ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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

August 5, 1998
StID# 4284

Mr. Joseph Cotton
City of Oakland
250 Frank H. Ogawa Plaza, Suite 5301
Oakland CA 94612-2034

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

Dear Mr. Cotton:

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. 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:

* 1511 parts per million (ppm) Total Petroleum Hydrocarbons as gasoline (TPHg), 260 ppm Total Petroleum Hydrocarbons as diesel (TPHd), 5520 ppm oil and grease and 0.87, 23, 21 and 110 ppm BTEX, respectively, remain in the soil at the site.

* 140 parts per billion (ppb) TPHg, 130 ppb TPHd and 0.9 ppb xylenes remain in groundwater at the site.

In addition, two monitoring wells, MW2 and MW4, exist at the site which could not be found, therefore, they were not properly closed. Should these wells be found in the future, they must be properly closed.

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

Sincerely,

Barney M Chan

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)
Trlt8124

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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

August 4, 1998
StID # 4284

REMEDIAL ACTION COMPLETION CERTIFICATION

Mr. Joseph Cotton
City of Oakland
250 Frank H. Ogawa Plaza, Suite 5301
Oakland CA 94612-2034

RE: City of Oakland Site, former Texaco Independent, 8124 E. 14th St.(International Blvd.), Oakland CA 94621

Dear Mr. Cotton:

This letter confirms the completion of site investigation and remedial action for the one (1) 7,500, four (4) 1000 gasoline and the one (1) 250 gallon waste oil underground tanks removed from 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.

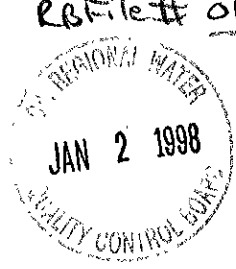
Sincerely,

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

RACC8124

RB File # 01-0792



CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION **Date:** December 8, 1997

Agency name: **Alameda County-HazMat** Address: **1131 Harbor Bay Parkway Rm 250, Alameda CA 94502**

City/State/Zip: **Alameda** Phone: **(510) 567-6700**

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

II. CASE INFORMATION

Site facility name: City of Oakland Site (Listed as "Texaco Independent" in Database)

Site facility address: 8124 E. 14th St., Oakland CA 94621

RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: 4284

ULR filing date: 8/27/87 SWEEPS No: **N/A**

Responsible Parties:	**Addresses:**	**Phone Numbers:**
1. City of Oakland c/o Mr. Joseph Cotton	1333 Broadway, Suite 330 Oakland CA 94612	(510) 238-6259

Tank No:	Size in gal.:	Contents:	Closed in-place or removed?:	Date:
1	7,500 ?	gasoline	Removed	4/87
2-5	4x1000	gasoline	Removed	4/87
6	250	waste oil	Removed	4/87

III RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: unknown

Site characterization complete? Yes

Date approved by oversight agency:

Monitoring Wells installed? Yes Number: 6 (possibly 8)

Proper screened interval? Yes, approximately 10-20'in wells MW1-3 (installed in 5/95) and 5-25' in wells MW1-2 installed in 1987 and 5-20' in wells MW4-6 installed in 1995.

Leaking Underground Fuel Storage Program

Highest GW depth: 3.90'bgs Lowest depth: 11.6' bgs

Flow direction: west- northwesterly

Most sensitive current use: commercial/industrial, across E. 14th St., downgradient, is residential

Are drinking water wells affected? No Aquifer name: NA

Is surface water affected? No Nearest affected SW name: NA

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

Report(s) on file? **Yes** Where is report(s)? Alameda County
1131 Harbor Bay Parkway,
Room 250, Alameda CA 94502-6577

Treatment and Disposal of Affected Material:

Material	Amount (include units)	Action (Treatment of Disposal w/destination)	Date
Tanks & Piping	1-7,500 gallon 4-1,000 gallon 1-250 gallon	Disposed, presumed taken to H&H Marine Salvage, SF	4/87
Free product/ Rinseate	unknown amt of gas and oil	disposed from USTs	4/87

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm) Before[1]	Soil (ppm) After[2]	Water (ppb) [3]Before	Water (ppb) After
TPH (gasoline)	410	1511	4900	140
TPH (diesel)	NA	260		130
Benzene	NA	0.87	21	ND
Toluene	NA	23	25	ND
Ethylbenzene	NA	3.2 21*	121	ND
Xylenes	NA	11 110*	1780	0.9
Oil and Grease	1100	5520	6600	ND
Others: Total lead		330		ND
chlorinated solvents	ND			
VOCs (8240)	ND			

Metals:Cd, Cr, Pb, Ni & Zn ND, ND, ND, ND, ND in groundwater
* results from boring MW-2B.

Comments (Depth of Remediation, etc.):
1 Initial tank removal soil samples
2 soil samples from trenches and borings from monitoring wells
3 Initial water sample from MW-1 and MW-2, 6/89. The installation of these wells is suspect since the installation report was full of errors and the wells could not be found.

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: Should any monitoring wells be unable to be located, deed notice should mention the relative location of the wells. Groundwater infiltration and surface disturbance in this area should be minimized. Site should be entered into the city's permit tracking system.

Should corrective action be reviewed if land use changes? Yes

Monitoring wells Decommisioned: No

Number Decommisioned: 0 Number Retained: 6 (or 8)

List enforcement actions taken: None

List enforcement actions rescinded: NA

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Barney M. Chan Title: Hazardous Materials Specialist

Signature: Barney M Chan Date: 12/29/97

Reviewed by

Name: Tom Peacock Title: Manager

Signature: Tom Peacock Date: 12-17-97

Name: Eva Chu Title: Hazardous Materials Specialist

Signature: Eva Chu Date: 12/10/97

VI. RWQCB NOTIFICATION

Date Submitted to RB: 1/2/98 RB Response: Concur

RWQCB Staff Name: ~~K. Graves~~ Stephen Hill Title: ~~AWRCE~~ EJ IV Sup Date: 1/8/98

VII. ADDITIONAL COMMENTS, DATA, ETC.

The historic use of this site from 1926 to 1987 was as a service station and vehicle maintenance facility. The history of the underground tank removals at this site is somewhat unclear because the standard tank closure report was never submitted to our office. Instead, our office received a three page letter report from the contractor, Mr. Lonnie Dillard, which described briefly the removal of tanks and includes analytical laboratory results. The exact number of tanks, sample and tank locations, etc. were not mentioned in this report.

Based on additional information provided, it is presumed that five tanks were removed since five soil samples were taken and identified as **Client ID #1-#5, Tank Exc.** In addition, a City of Oakland permit, dated **April 30, 1987** exists for the removal of four 1000 gallon tanks, one 7,000 gallon tank and one 250 gallon tank. It is noted on the back of this permit, written in ink, that the tanks were taken to H&H Marine Salvage, 220 China Basin, SF. The larger tanks are presumed to be gasoline and the smaller waste oil. Only TPH as gasoline and TPH as motor oil were run on the initial soil samples. Up to 1100 ppm TPHmo and 410 ppm TPHg were found in the soil samples. See attachment 1 for results. The Unauthorized Release Report, completed by Mr. Dillard, states that the total capacity of tanks removed was 11,500 gallons which is approximately what would be expected of the 4x1000, 7500 and 250 gallon tanks previously mentioned.

Apparently, Crosby and Overton was contracted by the City of Oakland to install two monitoring wells. Crosby and Overton subcontracted this work to Groundwater Technology (GTI). MW-1 was installed within the waste oil tank pit and MW-2, within the gasoline tank pit. Unfortunately, the monitoring well installation report includes errors in the site address as well as the site sketch. These errors cast some doubt as to the exact locations of the tanks. See attachment 2 for the GTI report. The wells were installed on **May 29, 1987**. Soil samples taken from the borings of these wells were ND for BTEX in MW-1 and ND for BT in MW-2. Up to 21 ppm ethylbenzene, 110 ppm xylenes, 411 ppm TOG and 348 ppm TPH Method 418.1 (TRPH IR method) was exhibited in boring MW-2. No other VOCs were detected via Method 8240. The groundwater samples from these wells detected up to 6600 ppb TOG, 4900 ppb TPH and 21, 25, 121 and 1780 ppb BTEX, respectively.

On **October 13, 1993** eight test pits were excavated in an attempt to characterize the site and investigate the assumed locations of the former underground tanks and monitoring wells. See Figure 2 for the location of the test pits (TP) and monitoring wells MW1-MW3. Each test pit was dug to approximately 12-15' depth. Soil samples were taken from each pit and soils were logged. Petroleum contamination was observed in the test pits, TP1, TP5 and TP8, located in the presumed locations of the former tanks.

VII. ADDITIONAL COMMENTS, DATA, ETC. (cont)

The soil samples were run for Oil and Grease, TPHg, BTEX, semi-volatiles, chlorinated solvents and the heavy metals; cadmium, chromium, lead, nickel and zinc. Only TPH and BTEX were detected in significant concentrations and the contamination appears to be localized in the southwest corner of the site. See Table 2 for a summary of the Test Pit results. Remnants of underground tank piping was observed in TP5 confirming the general location of the USTs. However, no evidence was found of the two monitoring wells. Either they are "lost", or they were never installed at this site. There is some belief that the two wells may have been installed on the property just south of this site at 82nd and E. 14th St. where another service station was located. The wells at that site were installed in 1988 by another consultant so this seems unlikely. Mr. Joseph Cotton of the City of Oakland Public Works, believes that the monitoring wells may not have been installed since a geophysical survey with a magnetometer, a physical inspection and a subsurface investigation were performed without detecting any evidence of the two wells.

On **October 22, 1993** three monitoring wells were installed at this site. Borings from these wells were analyzed for TPHg, TPHd, TOG, BTEX, semi-volatiles, chlorinated solvents and the metals; cadmium, chromium, lead, nickel and zinc. MW3, located in the southwest portion of the site, exhibited significant groundwater contamination while the other wells did not. Up to 32 mg/l oil and grease, 16 mg/l TPHd and 0.83, 0.19, 0.18, and 0.41 mg/l BTEX, respectively, was detected in MW-3. The only other parameter of potential concern found in the borings was the 10′ sample from MW-1 which exhibited 2100 ppm zinc. Long term monitoring for heavy metals has not indicated that this is a problem. Groundwater monitoring was performed in **August 1994, January 1995 and May 1995.** Groundwater gradient was west-northwesterly, towards E. 14th St. Monitoring well MW-3 continued to exhibit elevated levels of TPHg and BTEX, therefore, a work plan to further characterize the groundwater plume was provided. Of concern is the adult retirement home which lies across E. 14th St., downgradient of the site and possibly the East Oakland Youth Center located upgradient at 8200 E. 14th St..

Three additional monitoring wells were installed downgradient of the site. MW4 was installed on 81st Ave. on **April 6, 1995** and MW5 and MW6 were installed in the median of E. 14th St. on **May 26, 1995.** Soil samples from the borings for these wells were taken at 10′ and 15′ bgs. and all samples were ND for oil and grease, TPH, TPHg, TPHd and BTEX. The concentration of the metals; cadmium, chromium, lead, nickel and zinc were unremarkable. See Table 3 for a summary of results for soil samples from the test pits and MW1-MW6. See Figure 4 for the location of test pits and monitoring wells.

VII. ADDITIONAL COMMENTS, DATA, ETC. (cont)

In **September 1995** through a request from the City of Oakland Public Works, six additional borings (B1-B-6) were drilled and sampled in an attempt to determine the extent of petroleum contamination and to determine if any additional upgradient sources of contamination exist. Soil samples were taken from three depths; approximately 5', 10', and 15'bgs. These samples were analyzed for total lead, TPHg, TPHd, TOG and BTEX. Generally, contamination was limited to TOG, TPHg and BTEX within the 10'depth layer. This is likely from the migration of contamination in groundwater through the permeable soils in this layer. See Table 4 for a summary of these borings results. Two grab groundwater samples were taken from boring B6, the offsite, upgradient boring located on the south side of 82nd Ave. One sample was taken from the open borehole, the other after a slotted casing was installed. This water sample exhibited 67 mg/l TPHg and 3.5, 1.0, 3.5, and 6.3 mg/l BTEX, respectively. The other grab groundwater sample taken from boring B6 without the casing exhibited much lower TPHg and BTEX concentrations. Based upon the elevated groundwater concentrations found in B6, there is a potential of an offsite upgradient source of contamination (8200 E. 14th St.). This offsite area has been investigated by the City of Oakland since it is also city owned. It does not appear to be a problem based upon long term monitoring. See StID 4477 for details.

A **December 13, 1995** Health Risk Assessment was prepared for this site at the same time property sales and site development was being considered. A Walgreens store was being proposed in the northeast corner of the site

The exposure pathways investigated included:

* soil-volatilization to outdoor air
* surficial soil-inhalation/dermal/ingestion and
* groundwater-volatilization to outdoor air.

Soil leaching to groundwater was not evaluated since this shallow groundwater is not considered a drinking water source and EBMUD services this area. Because no buildings were planned to be located within the impacted area, volatilization to indoor air was not evaluated. A Tier 1 evaluation indicated that the maximum concentration for benzene in soil (0.87 mg/kg in MW-3;10.5') exceeded the RBSL for volatilization to outdoor air for the residential and commercial scenario assuming a 1E-6 risk. These RBSL values are 0.272 and 0.457 mg/kg, respectively. The analyte concentrations for TEX did not exceed their respective RBSLs.

Because of these results, a Tier 2 analysis was performed using site specific data. Because no future residences were planned for this site, this exposure pathway was eliminated. Because the analytical data did not

VII. ADDITIONAL COMMENTS, DATA, ETC. (cont)

exhibit normal distribution, the highest concentration detected was used to compare against the SSTLs not the 95% UCL value. Surficial soil exposure route was also eliminated since the site was to be asphalted during development. The remaining exposure pathways evaluated were:

* soil-volatilization to outdoor air and
* groundwater-volatilization to outdoor air.

The results of the Tier 2 analysis indicate that the maximum concentration of benzene in soil, 0.87 mg/kg, exceeds the SSTL for soil volatilization to outdoor air for commercial scenario at 1E-6 risk,(0.453 mg/kg), but not the SSTL based upon a 1E-5 risk (4.53 mg/kg). Because the site is capped and no residences are planned, a risk of 1E-5 is considered acceptable. After review by Ravi Arulanantham , Staff Toxicologist of the RWQCB, our office received concurrence on recommendation for site closure.
See Tables 6,7 & 8 for Tier 1 RBSLs, Tier 2 parameters and Tier 2 RBSLs

Site closure is recommended based upon:

* Adequate site characterization. Although the specifics of the location of the former USTs is not certain, numerous trenches, borings and monitoring wells have shown that the affected location is localized in the southwest portion of this property. See Figures 9 & 10 for TPHg and benzene isoconcentration maps.

* Adequate source removal. No evidence of underground tanks or heavily impacted soil or groundwater was encountered. Only a minor amount of piping was discovered.

* The groundwater plume appears to be stable. The downgradient monitoring wells, MW4-6, did not encounter soil or groundwater contamination. Long term monitoring has occurred. See Table 5 for a summary of groundwater analytical results.

* The site presents no significant risk to human health or the environment. A Tier 2 RBCA was performed and using the highest observed contaminant concentration (a very conservative estimate) no risk exceeding 1E-5 is expected. In addition, the site is asphalted over the area of highest soil and groundwater impact.

Thermo Analytical Inc.

TMA/Norcal
1400 53rd Street
Suite 460
Emeryville, CA 94608-2946
(415) 652-2300

Attachment I

Crosby and Overton
8430 Amelia St.
Oakland, CA 94621

May 8, 1987
Report #2701-53
P.O. #3619

Attention: Dan Heath

Site Location: ELDC Corp.

RE: Five (5) soil samples submitted on May 1, 1987 for rush gasoline analysis; also one soil sample for rush waste oil analysis.

Procedure: The sample is analyzed for waste oil by following a modified EPA Method 3510 extraction procedure. The sample is extracted three (3) times with hexane. The solvent is removed from the combined extracts and carbon disulfide is added. The solution is injected into a gas chromatograph fitted with a flame ionization detector. Quantitation is performed, as total hydrocarbon response, against a solution made from a known concentration of light machine oil. The limit of detection for this method of analysis is ten parts per million (mg/kg).

The samples are analyzed for gasoline by following the method described in Attachment 2, Analytical Procedures for Fuel Leak Investigations. The samples are concentrated on a Tekmar LSC-2 automatic sample concentrator prior to injection into a gas chromatograph fitted with a flame ionization detector. Quantitation is performed, as total hydrocarbon response, against known concentrations of gasoline. The limit of detection for this method of analysis is one part per million (mg/kg).

The results are summarized in the table below:

		Concentration (mg/kg)*	
TMA	Client ID	Waste Oil	Gasoline
2701-53-1	#1 Waste Oil Tank Exc.	1100	32
2701-53-2	#2 Tank Exc.	--	410
2701-53-3	#3 Tank Exc.	--	310
2701-53-4	#4 Tank Exc.	--	7.0
2701-53-5	#5 Tank Exc.	--	34

* wet weight basis

Submitted by:

Robert B. Flay
Manager, Organic Department

cc: Lonnie Dillard
ELDC Corp.
P.O. Box 43060
1824 E. 14th
Oakland, CA 94601

GROUNDWATER TECHNOLOGY, INC.
OIL RECOVERY SYSTEMS
4080 Pike Lane, Suite D, Concord, CA 94520-1227 (415) 671-2387

Attachment 2

June 23, 1987

Job No. 203 799 5000

Mr. Kevin Petal
Crosby and Overton EMI
8430 Amelia Street
Oakland, California 94621

8124

wrong file

Subject: Initial Contamination Assessment, City of Oakland property, 1884 East 14th Street, Oakland, California for Crosby and Overton EMI

Dear Mr. Petal,

8124

This letter presents the results of the initial contamination assessment performed by Groundwater Technology, Inc. (GTI) at the City of Oakland property located at 1824 East 14th Street in Oakland, California (See Figure 1, Site Location Map). The work was authorized by Crosby and Overton EMI on May 20, 1987, and included the installation of two groundwater observation wells, the collection and analysis of soil and groundwater samples and the preparation of a technical report regarding subsurface conditions at the site. The purpose of the assessment was to evaluate the potential of hydrocarbon contamination of the native materials underlying the former locations of underground gasoline and waste oil tanks.

Initially, two borings were drilled using a truck-mounted drill rig equipped with 7.5-inch outside diameter (OD) hollow-stem augers. These borings were drilled to 25-feet below the ground surface in the former tank pits (See Figure 2, Site Sketch). During drilling a GTI geologist maintained a continuous log of materials encountered according to the Unified Soil Classification System (See Appendix I, Drill Logs). Beginning at 3.5-feet below surface, soil samples were collected at 5-foot intervals to the bottom of each boring. Samples were collected using 2-inch by 6-inch brass tubes in a modified California split spoon sampler which was hammer driven 18-inches at each sample interval. Following collection, one soil filled brass tube was capped, sealed and placed on ice for delivery to an analytical laboratory. An appropriate Chain-of-Custody Manifest was included with the samples.

Attachment 2

Observation wells were installed in each boring and were constructed of 20-feet of PVC screen (.020 inch machine slotted) threaded to 5 feet of PVC pipe. After the casings were inserted in the borings, No. 2 sand was poured to pack the remaining space between the borehole wall and the casing. Sand was poured to 4-feet below surface where a sanitary seal of bentonite and cement was added. The seals were poured to just below surface where street-rated road boxes were installed to protect the well heads (See Attachment I, Drill Logs for well construction).

Following installation, the wells were developed by hand bailing to remove fine material. Groundwater samples were subsequently collected with a US Environmental Protection Agency (EPA)-approved Teflon® bailer. Water samples were transferred to 40-milliliter (ml) vials with Teflon® caps and sealed in a manner such that no headspace existed in the vials. Samples were placed on ice and delivered to an analytical laboratory accompanied by a Chain-of-Custody Manifest. Water samples collected on June 2, 1987, labeled in the field as "small pit" and "large pit" should have been labeled as MW-1 and MW-2 respectively. Water samples collected on June 8, 1987, were labeled correctly (See Attachment II, Analytical Results).

Groundwater and soil samples were delivered to Groundwater Technology Environmental Laboratory (GTEL) for analysis. Soil samples were analyzed using EPA Method 8240 for volatile organic compounds, 418.1 for total petroleum hydrocarbons (TPH), and 413.2 for total oil and grease (TOG). Analytical results for soil are presented in Table 1.

TABLE I
Soil Analysis

Sample I.D.	Benzene ppm	Toluene ppm	Ethylbenzene ppm	Xylene ppm	TPH (418.1) ppm	TOG ppm
MW-1B	ND	ND	ND	ND	28	84
MW-1C	ND	ND	ND	ND	296	376
MW-2B	ND	ND	21	110	348	411
MW-2C	ND	ND	ND	ND	23	93

Notes:

Analytical Reports are presented in Attachment II
MW = Monitoring Well
ND = Non Detectable concentration
ppm = parts per million

Attachment 2

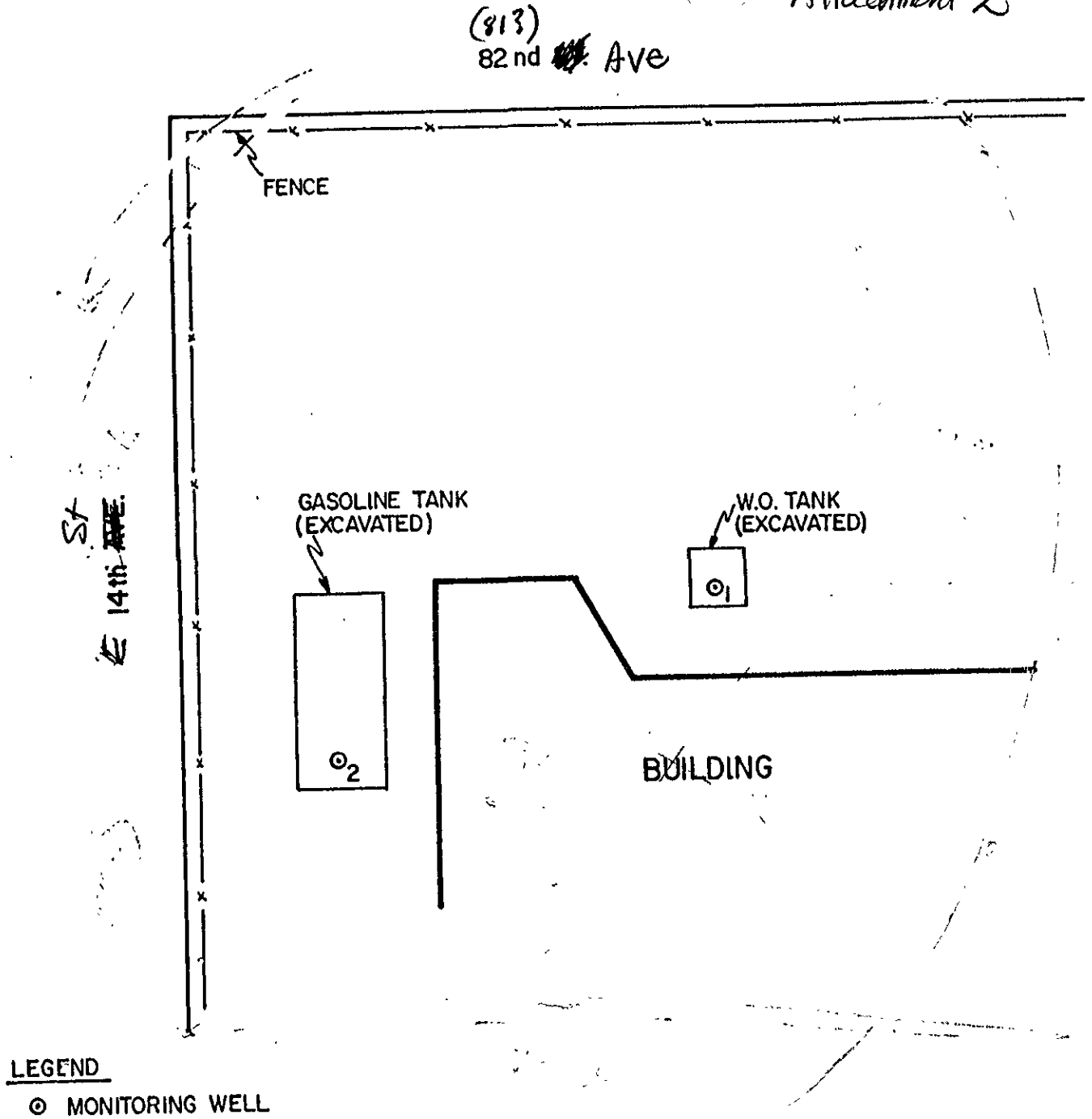


FIGURE 2
SITE SKETCH

N

NO SCALE

CROSBY & OVERTON
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY

Attachment 2

Water samples were analyzed using EPA Methods for volatile organics, 418.1 for TPH and 413.2 for TOG. Organic lead in water was analyzed by atomic absorption and flame-ionization detection. Table II presents the analytical results for groundwater.

TABLE II
Water Analysis

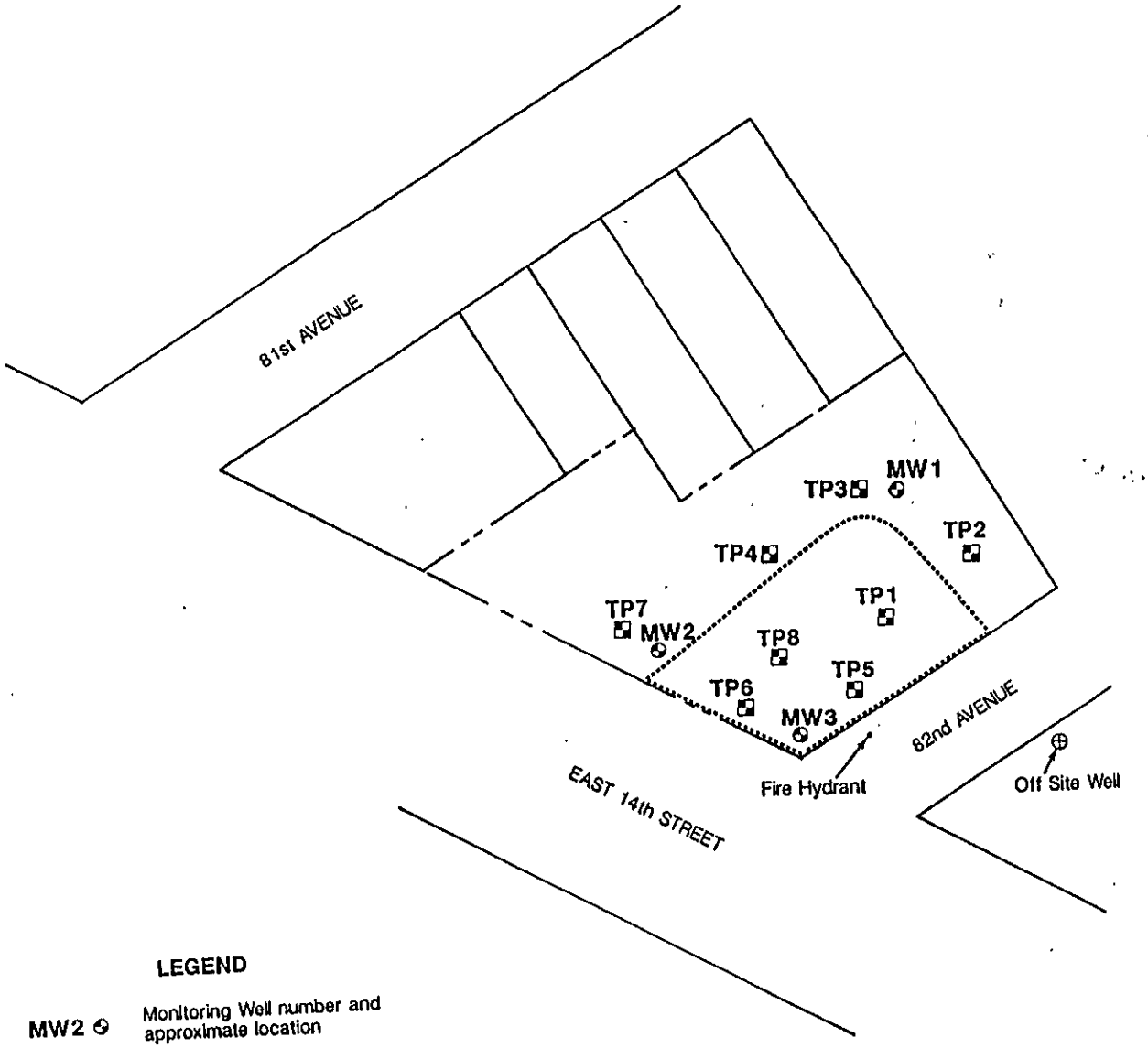
Sample I.D.	Benzene ppb	Toluene ppb	Ethlybenzene ppb	Xylene ppb	TPH ppb	TOG ppb	Pb (organic) ppb
1	1	2	ND	2	4900	5800	ND
2.	21	25	121	1780	4600	6600	ND

Notes:

Analytical Results are presented in Attachment II
ND = Non Detectable
ppb = parts per billion
TPH and TOG originally in ppm

After a review of the data collected during this investigation, GTI recommends that additional work be performed at this site. Groundwater contamination by aromatic hydrocarbons, such as benzene and xylene, was found in monitoring well 2 at concentrations exceeding the California Department of Health Services (DOHS) action levels. The benzene level in monitoring well 1 slightly exceeded the DOHS action level. No action levels have been established by the state for TOG and TPH.

GTI recommends that four additional monitoring wells be installed at this site to more fully define the extent of groundwater and soil contamination. GTI would be pleased to submit a proposal to conduct this work for Crosby and Overton EMI if requested.



Applied Geotechnology Inc.
Geotechnical Engineering
Geology & Hydrogeology

Site Plan

City of Oakland/8124 East 14th Street
Oakland, California

FIGURE
2

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,687.003	DFF				

Table 2
Summary of Chemical Analyses – Soil (Test Pits)
City of Oakland/East 14th Street
Oakland, California

Sample I.D.	Sample Depth (ft bgs)	Date Sampled	EPA Test Method						
			BETX 5030/8020				M8015	418	413.2
			Benzene	Ethylbenzene	Toluene	Total Xylenes	TPH–G	TPH	Oil & Grease
			mg/kg				mg/kg		
1	13.5	10/14/93	0.730 [a]	ND	23 [a]	11 [b]	230 [d]	73	86
2	12.0	10/14/93	ND	ND	ND	ND	ND	ND	ND
3	11.0	10/14/93	ND	ND	ND	ND	ND	ND	ND
4	15.0	10/14/93	ND	ND	ND	ND	ND	ND	ND
5	13.0	10/14/93	0.310	ND	0.480	18 [c]	520 [e]	180	190
6	12.0	10/14/93	ND	0.130	0.150	0.071	15 **	22	27
7	12.5	10/14/93	ND	ND	ND	ND	ND	ND	ND
8	12.0	10/14/93	0.085	ND	0.130	8.8	37	17	21
Method Reporting Limit			0.005	0.005	0.005	0.005	5	5	5

Notes:

**Does not match gasoline standard.
a) Reporting limit of 0.05 mg/kg.
b) Reporting limit of 0.100 mg/kg.
c) Reporting limit of 1.0 mg/kg.
d) Reporting limit of 50 mg/kg.
e) Reporting limit of 100 mg/kg.
ft bgs – Feet below ground surface.
ND – Not detected.
mg/kg – Milligrams per kilogram is equivalent to parts per million.
TPH–G – Total petroleum hydrocarbons as gasoline.

Table 1

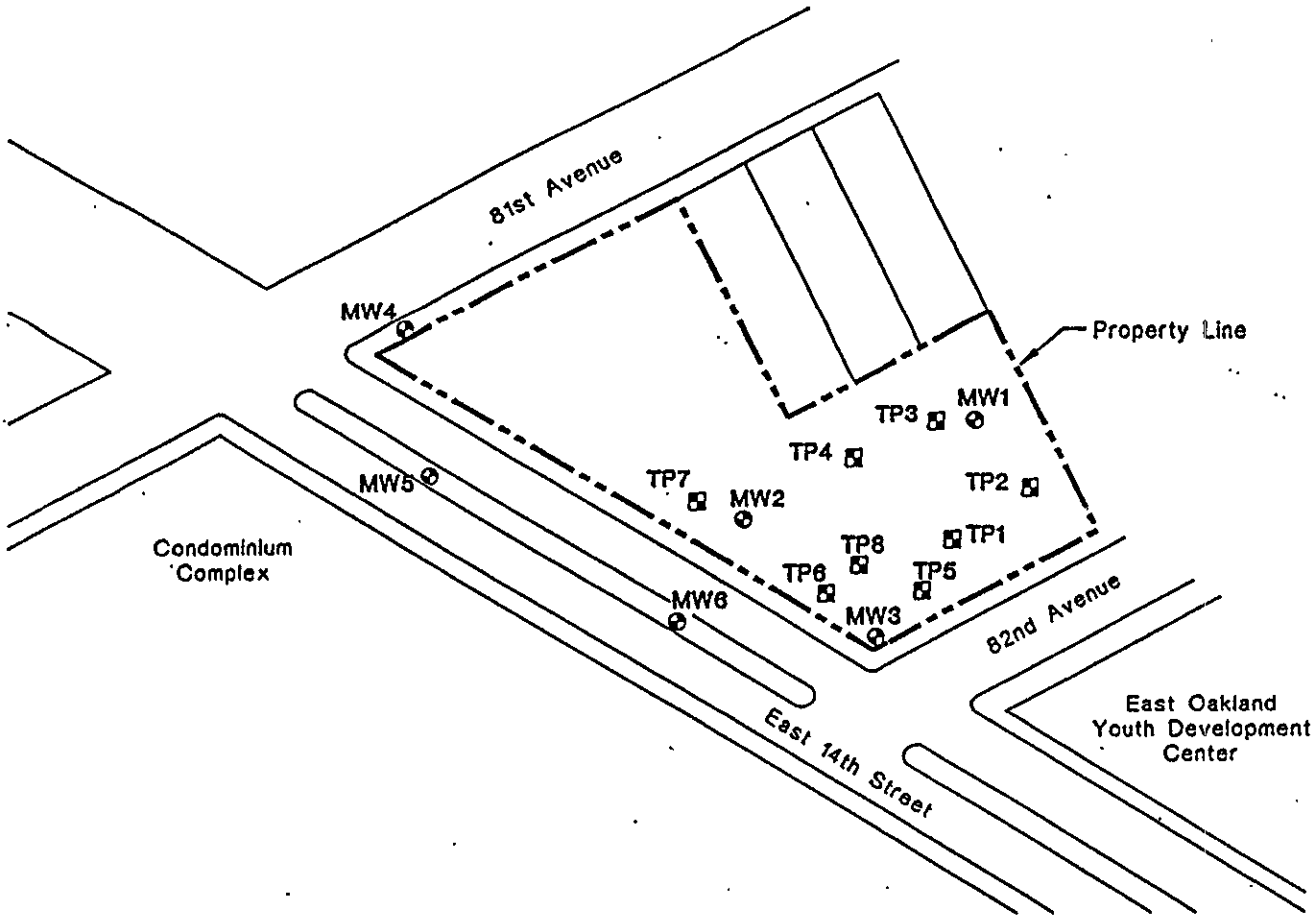
Summary Soil Analytical Data-Petroleum Hydrocarbons, and Metals
City of Oakland/ 8124 East 14th Street
Oakland, California

AGI TECHNOLOGIES

Sample I.D.	Date Sampled	Depth of Sample (ft bgs)	TPH-G	TPH-D	TPH	O&G	Benzene	Ethyl-Benzene	Toluene	Total Xylenes	Cadmium	Chromium	Lead	Nickel	Zinc
			mg/kg				mg/kg				mg/kg				
Results of Previous Investigations Performed by AGI															
TP1	14-Oct-93	13.5	230	NA	73	86	0.73	<0.005	2.3	11	<0.5	53	15	34	56
TP2	14-Oct-93	12.0	<5	NA	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.5	51	11	38	72
TP3	14-Oct-93	11.0	<5	NA	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.5	58	14	45	54
TP4	14-Oct-93	15.0	<5	NA	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.5	56	13	55	61
TP5	14-Oct-93	13.0	520	NA	180	190	0.31	<0.005	0.48	18	<0.5	48	15	39	55
TP6	14-Oct-93	12.0	15	NA	22	27	<0.005	0.13	0.15	0.071	<0.5	47	11	36	47
TP7	14-Oct-93	12.5	<5	NA	<5	<5	<0.005	<0.005	<0.005	<0.005	<0.5	59	12	66	77
TP8	14-Oct-93	12.0	37	NA	17	21	0.085	<0.005	0.13	8.8	<0.5	54	13	32	67
MW1	25-Oct-93	1.5	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	60	130	37	240
		7	<5	<5	NA	<5	<0.005	<0.005	<0.005	<0.005	1.9	56	330	42	370
		10	<5	<5	NA	40	<0.005	<0.005	<0.005	<0.005	1.6	51	55	53	2100
MW2	25-Oct-93	1.5	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	46	15	31	39
		6	<5	<5	NA	<5	<0.005	<0.005	<0.005	<0.005	0.54	63	14	48	93
		11	<5	<5	NA	<5	<0.005	<0.005	<0.005	<0.005	0.79	71	20	66	96
MW3	25-Oct-93	2	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	45	9.5	28	40
		5.5	<5	<5	NA	<5	<0.005	0.062	<0.005	<0.005	<0.5	65	63	49	220
		10.5	440	260 (1)	NA	6	0.870	3.20	0.860	22	<0.5	43	6.9	33	38
Results of Current Investigation Performed by AGI															
MW4	06-Apr-95	10.0	<1.0	<1.0	NA	<50	<0.005	<0.005	<0.005	<0.005	<0.5	18	5.9	21	25
		15.0	<1.0	<1.0	NA	<50	<0.005	<0.005	<0.005	<0.005	<0.5	17	4.4	12	21
MW5	26-May-95	10.0	<1.0	<1.0	NA	<50	<0.005	<0.005	<0.005	<0.005	0.7	24	7.6	17	37
		15.0	<1.0	<1.0	NA	<50	<0.005	<0.005	<0.005	<0.005	0.9	24	4.7	20	59
MW6	26-May-95	10.0	<1.0	<1.0	NA	<50	<0.005	<0.005	<0.005	<0.005	0.6	22	7.5	19	37
		15.0	<1.0	<1.0	NA	<50	<0.005	<0.005	<0.005	<0.005	0.7	24	6.3	25	150

Notes:

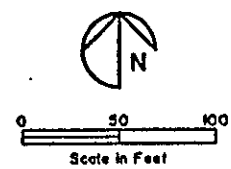
TPH-G = Total Petroleum Hydrocarbons quantified as gasoline
TPH-D = Total Petroleum Hydrocarbons quantified as diesel
TPH = Total Petroleum Hydrocarbons
O&G = Oil and Grease
ft bgs = feet below groundsurface
mg/kg = milligrams per kilogram
NA = Not Analyzed
<5 = not detected at indicated laboratory detection limit
(1) = Does not match diesel pattern; value is estimated based on diesel calibration



LEGEND

MW2 ⊕ Monitoring well

TP4 ⊡ Test Pit



AGI TECHNOLOGIES

Site Plan

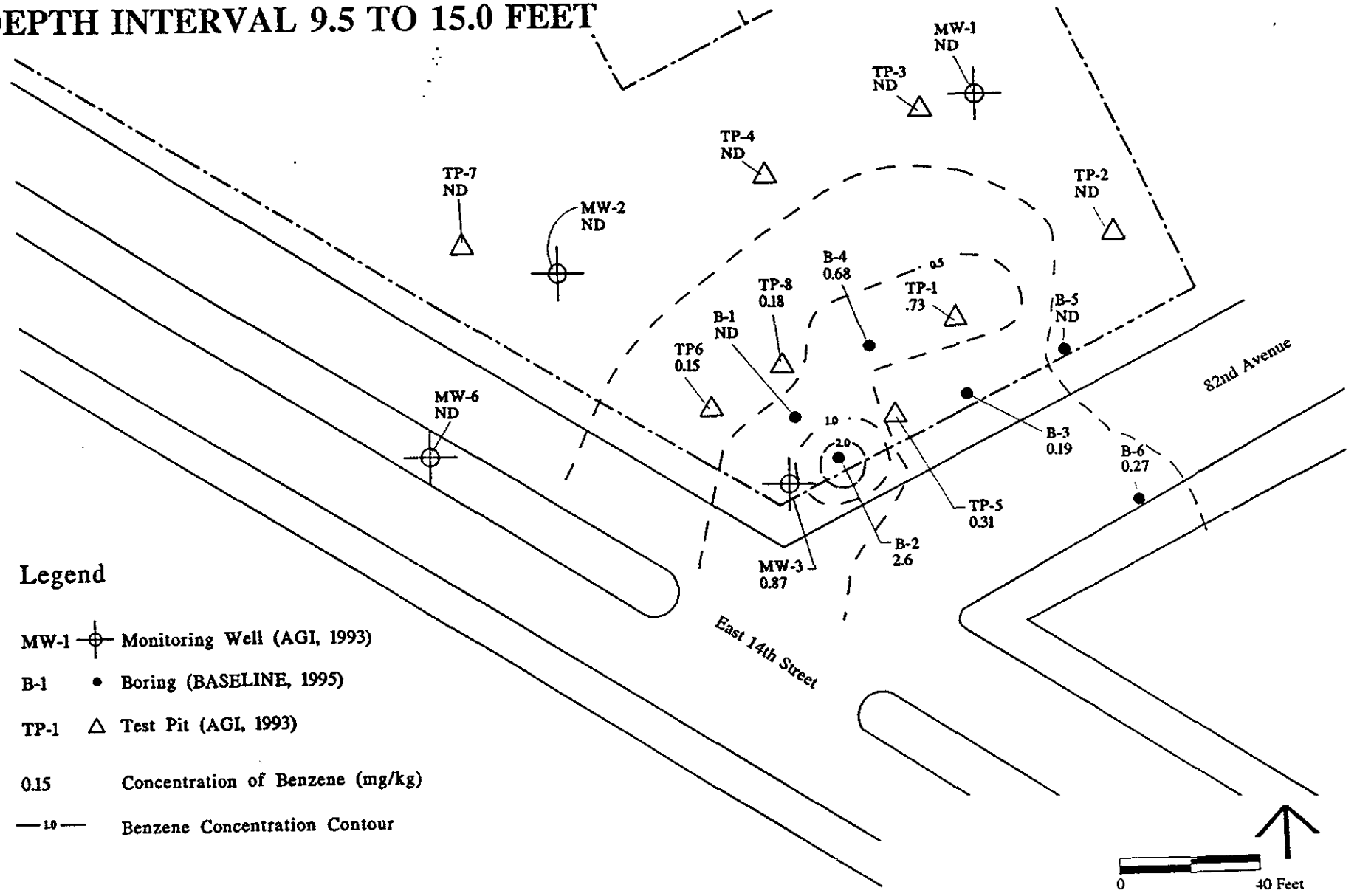
City of Oakland/East 14th Street
Oakland, California

FIGURE 4

PROJECT NO.	DRAWN	DATE	APPROVED	REVISED	DATE
siteplan.dwg	15,687.021	DFF	14 Jun 95		

CONCENTRATION BENZENE IN SOIL
DEPTH INTERVAL 9.5 TO 15.0 FEET

Figure 10



8124 East 14th Street
Oakland, California

BASELINE

93343-KO 11/21/95, Cadd 93343b, file U

TABLE 4

SUMMARY OF 1995 ANALYTICAL RESULTS, SOIL
8124 East 14th Street, Oakland, California
(mg/kg)

Sample ID	Date	Depth (feet)	Total Lead[1]	TPH as Gasoline[2]	TPH as Diesel[3]	Oil and Grease		Benzene[6]	Toluene[6]	Ethyl-benzene[6]	Xylenes[6]
						Total[4]	Nonpolar[5]				
B1; 5.0-5.5	09/27/95	5.0-5.5	<5.0	1.4	<1.0	150	86	0.043	<0.005	0.028	0.021
B1; 9.5-10.0	09/27/95	9.5-10.0	<5.0	170	<1.0	120	<50	<0.250	<0.250	2.00	4.2
B1; 14.0-14.5	09/27/95	14.0-14.5	<5.0	1.5	<1.0	130	<50	<0.005	<0.005	0.0055	0.0076
B2; 5.0-5.5	09/27/95	5.0-5.5	<5.0	<1.0	<1.0	170	94	<0.005	<0.005	<0.005	<0.005
B2; 9.5-10.0	09/27/95	9.5-10.0	<5.0	240	<1.0[7]	140	<50	0.26	0.27	260	8.7
B2; 15.5-16.0	09/27/95	15.5-16.0	<5.0	<1.0	<1.0	120	<50	<0.005	<0.005	<0.005	<0.005
B3; 9.5-10.0	09/27/95	9.5-10.0	<5.0	180	<1.0[8]	130	<50	0.19	0.33	3.4	15
B3; 15.5-16.0	09/27/95	15.5-16.0	<5.0	<1.0	<1.0	100	<50	<0.005	<0.005	<0.005	<0.005
B4; 5.0-5.5	09/27/95	5.0-5.5	<5.0	<1.0	<1.0	68	<50	<0.005	<0.005	<0.005	<0.005
B4; 9.5-10.0	09/27/95	9.5-10.0	<5.0	150	<1.0	130	<50	0.68	0.63	2.5	11
B4; 14.0-14.5	09/27/95	14.0-14.5	<5.0	<1.0	<1.0	150	130	<0.005	<0.005	<0.005	<0.005
B5; 5.0-5.5	09/27/95	5.0-5.5	<5.0	4.8	<1.0	110	<50	0.04	<0.005	0.099	0.2
B5; 9.5-10.0	09/27/95	9.5-10.0	<5.0	100	<1.0	110	65	<0.100	<0.100	1.4	0.25
B5; 14.0-14.5	09/27/95	14.5-15.0	<5.0	<1.0	<1.0	150	<50	<0.005	<0.005	<0.005	<0.005
B6; 5.0-5.5	09/27/95	5.0-5.5	<5.0	2.9	<1.0	140	<50	0.16	<0.005	0.057	0.12
B6; 9.5-10.0	09/27/95	9.5-10.0	<5.0	200	<1.0	120	<50	0.27	<0.250	2.7	14
B6; 14.0-14.5	09/27/95	14.0-15.0	<5.0	<1.0	<1.0	66	<50	<0.005	<0.005	<0.005	<0.005

Notes: x.x = Constituent detected above reporting limit.
<x.x = Constituent not detected at stated reporting limit.
Locations of soil borings installed in 1995 are included in Figure 3.
Laboratory reports are presented in Appendix B.

[1] EPA Method 3050M/7420.
[2] EPA Method 5030/8015M.
[3] EPA Method 3550/8015M.
[4] Standard Method 5520E.
[5] Standard Method 5520E and F
[6] EPA Method 8020.
[7] Sample contained unknown hydrocarbon in diesel range (3.3 mg/kg).
[8] Sample contained unknown hydrocarbon in diesel range (2.0 mg/kg).

TABLE 5

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS

8124 East 14th Street, Oakland, California

The Ellington Group, Inc.

Sample ID	Date Sampled(1)	TPH as Gasoline(2)	TPH as Diesel(2)	Oil and Grease(3)	Benzene(4)	Toluene(4)	Ethyl-benzene(4)	Total Xylenes(4)	Volatile Organic Compounds(5)	Metals(6) Cad-mium	Chrom-ium	Lead	Nickel	Zinc
		(mg/L)												
MW-1	10/27/93(7, 8)	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	0.012	<0.001	<0.01	<0.02	<0.06	<0.02	0.869
	08/18/94	<1.0	<1.0	<1.0	<0.001	<0.001	0.0046	0.007	<0.001	<0.01	0.012	<0.05	0.014	<0.01
	01/19/95(9)	<0.05	<0.05	<1.0	<0.0005	<0.0005	0.0002	0.0016	<0.0005	<0.001	<0.05	<0.01	<0.05	0.02
	05/30/95	0.09	<0.05	<1.0	<0.0005	<0.0005	0.0023	0.005	--	<0.005	0.04	<0.01	0.03	0.05
	09/14/95	<0.05	<0.05	<5.0	<0.0005	<0.0005	<0.0005	--	--	<0.005	0.0637	<0.04	0.0783	0.184
	03/12/96(10)	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	0.0009	--	--	--	--	--	--
	01/24/97(15)	<0.05	0.073Y	--	<0.0005	<0.0005	<0.0005	0.0009	--	--	--	--	--	--
MW-2	10/27/93(7, 8)	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.02	<0.06	<0.02	0.024
	08/18/94	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	0.02	<0.05	0.041	0.068
	01/19/95(9)	<0.05	<0.05	<1.0	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	0.002	<0.05	<0.01	<0.05	<0.01
	05/30/95	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	0.0007	--	<0.005	0.02	<0.01	0.02	0.03
	09/14/95	0.14	0.056	<5.0	<0.0005	0.0013	<0.0005	0.0053	--	<0.005	0.0521	<0.04	0.0571	0.157
	03/12/96(10)	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--
MW-3	10/27/93(7, 8)	<1.0	1613	32	0.83	0.19	0.18	0.41	<0.001	<0.01	<0.02	<0.06	<0.02	0.038
	08/18/94	15	3714	<1.0	0.5	0.35	0.12	0.83	<0.001	<0.01	0.019	<0.05	0.042	0.072
	01/19/95(9)	6.3	<0.05	1.1	0.43	0.076	0.26	0.26	<0.0005	0.002	<0.05	<0.01	<0.05	0.03
	05/30/95	3.3	<0.05	<1.0	0.4	0.041	0.098	0.15	--	<0.005	0.04	0.02	0.02	0.05
	09/14/95	12	0.82	<5.0	0.81	0.2	0.17	0.38	--	<0.005	0.062	<0.04	0.056	0.193
	03/12/96(10)	8.6	0.08214	<1.0	0.3	0.083	0.25	0.31	--	--	--	--	--	--
	05/08/97(16)	5.8	<0.05	--	0.23	0.023	0.025	0.057	--	<0.002	0.034	0.0085	0.027	0.056
MW-4	05/30/95	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.005	0.3	0.06	0.21	0.26
	09/14/95	<0.05	<0.05	<5.0	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.005	0.384	0.123	0.427	0.614
	03/12/96	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--
MW-5	05/30/95	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.005	0.68	0.16	0.51	0.7
	09/14/95	<0.05	<0.05	<5.0	<0.0005	<0.0005	<0.0005	<0.0005	--	<0.005	0.165	0.056	0.179	0.355
	03/12/96(10)	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--
	01/24/97(15)	<0.05	0.130Y	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--
MW-6	05/30/95	2.8	<0.05	<1.0	<0.0005	<0.0005	0.0099	0.014	--	<0.005	0.02	<0.01	0.02	0.03
	09/14/95	1.2	0.13	<5.0	0.063	0.034	0.1	0.08	--	<0.005	0.463	0.0985	0.446	0.702
	03/12/96(10)	<0.05	<0.05	<1.0	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--
	01/24/97(11)	0.140 YH	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--
B-611	09/27/95	67	<0.05	<1.012	3.5	1.8	3.5	6.3	--	--	--	--	--	--
C-1	01/24/97(15)	<0.05	<0.05	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--

TABLE 6

TIER 1: RISK-BASED SCREENING LEVELS
8124 East 14th Street, Oakland, California

Compound	Receptor/ Risk or Hazard Level	SOIL			GROUNDWATER	
		Maximum Concentration (mg/kg)	Soil Volatilization to Outdoor Air (mg/kg)	Surficial Soil Ingestion/ Inhalation/Dermal	Maximum Concentration (mg/L)	Groundwater Volatilization to Outdoor Air (mg/L)
			RBSL	*RBSL*		*RBSL*
Benzene	Residential, 1.0E-06	0.87	2.72E-01	5.82E+00	0.83	1.1E+01
	Commercial, 1.0E-06		4.57E-01	1.0E+01		1.84E+01
	Commercial, 1.0E-05		4.57E+00	1.0E+02		1.84E+02
Toluene	Residential, Chronic HQ = 1	23	RES	1.33E+04	0.35	>S
	Commerical, Chronic HQ = 1		RES	1.87E+04		>S
Ethylbenzene	Residential, Chronic HQ = 1	3.4	RES	7.83E+03	0.26	>S
	Commerical, Chronic HQ = 1		RES	1.15E+03		>S
Xylenes	Residential, Chronic HQ = 1	22	RES	1.45E+05	0.83	>S
	Commerical, Chronic HQ = 1		RES	2.08E+05		>S
Napthalenes	Residential, Chronic HQ = 1	1.86	RES	9.77E+02	NR	NA
			RES	1.90E+03		NA

Notes:

HQ = Hazard quotient.

>S = Selected risk level is not exceeded for all possible dissolved levels (< = pure component solubility).

RES = Selected risk level is not exceeded for pure compound present at any concentration.

RBSL = Risk based screening level (Tier 1).

Naphthalenes include naphthalene and 2-methylnaphthalene.

NR = Not reported above laboratory reporting limits.

NA = Not applicable, chemical not reported above laboratory reporting limits.

TABLE 7

SITE PARAMETERS FOR SITE-SPECIFIC TARGET LEVELS

Parameter	Definitions	Tier 1 Values		Site-Specific Values	
		Residential	Commercial	Residential	Commercial
d	Lower depth of surficial soil (cm)	100	100	244	244
ER	Enclosed-space air exchange rate (L/s)	1.40E-04	2.30E-04	1.40E-04	2.30E-04
foc	Fraction of organic carbon in soil (g-C/g-soil)	1.00E-02	1.00E-02	1.00E-02	1.00E-02
hcap	Thickness of capillary fringe (cm)	5	5	5	5
hv	Thickness of vadose zone (cm)	295	295	239	239
I	Infiltration rate of water through soil (cm/years)	30	30	30	30
LB	Enclosed-space volume/infiltration area ratio (cm)	200	300	200	300
Lcrack	Enclosed-space foundation or wall thickness (cm)	15	15	15	15
Lgw	Depth to groundwater = hcap + hy (cm)	300	300	244	244
Ls	Depth to subsurface soil sources (cm)	100	100	152	152
Pe	Particulate emission rate (g/cm2-s)	6.90E-14	6.90E-14	6.90E-14	6.90E-14
Uair	Wind speed above gs in ambient mixing zone (cm/s)	225	225	380	380
Ugw	Groundwater Darcy velocity (cm/s)	2500	2500	31540	31540
W	Width of source area parallel to wind or gw flow direction (cm)	1500	1500	3658	3658
Delta air	Ambient air mixing zone thickness (cm)	200	200	200	200
Delta gw	Groundwater mixing zone thickness (cm)	200	200	200	200
n	Areal fraction of cracks in foundations/walls	1.00E-02	1.00E-02	1.00E-02	1.00E-02
Theta acap	Volumetric air content in capillary fringe soils	3.80E-02	3.80E-02	2.90E-02	2.90E-02
Theta acrack	Volumetric air content in foundation/wall cracks	2.60E-01	2.60E-01	2.60E-01	2.60E-01
Theta as	Volumetric air content in vadose zone soils	2.60E-01	2.60E-01	2.20E-01	2.20E-01
Theta wcap	Volumetric water content in capillary fringe soils	3.80E-01	3.80E-01	2.90E-01	2.90E-01
Theta wcrack	Volumetric water content in foundation/wall cracks	3.42E-01	3.42E-01	2.60E-01	2.60E-01
Theta ws	Volumetric water content in vadose zone soils	1.20E-01	1.20E-01	1.20E-01	1.20E-01
ps	Soil bulk density (g-soil/cm3-soil)	1.20E-01	1.20E-01	7.00E-02	7.00E-02
		1.70E+00	1.70E+00	1.77E+00	1.77E+00
t	Averaging time for vapor flux (s)	7.88E+08	7.88E+08	7.88E+08	7.88E+08

TABLE 8

TIER 2: SITE-SPECIFIC TARGET LEVELS
8124 East 14th Street, Oakland, California

Compound	Receptor/ Risk or Hazard Level	SOIL			GROUNDWATER	
		Maximum Concentration (mg/kg)	Soil Volatilization to Outdoor Air (mg/kg)	Surficial Soil Ingestion/ Inhalation/Dermal	Maximum Concentration (mg/L)	Groundwater Volatilization to Outdoor Air (mg/L)
			SSTL	*SSTL*		*SSTL*
Benzene	Residential, 1.0E-06	0.87	--	--	0.83	--
	Commercial, 1.0E-06		4.53E-01	--		1.72E+01
	Commercial, 1.0E-05		4.53E+00	--		1.72E+02
Toluene	Residential, Chronic HQ = 1	23	--	--	0.35	>S
	Commerical, Chronic HQ = 1		RES	--		>S
Ethylbenzene	Residential, Chronic HQ = 1	3.4	--	--	0.26	>S
	Commerical, Chronic HQ = 1		RES	--		>S
Xylenes	Residential, Chronic HQ = 1	22	--	--	0.83	>S
	Commerical, Chronic HQ = 1		RES	--		>S
Napthalenes	Residential, Chronic HQ = 1	1.86	--	--	NR	NA
	Commercial, Chronic HQ = 1		1.31E+02	RES		NA

Notes:

HQ = Hazard quotient.

>S = Selected risk level is not exceeded for all possible dissolved levels (< = pure component solubility).

RES = Selected risk level is not exceeded for pure compound present at any concentration.

SSTL = Site-specific target level (Tier 2).

-- =Not calculated in Tier 2 analysis; exposure pathway eliminated through site development.

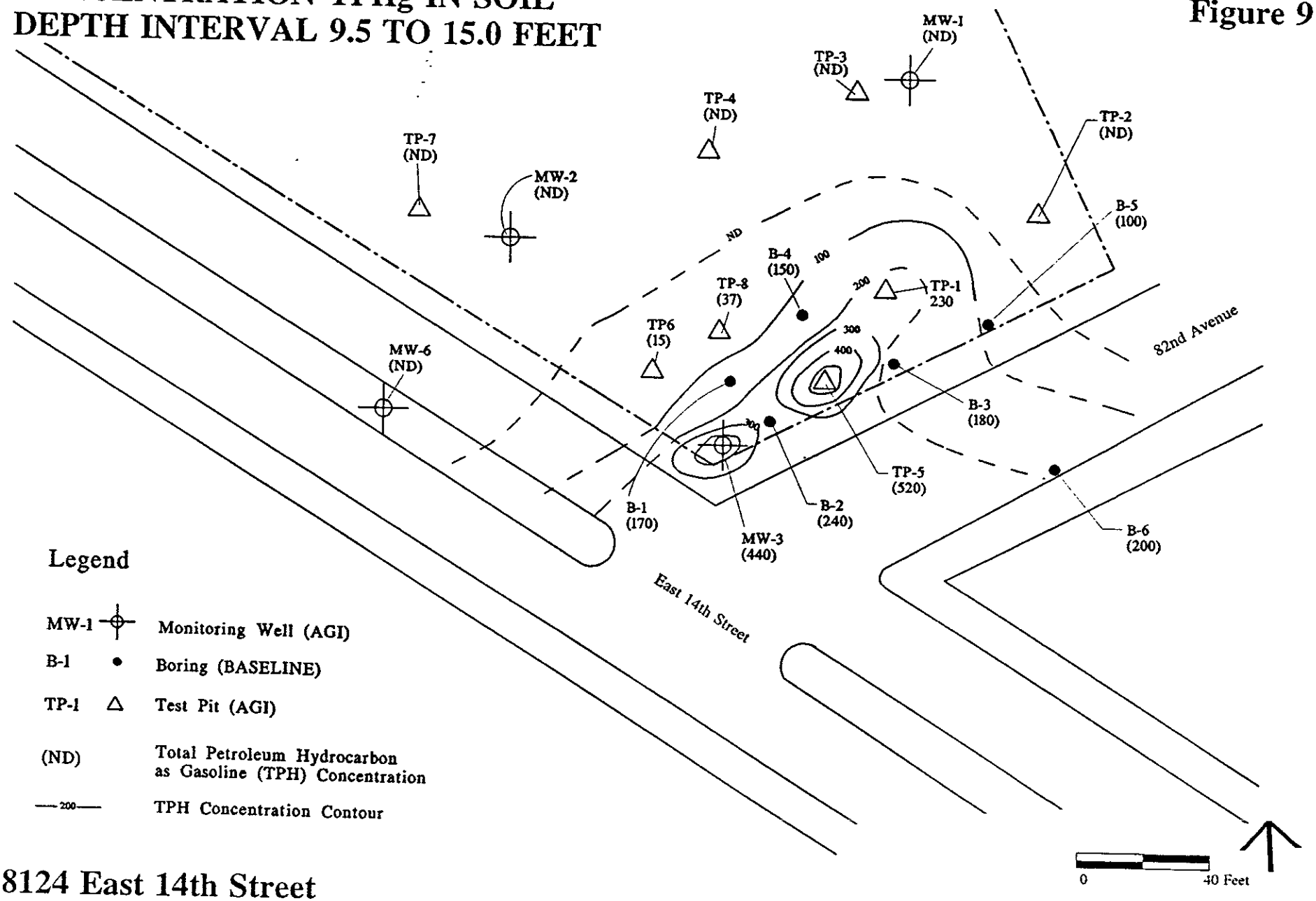
Naphthalenes include naphthalene and 2-methylnaphthalene.

NR = Not reported above laboratory reporting limits.

NA = Not applicable, chemical not reported above laboratory reporting limits.

CONCENTRATION TPHg IN SOIL
DEPTH INTERVAL 9.5 TO 15.0 FEET

Figure 9



Legend

MW-1	⊕	Monitoring Well (AGI)
B-1	•	Boring (BASELINE)
TP-1	△	Test Pit (AGI)
(ND)		Total Petroleum Hydrocarbon as Gasoline (TPH) Concentration
—200—		TPH Concentration Contour

8124 East 14th Street
Oakland, California

93343-KO 11/21/95, Cadd 93343a, file U

BASELINE