



January 24, 2003

Mr. Amir Gholami
Alameda Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: Workplan
807 75th Street
Oakland, CA 94621
AEI Project No. 5896

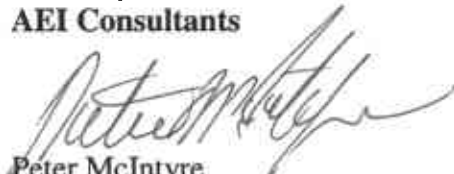
Alameda County
JAN 30 2003
Environmental Health

Mr. Gholami:

Enclosed is a workplan prepared by AEI on behalf of the owner of the above referenced property to further characterize the extent of the petroleum hydrocarbon release. The scope of work should be satisfactory, as we discussed.

We look forward to working with your office to develop an appropriate and cost effective approach to mitigate this release. Please call me at (925) 283-6000 x 104 if you have any questions or need any additional information.

Sincerely,
AEI Consultants



Peter McIntyre
Project Manager, Geologist

cc: Mr. Allan Kanady
Omega Termite Control, Inc.
807 75th Avenue
Oakland, CA 94621

January 27, 2003

Alameda County
JAN 30 2003
Environmental Health

WORKPLAN - SITE CHARACTERIZATION

807 75TH Avenue
Oakland, California

AEI Project No. 5896

Prepared For

Alameda County Health Care Services Agency
Attention: Mr. Amir Gholami
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Prepared By

AEI Consultants
3210 Old Tunnel Road, Suite B
Lafayette, CA 94549
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AEI

January 27, 2003

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

Re: Workplan – Site Characterization
807 75th Avenue
Oakland, California
AEI Project # 5896

Dear Mr. Gholami:

The following workplan has been prepared on behalf of Omega Termite Control, Inc (Omega). AEI Consultants (AEI) has been retained by Omega to provide environmental engineering and consulting services associated with the release of fuel hydrocarbons from the former underground storage tanks on the property. This workplan has been prepared in response to a request by the Alameda County Health Care Services Agency (ACHCSA) for further site investigation in preparation for development of a formal Remedial Action Plan.

SITE DESCRIPTION AND BACKGROUND

The site is located in an industrial area of the City of Oakland, on the northern corner of the intersection of 75th Avenue and Snell Street, just east of San Leandro Street. The property is approximately 10,000 square feet in size and currently developed with two buildings, occupied by Omega.

On September 15, 1996, AEI removed three gasoline underground storage tanks (USTs) from the subject property. The tanks consisted of one 8,000-gallon UST, one 1,000-gallon UST, and one 500-gallon UST. The former locations of the tanks are shown in Figure 2. A total of five soil samples and one groundwater sample collected during the tank removal activities revealed that a release had occurred from the tank system. Total petroleum hydrocarbons as gasoline (TPH-g), benzene, and MTBE were detected up to 4,300 mg/kg, 13 mg/kg, and 25 mg/kg, respectively in soil samples. The excavation was not backfilled. Soil removed from the excavation was stockpiled on the northern portion of the property. In 1999 soil samples collected from the stockpiled soil contained non-detectable to minor concentrations of TPH as gasoline. Mr. Barney Chan of the ACHCSA approved the stockpiled soil for reuse in the excavation.

In October 1997, soil and groundwater samples were collected from six soil borings (BH-1 through BH-6). In June 1999, four groundwater monitoring wells (MW-1 through MW-4) were also installed by AEI.

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Under the direction of ACHCSA, additional soil was removed from the excavation in March 2000. The excavation was extended to 29 by 48 feet in size and 8 feet deep at the east end of the excavation and 11.5 at the west end. During the excavation activities, an additional 500 gallon UST was discovered at the eastern end of the excavation. This tank was removed under the direction of Oakland Fire Services Agency (OFSA). A total of six additional soil samples were collected from the sidewalls and bottom of the excavation.

The resulting excavation was then backfilled with pea gravel to bridge the water table, with the remainder of the excavation being filled with the previously aerated soil and later with imported fill. The newly excavated soil was stockpiled on the northern portion of the property. A total of 7,400 gallons of hydrocarbon impacted groundwater was pumped from the excavation, treated on-site, and discharged under EBMUD permit to the sanitary sewer system.

Sample collection points, borehole locations, and monitoring wells are shown on Figure 3. Historical soil and groundwater sample analytical data are presented in Table 1 and Table 2, respectively. Historical water table elevation data are presented in Table 3.

ENVIRONMENTAL SETTING

The site is located at approximately 5 feet above mean sea level (msl). The site is flat and the regional topography slopes very gently to southwest (Figure 1). According to logs of soil borings advanced by AEI, the near surface sediments beneath the site consist generally of clayey soils. In the continuously logged borings, silty and gravelly sands were noted in the 3 to 6 feet below ground surface (bgs) range, below which stiff clays exist. Silty, sandy, and gravelly clays were noted below approximately 8 feet bgs to boring termination.

During the 11 episodes of monitoring, the water table has existed at approximately five feet bgs; however, during the February 2000 episode, the water table rose to approximately 2.5 feet bgs. Generally, water levels measurements reveal a flow direction ranging from southwest to east-southeast, with the predominant flow direction being to the south. The hydraulic gradient has generally been 10^{-3} ft/ft.

PROBLEM ASSESSMENT

Soil and groundwater sample analytical data have revealed that a release of petroleum hydrocarbons occurred from the former USTs. Generally, the contaminants of concern are consistent with gasoline range hydrocarbons, including BTEX compounds. ~~Locally, oil range hydrocarbons have been detected at the eastern corner of the former tank hold.~~

Although significant source material was removed during the excavation process, soil samples collected from the March 2000 excavation revealed that some source material might remain at the western and eastern ends of the former tank hold. Soil sample collection depths, in conjunction with water table elevations indicate that ~~remaining source material exists below the~~

water table. Groundwater sample analytical data since monitoring began has indicated fairly stable concentrations of TPH-g and BTEX over time; however, moderate seasonal fluctuations are evident. A significant spike in heavy range hydrocarbon concentrations was noted in well TW-5 in September 2001, with concentrations decreasing since that time. This spike corresponds approximately with final backfilling and compaction of the excavation, which may have liberated residual source material entrained in the soil matrix.

Currently the plume is not defined outside of the existing well network, particularly in the southwesterly to southeasterly direction. In addition, additional source area characterization is warranted to confirm the need for the requested remedial action plan.

SCOPE OF WORK

The proposed scope of work consists of the collection and analyses of samples collected from temporary soil borings. This is a cost effective method of assess the release prior to the installation of additional monitoring wells and/or preparation of a formal remedial action plan. A generalized scope of work for the installation of additional monitoring wells is presented, as they will likely be necessary, however details on their location and construction will be presented upon completion of the first phase of investigation.

Proposal of an interim remedial action will be made upon completion of the proposed source area investigation and plume characterization. Insufficient data is available regarding the magnitude and location of source material at this time to appropriately propose an interim action.

Temporary Borings

The investigation will consist of the advancement of eight (8) additional temporary soil borings (labeled AEI SB-7 through AEI SB-14), as shown on Figure 4. The locations of the borings SB-7 through SB-12 will further define extent of the dissolved phase plume. SB-13 will further assess the magnitude of residual source material remaining at the western end of the former tank hold and SB-14 will assess remaining source material at the eastern end of the former tank hold, adjacent to well TW-5. In addition, SB-14 will serve to assess the vertical extent of the release. Presented below is a summary of the rationale for the proposed boring locations.

<i>Boring IDs</i>	<i>Rationale</i>	<i>Target Depth</i>	<i>Analyses</i>
SB-7	Assess the up-gradient extent of the dissolved phase plume	10 -15 ft	TPH-g, BTEX & MTBE
SB-8, SB-9, SB-10, & SB-11	Assess the down-gradient extent of the plume	10 -15 ft	TPH-g, BTEX & MTBE
SB-12	Assess the northeasterly extent of the plume	10 -15 ft	TPH-g / d, BTEX & MTBE, POG
SB-13	Assess source area at western end of tank hold	15 ft	TPH-g, BTEX & MTBE
SB-14	Assess source area at eastern end of tank hold, vertical migration investigation	40 ft	TPH-g/d, POG, BTEX & MTBE

The temporary borings will be advanced with a Geoprobe™ direct-push drilling rig to depths of approximately 10 to 15 feet bgs in each boring, as needed to collect groundwater samples from the water table aquifer. Soils will be continuously collected within 2" diameter acrylic liners. Soil samples will be cut from the liners at approximately 4' intervals and just above the water table.

Groundwater samples will be collected using a drop tube inserted through the direct push rods. If groundwater cannot be collected by this method, temporary slotted PVC casing will be installed to allow for groundwater recharge. For the collection of groundwater samples from below the water table (SB-13 only), and to prevent vertical contaminant migration, a dual wall drilling system will be used to advance this boring. Following collection of samples, each boring will be backfilled with neat cement grout as required under the applicable drilling permit for the project.

It is anticipated that one soil sample and one groundwater sample will be analyzed from each boring, with several soil samples from borings SB-13 and SB-14 and a second groundwater sample from SB-14. The selected samples will be analyzed for TPH as gasoline, BTEX and MTBE by EPA method 8015M/8021 and selected samples from borings SB-12 and SB-13 will also be analyzed for TPH as diesel by EPA method 8015M and Petroleum Oil and Grease by EPA method 5520B/F.

Additional Monitoring Well Installation

The purpose of the additional well(s) is to provide down-gradient monitoring points to allow for data collection with the goal of modeling contaminant fate and transport in the water table aquifer. It is likely that one to two wells would be necessary. The proposed location of the well(s) will be based on the results of the above-described temporary boring project.

The wells will be constructed with 2" or 4" diameter well casing, as needed. Each well will be screened from approximately 3' to 13' bgs, unless logs of borings reveal a more appropriate screening interval. The wells will be installed with a hollow stem auger drilling rig, running 8¼ or 10½ inch diameter augers, depending on the size of the casing to be installed. A sand pack will be installed in the annulus of each well to 1 foot above the screen interval. A bentonite seal will be placed above the sand and the remainder of the boring will be sealed with cement grout. If necessary, a variance will be obtained for the installation of the wells with a short grout seal.

Soil samples will be collected at approximately 5' intervals during the well installation phase of the project with a split spoon sampler advanced ahead of the auger bit. Samples will be utilized to characterize the sediments beneath the site and for possible chemical analyses.

The wells will be developed no sooner than 3 days after setting the well seals by surging, bailing, and purging to remove accumulated fines from the casing and sand pack. Each well will be surveyed relative to each other, mean sea level, and a known datum by a California licensed land surveyor. Monitoring and sampling of the resulting network of wells will occur on a quarterly basis for a period of one year, with the first episode to occur within approximately 1 week of well development.

During each monitoring event, water levels will be measured in each well and the wells will be purged of approximately 3 well volumes of water prior to sample collection. Wells suspected of containing free phase hydrocarbons will be checked with an oil-water interface probe. Monitoring parameters will include temperature, pH, specific conductivity, and dissolved oxygen, and samples will be analyzed for TPH as gasoline, TPH as diesel, BTEX, and MTBE (EPA methods 8015M and 8020). If warranted, POG analyses may also be performed; however, it should be noted that recent monitoring events revealed non-detect concentrations in all wells.

Waste Storage

Drill cuttings will be stored in 55-gallon drums, pending the results of sample analyses. On-site treatment or off-site disposal of cuttings is not included in this scope of work. Equipment rinse water and well purge water will be stored in 55-gallon drums. It is likely that waste materials will be transported from the site under appropriate manifest to an approved disposal facility.

REPORTING

Following receipt of all analytical data, a technical report will be prepared. Although this workplan discusses the installation of additional monitoring wells, details will be submitted to the ACHCSA for their concurrence with the results of the temporary boring investigation, as stated above.

The final report will include figures, data tables, logs of borings, and interpretation of the contaminant distributions. Contaminant distribution and thoroughness of overall site characterization will be evaluated. If warranted, specific monitoring well locations or a formal corrective action plan (CAP) or similar study may be recommended. If interim remediation appears necessary and appropriate, specific methods may be recommended or implemented at the direction of the property owner. Quarterly monitoring of the existing well network will continue unless directed otherwise.

SITE SAFETY

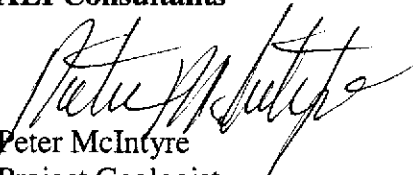
Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting, including an explanation of the hazards of the known or suspected chemicals of interest. All site personnel will be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

ESTIMATED SCHEDULE

Once a scope of work has been agreed upon by ACHCSA and Omega, project permitting will begin. AEI anticipates the field investigation to be completed in approximately 1 month of scope approval. Reports will be available within approximately 1 month of receipt of all necessary data.

AEI requests your comments and approval to proceed with this project. Please contact Mr. McIntyre at (925) 283-6000 if you have any questions or need any additional information.

Sincerely,
AEI Consultants


Peter McIntyre
Project Geologist



Joseph P. Derhake, PE
Principal



Figure 1 – Site Location Map

Figure 2 – Site Plan

Figure 3 – Boring and Sample Locations

Figure 4 – Proposed Boring Locations

Table 1 – Soil Sample Analytical Data

Table 2 – Groundwater Sample Analytical Data

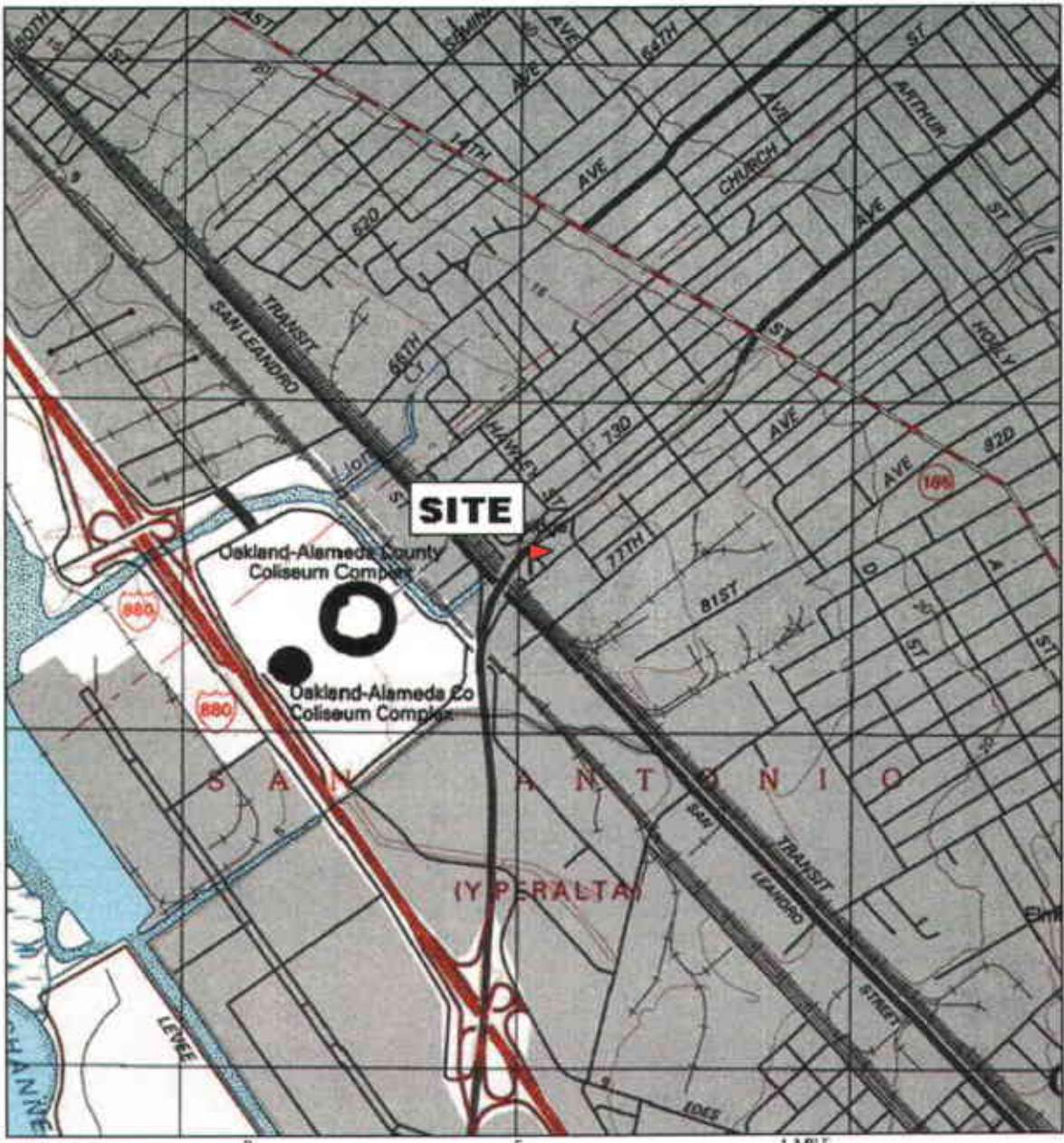
Table 3 – Water Table Elevation Data

Attachment: Boring Logs

Distribution:

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Omega Termite Control, Inc.
807 75th Avenue
Oakland, CA 94621

Mr. Amir Gholami
ACHCSA
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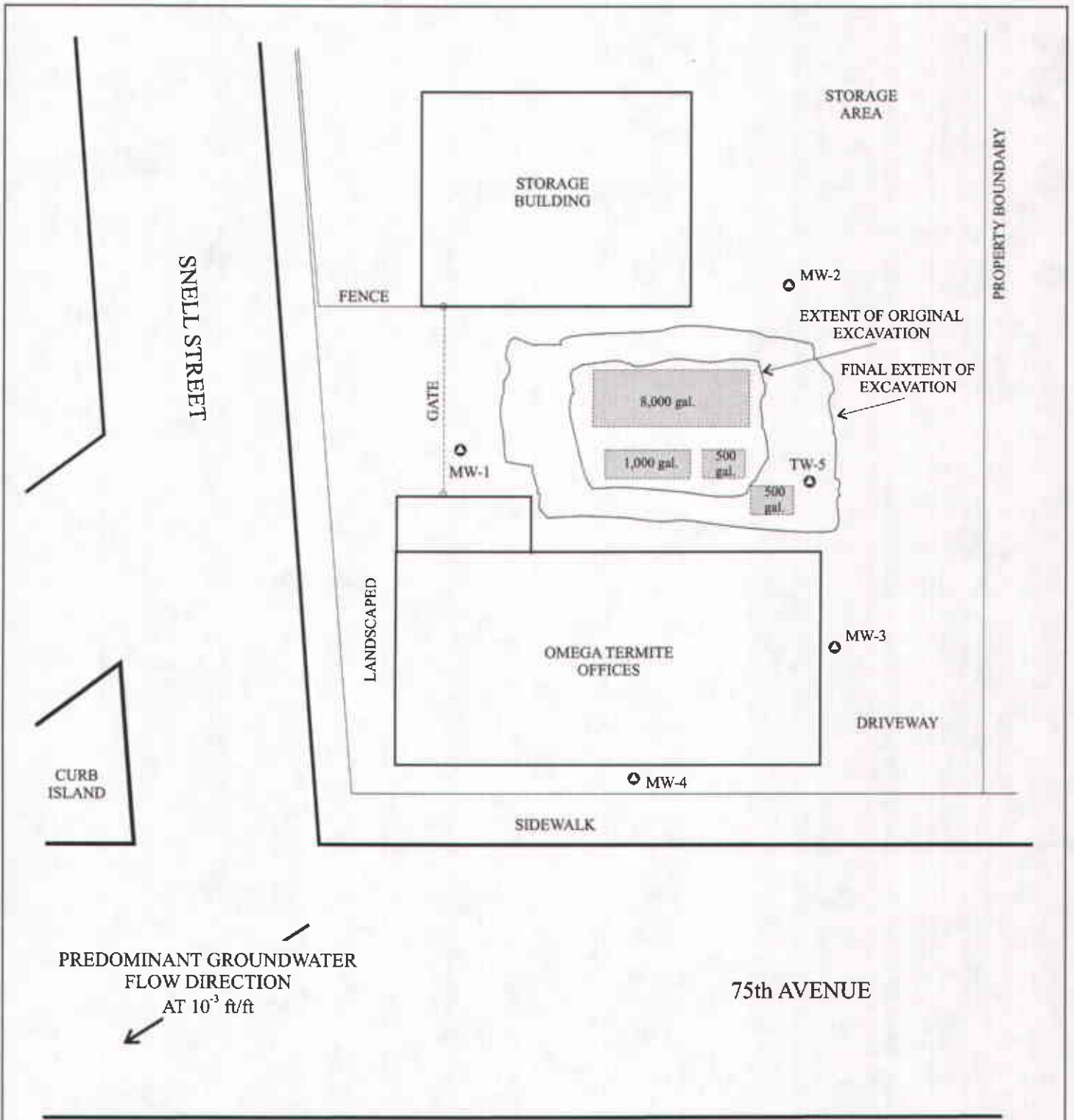


TN ↗ MN
15°


0 5 1 MILE
0 1000 FEET 0 500 1000 METERS


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<p>AEI CONSULTANTS 3210 OLD TUNNEL RD, STE B, LAFAYETTE, CA</p>	
<p>SITE LOCATION MAP</p>	
<p>807 75th AVENUE OAKLAND, CALIFORNIA</p>	<p>FIGURE 1 PROJECT No. 5896</p>



LEGEND

 EXISTING MONITORING WELL LOCATIONS

 FORMER TANK LOCATIONS

SCALE: 1in = 20 ft

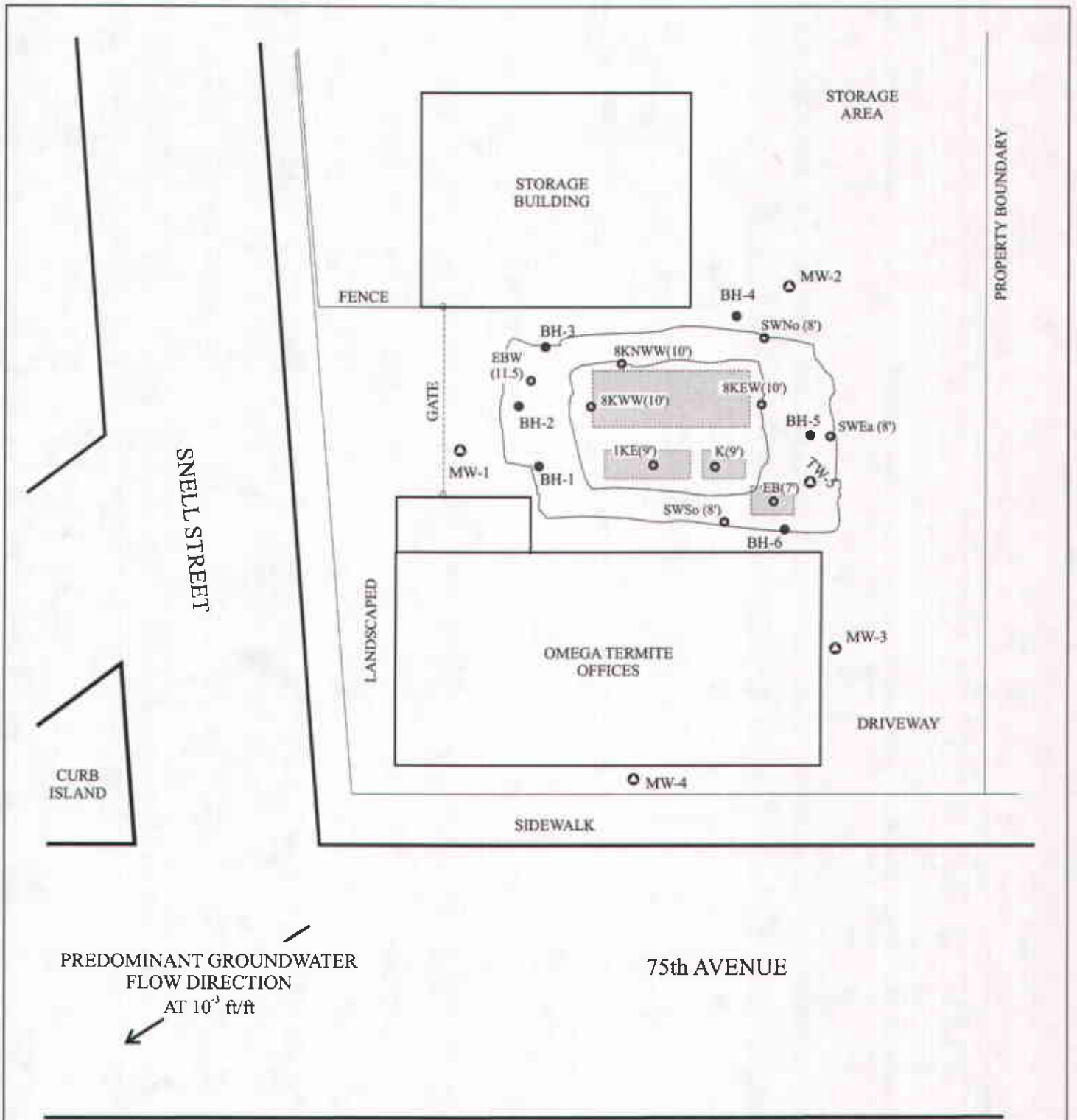
0' 10' 20'

AEI CONSULTANTS
 3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA


SITE PLAN

807 75th AVENUE
 OAKLAND, CALIFORNIA

FIGURE 2
 AEI PROJECT No. 5896



LEGEND



- PREVIOUS TEMPORARY BOREHOLES (1/31/97)
- EXCAVATION SOIL SAMPLE COLLECTION POINTS (9/15/96 & 3/20/00)
- EXISTING WELLS

SCALE: 1in = 20 ft

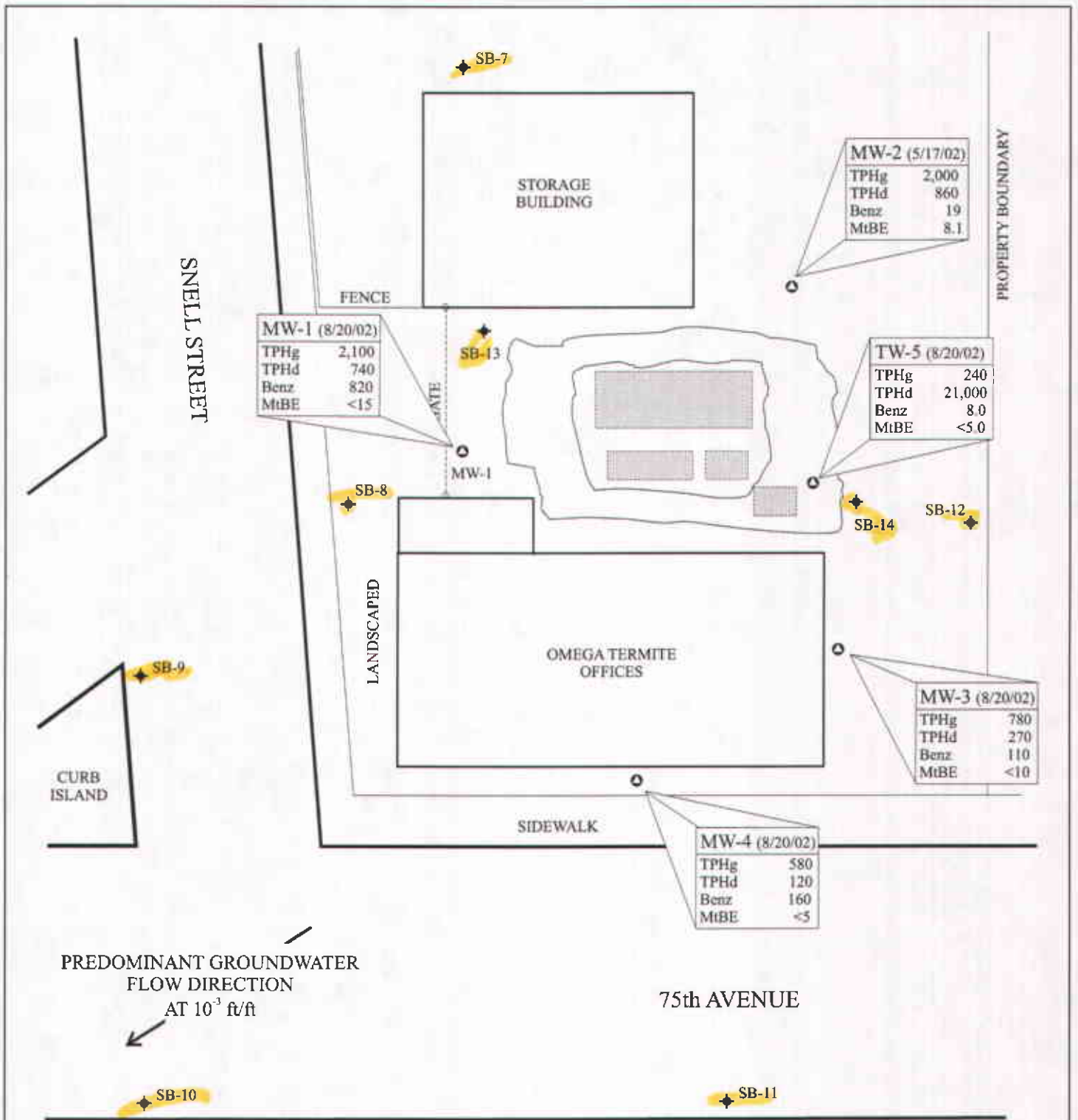
0' 10' 20'

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 3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

BORING AND SAMPLE LOCATIONS

807 75th AVENUE
 OAKLAND, CALIFORNIA

FIGURE 3
 AEI PROJECT No. 5896



LEGEND

◉ EXISTING MONITORING WELL LOCATIONS (Hydrocarbon concentrations as of 8/20/02)

◆ PROPOSED TEMPORARY BORING LOCATIONS

SCALE: 1in = 20 ft

0' 10' 20'

AEI CONSULTANTS
 3210 OLD TUNNEL ROAD, SUITE B, LAFAYETTE, CA

PROPOSED BORING LOCATIONS

807 75th AVENUE
 OAKLAND, CALIFORNIA

FIGURE 4
 AEI PROJECT No. 5896

Table 1
Soil Sample Analytical Data

Sample ID	Date	TPH-g mg/kg	TPH-d mg/kg	TOG mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	E'benzene mg/kg	Xylenes mg/kg	Lead mg/kg <i>EPA 6010</i>
8KEW (10')	9/15/96	64	-	-	0.16	1.8	1.2	1.4	2.9	11
8KWW (10')	9/15/96	2600	-	-	25	2.8	15	37	120	24
8KNWW (10')	9/15/96	360	-	-	2.5	2.5	0.83	8.5	2.4	110
1KE (9')	9/15/96	41	-	-	<0.1	0.077	0.99	0.86	4.7	8.5
K (9')	9/15/96	4300	-	-	<10	13	83	71	310	9.8
BH-1 10'	1/31/97	4.1	-	-	<5.0	0.078	0.009	0.11	0.17	5.6
BH-2 10'	1/31/97	23	-	-	0.13	0.46	0.05	0.089	0.061	7.7
BH-3 10'	1/31/97	280	-	-	1.8	3.2	3	3.8	12	6.6
BH-4 10'	1/31/97	4.6	-	-	<5.0	0.03	0.025	0.36	0.46	7.8
SB-5 10'	1/31/97	800	-	-	5	4.3	23	15	65	6.7
BH-6 10'	1/31/97	110	-	-	0.53	3	0.25	0.95	0.53	5.6
MW-1 10'	6/25/99	<1.0	-	-	<0.05	<0.005	<0.005	<0.005	<0.005	6.4
MW-1 15'	6/25/99	3.4	-	-	<0.05	0.092	0.022	0.054	0.14	4.8
MW-2 10'	6/25/99	420	-	-	<2	<0.1	2.7	4.8	8.2	6.6
MW-2 15'	6/25/99	<1.0	-	-	<0.05	<0.005	<0.005	<0.005	<0.005	6.9
MW-3 10'	6/25/99	14	-	-	<0.05	0.3	0.091	0.29	0.28	6.6
MW-3 15'	6/25/99	<1.0	-	-	<0.05	<0.005	<0.005	<0.005	<0.005	8.5
MW-4 10'	6/25/99	3.6	-	-	<0.05	0.71	<0.005	0.19	<0.005	6.6
MW-4 15'	6/25/99	<1.0	-	-	<0.05	<0.005	<0.005	<0.005	<0.005	8.5
AEI SW South 8'	3/20/00	290	-	-	<0.5	0.84	2	6.3	1.3	9.1
AEI SW North 8'	3/20/00	1.8	-	-	<0.05	<0.005	<0.005	0.007	0.008	7.3
AEI SW East 8'	3/20/00	1800	-	-	<5.0	12	65	32	160	7.4
AEI EB 7'	3/20/00	560	220	100	<1.0	0.59	4.9	7.3	40	7.5
AEI EB West 11.5'	3/20/00	280	-	-	<0.21	2.7	6.6	5.2	23	5.9
RL		1	1		0.05	0.005	0.005	0.005	0.005	3.0

TPH-g = total petroleum hydrocarbons as gasoline

TPH-d = total petroleum hydrocarbons as diesel

MTBE = methyl tert-butyl ether

E'benzene = ethylbenzene

- = Sample not analyzed by this method

Table 2
Groundwater Sample Analytical Data

Sample ID	Date	TPH-g µg/l	TPH-d µg/l	TOG µg/l	MTBE µg/l	Benzene µg/l	Toluene µg/l	E'benzene µg/l	Xylenes µg/l	Lead µg/l
GW	9/15/96	4800	-	-	<130	4100	3500	21000	6400	<5
BH-1	1/31/97	13000	-	-	<60	770	67	530	1800	-
BH-4	1/31/97	25000	-	-	<50	1300	110	1200	2400	-
BH-6	1/31/97	27000	-	-	230	5000	410	1100	2400	-
MW-1	07/30/99	2,700	-	-	<10	920	5.5	18	130	-
	11/09/99	1,800	-	-	<20	430	1.5	26	60	-
	02/23/00	3,800	-	-	<10	1,500	56	78	35	-
	05/26/00	7,100	-	-	<10	2,800	70	220	81	Δ
	10/10/00	980	-	-	<5.0	260	2.9	10	11	-
	02/07/01	570	-	-	<5.0	150	1.8	4.9	9.3	-
	05/25/01	18,000	-	-	ND<100	3,800	350	550	620	-
	09/19/01	840	-	-	<5.0	190	4.0	4.6	5.3	-
	02/06/02	-	-	-	-	-	-	-	-	-
	05/17/02	13,000	920	-	<50/<5.0*	4,500	29	50	58	-
	08/20/02	2,100	740	<5000	ND<15	820	4.5	6.4	9.6	-
MW-2	07/30/99	1,200	-	-	<10	29	2.5	51	100	-
	11/09/99	1,300	-	-	<30	26	1.1	55	32	-
	02/23/00	5,000	-	-	<10	200	18	390	440	-
	05/26/00	2,700	-	-	<10	69	13	83	68	Δ
	10/10/00	810	-	-	<10	17	4.7	42	46	-
	02/07/01	2,600	-	-	<10	70	15	80	100	-
	05/25/01	2,400	-	-	<5.0	75	16	85	100	-
	09/19/01	1,200	-	-	<5.0	10	9	46	55	-
	02/06/02	1,800	-	-	ND<50	14	11	58	59	-
	05/17/02	2,000	860	-	ND<20/8.1*	19	1	1	88	-
	08/20/02	-	-	-	-	-	-	-	-	-
MW-3	07/30/99	2,700	-	-	<10	220	15	130	230	-
	11/09/99	3,100	-	-	15	440	9	150	96	-
	02/23/00	1,800	-	-	<15	180	11	82	79	-
	05/26/00	1,600	-	-	6.4	140	10	69	63	Δ
	10/10/00	1,100	-	-	ND<10	110	4.4	63	51	-
	02/07/01	1,100	-	-	ND<10	130	5.1	68	65	-
	05/25/01	1,200	-	-	ND<6.0	120	5.4	69	64	-
	09/19/01	800	-	-	<5.0	78	3.5	52	37	-
	02/06/02	1,100	-	-	ND<10	130	4.7	77	71	-
	05/17/02	2,800	810	-	<50/2.0*	410	23	160	210	-
	08/20/02	780	270	<5000	ND<10	110	2.8	63	41	-
MW-4	07/30/99	340	-	-	<10	57	2.2	8.5	6.8	-
	11/09/99	1,000	-	-	<10	220	<0.5	17	7.1	-
	02/23/00	980	-	-	<5.0	260	7	33	27	-
	05/26/00	760	-	-	5.7	170	4.8	22	13	Δ
	10/10/00	520	-	-	ND<10	130	2.3	22	10	-
	02/07/01	680	-	-	ND<8.0	180	3.7	29	21	-
	05/25/01	1,700	-	-	ND<10	510	9.6	44	46	-
	09/19/01	680	-	-	ND<10	200	2.6	33	12	-
	02/06/02	710	-	-	ND<15	220	2.8	40	21	-
	05/17/02	1,300	190	-	<5.0/3.3*	330	5.6	61	51	-
	08/20/02	580	120	<5000	<5.0	160	1.7	34	13	-
TW-5	10/10/00	5,800	2,900	<250	ND<50	650	60	190	230	-
	02/07/01	720	650	450	<5.0	6.0	4.5	3.2	4.5	-
	05/25/01	370	420	<250	<5.0	13.0	4.1	1.6	1.3	-
	09/19/01	15,000	2,700,000	1,100,000	530	29	2.7	14	240	-
	02/06/02	280	55,000	18,000	<5.0	2.3	0.74	<0.5	0.70	-
	05/17/02	480	41,000	-	<5.0/<5.0*	1.6	1.1	1	<0.5	-
	08/20/02	240	21,000	<5000	<5.0	8.0	1.2	1	0.54	-
RL		50	50	5000	5	0.5	0.5	0.5	0.5	5.0

TPH-g = total petroleum hydrocarbons as gasoline

TPH-d = total petroleum hydrocarbons as diesel

MTBE = methyl tert-butyl ether

E'benzene = ethylbenzene

- = Sample not analyzed by this method

* - presented as MTBE concentration by EPA 8020(1) / EPA 8260B

Table 3
Water Table Elevation Data

Well ID	Date	Well Elevation (ft amsl)	Depth to Water (ft)	Groundwater Elevation (ft amsl)
MW-1	07/30/99	5.00	5.82	-0.82
	11/09/99	5.00	5.70	-0.70
	02/23/00	5.00	2.84	2.16
	05/26/00	5.00	5.50	-0.50
	10/10/00	5.00	5.70	-0.70
	02/07/01	5.00	5.25	-0.25
	05/25/01	5.00	5.25	-0.25
	09/19/01	5.00	5.51	-0.51
	02/06/02	5.00	NS	NS
	05/17/02	5.00	5.30	-0.30
08/20/02	5.00	5.39	-0.39	
MW-2	07/30/99	5.95	6.64	-0.69
	11/09/99	5.95	6.42	-0.47
	02/23/00	5.95	3.31	2.64
	05/26/00	5.95	6.34	-0.39
	10/10/00	5.95	6.52	-0.57
	02/07/01	5.95	5.90	0.05
	05/25/01	5.95	6.08	-0.13
	09/19/01	5.95	6.53	-0.38
	02/06/02	5.95	5.72	0.23
	05/17/02	5.95	6.17	-0.22
08/20/02	5.95	NS	NS	
MW-3	07/30/99	4.66	5.35	-0.69
	11/09/99	4.66	5.11	-0.45
	02/23/00	4.66	2.37	2.29
	05/26/00	4.66	4.98	-0.32
	10/10/00	4.66	5.24	-0.58
	02/07/01	4.66	4.73	-0.07
	05/25/01	4.66	4.73	-0.07
	09/19/01	4.66	5.07	-0.41
	02/06/02	4.66	4.69	-0.03
	05/17/02	4.66	4.80	-0.14
08/20/02	4.66	4.97	-0.31	
MW-4	07/30/99	4.59	5.45	-0.86
	11/09/99	4.59	5.31	-0.72
	02/23/00	4.59	2.72	1.87
	05/26/00	4.59	5.07	-0.48
	10/10/00	4.59	5.32	-0.73
	02/07/01	4.59	4.73	-0.14
	05/25/01	4.59	4.90	-0.31
	09/19/01	4.59	5.16	-0.57
	02/06/02	4.59	4.65	-0.06
	05/17/02	4.59	4.90	-0.31
08/20/02	4.59	5.02	-0.43	

Notes:

Depth to water measured from top of casings

ft amsl = feet above mean sea level

NS = not sampled (well covered)

ATTACHMENT: SOIL BORING LOGS

Project No: 3190

Sheet: 1 of 1

Project Name: OMEGA

Log of Borehole: MW-1

Client: A. KANADY

Location: WEST OF EXCAVATION

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
0.5		FILL						
1		Sand and gravel						
1.5		CLAY						
2		Stiff clay and silty clay						
3								
4			MW-1 5'	SS	3 3 3	100	No hydrocarbon odor PID = 0.0 ppm	
5								
6								
7								
8		Increased silt and minor sand						
9			MW-1 10'	SS	6 7 8	100	No Hydrocarbon odor PID = 0.0 ppm	
10								
11								
12								
13								
14			MW-1 15'	SS	3 4 3	100	PID = 364 ppm Strong hydrocarbon odor	
15							Water initially encountered at 15 ft.	
16		CLAY						
17		Silty clay with sand and gravel up to 0.5 cm						
18								
19								
20								
21		End of Borehole						
22								
23								

Drill Date 6/25/99
 Drill Method: HOLLOW AUGER
 Total Depth: 20
 Depth to Water: 15

Reviewed by: JPD
 Logged by: PJM

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Project No: 3190

Sheet: 1 of 1

Project Name: OMEGA

Log of Borehole: MW-2

Client: A. KANADY

Location: NORTH OF EXCAVATION

Depth ft m	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
0.5		FILL						
1		Sand and gravel						
1.5		CLAY						
2		Stiff clay with silt and minor sand						
3								
4			MW-2 5'	SS	3 5 6	75	No hydrocarbon odor PID = 3.5 ppm	
5								
6								
7								
8								
9		CLAY						
10		Silty clay with sand and gravel up to 2 cm	MW-2 10'	SS	5 7 12	90	Strong hydrocarbon odor PID = 2300 ppm	
11								
12								
13								
14			MW-2 15'	SS	7 9 13	100	Strong hydrocarbon odor PID = 8900 ppm	
15								
16		Silty clay						
17								
18								
19			MW-2 20'	SS		100	Water initially encountered at 17.5 ft.	
20							No odor - PID = 2 ppm	
21		End of Borehole						
22								
23								

Drill Date 6/25/99

Reviewed by: JPD

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Drill Method: HOLLOW AUGER

Logged by: PJM

Total Depth: 20

Depth to Water: 17.5

Project No: 3190




Sheet: 1 of 1

Project Name: OMEGA

Log of Borehole: MW-3

Client: A. KANADY

Location: EAST OF BUILDING

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 Sandy clay, moderately plastic						
2								
3								
4			MW-3 5'	SS	2 3 5	100	No hydrocarbon odor PID = 4 ppm	
5								
6								
7								
8								
9		CLAY Stiff clay with minor silt and sand						
10			MW-3 10'	SS	4 6 4	100	Strong hydrocarbon odor PID = 2165 ppm	
11								
12								
13								
14			MW-3 15'	SS	3 5 5	100	No hydrocarbon odor PID = 235 ppm	
15								
16								
17								
18								
19								
20								
21		End of Borehole						
22								
23								

Drill Date 6/25/99

Reviewed by: JPD

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Drill Method: HOLLOW AUGER

Logged by: PJM

Total Depth: 20

Depth to Water: 15

Project No: 3190

Sheet: 1 of 1

Project Name: OMEGA

Log of Borehole: MW-4

Client: A. KANADY

Location: ALONG 75th AVE

Depth	Soil Symbol	Subsurface Description	Sample Data				Well Data	Remarks
			Sample Label	Type	Blow Counts/	Recovery		
0		Ground Surface						
0		CONCRETE						
1		CLAY						
2		Sandy clay, moderately plastic						
3								
4			MW-4 5'	SS	3 4 5	100		No hydrocarbon odor PID = 0.0 ppm
5								
6		Stiff sandy clay						
7								
8								
9			MW-4 10'	SS	5 8 11	100		Slight hydrocarbon odor PID = 84 ppm
10								
11								
12								
13		CLAY						
14		Sandy clay with gravel up to 0.5 cm	MW-4 15'	SS	5 8 9	95		No hydrocarbon odor PID = 0.0 ppm
15								
16								
17								
18								
19								
20		End of Borehole						
21								
22								
23								

Drill Date 6/25/99
 Drill Method: HOLLOW AUGER
 Total Depth: 20
 Depth to Water: 14.5

Reviewed by: JPD
 Logged by: PJM


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PROJECT: KANADY - Project No. 1515		LOG OF BOREHOLE: BH-1	
BORING LOC.: WEST OF EXCAVATION		ELEVATION, TOC: --	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/31/97	END DATE: 1/31/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 16.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: 15.0'	
SAMPLING METHOD: 2" DRIVE SAMPLER		LOGGED BY: B. CAMPBELL	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0.0 - 1.0	CL	Clay; Dark Gray.				
1.0 - 3.0	CL	Silty Clay; Light Olive Brown.				
3.0 - 6.0	SC	Silty, Gravelly, Sand; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.		3'		No Odor. 10 ppm
6.0 - 8.0	CL	Clay; Dark Gray.				
8.0 - 16.0	CL	Silty, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
3.0 - 5.0				5'		Slight Hydrocarbon Odor. 20 ppm
6.0 - 7.0				7'		No Odor. 60 ppm
9.0 - 10.0				10'		Slight Hydrocarbon Odor. 20 ppm

PROJECT: KANADY - Project No. 1515


LOG OF BOREHOLE: BH-1

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
15						
16						
17		Borehole terminated at 16.0 feet.				
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						


PROJECT: KANADY - Project No. 1515		LOG OF BOREHOLE: BH-2	
BORING LOC.: WEST OF EXCAVATION		ELEVATION, TOC: --	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/31/97	END DATE: 1/31/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 12.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: NA	
SAMPLING METHOD: 2" DRIVE SAMPLER		LOGGED BY: B. CAMPBELL	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0.0 - 1.0	CL	Clay; Dark Gray.				
1.0 - 2.0	CL	Silty Clay; Light Olive Brown.				
2.0 - 5.5	SC	Silty, Gravelly, Sand; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
3.0 - 3.5				3'		Slight Hydrocarbon Odor. 50 ppm
5.0 - 5.5				5'		Slight Hydrocarbon Odor. 30 ppm
5.5 - 8.0	CL	Clay; Dark Gray.				
7.0 - 7.5				7'		Slight Hydrocarbon Odor. 30 ppm
8.0 - 12.0	CL	Silty, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
10.0 - 10.5				10'		Strong Hydrocarbon Odor. 400 ppm
12.0	Borehole terminated at 12.0 feet.					

PROJECT: KANADY - Project No. 1515		LOG OF BOREHOLE: BH-3	
BORING LOC.: WEST OF EXCAVATION		ELEVATION, TOC: --	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/31/97	END DATE: 1/31/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 12.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: 4.5'	
SAMPLING METHOD: 2' DRIVE SAMPLER		LOGGED BY: B. CAMPBELL	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BOW COURSE	
0.0 - 1.5	CL	Clay; Dark Gray.				
1.5 - 4.0	SC	Silty, Gravelly, Sand; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
3.0 - 3.0				3'		No Sample.
4.0 - 8.0	CL	Clay; Dark Gray.				
5.0 - 5.0				5'		Slight Hydrocarbon Odor. 10 ppm
7.0 - 7.0				7'		Some Hydrocarbon Odor. 100 ppm
8.0 - 12.0	CL	Sandy, Gravelly, Clay; Light Olive Brown Gravel up to 1/8"; w/ Grayish Olive Mottling.				
10.0 - 10.0				10'		Strong Hydrocarbon Odor. 400 ppm
		Borehole terminated at 12.0 feet.				

PROJECT: KANADY - Project No. 1515		LOG OF BOREHOLE: BH-4	
BORING LOC.: WEST OF EXCAVATION		ELEVATION, TOC: --	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/31/97	END DATE: 1/31/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 20.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: 4.9'	
SAMPLING METHOD: 2" DRIVE SAMPLER		LOGGED BY: B. CAMPBELL	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	


DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0.0 - 7.0	CL	Clay; Dark Gray.				
4.0			4'			Slight Hydrocarbon Odor. 40 ppm
5.0			5'			Slight Hydrocarbon Odor. 50 ppm
6.0 - 8.0		Clay; Dark Gray.				
7.0 - 9.5	CL	Silty, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
8.0			8'			Slight Hydrocarbon Odor. 60 ppm
9.5 - 11.0	CL	Clay; Dark Gray.				
10.0			10'			Some Hydrocarbon Odor.
11.0 - 16.0	CL	Silty, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
12.0			12'			Strong Hydrocarbon Odor. 200 ppm

PROJECT: KANADY - Project No. 1515

LOG OF BOREHOLE: BH-4

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
15						
16		16.0 - 20.0; Sandy, Clay; Light Olive Brown; w/ Grayish Olive Mottling.	16		Strong Hydrocarbon Odor. 200 ppm	
17						
18						
19						
20		Borehole terminated at 20.0 feet.				
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

PROJECT: KANADY - Project No. 1515		LOG OF BOREHOLE: BH-5	
BORING LOC.: WEST OF EXCAVATION		ELEVATION, TOC: --	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/31/97	END DATE: 1/31/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 12.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: 3.6'	
SAMPLING METHOD: 2" DRIVE SAMPLER		LOGGED BY: B. CAMPBELL	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0.0 - 1.0	CL	Clay; Dark Gray.				
1.0 - 3.0	CL	Clay; Greenish Gray.				
3.0 - 4.0	SC	Silty, Gravelly, Sand; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.	3'			Some Hydrocarbon Odor. 300 ppm 
4.0 - 6.0	CL	Silty, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
6.0 - 8.5	CL	Clay; Dark Gray.				Some Hydrocarbon Odor. 200 ppm
8.5 - 11.0	CL	Silty, Gravelly, Clay; Grayish Olive; Gravel up to 1/8"; w/ Grayish Olive Mottling.				Strong Hydrocarbon Odor. 200 ppm
11.0 - 12.0	CL	Sandy, Gravelly, Clay; Light Olive Brown Gravel up to 1/8"; w/ Grayish Olive Mottling.				Strong Hydrocarbon Odor. >1000 ppm
Borehole terminated at 12.0 feet.						

PROJECT: KANADY - Project No. 1515		LOG OF BOREHOLE: BH-6	
BORING LOC.: WEST OF EXCAVATION		ELEVATION, TOC: —	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/31/97	END DATE: 1/31/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 16.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: 9.2'	
SAMPLING METHOD: 2" DRIVE SAMPLER		LOGGED BY: B. CAMPBELL	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0.0 - 1.0	CL	Clay; Dark Gray.				
1.0 - 2.5	CL	Clay; Greenish Gray.				
2.5 - 4.0	SC	Silty, Gravelly, Sand; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				
4.0 - 6.0	CL	Silty, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				Slight Hydrocarbon Odor. 20 ppm
6.0 - 8.0	CL	Clay; Dark Gray.				Strong Hydrocarbon Odor. >1000 ppm
8.0 - 10.5	CL	Sandy, Gravelly, Clay; Light Olive Brown; Gravel up to 1/8"; w/ Grayish Olive Mottling.				Strong Hydrocarbon Odor. 200 ppm
10.5 - 16.0	CL	Sandy, Gravelly, Clay; Grayish Olive; Gravel up to 1/8"; w/ Grayish Olive Mottling.				Slight Hydrocarbon Odor. 20 ppm

PROJECT: KANADY - Project No. 1515

LOG OF BOREHOLE: BH-6

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNT	
15						
16						
17		Borehole terminated at 16.0 feet.				
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						