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

March 4, 1997
StID # 3679

REMEDIAL ACTION COMPLETION CERTIFICATION

Mr. Bennie Kwong
Oakland Community Housing Inc.
405 14th St., #400
Oakland, CA 94612

Re: Oakland Community Housing Inc., 2530 E. 14th St., Oakland CA 94601

Dear Mr. Kwong:

This letter confirms the completion of site investigation and remedial action for the four underground tanks (4-10,000 gallon UL/ regular) 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 storage tanksis 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 release is required.

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

Please contact this office at (510) 567-6700 if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung
Local Agency Director

enclosure

c: B. Chan, Hazardous Materials Division-files
Kevin Graves, RWQCB
L. Casias, SWRCB (with attachment)
Ms. Meg Mendoza, Subsurface Consultants, Inc., 3736 Mt. Diablo Blvd., Suite 200, Lafayette, CA 94549

RACC2530

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION **Date:** 1/29/97

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: Oakland Community Housing Inc.

Site facility address: 2530 E. 14th St., Oakland CA 94601

RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: 3679

ULR filing date: 9/22/89 via leak book SWEEPS No: **N/A**

Responsible Parties:	Addresses:	Phone Numbers:
1. Mr. Bennie Kwong c/o Oakland Community Housing	405 14th St., #400 Oakland CA 94612	(510) 763-7676x27
2. Mrs. Martha Dirito c/o Ms. Libby Dietz	3813 Gareth Lane Modesto, CA 95356	

Tank No:	Size in gal.:	Contents:	Closed in-place or removed?:	Date:
1	10,000	reg/UL gasoline	Removed	5/09/89
2	10,000	reg/UL gasoline	Removed	5/09/89
3	10,000	reg/UL gasoline	Removed	5/09/89
4	10,000	reg/UL gasoline	Removed	5/09/89

III RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: unknown

Site characterization complete? Yes

Date approved by oversight agency: Work plan approved June 25, 1991

Monitoring Wells installed? YES Number: 6

Proper screened interval? Yes, screen interval typically from 5' to 15' bgs or to the depth of the well.

Leaking Underground Fuel Storage Program

Highest GW depth: 4.48'bgs Lowest depth: 12.9' bgs

Flow direction: west-southwest

Most sensitive current use: 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	4-10 k USTs	Disposed, H&H Ship Service China Basin, San Francisco	5/09/89
Soil	6200 cy	Aerated and reused onsite	1991
Groundwater	22,000 gal	Gibson Oil Recylers	

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	[1]Before	After[2]	[3]Before	After[4]
TPH (Gas)	410	1100	160,000	4400
Benzene	1.5	0.87	230	230
Toluene	8.9	14	23	360
Ethylbenzene	15	15	ND	230
Xylenes	68	66	3200	700
Lead	*6.3			

Comments (Depth of Remediation, etc.):
1 Results of samples from initial tank pull
2 Sidewall samples after overexcavation
3 Grab GW sample from tank removal
4 Latest monitoring well results
*** Composite sample from 1' samples from borings B-9,B-12 & B-13.**

Leaking Underground Fuel Storage Tank Program

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: NA

Should corrective action be reviewed if land use changes? Yes

Monitoring wells Decommisioned: Two closed during excavation, other four pending site closure

Number Decommisioned: 2 Number Retained: 4

List enforcement actions taken: None

List enforcement actions rescinded:None

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Barney M. Chan Title: Hazardous Materials Specialist

Signature: Barney M Chan Date: 2/4/97

Reviewed by

Name: Eva Chu Title: Hazardous Materials Specialist

Signature: Date:

Name: Tom Peacock Title: Manager

Signature: Tom Peacock Date: 1-31-97

VI. RWQCB NOTIFICATION

Date Submitted to RB: RB Response: Approved

RWQCB Staff Name: K. Graves Title: AWRCE Date: 2/4/97

VII. ADDITIONAL COMMENTS, DATA, ETC.

See site summary, attached

Leaking Underground Fuel Storage Tank Program

Site Summary

Four 10K UL/Regular gasoline tanks were removed from the site on 5/9/89. See Drawing 1 for their approximate location. Up to 410 ppm TVH and 1.5, 8.9, 15, 68 ppm BTEX was detected, respectively in soil samples collected during the tank removal. A grab groundwater sample taken exhibited 160 mg/l TPHg and 230, 23, <1.2 and 3200 ug/l BTEX, respectively. Attachments 1-3 are copies of these results. A liquid sample was also taken by ACEH and analyzed by the Alameda County Environmental Health Laboratory. This sample exhibited 44 mg/l gasoline.

Subsurface Consultants Inc. (SCI) performed an environmental assessment, (summarized in a November 17, 1989 report) and a preliminary soil and groundwater assessment (recorded in their 4/20/90 report). The subsurface investigation included 14 test borings and the construction of wells MW 12 through 14 within three of the borings. Soil samples collected from the borings were field screened and those indicating significant hydrocarbon contamination were analyzed for TPHg, BTEX, chlorinated solvents, semi-volatiles and heavy metals. Offsite hydrocarbon contamination was not detected in monitoring wells installed by others across the street. See Plates 1 and 2 and Tables 1-3 for locations and analytical results. In general, the results showed that soil and groundwater contamination was limited to around the tank pit.

The 5/16/90 SCI work plan proposed soil excavation, soil aeration and reuse, and groundwater monitoring. This work plan was approved with the condition that: soil exceeding 100 ppm be excavated to the greatest extent possible; additional groundwater monitoring wells be installed; a statistical analysis be provided to verify that the number of confirmatory soil samples taken after excavation is sufficient according to SW846 protocol; a human health and ecological risk assessment be provided; and, those adjoining properties which may be impacted by the hydrocarbon release be notified in writing. Aerated soils would be reused on the condition that concentrations of TVH<10 ppm, benzene < 5ppb and toluene, ethyl benzene and xylene < their respective MCLs. Sidewall samples at the property boundary would be allowed to exceed these cleanup levels since excavation beyond these limits appeared impractical. The risk assessment would account for residual contamination.

During the summer of 1991, the work plan was implemented. Soil was excavated down to approximately 10-13' bgs removing approximately 6200 cy of soil, of which approximately 3000 cy were impacted. Sixty-one total bottom and sidewall confirmatory samples were taken. All bottom samples met the cleanup requirements for TVH, however, a number of sidewall samples exceeded the standards. See Plate 4 for the location of the confirmatory samples and their results. Table 4 and 5 give the concentrations of soil left in place and aerated reused soils results, respectively. BTEX was not

Site Summary (cont.)

run on the bottom samples nor all of the sidewall samples, however, all bottom samples were < 10ppm TVH and BTEX was run on representative sidewall samples. The sixty-one samples was shown to exceed the required number of 55 samples with an 80% confidence limit. Prior to backfilling the excavation, 22,000 gallons of water was removed from the excavation pit.

A qualitative human health and ecological risk assessment was performed by Bendix Environmental Research Inc. The conclusion of this report was that the residual soil contamination would not pose a human health risk or an ecological risk to surface water. The report, however did recommend that the vapor barrier being laid for the future residential building at this site be extended under the landscaping areas and the use of one foot of imported clean soil at the surface of planted areas.

The adjoining potentially affected properties, Tri City Cleaners, the City of Oakland (for E. 14th St.) and Taco Bell were notified of the residual contamination in writing.

Since monitoring wells MW-12 and MW-13 were abandoned during the soil excavation activities, three additional wells, MW15 through 17, were installed in June 1994. Two of the wells were located in the parking lane immediately downgradient of the Drasin Manor housing complex and one was installed within the the parking lane across E. 14th St. Plate 3 and Table 6 show the locations and analytical results from the offsite wells.

Groundwater monitoring has been performed quarterly for one year, semi-annually for one year and annually for another year. Table 7 gives teh historic groundwater monitoring data. A Tier 2 Health Risk Assessment was performed by SCI. Analytical parameters associated with natural biodegradation were also analyzed. Inorganic parameters were within acceptable biodegration range and hydrocarbon degrading bacteria was detected in highest concentrations in the wells with the highest TVH concentration. See Table 8 for this data. No SSTLs were exceeded for the potential exposure pathways examined. See Tables 9 and 10 for this data.

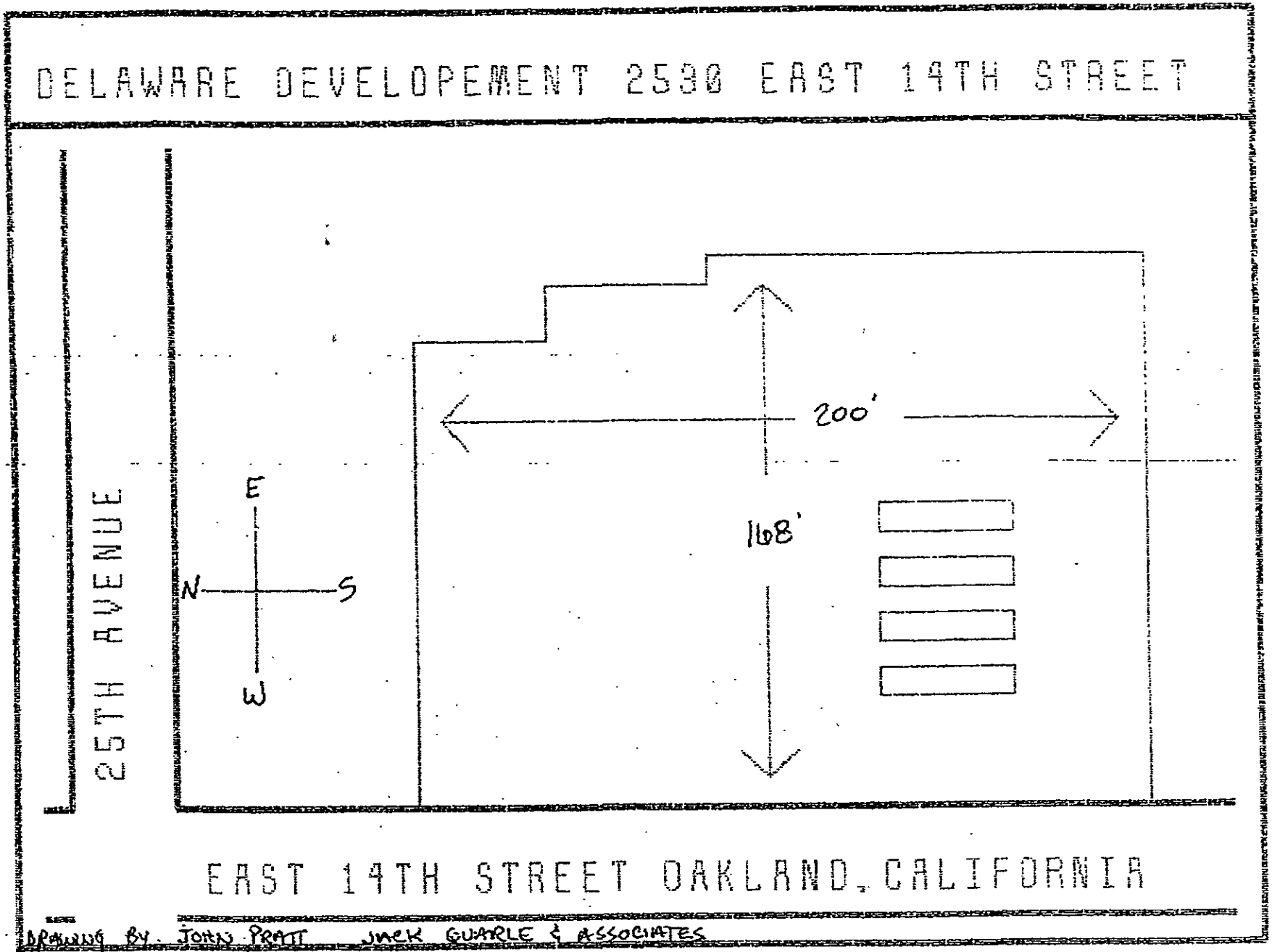
Site Closure is recommended based upon:

1. The majority of the source has been removed through soil removal, aeration and reuse; and groundwater removal;

2. Adequate site characterization;

3. Long term monitoring has shown an equilibrating, non-moving plume;and

4. The HRA indicates no threat to human health.



Approximate location of USTs.
Drawing 1

Tank Removal Results
Attachment 1

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-05-817

Received: 10 MAY 89
Reported: 25 MAY 89

Mr. Jack Quarle
J. Quarle and Associates
5835 Doyle Street Suite 107
Emeryville, California 94608

DELAWARE

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-817-1	14th Street Excavation North West Wall	09 MAY 89
05-817-2	14th Street Excavation N.C. Wall	09 MAY 89
05-817-3	14th Street Excavation North East Wall	09 MAY 89
05-817-4	14th Street Excavation West Wall	09 MAY 89
05-817-5	14th Street Excavation South West Wall	09 MAY 89

PARAMETER	05-817-1	05-817-2	05-817-3	05-817-4	05-817-5
Hydrocarbons by IR (EPA 418.1), mg/kg	<50	<50	<50	<50	<50
TPH-Volatile Hydrocarbons/BTEX					
Date Analyzed	05.15.89	05.12.89	05.12.89	05.15.89	05.15.89
Dilution Factor, Times	2	1	4	1	1
Benzene, mg/kg	<0.2	<0.1	0.4	<0.1	<0.1
Ethylbenzene, mg/kg	2.5	0.42	15	<0.1	<0.1
Toluene, mg/kg	<0.2	<0.1	6.6	<0.1	<0.1
Total Xylene Isomers, mg/kg	6.6	4.7	68	<0.1	<0.1
C4 to C12 Hydrocarbons, mg/kg	410	20	400	<5.0	<5.0
Other TPH-Volatile Hydrocarbons/	---	---	---	---	---

Tank Removal Results.
Attachment 2

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-05-817

Received: 10 MAY 89
Reported: 25 MAY 89

Mr. Jack Quarle
J. Quarle and Associates
5835 Doyle Street Suite 107
Emeryville, California 94608

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-817-6	14th Street Excavation S.C. Wall	09 MAY 89
05-817-7	14th Street Excavation South East Wall	09 MAY 89
05-817-8	14th Street Excavation East Wall	09 MAY 89

PARAMETER	05-817-6	05-817-7	05-817-8
Hydrocarbons by IR (EPA 418.1), mg/kg	110	<50	<50
TPH-Volatile Hydrocarbons/BTEX			
Date Analyzed	05.15.89	05.12.89	05.12.89
Dilution Factor, Times	1	10	10
Benzene, mg/kg	<0.1	<1.0	1.5
Ethylbenzene, mg/kg	<0.1	<1.0	9.4
Toluene, mg/kg	<0.1	<1.0	8.9
Total Xylene Isomers, mg/kg	0.25	2.7	55
C4 to C12 Hydrocarbons, mg/kg	26	58	220
Other TPH-Volatile Hydrocarbons	---	---	---

Tank Removal Results
Attachment 3

BROWN AND CALDWELL LABORATORIES

1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E89-05-817

Received: 10 MAY 89
Reported: 25 MAY 89

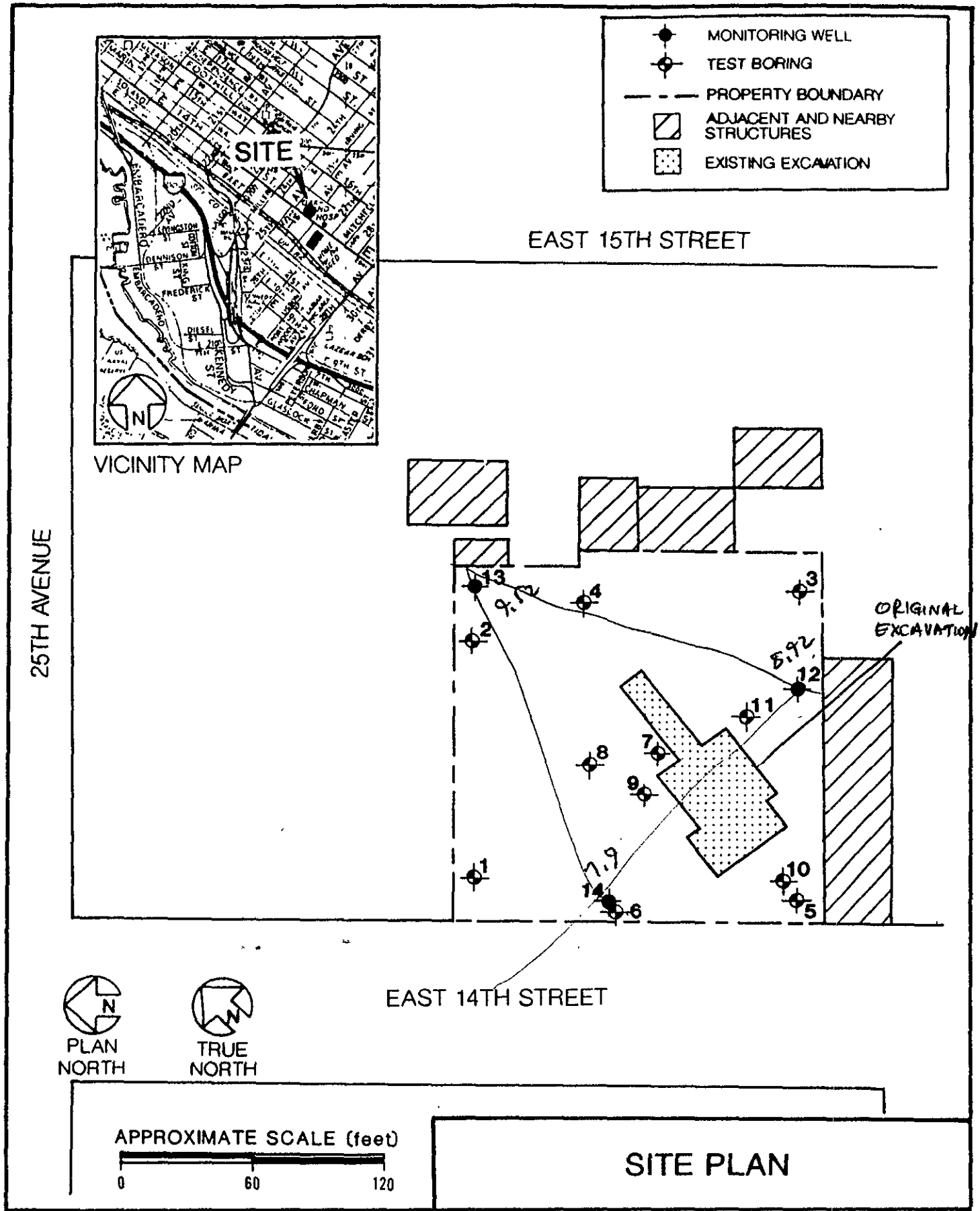
Mr. Jack Quarle
J. Quarle and Associates
5835 Doyle Street Suite 107
Emeryville, California 94608

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, AQUEOUS SAMPLES	DATE SAMPLED
05-817-9	14th Street Excavation Water	09 MAY 89

PARAMETER	05-817-9
ydrocarbons by IR (EPA 418.1), mg/L	<5
PH-Volatile Hydrocarbons/BTEX	
Date Analyzed	05.15.89
Dilution Factor, Times	4
Benzene, ug/L	230
Ethylbenzene, ug/L	<1.2
Toluene, ug/L	23
Total Xylene Isomers, ug/L	3200
C4 to C12 Hydrocarbons, ug/L	160000
Other TPH-Volatile Hydrocarbons	---

m D. Lessley, Ph.D., Laboratory Director



SITE PLAN

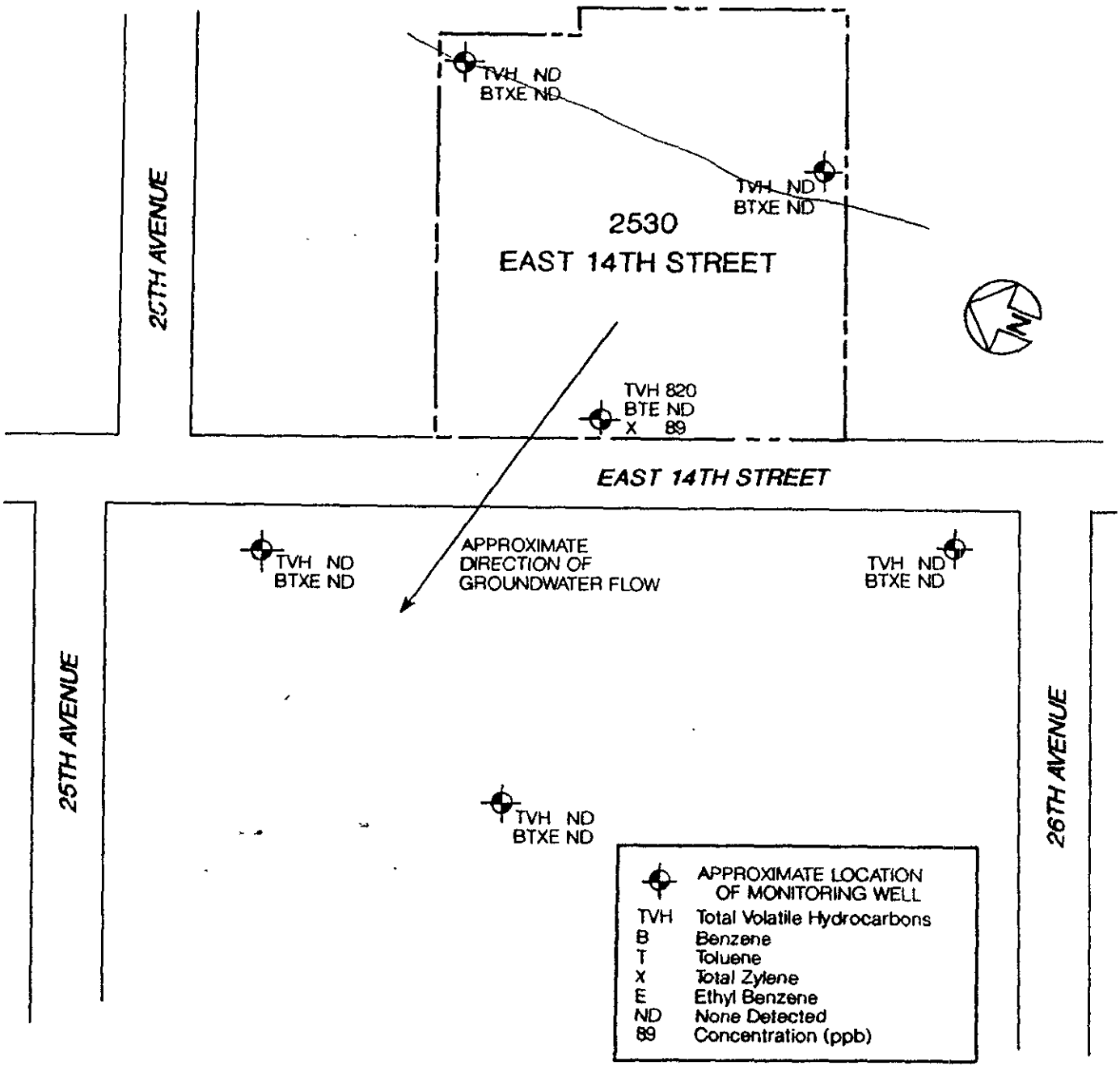
Subsurface Consultants

2530 EAST 14TH STREET, OAKLAND, CA

JOB NUMBER	DATE	APPROVED
586.001	10/17/89	

PLATE 1

Three wells installed + 3 offsite wells installed by others



NOT TO SCALE

MONITORING WELL LOCATION PLAN

Subsurface Consultants

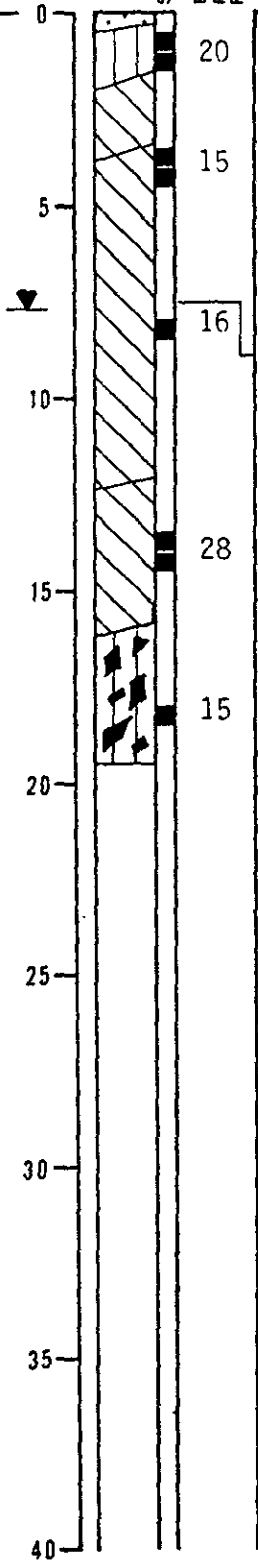
2530 EAST 14TH STREET - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
586.001	5/11/90	

PLATE 2

LOG OF TEST BORING 9

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/22/90
ELEVATION --



SAMPLER TYPES:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

*STANDARD PENETRATION TEST
O.D.: 2.0 inches
I.D.: 1.4 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

Subsurface Consultants

2530 E. 14TH STREET - OAKLAND, CA

JOB NUMBER 586.001 | DATE 4/9/90 | APPROVED

PLATE 2

Table 1. HYDROCARBON AND BTEX CONCENTRATIONS IN SOIL

Sample Designation	TVH as Gasoline[1] (ppm)[3]	Benzene[2] (ppb)[4]	Toluene[2] (ppb)	Ethyl-benzene[2] (ppb)	Total Xylenes[2] (ppb)
9 @ 4 feet	170	ND[5]	410	1,200	15,000
9 @ 8 feet	680	1,700	18,000	18,000	97,000
10 @ 4 feet	ND	ND	ND	ND	ND
10 @ 9 feet	160	690	2,900	3,500	20,000
11 @ 7 feet	ND	ND	13	12	35
14 @ 4 feet	ND	ND	ND	ND	ND
14 @ 7 feet	200	360	1,300	3,400	18,000
14 @ 12 feet	ND	8.6	11	19	80

1 As determined by EPA Methods 8015 modified after sonication extraction (EPA 3550)
2 As determined by EPA Method 8020 after purge and trap extraction (EPA 5030)
3 ppm = parts per million = milligrams per kilogram = mg/kg
4 ppb = parts per billion = micrograms per kilogram = ug/kg
5 ND = None detected, chemicals not present at concentrations above detection limits

Table 2. HYDROCARBON AND BTEX CONCENTRATIONS IN WATER

Sample Designation	TVH as Gasoline[1] (ppb)[3]	Benzene[2] (ppb)	Toluene[2] (ppb)	Ethyl-benzene[2] (ppb)	Total Xylenes[2] (ppb)
MW-12	ND[4]	ND	ND	ND	ND
MW-13	ND	ND	ND	ND	ND
MW-14	820	ND	ND	89	ND

1 As determined by EPA Methods 8015 modified after sonication extraction (EPA 3550)
2 As determined by EPA Method 8020 after purge and trap extraction (EPA 5030)
3 ppb = parts per billion = micrograms per kilogram = ug/kg
4 ND = None detected, chemicals not present at concentrations above detection limits

Table 3. ORGANIC CHEMICAL AND METAL CONCENTRATIONS IN SOIL AND WATER

Composite Soil Sample (9@1', 12@1' & 13@1')	Concentration[1]
Semi-Volatile Organics (EPA Method 8270[2])	ND[3]
Title 26 Metals (EPA Method 6010)	
Barium	170
Beryllium	0.50
Cadmium	2.1
Chromium	64
Cobalt	15
Copper	29
Lead	6.3
Nickel	110
Vanadium	29
Zinc	51
Other Title 26 Metals[4]	ND
Monitoring Well 12 - Water	
Purgeable Halocarbons (EPA Method 8010)[5]	ND
Monitoring Well 13 - Water	
Purgeable Halocarbons (EPA Method 8010)	ND
Monitoring Well 14 - Water	
Purgeable Halocarbons (EPA Method 8010)	ND

---

1 ppm = parts per million - milligram per kilogram = mg/kg

2 Method includes the 97 chemicals listed on the test reports in the Appendix

3 ND = None detected, chemicals not present at concentrations above the detection limits present on test reports

4 Method includes the 17 metals listed on the test reports in the Appendix

5 Method includes the 28 chemicals listed on the test reports in the Appendix

PROPERTY LINE

EXISTING BUILDING

MW-13

2530 E. 14th STREET

EXTENT OF EXCAVATION

MW-12

2560 E. 14th STREET

TVH CONCENTRATIONS LEFT IN PLACE	
AREA	TVH (mg/kg)
Bottom	35
North Sidewall	89
South Sidewall	487
East Sidewall	643
West Sidewall	270

362 TVH 120
296 TVH 140
54 TVH <1
56 TVH <1
92 TVH <1
55 TVH 35
57 TVH 6.4
93 TVH 3.9
361 TVH 68
293 TVH 230
297 TVH 5.3
428 TVH 16 B 61 T 48 E 65 X 94
429 TVH 6.8
420 TVH <1
78 TVH <1
94 TVH <1
95 TVH 600
158 TVH 3.6
37 TVH <1
115 TVH 17
434 TVH <1
427 TVH 130
290 TVH 180
294 TVH <1
288 TVH 170
159 TVH 4.6
426 TVH <1
291 TVH 1.8
36 TVH <1
96 TVH 43
97 TVH <1
98 TVH 1000
286 TVH 5.6
289 TVH 2.2
218 TVH 9.9
421 TVH 880 B 630 T <400 E 1500 X 59000
217 TVH 3.3
35 TVH 5.4
134 TVH 4
258 TVH 1.1
259 TVH 1.5
260 TVH 3.4
186 TVH 6.9
169 TVH 13
168 TVH 2.4
133 TVH 1.6
128 TVH 800
127 TVH <1
257 TVH 60
MW-14
216 TVH 616 B 870 T 14000 E 15000 X 66000
212 TVH 330 B 200 T 5400 E 6200 X 3200
256 TVH 12
255 TVH 9 6
254 TVH 290
253 TVH 590
240 TVH 230
214 TVH 520
211 TVH 330
418 TVH 1100
130 TVH 810
129 TVH <1
239 TVH 740

SIDEWALK

EAST 14th STREET

- ● SIDEWALL SAMPLE
- ⊙ BOTTOM SAMPLE.
- ⊕ MONITORING WELL
- ⊕ ABANDONED MONITORING WELL
- 211 SAMPLE NUMBER
- TVH TOTAL VOLATILE HYDROCARBONS (mg/kg)
- B BENZENE (ug/kg)
- T TOLUENE (ug/kg)
- E ETHYLBENZENE (ug/kg)
- X XYLENE (ug/kg)

N

APPROXIMATE SCALE (feet)

0 20 40

SITE PLAN

Subsurface Consultants

2530 E. 14TH STREET – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
406 011	2/7/92	

PLATE 4

Table 4.
Contaminant Concentrations Left In Place

Sample	Location	Depth (feet)	TVH[1] mg/kg[2]
35	Bottom	13	5.4
36	Bottom	13	<1
37	Bottom	13	<1
54	Sidewall	6	<1
55	Sidewall	10	35
56	Sidewall	6	<1
57	Sidewall	10	6.4
78	Bottom	14.5	<1
92	Sidewall	6.5	<1
93	Sidewall	10	3.9
94	Sidewall	6.5	<1
95	Sidewall	10	600
96	Bottom	12.5	43
97	Sidewall	6.5	<1
98	Sidewall	10	1000
115	Bottom	12.5	17
127	Sidewall	6.5	<1
128	Sidewall	10.5	800
129	Sidewall	6.5	<1
130	Sidewall	10.5	810
133	Bottom	12.5	1.6
134	Bottom	12.5	4.0
158	Bottom	13.5	3.6
159	Bottom	13.5	4.6
168	Bottom	13	2.4
169	Bottom	13	4.5
186	Bottom	12.5	6.9
211	Sidewall	9	330
212	Sidewall	10	330
214	Sidewall	10.5	520
216	Sidewall	10.5	610
217	Bottom	12	3.3
218	Bottom	12	9.9
239	Bottom	11	740
240	Sidewall	9	230
253	Sidewall	9.5	530
254	Sidewall	9.5	290
255	Sidewall	10.5	9.6
256	Sidewall	10.5	12
257	Sidewall	10.5	60
258	Bottom	12	1.1
259	Bottom	12	1.5
260	Bottom	12	3.4

Table 4.
Contaminant Concentrations Left In Place (Cont.)

Discrete Samples	Location	Depth (feet)	TVH[1] mg/kg[2]
286	Bottom	12	5.4
288	Sidewall	10	170
289	Bottom	12	2.2
290	Sidewall	9.5	180
291	Bottom	12	1.8
293	Sidewall	10	230
294	Bottom	13	<1
296	Sidewall	10	140
297	Bottom	12	5.3
361	Sidewall	10	68
362	Sidewall	11.5	120
418	Sidewall	10.5	1100
420	Bottom	12	<1
421	Sidewall	9.5	880
426	Bottom	12	<1
427	Sidewall	9.5	130
428	Sidewall	10	16
429	Sidewall	12	6.8
434	Bottom	12	<1

---

1 TVH = Total Volatile Hydrocarbons
2 mg/kg = milligrams per kilogram = ppm

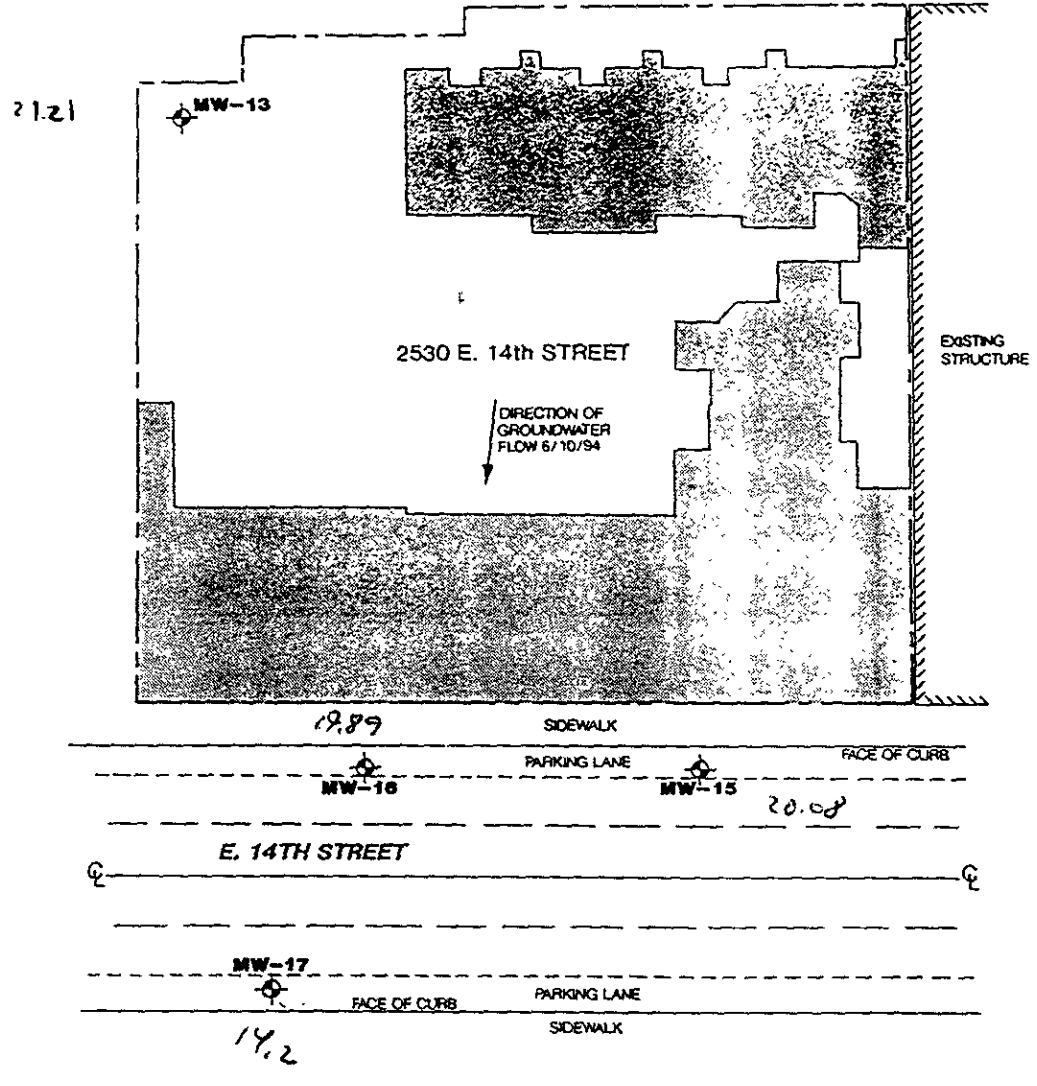
APPENDIX A APPENDIX B

Table 5.
Contaminant Concentrations in Aerated Soil

Sample	TVH mg/kg	Benzene ug/kg	Toluene ug/kg	Ethylbenzene ug/kg	Xylene ug/kg
350	2.5	(19)	23	19	120
351	2.8	<5	11	<5	68
352	1.6	<5	<5	<5	37
353	1.5	<5	12	<5	19
354	1.0	<5	10	<5	15
355	<1	<5	<5	<5	5.1
356	<1	<5	<5	<5	<5
357	1.5	<5	<5	<5	17
358	1.4	<5	<5	<5	20
359	2.1	<5	<5	<5	7.7
360	1.5	<5	<5	<5	24
364	5.6	5.5	<5	<5	100
365	2.5	<5	<5	<5	43
366	4.6	<5	<5	<5	67
367	8.7.	18	11	<5	90
368	4.4	<5	<5	<5	52
369	<1	<5	<5	<5	<5
370	1.9	<5	<5	<5	<5
371	4.6	7.3	<5	<5	12
372	10	17	22	16	340
373	10	<5	85	52	1300
375	7.5	12	13	<5	19
376	<1	<5	<5	<5	5.7
378	<1	<5	<5	<5	<5
381	11	<5	7.9	<5	21
382	18	<5	88	210	1400
383	5.2	6.2	<5	<5	25
384	<1	<5	<5	<5	<5
385	15	18	40	15	24
386	1.1	<5	<5	<5	<5
387	2.1	<5	<5	<5	12
388	<1	<5	<5	<5	<5
389	<1	<5	<5	<5	<5
390	16	16	38	7.6	5.8
391	<1	<5	<5	<5	<5
392	<1	<5	<5	<5	<5
393	1.6	<5	<5	<5	<5
394	<1	<5	<5	<5	<5
395	1.1	<5	<5	<5	<5
396	<1	<5	<5	<5	<5
397	<1	<5	<5	<5	<5
398	7.3	17	9.3	<5	45
401	1.7	<5	6.7	<5	54
406	2.3	<5	<5	6.0	81
407	<1	<5	9.6	6.0	13
		MCL 1	100	680	1750

Table 5
Contaminant Concentrations in Aerated Soil (Cont.)

Sample	TVH mg/kg	Benzene ug/kg	Toluene ug/kg	Ethylbenzene ug/kg	Xylene ug/kg
408	<1	<5	<5	<5	<5
409	1.4	<5	<5	<5	<5
410	1.5	<5	<5	<5	36
411	<1	<5	<5	<5	15
412	<1	<5	<5	<5	<5
413	<1	<5	<5	<5	<5
414	<1	<5	<5	<5	<5
415	<1	<5	<5	<5	<5
416	<1	<5	<5	<5	<5
417	<1	<5	<5	<5	<5
435	<1	<5	<5	<5	<5
436	<1	<5	<5	<5	<5
437	<1	<5	<5	<5	<5
438	<1	<5	<5	<5	<5
439	<1	<5	<5	<5	<5
440	<1	<5	<5	<5	<5
Averages	3.0	6.3	10.0	9.7	69.4



VICINITY MAP

MONITORING WELL

BUILDING

APPROXIMATE SCALE (feet)

0 30 60

SITE PLAN

Subsurface Consultants

2530 E. 14TH STREET – OAKLAND, CA

JOB NUMBER 406.011

DATE 9/8/94

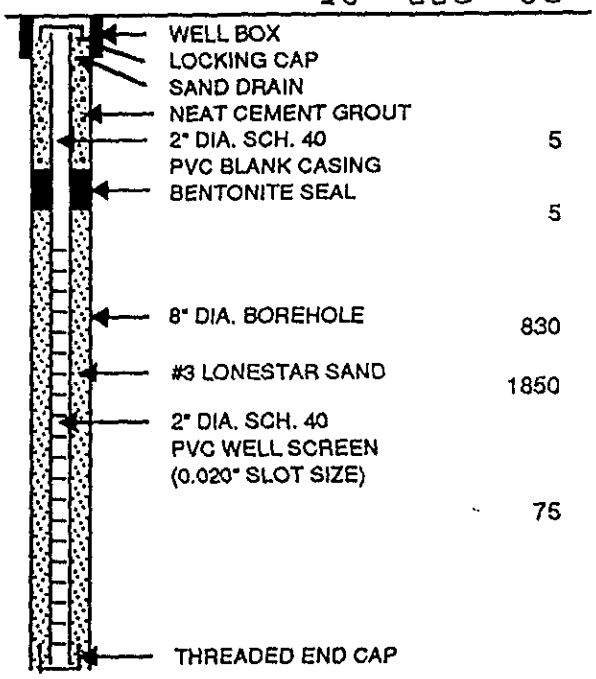
APPROVED

PLATE 3

Typical Geology

LOG OF TEST BORING MW-15

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 6/1/94
ELEVATION 26.53 feet MSL*



MOISTURE CONTENT %	DRY DENSITY (PCF)	OVM (ppm)	DEPTH (feet)	SAMPLE	BLOWS PER FOOT	
			0			CONCRETE SLAB - 12" thick
						BROWN SANDY GRAVEL (GW)
						medium dense, moist (fill)
		5			7	DARK GRAY BROWN SILTY CLAY (CL)
						medium stiff, moist
		5	5		push	MOTTLED ORANGE BROWN AND DARK
						GRAY SANDY SILTY CLAY (CL)
						soft, moist, with gravel to 1" in dia.
						moderate hydrocarbon odor
					17	GROUNDWATER LEVEL 6/10/94
						MOTTLED GRAY AND ORANGE BROWN
		830			18	SANDY SILTY CLAY (CL)
			10			medium stiff, moist, strong hydrocarbon odor
		1850				MOTTLED OLIVE GREEN AND LIGHT
						BROWN SANDY SILTY CLAY (CL)
		75			20	medium stiff, moist, slight hydrocarbon odor
			15			
						LIGHT ORANGE BROWN GRAVELLY
						SANDY CLAY (CL/SC)
						stiff, moist
		7			29	LIGHT BROWN CLAYEY SAND (SC)
						dense, wet
			20			GROUNDWATER NOT ENCOUNTERED
						DURING DRILLING
			25			
			30			
			35			
			40			

SAMPLER TYPE:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

* ELEVATION REFERENCE: CITY OF OAKLAND BENCH MARK AT FACE OF CURB, 30.66 FEET. CITY OF OAKLAND DATUM, 27.66 FEET MSL DATUM.

Subsurface Consultants

2530 E. 14TH STREET - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
406.011	6/8/94	

PLATE 3

Contaminant Concentrations in Soil

Table 6

Sample Location	Boring Depth (feet)	TEH (mg/kg)	TVH (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl-Benzene (µg/kg)	Xylenes (µg/kg)
MW-15	9.5	91	140	200	2,000	2,900	15,000
MW-16	8.0	14	500	<300	1,700	8,400	48,000
MW-17	8.0	<1	<1	<5	<5	<5	<5

d.l. high due to dilution

Table 2.
Contaminant Concentrations in Groundwater

Sample Location	Date	TEH (µg/l)	TVH (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-Benzene (µg/l)	Xylenes (µg/l)
MW-12	3/30/90	-	<50	<1	<1	<1	<1
	8/28/91	-	<50	<0.5	<0.5	<0.5	<0.5
	Abandoned 1991						
MW-13	3/30/90	<50	<50	<1	<1	<1	<1
	8/28/91	-	<50	<0.5	<0.5	<0.5	<0.5
	1/24/94	<50	<50	<0.5	<0.5	<0.5	<0.5
	6/10/94	<50	<50	<0.5	<0.5	<0.5	<0.5
MW-14	3/30/90	-	820	<1	<1	<1	89
	8/28/91	-	230	11	6.2	7.2	20
	Abandoned 1991						
MW-15	6/10/94	440	6,000	150	150	26	940
MW-16	6/10/94	150	3,400	28	84	75	560
MW-17	6/10/94	<50	<50	<0.5	<0.5	<0.5	<0.5

Recheck these conc vs. Duke assessment

µg/l = Micrograms per liter = parts per billion
µg/kg = Micrograms per kilogram
mg/kg = Milligrams per kilogram
TEH = Total Extractable Hydrocarbons
TVH = Total Volatile Hydrocarbons
<1 = Chemical not present at a concentration greater than laboratory detection limit stated
- = Test not requested

Table 7

Petroleum Hydrocarbon Concentrations in Groundwater

Well	Sample Date	TVH[1] (ug/l)[4]	TEH[3] (ug/l)	B[2] (ug/l)	T[2] (ug/l)	E[2] (ug/l)	X[2] (ug/l)
MW-12	3/30/90	-	ND (50)	ND (1)	ND (1)	ND (1)	ND (1)
	8/28/91	-	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	Abandoned 1991						
MW-13	3/30/90	ND (50)	ND (50)	ND (1)	ND (1)	ND (1)	ND (1)
	8/28/91	ND (50)	-	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	1/24/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	6/10/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	9/23/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	12/21/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	3/14/95	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	12/4/96	ND (50)	ND (47)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
MW-14	3/30/90	820	-	ND (1)	ND (1)	ND (1)	89
	8/28/91	230	-	11	6.2	7.2	20
	Abandoned in 1991						
MW-15	6/10/94	6,000	440	150	150	26	940
	9/23/94	2,300	330	250	210	170	360
	12/22/94	7,000	340	360	620	350	930
	3/14/95	4,700	240	310	520	300	830
	9/27/95	2,200	ND (50)	210	180	190	469
	12/4/96	4,400	ND (47)	230	360	230	700
MW-16	6/10/94	3,400	150	28	84	75	560
	9/23/94	1,900	270	38	52	73	350
	12/21/94	680	ND (50)	12	26	34	130
	3/14/95	440	ND (50)	13	19	32	110
	9/27/95	ND (50)	140[5]	2.8	2.6	7.5	26
	12/4/96	72	ND (47)	3.0	ND (0.5)	7.7	23
MW-17	6/10/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	9/23/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	1.1
	12/21/94	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	3/14/95	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	9/27/95	ND (50)	150[5]	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	12/8/95	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
	12/4/96	ND (50)	ND (47)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)

[1] TVH = Total volatile hydrocarbons

[2] BTEX = Benzene, toluene, ethylbenzene, and xylenes

[3] TEH = Total extractable hydrocarbons

[4] ug/l = Micrograms per liter

[5] Sample exhibits fuel pattern which does not resemble standard

Table 8
Hydrocarbon-Degrading Bacteria Plate Enumeration Assay Results

Sample Location	Sample Date	Dissolved Oxygen (mg/l)	Ammonia (mg/l)	Nitrate (mg/l)	Phosphate (mg/l)	pH	Hydrocarbon Degraders (cfu/ml)
MW-13	12/4/96	3.2	2.0	3.5	2.6	6.92	$5.0x10^3$
MW-15	12/4/96	1.1	1.4	0.12	1.0	6.93	$3.3x10^4$
MW-16	12/4/96	1.9	0.4	0.09	0.9	6.92	$4.2x10^4$
MW-17	12/4/96	3.0	1.2	0.18	2.2	6.87	$7.6x10^2$

Notes:
mg/l = milligrams per liter
cfu/ml = colony forming units per milliliter

Table 9
Comparison of Site Specific Target Levels with Representative Soil Concentrations
Residential Use, Risk Factor = 10^{-6}

Subsurface Soil Volatilization	Tier 2 Site Specific Target Levels for Constituents of Concern Volatilization to Outdoor Air mg/kg	Volatilization to Indoor Air mg/kg	Representative Site Values mg/kg
Remediated Soil Beneath the Structure			
Benzene	NA	0.019	0.006
Ethylbenzene	NA	RES	0.010
Toluene	NA	94	0.010
Xylenes	NA	RES	0.069
Soil Beneath Property Limits and Adjacent Right-of-Way			
Benzene	7.83	NA	0.360
Ethylbenzene	RES	NA	3.40
Toluene	RES	NA	1.30
Xylenes	RES	NA	18.0

Notes:

For remediated soil, the analytical data summarized in Table 2 were averaged to obtain representative site values.
For soil beneath the property limits and adjacent right of way, the maximum concentrations (MW-14@7') are listed as representative site values.
Site Specific Target Levels for benzene have been corrected per EPA standards.
mg/kg = milligrams per kilogram
RES = Selected risk level is not exceeded for pure compound present at any concentration.

Table 10

Comparison of Site Specific Target Levels with Representative Groundwater Concentrations
Residential Use, Risk Factor = 10-6

Applicable Exposure Pathway	Site Specific Target Level for Constituents of Concern		Mean* Values
	Volatilization to Indoor Air	Volatilization to Outdoor Air	
	mg/l	mg/l	mg/l
Groundwater			
Benzene	0.128	49.3	0.091
Ethylbenzene	>Sol	>Sol	0.125
Toluene	>Sol	>Sol	0.084
Xylenes	>Sol	>Sol	0.320

Notes:

*This value represents the mean of all historic BTEX analytical data for wells MW-14, MW-15, and MW-16. The analytical reporting limit was used as the compound concentration for analytes that were not detected.
Site specific target levels for benzene have been corrected per EPA standards.
mg/l = milligrams per liter
>Sol = Selected risk level is not exceeded for all possible dissolved levels.