

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

June 7, 1999
StID# 1302

Ms. Eddie M. Jones
184 Kimberlin Heights
Oakland CA 94619

Mr. Mitchell Black
8525 D. St.
Oakland CA 94621

**RE: Fuel Leak Site Case Closure, 8124 E. 14th St., Oakland
CA 94621**

Dear Ms. Jones and Mr. Black:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with the Health and Safety Code, Chapter 6.75 (Article 4, Section 25299.37 h). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Health Services, Local Oversight Program (LOP) is required to use this case closure letter. We are also enclosing the case closure summary and the site Risk Management Plan. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site.

Site Investigation and Cleanup Summary:

Please be advised that the following conditions exist at the site:

* 1500 parts per million (ppm) Total Petroleum Hydrocarbons as gasoline (TPHg), and 0.92, 2.7, 11 and 3.2 ppm BTEX, respectively, remain in the soil at the site.

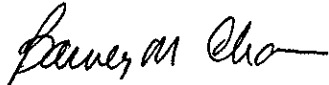
* 7000 parts per billion (ppb) TPHg, and 100,13,77 and 390 ppb BTEX remain in groundwater at the site.

In addition, a Risk Management Plan exists for this site. It should be kept with this file and followed, if necessary.

This site should be included in the City's permit tracking system. Please contact me at (510) 567-6765 if you have any questions.

Ms. Jones and Mr. Black
StID # 1302
8332 E. 14th St.
June 7, 1999
Page 2.

Sincerely,



Barney M. Chan
Hazardous Materials Specialist

enclosures: Case Closure Letter, Case Closure Summary

c: Mr. L. Griffin, City of Oakland OES, 505 14th St., Suite
702, Oakland CA 94612

B. Chan, files (letter only)

Tr1t8332

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES

1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

June 4, 1999
StID # 1302

REMEDIAL ACTION COMPLETION CERTIFICATION

Ms. Eddie M. Jones
184 Kimberlin Heights
Oakland CA 94619

Mr. Mitchell Black
8525 D. St.
Oakland CA 94621

RE: 8332 E. 14th St., Oakland CA 94621

Dear Ms. Jones and Mr. Black:

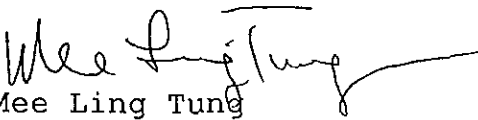
This letter confirms the completion of site investigation and remedial action for the (3) three 2,000 gallon and one (1) 6,000 gallon gasoline and the one (1) 500 gallon waste oil tanks at the above described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground tank is greatly appreciated.

Based upon the available information and with provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank releases is required.

This notice is issued pursuant to a regulation contained in Title 23, Division 3, Chapter 16, Section 2721 (e) of the California Code of Regulations.

Please contact Barney Chan at (510) 567-6765 if you have any questions regarding this matter.

Sincerely,


Mee Ling Tung
Director, Environmental Health

c: B. Chan, Hazardous Materials Division-files
Chuck Headlee, RWQCB
Mr. Dave Deaner, SWRCB Cleanup Fund
Mr. Leroy Griffin, City of Oakland OES, 505 14th St., Suite
702, Oakland CA 94612

ENVIRONMENTAL PROTECTION
99 MAY 10 PM 2:18
Felix
close

California REGIONAL WATER
APR 28 1999
QUALITY CONTROL BOARD
LB# 01-0830
CTH

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: April 12, 1999

Agency name: **Alameda County-HazMat** Address: **1131 Harbor Bay Parkway**
Rm 250
City/State/Zip: **Alameda, CA 94502** Phone: **(510) 567-6700**

Responsible staff person: **Barney Chan** Title: **Hazardous Materials Spec.**

II. CASE INFORMATION

Site facility name: **Ms. Eddie M. Jones Property**

Site facility address: **8332 E. 14th St., Oakland CA 94621**

RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: **1302**

ULR filing date: **1/16/92** SWEEPS No: **N/A**

<u>Responsible Parties:</u>	<u>Addresses:</u>	<u>Phone Numbers:</u>
1. Ms. Eddie M. Jones	184 Kimberlin Heights Oakland CA 94619	510-531-5410
2. Mr. Mitchell Black	8525 D. St., Oakland CA 94621	

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	2000	gasoline	removed	8/2/91
2	2000	gasoline	removed	8/2/91
3	2000	gasoline	removed	8/2/91
4	6000	gasoline	removed	8/2/91
5	500	waste oil	removed	8/2/91

III RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: possibly from leaks in dispenser or piping
Site characterization complete? **Yes**

Date approved by oversight agency:

Leaking Underground Fuel Storage Program

Monitoring Wells installed? Yes Number: 4

Proper screened interval? Yes, from approximately 10-25' bgs

Highest GW depth: 5.2' bgs Lowest: 12.0' bgs

Flow direction: southerly

Most sensitive current use: commercial/industrial

Are drinking water wells affected? No Aquifer name: NA

Is surface water affected? No Nearest affected SW name:

Off-site beneficial use impacts (addresses/locations): NA

Report(s) on file? Yes Where is report(s) filed?
 Alameda County City of Oakland
 1131 Harbor Bay Parkway, Room 250 Fire Dept., OES Division
 Alameda CA 94502-6577 505 14th St., 7th Floor
 Oakland CA 94612

Treatment and Disposal of Affected Material:

<u>Material</u>	<u>Amount (include units)</u>	<u>Action (Treatment of Disposal w/destination)</u>	<u>Date</u>
Tanks	3-2k, 1-6k, 1-500	Disposed, H&H, SF	8/2/91
Soil	Approx 150-200cy	Aerated, disposed at Richmond dump	5/21/96

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	<u>1 Before</u>	<u>3 After</u>	<u>5 Before</u>	<u>4 After</u>
TPH (Gas)	1600	1500	840,000	7000
Benzene	ND	0.92	1,200	100
Toluene	5.4	2.7	520	13
Ethylbenzene	18	11	15,000	77
Xylenes	19	3.2	5,200	390
MTBE			680	<100
TPH (Diesel)	2	ND	NA	
TPH (motor oil)		ND		
Chlorinated HC		ND		

Leaking Underground Fuel Storage Tank Program

Comments (Depth of Remediation, etc.):

- 1 soil sample G-5-12 from large fuel tank pit at time of removal, 8/91
- 2 soil sample WO-1, 2-9 (composite)
- 3 soil sample SWSM from south wall of large tank pit after over-excavation
- 4 sample from 6/29/97 GW monitoring event
- 5 grab groundwater samples from investigative borings 1B7 and 1B8
- 6 water sample from well MW-4, 1/97

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Undetermined

Does corrective action protect public health for current land use? YES

Site management requirements: site should be included in the City of Oakland Permit Tracking System. A site health and safety plan will be required for any subsurface work in the vicinity of the former underground tanks and dispensers. A Risk Management Plan has been provided and must be observed.

Should corrective action be reviewed if land use changes? Yes

Monitoring wells Decommissioned: No

Number Decommissioned: 0 Number Retained: 4

List enforcement actions taken: none

List enforcement actions rescinded: NA


V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Barney M. Chan Title: Hazardous Materials Specialist

Signature:  Date: 4/26/99

Reviewed by

Name: Tom Peacock Title: Manager

Signature:  Date: 4-20-99

Leaking Underground Fuel Storage Tank Program

Name: Eva Chu

Title: Hazardous Materials Specialist

Signature:  Date: 4/1/99

VI. RWQCB NOTIFICATION

Date Submitted to RB: 4/28/99

RB Response: 

RWQCB Staff Name: C. Headlee

Title: EG

Date: 5/12/99

VII. ADDITIONAL COMMENTS, DATA, ETC.

See attached site summary.

Site summary for 8332 E. 14th St., Oakland CA 94621
StID # 1302, Eddie M. Jones/ Mitchell Black property

This ½ acre site is located at the northeast corner of E. 14th St. and 84th Ave. in Oakland. See **Figure 1**. The nearest surface water body is San Leandro Creek, located approximately 1 ½ miles to the south and San Leandro Bay, located about 1 ½ miles to the west. One building is located on the property, which contains both an auto service bay and office area. This site was apparently a service station in the past and the empty tanks had not been used for over 10 years.

On **August 2, 1991**, five underground tanks; three 2,000 gallon and one 6,000 gallon gasoline and one 500 gallon waste oil, were removed from this site. The tanks were removed from three tank excavation pits; one from the waste oil tank, one from one of the 2,000 gallon tanks and one common pit containing the 6,000 and two 2,000 gallon gasoline tanks. See **Figure 2**.

Soil samples were collected at each end of the waste oil tank at an approximate depth of 9' bg. These soils were designated WO-1-9 and WO-2-9. To minimize the number of samples, a composite of these samples (WO-1,2-9) was analyzed. This composite sample exhibited the following concentrations:

Total Oil and Grease..... ND
TPH as Diesel.....ND
TPH as Gasoline.....ND
BTEX..... ND
Chlorinated HC..... ND
Metals, Cd, Cr, Pb, Ni, Zn ND, 42, 10.5, 43.3, 92.7 ppm

Six soil samples (G-1 through G-6) were initially taken from the large tank pit containing the three gasoline USTs. These soil samples were collected at the ends of these tanks at a depth from 11-12' bg. See **Figure 2** for the location of these samples. The highest gasoline contamination was sample G-5-12, located along 84th Ave., to the south of the UST pit. On 8/15/91, both the north and the south sides of the pit were over-excavated and six additional soil samples collected, (BSM, BSL, SWW, SWN, SWSW and SWSM). Two samples were floor samples at a depth of 16' bg, one was from the north sidewall at a depth of 8' and the other three were from the more impacted south side of the pit at a depth of 13' bg. The over-excavation was partially successful, however, the presence of 84th Ave. prevented any further excavation in the southern direction. See **Figure 3** and **Tables 1&2** for the location of these samples and their analytical results. Also included are the analytical results for the other samples.

Two soil samples, (GD-1 and GD-2) one each from the end of the other 2000 gallon UST were taken at a depth of 11 and 12' bg. These samples were only slightly impacted with the highest sample exhibiting 75 ppm TPHg and ND,ND,0.23, 1.9 ppm BTEX, respectively.

Based upon these results, a soil and groundwater investigation was performed on 9/14/94. Seven borings, ~~three which were converted into monitoring wells MW-1 through MW-3, were advanced. Monitoring wells MW-1 and MW-2 were located to the east and west of the largest tank pit and MW-3 was located next to the former waste oil tank. Borings BH-1 and BH-2 were located down-gradient of the large tank pit in the curb of 84th Ave. Borings BH-3 and BH-4 were~~

advanced in the area of the former fuel dispensers. See **Figure 4** for a site plan indicating the locations of the borings and wells. See **Tables 3 and 4** for a summary of soil and groundwater results. Also attached are the boring logs which encountered silty clay and groundwater within the sandy clay at a depth of approximately 13' bg. These results are typical of this site and have been confirmed by examining the logs of other borings. The results of the borings indicate off-site groundwater contamination in the direction of 84th Ave. and residual soil contamination beneath the southern dispenser detected in BH-3.

To further investigate the down-gradient condition to these areas, on **June 1, 1995 and July 17, 1995**, a total of eight borings (IB-1 through IB-8) and one additional monitoring well (MW-4) were advanced. See **Figure 5** for the locations of these borings and well. Although grab groundwater samples were attempted in all eight investigative borings, groundwater was not encountered in borings IB-1 through IB-4 due to tight soil conditions. Those borings where groundwater was sampled confirmed the presence elevated levels of dissolved TPHg particularly in borings IB-7 and IB-8. The highest soil and groundwater benzene concentrations were found in samples from IB-8 located in the curb on the north side of 84th Avenue. See **Table 5** for a summary of these analytical results.

Because the extent of soil and groundwater contamination had not yet been determined, three additional investigative borings (BH-1 through BH-3) were advanced beyond the property boundary on 1/27/97 to a depth of 20' bg. Two of the borings were on the E. 14th St. side of the site and one was on the 84th Ave. side. The borings on E. 14th St. were moved from the street onto the sidewalk due to the presence of utilities. These samples exhibited low TPHg and BTEX in soil and groundwater. MTBE was initially reported in the grab groundwater samples from these borings, however, it was run by EPA Method 8020 not 8260 (GC/MS). Groundwater monitoring since has not identified MTBE in water. See **Figure 6 and Tables 6 & 7** for the location and analytical results for these samples. Included is the boring log for BH-1, which is typical of these three borings. It appears that groundwater migration is the sole method of transport of contaminants to off-site. In addition to monitoring for the petroleum parameters, monitoring for the natural attenuation parameters was started in June 1997 and again run in October 1997. These results indicate a high likelihood that aerobic biodegradation is occurring given the presence of ample dissolved oxygen and the large positive oxidation-reduction potential.

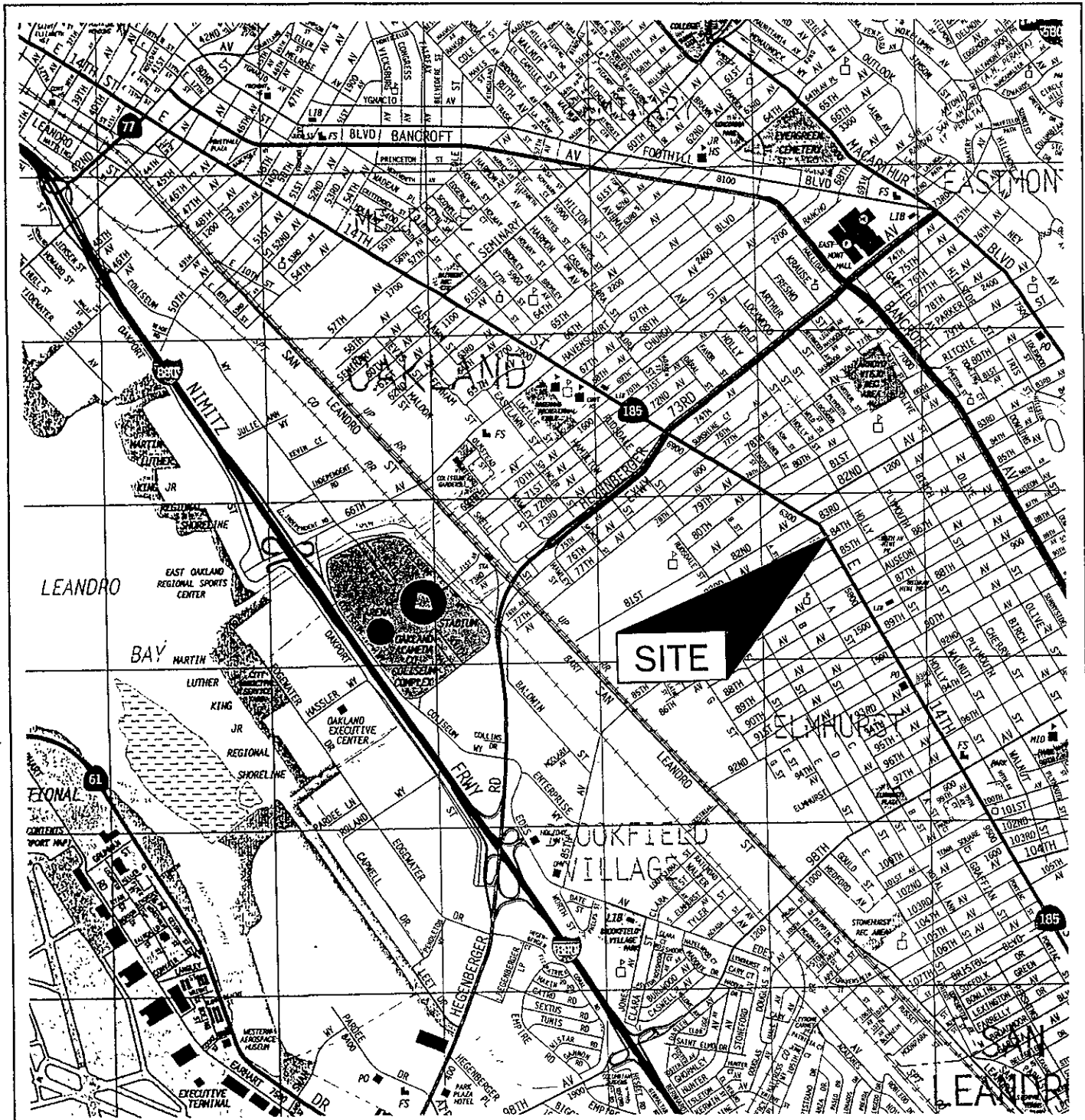
Based upon a Tier 2 RBCA evaluation of the site, potential human health risk existed from the exposure of benzene vapor from soil and groundwater to indoor air. Included are excerpts from this risk assessment in **Tables 8 & 9 and a table of highest soil and groundwater concentrations**. Upon review of this risk assessment a work plan was accepted to obtain soil vapor samples to assess the actual risk to benzene vapor. Therefore, on 4/15/98 two soil vapor borings (VB-1 and VB-2) were advanced and sampled at depths of 3 and 6' bgs. The locations of these borings were within the existing building (VB-1) and near the dispenser island (VB-2) where residual benzene concentrations were detected in soil boring bh-3. This sampling was performed using a geoprobe apparatus. A gas vapor probe was connected to a Summa Cannister

for sample collection. The four vapor samples were transported and analyzed by Air Toxics, Ltd. In addition, to examine the extent of groundwater contamination down-gradient of the former gasoline tank pit, soil boring IB-9 was advanced on the south side of 84th Ave., between former borings IB-1 and IB-2. See Figure 7 for the location of borings. The results of the soil boring sample IB-9 indicated a significant drop-off in TPHg and benzene in both soil and groundwater. The soil vapor concentrations were compared to the RBSL values in the Draft issued by Weiss Associates and R. Arulanantham and S. Morse of the RWQCB. The highest benzene concentration was detected in the 6' bgs sample from VB-2.2, which detected 260 ppbv. This is less than the 10-5 Risk RBSL of 384 ppbv. **Table 10 summarizes the soil vapor results and the grab groundwater results from boring IB-9.**

A Risk Management Plan was prepared for this site and must be followed prior to any subsurface work at the site. The RMP will be part of the closure document and its implementation will be overseen by the City of Oakland Permit Tracking System. Included are summary of the most significant requirements.

Site closure is recommended based upon:

- Adequate site characterization. Extensive soil and groundwater data is available from a number of on and off-site borings.
- The source, underground piping, tanks and contaminated soil has been removed from the site.
- The plume appears to have stabilized as low levels of TPHg and BTEX are exhibited within 50' downgradient of the sources. Long term monitoring has been done. Natural attenuation is expected to decrease the concentrations even more as you move further from the site. The measured bio-remediation parameters are favorable for aerobic degradation to occur.
- Soil vapor samples indicate that the risk to human health is less than that expected for an excess risk of 1 in 10E5 when compared to the RBSL in a Draft concurred by the Water Board. MTBE is low to ND in groundwater.
- A Risk Management Plan has been submitted to prevent risk to future exposure to the residual contamination. The RMP will be noted in the Closure Transmittal Letter and kept with the file.



FROM:
THOMAS BROS. MAPS
1997

ALL ENVIRONMENTAL, INC.
3364 MT. DIABLO BOULEVARD, LAFAYETTE, CA

SCALE: 1 IN = 2400 FT

REVISED BY:

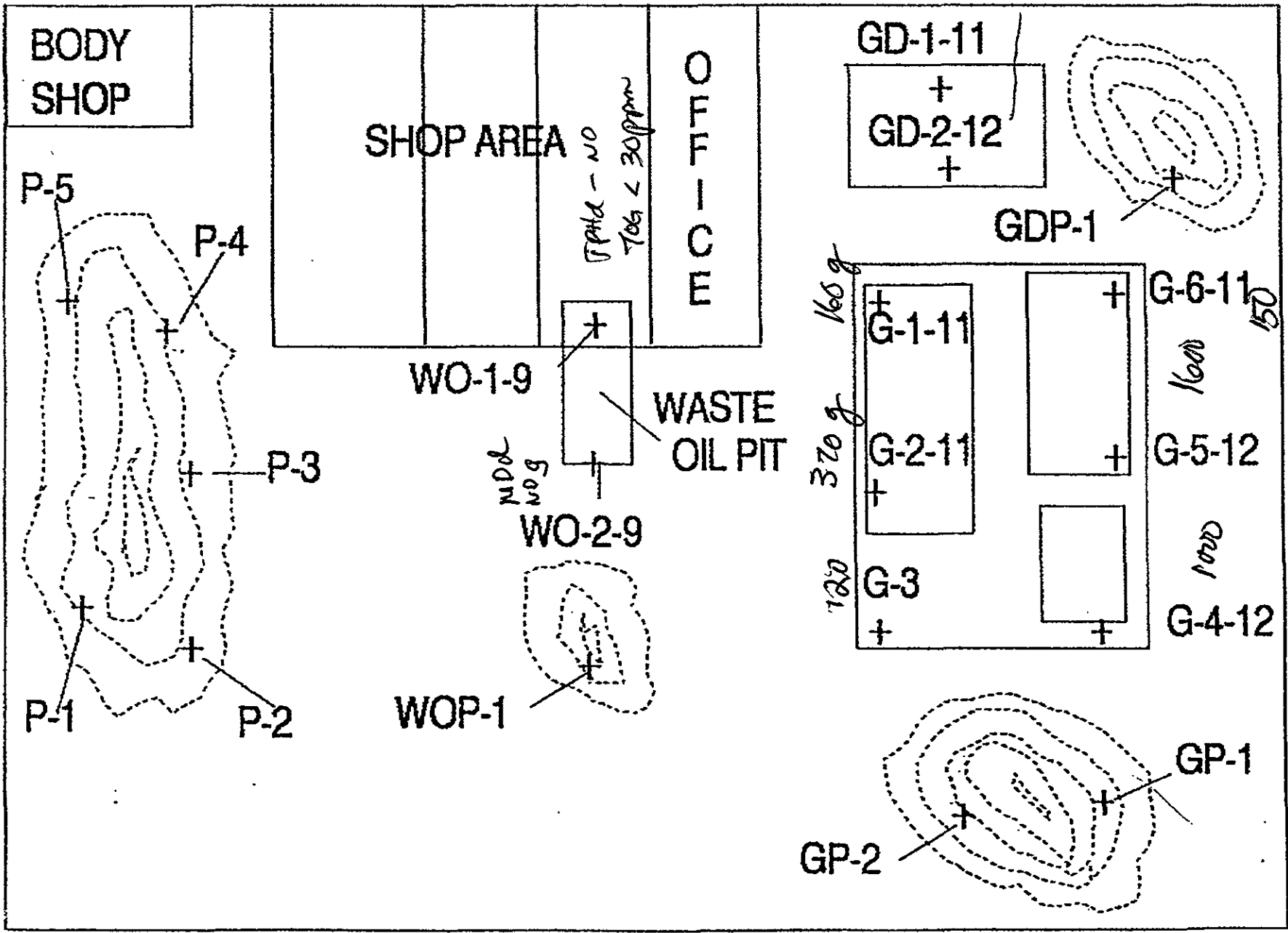
DATE: 5 MARCH 97

APPROVED BY:

SITE LOCATION MAP

8332 E. 14th STREET
OAKLAND, CALIFORNIA

DRAWING NUMBER:
FIGURE 1



NO
 75g
 165g

Figure 2

84th Ave

EAST 14TH STREET

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9108031
Matrix : SOIL
Date Sampled : 08/02/91

Project Number : 8332 14th. ST.
Date Released : 08/07/91

COMPOUNDS	Reporting Limit (mg/Kg)	Sample I.D.# G-1-11	Sample I.D.# G-2-11	Sample I.D.# G-3-11	Sample I.D.# G-4-12	Sample I.D.# G-5-12
Benzene	0.005	ND	ND	ND	ND	ND
Toluene	0.005	0.31	ND	0.15	2.4	5.4
Ethylbenzene	0.005	0.71	2.2	0.45	4.2	18
Total Xylenes	0.005	0.57	2.3	1.0	8.4	19
TPH as Gasoline	0.5	160	370	120	1000	1600
% Surrogate Recovery		145%	138%	145%	142%	110%
Instrument I.D.		HP21	HP21	HP21	HP21	HP21
Date Analyzed		08/06/91	08/06/91	08/06/91	08/06/91	08/06/91
RLMF		25	100	25	250	250

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020.
- RLMF - Reporting Limit Multiplication Factor.
Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

C. Fern 8.7.91
Analyst Date

Cheryl Balmer 8/7/91
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9108031
Matrix : SOIL
Date Sampled : 08/02/91

Project Number : 8332 14th. ST.
Date Released : 08/07/91

Reporting Limit	Sample I.D.#	Sample I.D.#	Sample I.D.#	Sample I.D.#	Sample I.D.#
	G-6-11	GD-1-11	GD-2-12	WO-1,2-9	21B0805A
COMPOUNDS (mg/Kg)	-06	-07	-08	-09	BLANK
Benzene	0.005	ND	ND	ND	ND
Toluene	0.005	ND	ND	ND	ND
Ethylbenzene	0.005	0.49	ND	0.23	ND
Total Xylenes	0.005	0.76	ND	1.9	ND
TPH as Gasoline	0.5	150	ND	75	ND
% Surrogate Recovery	224%	118%	145%	114%	119%
Instrument I.D.	HP21	HP21	HP21	HP21	HP21
Date Analyzed	08/06/91	08/05/91	08/05/91	08/05/91	08/05/91
RLMF	10	1	25	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020.
- RLMF - Reporting Limit Multiplication Factor.
Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

C. Fern 8.7.91
Analyst Date

Cheryl Balmer 8/7/91
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anamatrix W.O.: 9108031
Matrix : SOIL
Date Sampled : 08/02/91
Date Extracted: 08/06/91

Project Number : 8332 14th. ST.
Date Released : 08/07/91
Instrument I.D.: HP23

Anamatrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)
9108031-09	WO-1,2-9	08/06/91	10	ND
DSBL080691	METHOD BLANK	08/06/91	10	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 10mg/Kg.

ND - Not detected at or above the practical quantitation limit for the method.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GC/FID following sample extraction by EPA Method 3550.


All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

C. J. [Signature] 8.7.91
Analyst Date

Cheryl Balmer 8/6/91
Supervisor Date

ANALYSIS DATA SHEET - TOTAL OIL AND GREASE
 ANAMETRIX, INC. (408) 432-8192

Project # : 8332 14th. ST.
 Matrix : SOIL
 Date sampled : 08/02/91
 Date ext. TOG: 08/06/91
 Date anl. TOG: 08/06/91

Anamatrix I.D. : 9108031
 Analyst : APP. 
 Supervisor :
 Date released : 08/06/91

Workorder #	Sample I.D.	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)
9108031-09	WO-1,2-9	30	ND
GSBL080691	METHOD BLANK	30	ND

ND - Not detected at or above the practical quantitation limit for the method.

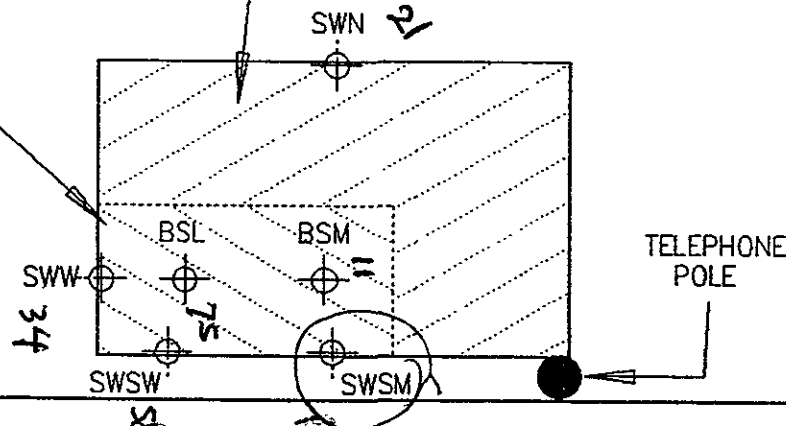
TOG - Total Oil & Grease is determined by Standard Method 5520E&F.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

E. 14th STREET

EXCAVATION
13 FOOT DEPTH
16 FOOT DEPTH

OFFICE AND
SHOP AREA



NOTES:

- ▷ Sample SWN was taken from the sidewall at a depth of 8 feet below grade.
- ▷ Samples SWW, SWSW, and SWSM were taken from the sidewall at a depth of 13 feet below grade.
- ▷ Samples BSL and BSM were taken from the excavation floor at a depth of 16 feet below grade.

84th AVENUE

(SCOTT CO.)
8332 EAST 14th STREET
OAKLAND, CALIFORNIA

Overhead view

Sample Log#: 2967

DATE: 8/15/1991

NOT TO SCALE



Western Environmental
Science & Technology

1046 Olive Drive #3, Davis, CA 95616

Phone: (916) 753-9500

Drawn by: TGT

Figure 3



August 26, 1991
Sample Log 2967

Table 1: 'BTEX' Results for 6 Soil Sample(s) Identified as
8332 East 14th St., Oakland
Received 08/15/91

--all concentrations are units of mg/kg--

Sample	Benzene	Toluene	Ethylbenzene	Xylenes
BSM	<.005	<.005	.028	.027
BSL	.018	<.005	.39	.23
SWW	.0059	<.005	.22	.091
SWN	<.005	<.005	.047	.0074
SWSW	<.005	<.005	.65	.062
SWSM	0.92	2.7	11	3.2
(Reporting Limit	.005	.005	.005	.005)

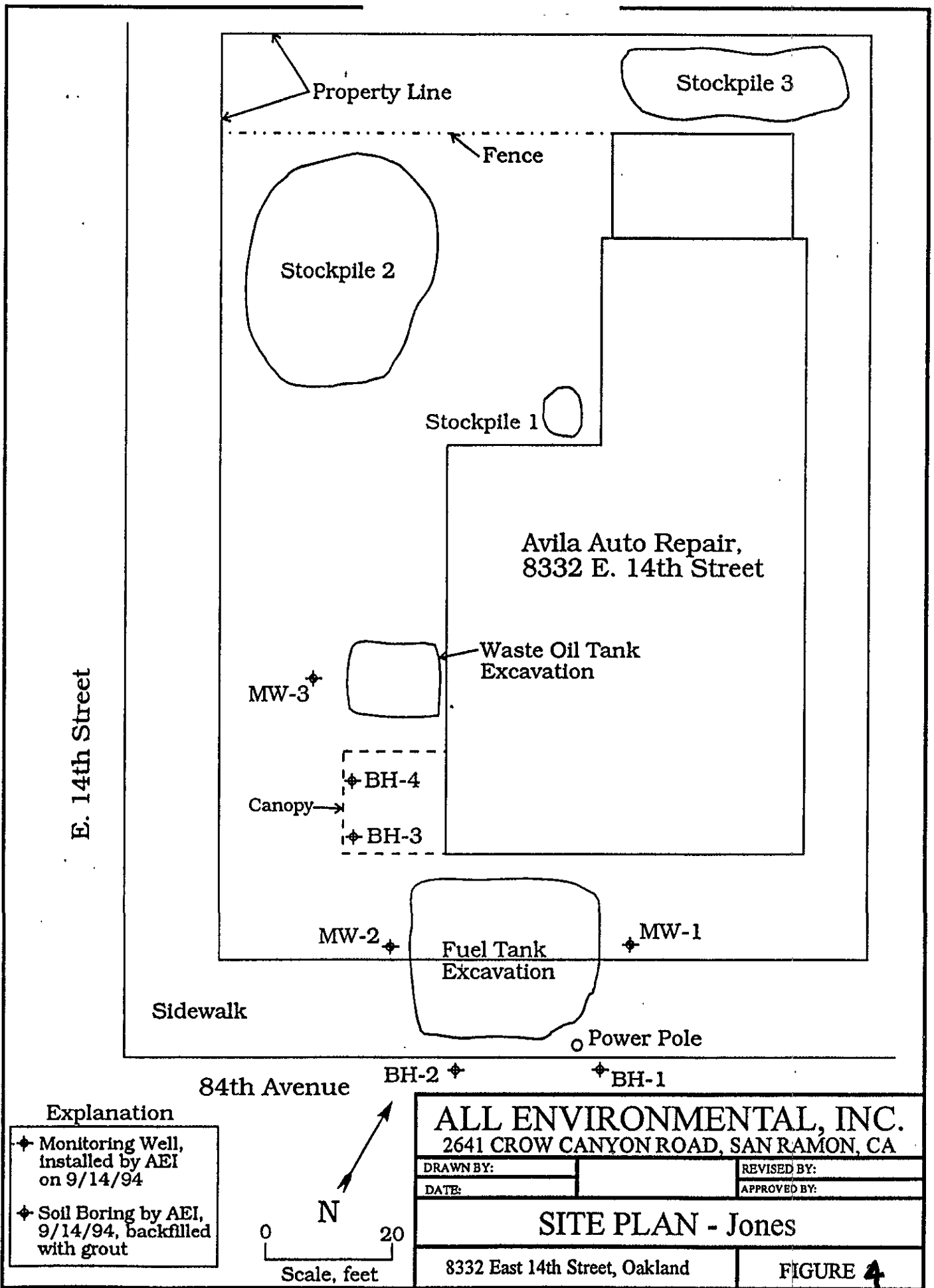


August 26, 1991
Sample Log 2967

Table 2: Gasoline Results for 6 Soil Sample(s)
From : 8332 East 14th St., Oakland
Received 08/15/91

--all concentrations are units of mg/kg--

Sample	TPH as Gasoline
BSM	11
BSL	75
SWW	34
SWN	21
SWSW	58
SWSM	1500
(Reporting Limit	.5)



E. 14th Street

Property Line

Stockpile 3

Fence

Stockpile 2

Stockpile 1

Avila Auto Repair,
8332 E. 14th Street

Waste Oil Tank
Excavation

MW-3

BH-4

Canopy

BH-3

MW-2

Fuel Tank
Excavation

MW-1

Sidewalk

Power Pole

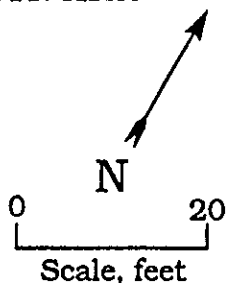
84th Avenue

BH-2

BH-1

Explanation

- ◆ Monitoring Well, installed by AEI on 9/14/94
- ◆ Soil Boring by AEI, 9/14/94, backfilled with grout



ALL ENVIRONMENTAL, INC.
2641 CROW CANYON ROAD, SAN RAMON, CA

DRAWN BY:

REVISED BY:

DATE:

APPROVED BY:

SITE PLAN - Jones

8332 East 14th Street, Oakland

FIGURE 4

Table 4 -Soil Sample Analyses, MW-1 Through MW-3

TEST	MW-1, L-1 13'	MW-1, L-2 16'	MW-2, L-2 11'	MW-2, L-3 16'	MW-3, L-2 11'	MW-3, L-3 16'
TPH-G (mg/Kg)	12	16	120	47	ND	ND
TPH-D (mg/Kg)	ND	ND	2.7	13	ND	ND
Benzene (ug/Kg)	ND	5.3	48	9.3	ND	ND
Toluene (ug/Kg)	ND	ND	80	6.4	ND	ND
Eth. Benz. (ug/Kg)	ND	5.0	210	13	ND	ND
Xylene (ug/Kg)	8.7	15	270	24	ND	ND
Oil & Grease (mg/Kg)	ND	ND	ND	15	ND	15
Cadmium (mg/Kg)	2.5	3.4	2.9	4.1	2.3	4.2
Chromium (mg/Kg)	16	3.6	11	15	10	16
Lead (mg/Kg)	8.0	8.3	7.5	4.5	6.2	5.3
Nickel (mg/Kg)	80	62	48	64	99	50
Zinc (mg/Kg)	28	4.6	6.9	4.2	4.0	2.9
Chlor. Hyd's. (ug/Kg)*	ND	ND	ND	ND	ND	ND

* All compounds of this group were ND. See the raw data in Appendix C for a complete listing

Table 3 -Soil Sample Analyses, BH-1 Through BH-4

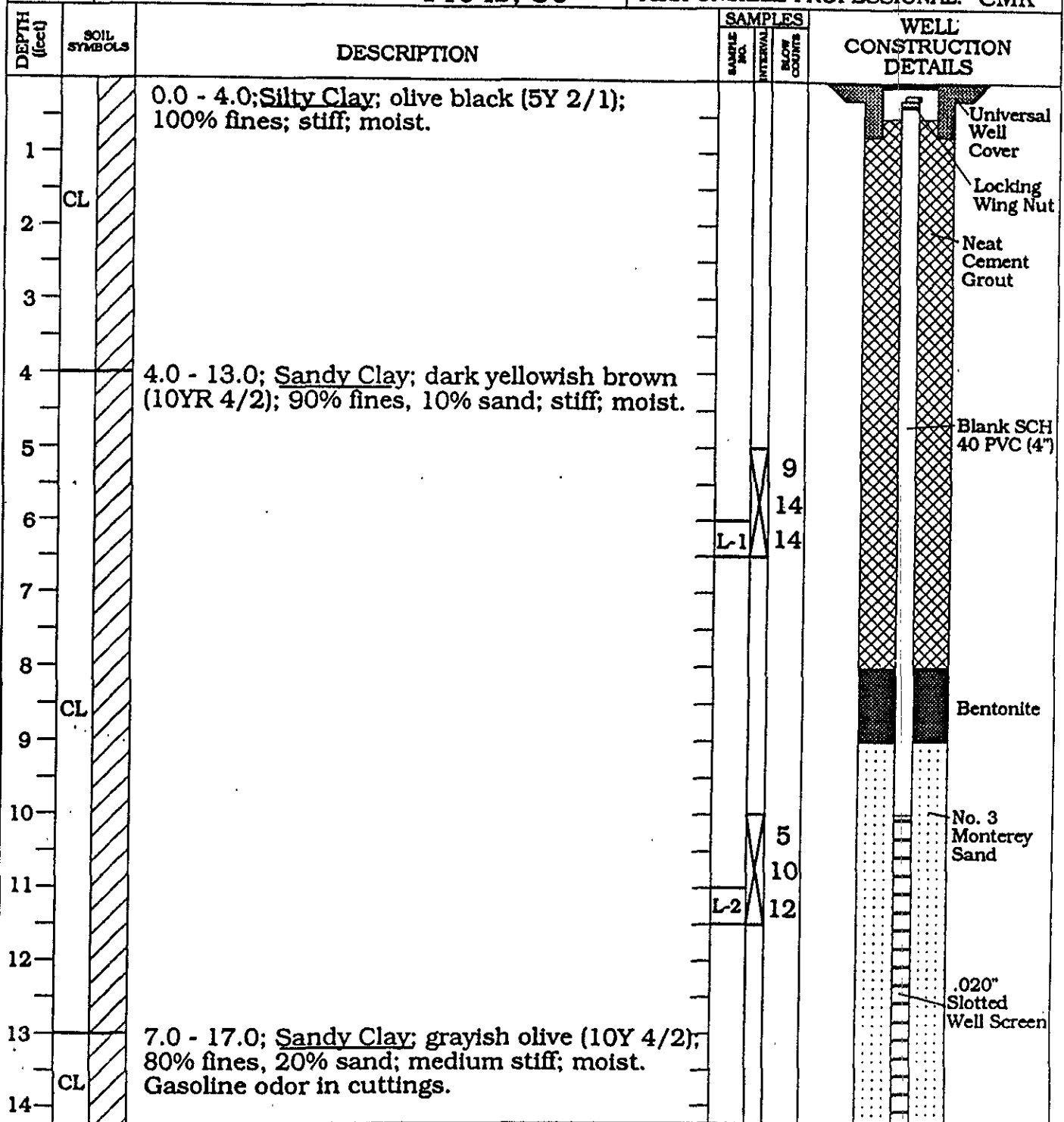
TEST	BH-1, L-2 10'	BH-2, L-2 14'	BH-3, 3'	BH-3, 7.5'	BH-4, 2'	BH-4, 7.5'
TPH-G (mg/Kg)	13	39	1100	2700	31	38
Benzene (ug/Kg)	ND	22	30	380	ND	ND
Toluene (ug/Kg)	ND	17	280	320	ND	6.1
Eth. Benz.(ug/Kg)	ND	28	1100	1100	5.6	10
Xylene (ug/Kg)	7.3	43	2300	1900	16	37
Lead (mg/Kg)	5.4	26	4.0	4.3	5.3	5.6

PROJECT: Jones #1132	LOG OF WELL NUMBER: MW-1	
BORING LOC.: SE corner, near 84th Ave	ELEVATION, TOC:	30.48'
DRILLING CONTRACTOR: Gregg Drilling	START DATE: 9/14/94	END DATE: 9/14/94
DRILLING METHOD: Hollow Stem Auger	TOTAL DEPTH: 24'	SCREEN INT: 9-24'
DRILLING EQUIPMENT: Mobile B-61	DEPTH TO WATER: ~14'	CASING: 2" PVC
SAMPLING METHOD: drive sampler w/ 2" liner	LOGGED BY: CMK	
HAMMER WEIGHT and FALL: 140 lb, 30"	RESPONSIBLE PROFESSIONAL: CMK	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			WELL CONSTRUCTION DETAILS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0.0 - 3.0	CL	Silty Clay; dusky yellowish brown (10YR 2/2); 100% fines; medium stiff; moist. Note: Because of overhead wires, rig could not raise boom and take drive samples. Samples are from cuttings.				
3.0 - 7.0	CL	Sandy Clay; olive black (5Y 2/1); 85% fines, 15% sand; stiff; moist.				
7.0 - 17.0	CL	Sandy Clay; moderate brown (5YR 4/4); 85% fines, 15% sand; medium stiff; moist.				
17.0 - 14.0	CL	Gas Odor	L-1			

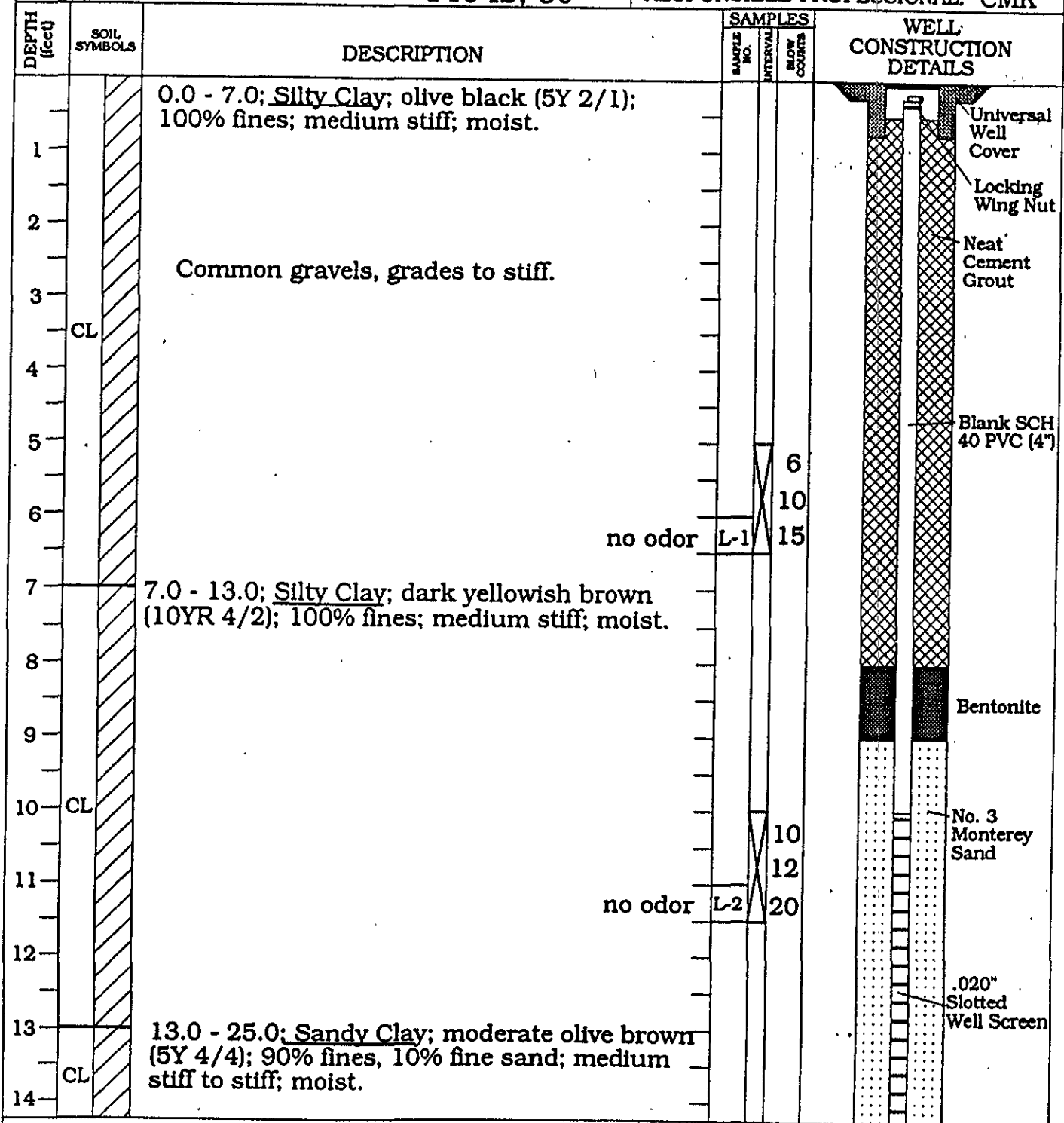
DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			WELL CONSTRUCTION DETAILS	
			SAMPLE NO.	INTERVAL	BLOW COUNTS		
15	CL	7.0 - 17.0; <u>Sandy Clay</u> (cont.)					
16		gas odor	L-2				
17	CL	17.0 - 24.0; <u>Silty Clay</u> ; grayish olive (10Y 4/2); 100% fines; medium stiff; saturated.					
18							
19							
20							
21							
22							
23							
24			Bottom of hole at 24.0'				
25							
26							
27							
28							
29							
30							
31							


PROJECT: Jones #1132		LOG OF WELL NUMBER: MW-2	
BORING LOC.: SW corner of property		ELEVATION, TOC: 29.85'	
DRILLING CONTRACTOR: Gregg Drilling		START DATE: 9/14/94	END DATE: 9/14/94
DRILLING METHOD: Hollow Stem Auger		TOTAL DEPTH: 25'	SCREEN INT: 10-25'
DRILLING EQUIPMENT: Mobile B-61		DEPTH TO WATER: ~15'	CASING: 2" PVC
SAMPLING METHOD: drive sampler w/ 2" liner		LOGGED BY: CMK	
HAMMER WEIGHT and FALL: 140 lb, 30"		RESPONSIBLE PROFESSIONAL: CMK	



DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			WELL CONSTRUCTION DETAILS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
13.0 - 25.0		13.0 - 25.0; <u>Sandy Clay</u> (cont.)				
15					6	
16		Bottom of sample saturated.			12	
		gas odor	L-3		17	
17						
18						
19		Common gravels intermixed in clay, up to 1" long.				
20	CL					
21						
22						
23						
24						
25						End Cap
		Bottom of hole at 25.0'				
26						
27						
28						
29						
30						
31						

PROJECT: Jones #1132		LOG OF WELL NUMBER: MW-3	
BORING LOC.: NW of canopy		ELEVATION, TOC: 30.34'	
DRILLING CONTRACTOR: Gregg Drilling		START DATE: 9/14/94	END DATE: 9/14/94
DRILLING METHOD: Hollow Stem Auger		TOTAL DEPTH: 25'	SCREEN INT: 10-25'
DRILLING EQUIPMENT: Mobile B-61		DEPTH TO WATER: ~15'	CASING: 2" PVC
SAMPLING METHOD: drive sampler w/ 2" liner		LOGGED BY: CMK	
HAMMER WEIGHT and FALL: 140 lb, 30"		RESPONSIBLE PROFESSIONAL: CMK	



DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			WELL CONSTRUCTION DETAILS
			SAMPLE NO.	INTERVAL	FLOW COURSE	
15	CL	13.0 - 25.0; <u>Sandy Clay (cont.)</u>			3	
16		Bottom of sample saturated.	no odor	L-3	6	
17					10	
18						
19						
20						
21						
22						
23						
24						
25		Bottom of hole at 25.0'				
26						
27						
28						
29						
30						
31						

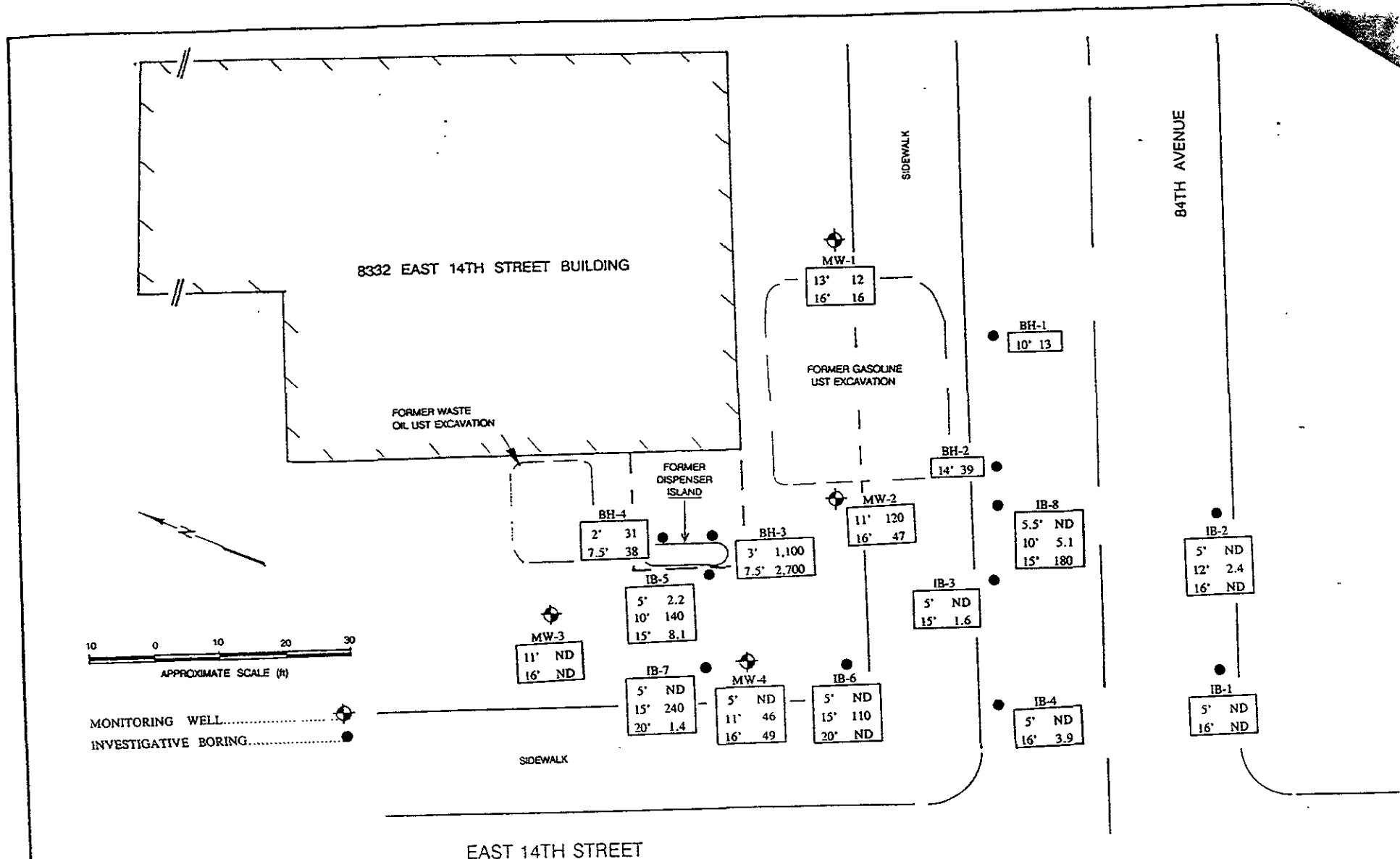
PROJECT: Jones #1132	LOG OF BOREHOLE: BH-2
BORING LOC.: In 84th Ave., near corner	ELEVATION, TOC: n/a
DRILLING CONTRACTOR: Cenozoic Exploration	START DATE: 9/14/94 END DATE: 9/14/94
DRILLING METHOD: flight auger	TOTAL DEPTH: 17.5'
DRILLING EQUIPMENT: Minuteman rig	DEPTH TO WATER: ~16'
SAMPLING METHOD: 2" drive samples	LOGGED BY: CMK
HAMMER WEIGHT and FALL: 140 lb, 30"	RESPONSIBLE PROFESSIONAL: CMK

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
0 - 5		0.0 - 5.0: <u>Silty Clay</u> : dusky yellowish brown (10YR 2/2); 100% fines; stiff; moist. Occasional fine gravels intermixed.				
5 - 7	CL	5.0 - 7.0: <u>Silty Clay</u> : olive gray (5Y 3/2); 100% fines; stiff; moist.				
7 - 17.5	CL	7.0 - 17.5: <u>Silty Clay</u> : dark yellowish brown (10YR 4/2); 100% fines; stiff; moist.				
6 - 8					6	
8 - 10					8	
10 - 11			L-1		15	Slight gas odor.
13 - 14					3	
					3	
			L-2		7	Strong gas odor.

PROJECT: Jones #1132

LOG OF BOREHOLE: BH-2

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES			COMMENTS
			SAMPLE NO.	INTERVAL	BLOW COUNTS	
15	CL	7.0 - 17.5 <u>Silty Clay</u> (cont.)				▼ Water at ~16' Strong gas odor, visible balls of fuel in water.
16						
17						
18		Bottom at 17.5 feet.				
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						



REVISIONS			
NO	BY	APPV'L	DATE

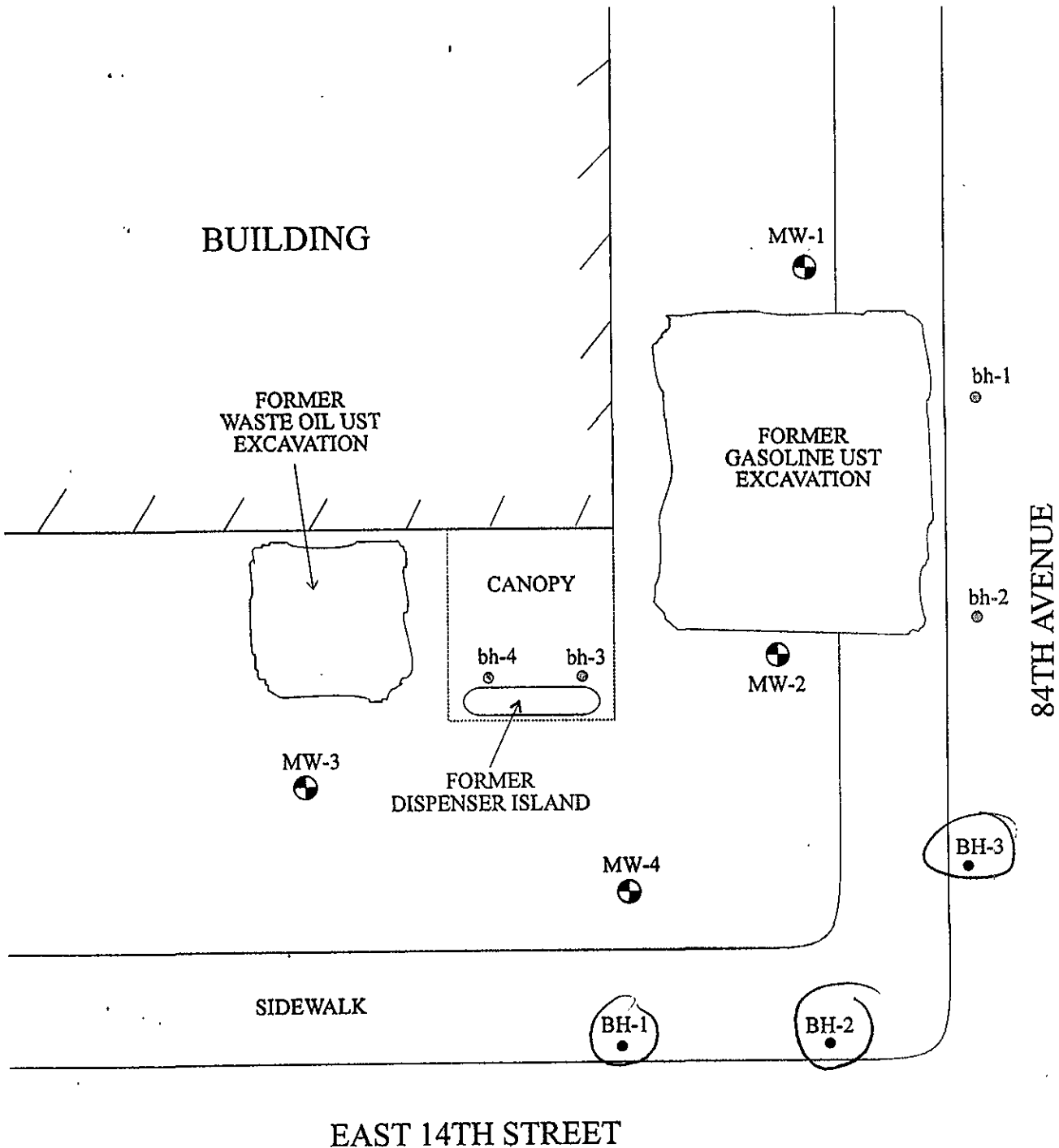
DESIGNED BY	DATE
DRAWN BY	SCALE
CHECKED BY	SEC
DRAWING NO.	

FIGURE 5
SITE PLAN
SOIL TPH-G Results (ppm)

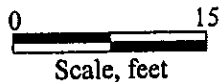


Table **5**
SUMMARY OF SOIL AND GROUND WATER ANALYTICAL RESULTS
 8332 East 14th Street UST Site

Sample ID	Sample Depth (ft)	Concentration (ppm)					
		TPH-D	TPH-G	B	T	E	X
<i>Soil Samples</i>							
IB-1.1	5.0	ND(5.0) ¹	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-1.3	16.0	ND(5.0)	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-2.1	5.0	ND(5.0)	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-2.3	12.0	ND(5.0)	2.4	ND(0.005)	ND(0.005)	ND(0.005)	0.018
IB-2.4	16.0	ND(5.0)	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-3.1	5.0	ND(5.0)	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-3.3	15.0	ND(5.0)	1.6	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-4.1	5.0	ND(5.0)	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-4.3	16.0	ND(5.0)	3.9	ND(0.005)	ND(0.005)	ND(0.005)	0.67
IB-5.1	5.0	ND(5.0)	2.2	ND(0.005)	ND(0.005)	ND(0.005)	0.037
IB-5.2	10.0	ND(5.0)	140 ²	ND(0.005)	0.036	2.7	8.9
IB-5.3	15.0	ND(5.0)	8.1	ND(0.005)	ND(0.005)	0.42	0.12
IB-6.1	5.0	ND(5.0)	ND(1.0)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-6.3	15.0	ND(5.0)	110 ²	ND(0.005)	ND(0.005)	ND(0.005)	1.0
IB-6.4	20.0	ND(5.0)	ND(1.0)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-7.1	5.0	ND(5.0)	ND(1.0)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-7.3	15.0	ND(5.0)	240 ²	ND(0.005)	ND(0.005)	ND(0.005)	1.4
IB-7.4	20.0	ND(5.0)	1.4	ND(0.005)	ND(0.005)	ND(0.005)	0.019
IB-8.1	5.0	-- ³	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
IB-8.2	10.0	--	5.1	0.10	0.007	0.23	0.17
IB-8.3	15.0	--	180 ²	2.3	3.0	2.2	1.0
MW-4.1	5.0	--	ND(1.0)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
MW-4.2	11.0	--	46.0	0.52	0.77	0.67	0.32
MW-4.3	16.0	--	49.0	0.50	0.96	0.63	0.35
<i>Ground Water Samples</i>							
			<i>mg/l (ppm)</i>				
IB-5W ⁴	(15.0) ⁵	--	7.0	0.310	0.011	0.450	0.360
IB-6W ⁴	(15.0)	--	9.5	ND(.0005)	ND(.0005)	0.280	0.220
IB-7W ⁴	(15.0)	--	840	ND(.0005)	ND(.0005)	15.0	5.20
IB-8W ⁴	(15.0)	--	170	1.20	0.520	1.30	5.10
MW-4	10.99	--	19.0	0.320	0.028	0.150	ND(0.005)



- ⊕ MONITORING WELL LOCATION
- AEI SOIL BORING LOCATION
ADVANCED 1/27/97
- AEI SOIL BORING LOCATION
ADVANCED 9/14/94



ALL ENVIRONMENTAL, INC.		
3364 MT. DIABLO BOULEVARD, LAFAYETTE, CA		
SCALE: 1 IN = 10 FT		DRAWN BY: J.S. ANDERSON
DATE: 27 JANUARY 97		REVISED BY:
SITE PLAN		
8332 E. 14th STREET OAKLAND, CALIFORNIA		DRAWING NUMBER: FIGURE 6

Concentrations of petroleum hydrocarbons were below 100 mg/kg in all of the soil samples analyzed. The soil samples collected at 15 feet bgs from BH-2 contained 98 mg/kg TPH as gasoline, however no benzene was detected. Analytical results and chain of custody documents are included as Attachment B. The soil sample analytical data is summarized in Table 2, below.

Table 6 - Soil Sample Analyses, January 29, 1997

Sample ID (Depth)	TPHg mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl-benzene mg/kg	Xylenes mg/kg
BH-1 (10')	13	<0.05	0.011	0.041	0.048	0.041
BH-1 (15')	4.8	<0.05	0.012	0.014	0.046	0.030
BH-2 (10')	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005
BH-2 (15')	98	0.36	<0.005	0.30	0.73	0.62
BH-3 (10')	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005
BH-3 (15')	21	<3.0	<0.02	0.032	0.033	0.029

different from BH-3

TPHg = total petroleum hydrocarbons as gasoline
 MTBE = methyl tertiary butyl ether
 mg/kg = milligrams per kilogram (ppm)

Significant concentrations of TPH as gasoline were detected in the grab groundwater samples collected from BH-1, BH-2 and BH-3. Benzene was present at concentrations of 50 ppb and 10 ppb in grab groundwater samples collected from BH-1 and BH-2, respectively. No concentration of benzene was detected in the groundwater sample collected from BH-3. Refer to Table 3 for a summary of the grab groundwater samples.

Table 7 - Grab Groundwater Sample Analyses, January 27, 1997

Sample ID (Depth)	TPHg ug/L	MTBE ug/L	Benzene ug/L	Toluene ug/L	Ethyl-benzene ug/L	Xylenes ug/L
BH1W	3,100	29	50	5.2	40	14
BH2W	3,400	32	10	6.0	29	14
BH3W	2,300	5.2	<0.005	0.89	3.6	4.9

TPHg = total petroleum hydrocarbons as gasoline
 MTBE = methyl tertiary butyl ether
 ug/L = micrograms per liter (ppb)

PROJECT: Jones - Project No. 1501		LOG OF BOREHOLE: BH-1	
BORING LOC.: E. 14th Street Sidewalk		ELEVATION, TOC: --	
DRILLING CONTRACTOR: GREGG DRILLING		START DATE: 1/27/97	END DATE: 1/27/97
DRILLING METHOD: DIRECT PUSH		TOTAL DEPTH: 20.0'	
DRILLING EQUIPMENT: GEOPROBE DRILL RIG		DEPTH TO WATER: 18.0'	
SAMPLING METHOD: 2" DRIVE SAMPLER		LOGGED BY: J.S. ANDERSON	
HAMMER WEIGHT and FALL: N/A		RESPONSIBLE PROFESSIONAL: JPD	

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES		COMMENTS
			SAMPLE NO.	BLOW COUNTS	
0.0 - 0.6	AB	Concrete, 3" Aggregate Base.			
4.0 - 6.0	CL	Silty Clay: dark yellowish brown, 10 YR 4/2, med. stiff, some gravel up to 1/8".	L-1		No Hydrocarbon odor.
9.0 - 11.0	CL	Silty Clay (cont.)	L-2		Slight Hydrocarbon odor.

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES		COMMENTS
			SAMPLE NO.	INTERVAL FLOW COUNTS	
15	CL	14.0 - 16.0 Silty Clay, mod. yellowish brown 10 YR 5/4, med. stiff.	L-3		No Hydrocarbon odor.
16					
17					
18					▼
19	CL	18.0 - 20.0 Silty Clay, greenish (cont.)	L-4		
20		Borehole terminated at 20.0 feet. Grab groundwater samples collected.			Borehole backfilled with cement grout.
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
FOR HYDROCARBON PARAMETERS
8332 EAST 14TH STREET
All units in micrograms per liter (ug/L)

Sample ID	Date	GW Elev.	TPH-G	B	T	E	X	MTBE
MW-1	9/21/94		6,700	1.1	1.1	12	33	NA
<30.48> [*]	12/21/94		6,000	3.9	6.0	19	31	NA
	3/29/95		2,100	5.4	6.8	8.7	34	NA
	6/30/95	19.60	11,000	36	18	110	380	NA
	1/27/97	25.19	6,000	18	3.0	130	320	30
	6/29/97	18.71	4,300	<5.0	<5.0	77	390	<50
MW-2	9/21/94		64,000	6.2	9.8	72	250	NA
<30.24>	12/21/94		26,000	51.0	64	80	400	NA
	3/29/95		510	2.0	2.7	1.8	8.6	NA
	6/30/95	19.15	3,600	17	6.1	28	46	NA
	1/27/97	24.96	2,400	18	6.0	43	28	21
	6/29/97	18.37	3,600	7.1	5.6	21	13	<25
MW-3	9/21/94		710	<0.5	<0.5	<0.5	<0.5	NA
<30.31>	12/21/94		<50	<0.5	<0.5	<0.5	<0.5	NA
	3/29/95		<50	<0.5	<0.5	<0.5	<0.5	NA
	6/30/95	19.23	<50	<0.5	<0.5	<0.5	<0.5	NA
	1/27/97	24.30	<50	<0.5	<0.5	<0.5	<0.5	<0.05
	6/29/97	18.43	<50	<0.5	<0.5	<0.5	<0.5	<5.0
MW-4	9/21/94		NA	NA	NA	NA	NA	NA
<30.06>	12/21/94		NA	NA	NA	NA	NA	NA
	3/29/95		NA	NA	NA	NA	NA	NA
	7/25/95	19.07	19,000	320	28	150	<5.0	NA
	1/27/97	24.24	6,900	95	18	58	43	80
	6/29/97	18.15	7,000	100	13	30	21	<100

GW Elev. = Groundwater elevation in feet above mean sea level.

TPH-G + Total Petroleum Hydrocarbons as Gasoline

B = Benzene, T = Toluene, E = Ethylbenzene, X = Xylenes

MTBE = Methyl-t-butyl Ether

* = Top of casing mean sea level elevation

Exposure Pathway	Carcinogenic Risk				Toxic Effects Risk			
	Individual COC Risk		Cumulative COC Risk		Individual COC Risk		Cumulative COC Risk	
	Maximum Value	Target Risk	Total Value	Target Risk	Hazard Quotient	Applicable Limit	Hazard Index	Applicable Limit
Outdoor air exposure pathways	8.4×10^{-8}	1×10^{-6}	8.4×10^{-8}	1×10^{-4}	4.3×10^{-3}	1	4.4×10^{-3}	1
Indoor air exposure pathways	3.3×10^{-5}	1×10^{-6}	3.3×10^{-5}	1×10^{-4}	1.9	1	1.9	1
Soil Exposure Pathways	9.0×10^{-9}	1×10^{-6}	9.0×10^{-9}	1×10^{-4}	3.2×10^{-4}	1	3.9×10^{-4}	1
Groundwater exposure pathways	3.4×10^{-26}	1×10^{-6}	3.4×10^{-26}	1×10^{-4}	2.5×10^{-46}	1	3.9×10^{-46}	1

Based on model risk estimates, it appears that risk from indoor air exposure to benzene vapors exceeds both carcinogenic target risk values and toxic effects risk limits. Note that the indoor air exposure pathway includes only onsite commercial receptors, with no offsite receptors for this pathway. Potential sources for volatilization to indoor air include subsurface soils and groundwater.

4.2.3 Model Calculations of SSTL Values

Tabulated Site-Specific Target Levels (SSTLs) generated by the model are contained in Appendix D. Calculation of risk-based cleanup standards, or Site-Specific Target Levels (SSTLs), for soil and groundwater involves the reverse of calculation procedures used for baseline risk calculations. Given a target risk limit at the point of exposure, the maximum allowable COC concentration at the source is back-calculated using applicable exposure factors and toxicity parameters.

Calculations of SSTL values based on the indoor air exposure pathway provided the lowest (most conservative) SSTL values for subsurface soil and groundwater. These SSTL values are summarized in Table 6.

COC	Surface Soil		Subsurface Soil		Groundwater	
	SSTL (mg/kg)	Representative Concentration (mg/kg)	SSTL (mg/kg)	Representative Concentration (mg/kg)	SSTL (mg/L)	Representative Concentration (mg/L)
Benzene	3.2	0.030	0.081	2.3	0.074	0.320
Toluene	>Res	0.280	>Res	3.0	>Sol	0.064
Ethylbenzene	>Res	1.100	96	2.2	85	0.150
Xylenes	>Res	2.300	>Res	1.9	>Sol	0.400

>Sol = Indicates that the risk-based target concentration is greater than the constituent solubility.

>Res = Indicates that the risk-based target concentration is greater than the constituent residual saturation value.

- **Groundwater flow gradient:** 0.001 feet/foot (south-southwest). Calculated from July 1997 data.
- **Representative COC concentrations:** Maximum concentrations from surface soil, subsurface soil and groundwater results, as follow:

Soil (highest result above three feet in depth)

Benzene	0.030 mg/kg (bh-2 at 3.0 ft in depth)
Toluene	0.280 mg/kg (bh-2 at 3.0 ft in depth)
Ethylbenzene	1.100 mg/kg (bh-2 at 3.0 ft in depth)
Xylenes	2.300 mg/kg (bh-2 at 3.0 ft in depth)

Subsurface soil (highest results in any boring)

Benzene	2.300 mg/kg (IB-8 at 15.0 ft in depth)
Toluene	3.000 mg/kg (IB-8 at 15.0 ft in depth)
Ethylbenzene	2.200 mg/kg (IB-8 at 15.0 ft in depth)
Xylenes	1.900 mg/kg (bh--3 at 7.5 ft in depth)

Groundwater (highest result in any well during any sampling event)

Benzene	0.320 mg/L (MW-4, 07/25/95)
Toluene	0.064 mg/L (MW-2, 12/21/94)
Ethylbenzene	0.150 mg/L (MW-4, 07/25/95)
Xylenes	0.400 mg/L (MW-2, 12/21/94)

-grab gw, results ignored correct?

- **Target Risk Levels:** For benzene, which is a Class A carcinogen, we used default ASTM Individual and Cumulative Carcinogenic Risk Goals of 10^{-6} and 10^{-4} , respectively, which represent upperbound excess lifetime risks from chronic exposure to individual and multiple constituents. In order to evaluate individual and cumulative risk from non-carcinogenic effects, we used default Hazard Quotient and Hazard Index values of 1 for both, which represent the ratio of the exposure level to established hazard threshold levels for the COCs.

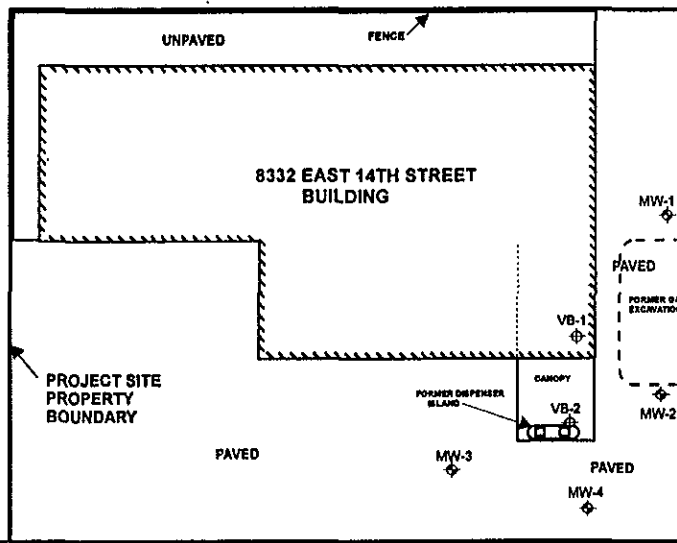
For other parameters, such as exposure parameters and building parameters, we used default values, which conform to ASTM E-1739 default parameter values and are conservative.

4.2.2 Model Calculations of Baseline Risk

Tabulated model calculations of site-specific constituent baseline intake rates and risk levels for each exposure pathway are contained in Appendix C. The baseline risk represents the excess risk to which the receptor would be exposed under current or anticipated future site conditions if no remedial measures are implemented. Total carcinogenic risk and toxic effects risk for each complete pathway are summarized in Table 5.

RESIDENTIAL PROPERTIES

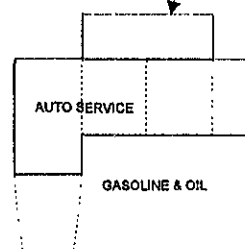
RESIDENTIAL PROPERTIES



84TH AVENUE

LIQUOR STORE

FORMER GAS STATION AS DEPICTED ON 1951 SANBORN INSURANCE MAP



IB-9

SIDEWALK

SIDEWALK

EAST 14TH STREET

SIDEWALK

- ◆ - GROUNDWATER MONITORING WELL
- ◇ - VAPOR BORING LOCATION
- - SOIL BORING LOCATION



DESIGNED BY:

CHECKED BY:

DATE: 05/07/98

FIGURE: 7

DRAWN BY: JG

SCALE:

SITE PLAN

PROJECT NO: 111-01-03

8332 EAST 14TH STREET
OAKLAND, CALIFORNIA

GRIBI Associates

RESIDENCE

FENCE

8332 EAST 14TH STREET BUILDING

84TH AVENUE

FORMER GASOLINE UST EXCAVATION CAVITY

CANOPY

FORMER DISPENSER ISLAND

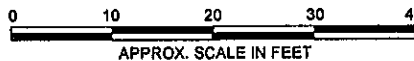
SIDEWALK

EAST 14TH STREET

1.0 PPM TPH-G

- - INVESTIGATIVE BORING
- ⊕ - GROUNDWATER MONITORING WELL

G, B - TPH-G AND BENZENE RESULTS IN MG/L



DESIGNED BY:	CHECKED BY:	GROUNDWATER TPH-G & BENZENE AT VARIOUS DATES	DATE: 05/06/98	FIGURE: 4
DRAWN BY: JG	SCALE:		GRIBI Associates	
PROJECT NO: 111-01-03				

3.0 RESULTS OF INVESTIGATION

3.1 General Subsurface Conditions

Two soil cores from IB-9 were examined in the field, one from 10 to 12 feet in depth, and the other from 14 feet to 16 feet in depth. Subsurface soils encountered in the first core consisted of brown to grey clay with no hydrocarbon odor or stain from ten to 11 feet in depth, followed by grey green clay with slight to moderate hydrocarbon odors from 11 feet to 12 feet in depth. Subsurface soils encountered in the second core consisted of brown to grey clay from 14 feet to 15 feet in depth, followed by reddish brown gravelly silt from 15 feet to 16 feet in depth, with no hydrocarbon odors or staining throughout the entire core.

Groundwater was encountered at a depth of about 12 feet below surface grade. Groundwater exhibited a slight hydrocarbon odor with no hydrocarbon sheen.

3.2 Results of Laboratory Analyses

Vapor, soil, and groundwater analytical results are summarized in Table 1. Laboratory data reports for vapor, soil, and groundwater samples are contained in Appendix D. Soil TPH-G and benzene at eight to 16 feet in depth from this and previous investigations are summarized on Figure 3. Groundwater analytical results from this and selected previous investigations are summarized on Figure 4.

Table 1 SUMMARY OF VAPOR, SOIL, AND GROUNDWATER ANALYTICAL RESULTS 8332 East 14 th Street UST Site							
Sample ID	Sample Depth	Constituent					
		TPH-G	B	T	E	X	MTBE
Soil Vapor Samples		Parts Per Billion By Volume (ppbv)					
VB-1.1	3.0 ft	--	1.5	6.5	0.93	5.4	--
VB-1.2	6.0 ft	--	2.3	9.1	1.1	6.8	--
VB-2.1	3.0 ft	--	14	51	1,600	5,660	--
VB-2.2	6.0 ft	--	260	42	12,000	14,960	--
Vapor RSBL		--	384	140,000	358,000	2,604,000	--
Soil Samples		Milligrams Per Kilogram (mg/kg)					
IB-9.1	11.0 ft	5.2	<0.0050	0.0092	0.019	0.023	<0.050
IB-9.2	15.0 ft	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Groundwater Sample		Micrograms Per Liter (ug/l)					
IB-9W	(12 ft)	3,500 ¹	<5.0	<5.0	16	12	<50

<0.0050 - Not detected above the expressed value.

Vapor RSBL - Risk-Based Screening Levels for vapors in soil at three feet below ground surface, with no building slab (commercial receptors), San Francisco Bay Regional Water Quality Control Board. Concentrations for benzene are based on carcinogenic risk of 10⁻⁵; and concentrations for toluene, ethylbenzene, and xylenes are based on non-carcinogenic chronic hazard quotient of 1.0.

1 - West Laboratory report states that "Product is not typical gasoline."

Subsequent soil and groundwater investigation activities at the project site were conducted by All Environmental, Inc., Century West Engineering, and Gribi Associates. Results of these investigations indicated that low-permeability soils beneath the site resulted in localized soil and groundwater hydrocarbon plumes, limited to an area immediately surrounding the former UST and extending approximately 80 feet in a downgradient (south-southwest) direction. Further, natural attenuation has resulted in relatively low concentrations of specific volatile gasoline constituents within the soil and groundwater hydrocarbon plumes.

Gribi Associates conducted a Tier 2 Risk-Based Corrective Action (RBCA) assessment for the project site (*Report of Tier 2 Risk-Based Corrective Action Assessment, 8332 East 14th Street UST Site, Oakland, California, January 29, 1998*). Results of this RBCA assessment indicated that the only potential environmental or public health risk was from possible indoor Benzene vapor exposure resulting from volatilization from subsurface soils and groundwater. Based on results of the RBCA assessment and on input from Alameda County UST Local Oversight Program personnel, Gribi Associates conducted additional sampling which included: (1) Collecting four soil vapor samples, including vapor samples from depths of three feet and six feet below surface grade from two different vapor probe borings; and (2) Collecting soil and groundwater samples from a single Geoprobe boring drilled on the south side of 84th Avenue. Laboratory analytical results for all four soil vapor samples were below San Francisco Bay Regional Water Quality Control Board Draft Risk-Based Screening Levels for vapor at three feet below unpaved ground surface (commercial receptors), calculated based on a carcinogenic risk of 10^{-5} and non-carcinogenic chronic hazard quotient of 1.0. ^{Table 1} Soil and groundwater analytical results from the single soil boring located on the south side of 84th Avenue indicated that elevated levels of gasoline constituents encountered in previous soil borings on the south side of the former project site UST cavity do not extend in a southerly direction across 84th Avenue. Because residual hydrocarbons in soil and groundwater at the project site pose no significant risk to surrounding public health and environmental receptors, Gribi Associates requested that Alameda County Health Agency grant regulatory closure for the site. On May 19, 1998, Alameda County Health Agency issued a letter stating that regulatory closure would be granted with the provision that a Risk Management Plan be prepared for the site.

Summary of Site Risks

Project site conditions related to former UST releases at the site are summarized below:

- **Subsurface soils consist primarily of low-permeability silts and clays.** Well borings and soil borings at the site encountered clays, silty clays, sandy clays, and gravelly clays, with no stratified silt, sand, or gravel units. These soils are consistent with Bay Mud sediments, which generally do not transmit hydrocarbon contamination very well.
- **Subsurface soils are gasoline-impacted at shallow depths immediately adjacent to the former east fuel dispenser.** Soil samples taken at three feet and eight feet in depth in bh-4, located on the east side of the former dispenser island, contained 1,100 parts per million (ppm) and 2,700 ppm, respectively, of Total Petroleum Hydrocarbons as Gasoline (TPH-G) and 0.030 ppm and 0.330 ppm, respectively, of Benzene (see Figure 2).

- **Subsurface soils are gasoline-impacted at approximate groundwater depth (10 to 15 feet in depth) on the south side of the project site.** Soil analytical results from samples at approximate groundwater depth (below ten feet in depth) show TPH-G results ranging between about 50 ppm and 250 ppm (see Figure 3). Benzene concentrations in these soil samples tend to be nondetectable at increased distance away from the UST and dispenser sources.
- **Groundwater, which has ranged in depth between about eight feet and 14 feet below surface grade, is gasoline impacted on the south side of the project site.** The highest concentrations of TPH-G and Benzene, encountered in MW-2, were 64 ppm and 0.051 ppm, respectively (see Figure 4). These concentrations of TPH-G and Benzene were encountered prior to 1995, and have since decreased over time.

In summary, potential risks of exposure to residual gasoline-range hydrocarbons during possible future construction-related activities include: (1) Contact with near-surface soils adjacent to the former east fuel dispenser; (2) Contact with subsurface soils between ten and 15 feet in depth on the south side of the site; and (3) Contact with groundwater below about ten feet in depth on the south side of the site.

RISK MANAGEMENT PLAN

The following risk management plan shall be implemented for the site in order to reduce identified exposure risks. Note that because there is a chance that site records identifying hydrocarbon risk areas might be lost in the future, this risk management plan shall apply to the entire site. The risk management plan shall incorporate the following measures:

1. Alameda County Environmental Health Services (ACEHS) shall be notified before any general construction takes place at the site where soil and/or groundwater might be handled. This measure will assure that pertinent aspects of any construction project for the site are reviewed in light of the fact that residual hydrocarbons have been left in-place at the site.
2. ACEHS shall be consulted for approval regarding uses or disposal of soils from the site. This measure is meant to place controls on the use or disposal of soils from the site that may contain petroleum hydrocarbons.
3. ACEHS shall be consulted for approval regarding construction dewatering at the site. The purpose of this measure is to assure that extracted groundwater is handled properly given the potential that groundwater may be impacted with petroleum hydrocarbons.
4. Groundwater from beneath the site shall not be used for any purpose unless approved by ACEHS. This measure is meant to place controls on the use of groundwater from beneath the site that may contain petroleum hydrocarbons.

Ramp - 8332 E 14th St, Oakland CA 94621

5. Wells shall not be installed at the site unless approved by ACHES. The purpose of this measure is to reduce the possibility that vertical conduits to deeper groundwater sources are introduced at the site.
6. Before any development occurs at the site, development plans and a health and safety plan shall be submitted to ACEHS for review and approval. The purpose of this measure is to assure that workers and the general public are protected from the potential hazards associated with subsurface petroleum impacts. An example health and safety plan is included in Appendix A.
7. Records for the site, including investigative reports and the *Risk-Based Corrective Action Assessment*, shall be retained on file with ACEHS. Proper documentation can help all parties control potential risks associated with the site.
8. In the event that a land use change is anticipated for the site (i.e. from commercial use to residential use), then the risk assessment must be reviewed and revised to incorporate new receptor scenarios. The purpose of this measure is to insure that different receptor scenarios that would accompany different land uses are adequately addressed.

We appreciate the opportunity to present this Risk Management Plan for your review. Please contact us if you have questions or require additional information.

Very truly yours,



James E. Gribi
Registered Geologist
California No. 5843



JEG/ct
Enclosure

c Ms. Eddie Mae Jones
Ms. Julie Rose, Randick & O'Dea

File: GA-28/jns-RMP.It1