW-1 through AEI MW-3) at the site in the locations shown on Figure 4. The soil borings will be converted to two inch groundwater monitoring wells.

TABLE 1 – Soil Boring/Monitoring Well Information

SOIL BORING/ MONITORING WELL	LOCATION	RATIONAL	DEPTH (FT)
AEI MW-1	Western edge of property	Assess westerly extent of soil and groundwater impact, determine groundwater flow direction and gradient	35
AEI MW-2	North of former product piping	Assess northerly extent of soil and groundwater impact, determine groundwater flow direction and gradient	35
AEI MW-3	Southeast of former dispenser location	Assess southerly extent of soil and groundwater impact, determine groundwater flow direction and gradient	35

A Mobile B-57 or CME 75 hydraulic rotary drill with 6.25" I.D. by 10.5" O.D. hollow stem augers will be used to drill the borings. The borings will be drilled to first encountered groundwater plus approximately 10 feet, corresponding to a maximum depth of approximately 40 feet bgs.

The soil borings will be logged on-site by an AEI geologist using the Unified Soil Classification System. Undisturbed soil samples will be collected at 5 foot intervals, starting at 5 feet bgs until groundwater is encountered, for visual classification and chemical analysis. Two soil samples from each boring will be analyzed at a state certified laboratory as determined by the on-site geologist. Soil samples obtained during drilling will be screened in the field via portable organic vapor meter.

All soil samples will be secured using teflon tape and plastic caps. All samples will be put on ice and transported, under chain of custody procedures to McCampbell Analytical, Inc. of Pacheco, California. Selected soil samples will be analyzed for TPH as gasoline (EPA method 3550/8015), benzene, toluene, ethylbenzene and xylenes (BTEX) methyl tertiary butyl ether (MTBE) (EPA method 5030/8020), and total lead (EPA method 6010).

unnecessary

unnecessary

All sampling equipment will be cleaned in buckets with brushes with a TSP or Alconox solution, then rinsed twice with tap water. The drilling augers will be steam cleaned prior to drilling. Rinsate will be contained on-site in sealed, labeled drums.

Cuttings generated during drilling will be stored on-site in 55 gallon drums. The soil will be sampled, analyzed and disposed of at an appropriate facility.

The monitoring wells will be constructed of 2" flush threaded Schedule 40 PVC casing, with up to 15 feet of .01" or .02" factory-slotted well screen. The top of the well screen will extend up to 6 feet above the encountered groundwater level to account for static water level establishment and seasonal fluctuations. The well casing will be inserted through the augers to a point a few inches above the borehole terminus where it will be suspended until the well is secured within the sand pack. Sand (#2 or #3) will be poured through the augers in one- to two-foot lifts up to two feet above the top of the perforated casing. Two feet of bentonite pellets will be placed above the sand and activated with tap water. The seal will be finished up to the surface with cement/bentonite grout. A locking top cap and a flush-mounted, traffic rated, watertight well cover will be installed.

The wells will be developed by bailing water into a DOT 17H drum until the water appears to be reasonably clear with a minimum of 10 well volumes removed. Well development will take place no less than 72 hours after installation of the wells.

Prior to obtaining water samples from the monitoring wells, no less than 3 well volumes of water will be bailed from the wells. Groundwater will be checked for sheen and free product prior to purging and sampling. Samples will be obtained in plastic disposable bailers, secured in 40-milliliter volatile organic analysis vials and amber liter bottles, placed in a cooler with wet ice and transported, under chain of custody procedures to the laboratory. Water samples will be analyzed for TPH as gasoline, BTEX and MTBE.

The three wells will be surveyed to Mean Sea Level, with an accuracy of 0.01 foot for calculation of groundwater flow direction and gradient.

Site Safety

Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting. Also, the hazards of the known or suspected chemicals of interest will be explained. Level D personal protection equipment is the anticipated maximum amount of protection needed. A site safety plan conforming to Part 1910.120 (i) (2) of 29 CFR will be on site at all times during the project.

A working area will be established with barricades and warning tape to delineate the zone where hard hats and steel-toed shoes must be worn, and where unauthorized personnel will not be allowed. If, during drilling, fuel product odors are deemed to be substantial, half-face respirators with organic vapor cartridges will be worn.

A nearby hospital will be designated in the site safety plan as the emergency medical facility of first choice. A map with a course plotted to the hospital will be on-site.

Estimated Schedule

Work will commence within two weeks after approval of this workplan by the ACHCSA. The ACHCSA will be given adequate notification of the scheduled day of drilling to schedule field inspectors if desired. Laboratory analytical results will be obtained within one week of collection. The final report will be prepared promptly, and copies will be delivered to the client and the ACHCSA.

AEI will monitor the wells and analyze groundwater samples on a quarterly basis for a minimum of one year following the well installation. This will document the depth, gradient and concentrations of dissolved hydrocarbons in the groundwater beneath the site. Quarterly monitoring reports will be submitted to the ACHCSA following each sampling episode.

AEI requests your approval to proceed with this project. Please let me know if you need additional information and please do not hesitate to call me at (925) 283-6000 if you have any questions.

Sincerely,



Peter McIntyre
Project Geologist



Joseph P. Derhake, PE, CAC
Principal



Figure 1 – Site location map

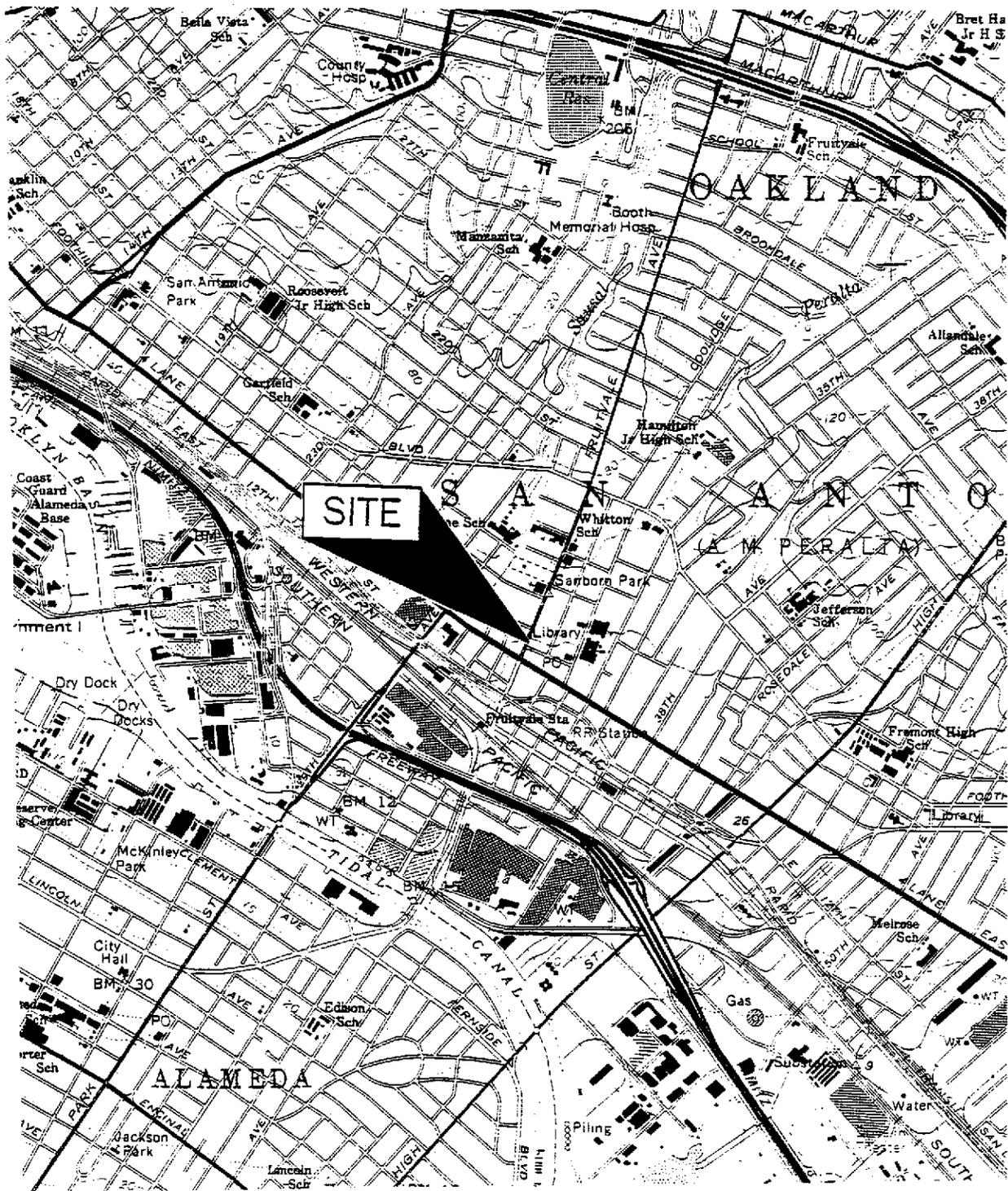
Figure 2 – Site Plan with Excavation Locations

Figure 3 – Previous Soil Boring Locations

Figure 4 – Proposed Well Locations

Table 1 – Previous Soil Sample Analytical Results

Table 2 – Previous Groundwater Sample Analytical Results



SOURCE:
 USGS EAST OAKLAND QUADRANGLE
 SCALE: 1 in = 2,000 ft.

AEI CONSULTANTS
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SITE LOCATION MAP

1450 FRUITVALE AVENUE
 OAKLAND, CALIFORNIA

FIGURE 1
 PROJECT NO. 3397

FRUITVALE AVENUE

SUBJECT PROPERTY
BOUNDARY

FORMER
PUMP ISLAND
LOCATION

APPROXIMATE LOCATION
OF FORMER PRODUCT
PIPING LINES

EXCAVATION C

CANOPY

PAVED LOT

FORMER LOCATION
OF GASOLINE USTs

ROLL-UP DOORS

EXCAVATION A

EXCAVATION B

WAREHOUSE

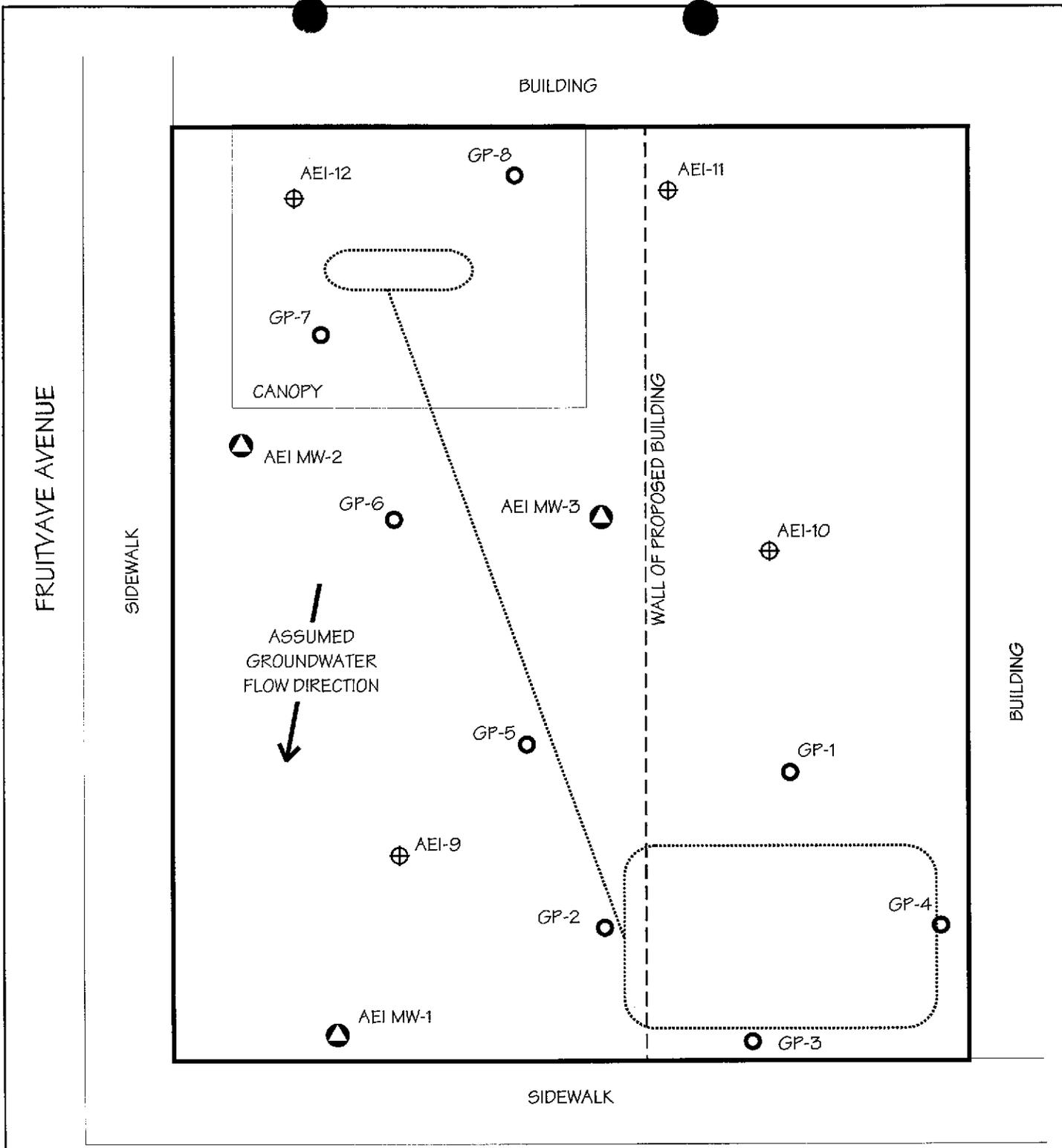
FARNAM STREET



NOTE : EXCAVATIONS A, B, AND C
WERE DUG BY AEI IN
JUNE 1999

AEI CONSULTANTS
3210 OLD TUNNEL RD, SUITE B, LAFAYETTE, CA
**SITE PLAN WITH
EXCAVATION LOCATIONS**

FIGURE 2



KEY

- ⊕ BORING LOCATIONS PERFORMED BY AEI AUGUST 24, 1999
- APPROXIMATE LOCATIONS OF SAMPLING PERFORMED BY GLENFOS; JULY, 1998
- ▲ WELL LOCATIONS PROPOSED BY AEI

SCALE: 1" = 10'



FARNAM STREET

<p>AEI CONSULTANTS 3210 OLD TUNNEL RD, SUITE B, LAFAYETTE, CA</p>	
<p>PROPOSED WELL LOCATIONS</p>	
<p>1450 FRUITVALE AVENUE OAKLAND, CALIFORNIA</p>	<p>FIGURE 4</p>

**Table 1:
Soil Sample Analytical Results**

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	-
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 2:
Groundwater Sample Analytical Results**

Sample ID	Consultan	Sample Date	TPH-g µg/L	MTBE µg/L	Benzene µg/L	Toluene µg/L	Ethyl- Benzene µg/L	Xylenes µg/L	Lead 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	11
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	9.5
AEI-9W	AEI	8/23/1999	690	3.8	72	0.79	29	24	-
MDL			50	5.0	0.5	0.5		1.5	2.5

MDL = Method Detection Limit

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

µg/L = micrograms per liter (ppb)

mg/L = milligrams per liter (ppm)

- Sample not analyzed for this chemical

TPH-g = Total petroleum hydrocarbons as gasoline