Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3273A

Date: 08-14-90
Page: 2

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			C-2a 08-09-90	C-18bc 08-09-90	
Parameter	Method	Reporting Limit	59949	59975	Units
Oil & Grease, IR Non-Polar	SM503B,D,E	50	88	ND	mg/Kg

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3273A

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-19bc 08-09-90 59976	C-4bc 08-09-90 59966	Units
Oil & Grease, IR Non-Polar	SM503B,D,E	50	ND	ND	mg/Kg

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3273A

Date: 08-14-90

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			C-11bc 08-09-90	C-17a 08-09-90	
Parameter	Method	Reporting Limit	59972	59959	Units
Oil & Grease, IR Non-Polar	SM503B,D,E	50	ND	ND	mg/Kg

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following, which supercedes the listed reporting limit.
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

* Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated reporting limits by the dilution factor.

(3273)

Woodward-Clyde Consultants

500 12th Street, Suite 100, Oakland, CA 94607-4041
(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS (Signature) T.R. Kalle

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	503 Oil and Grease	Total Pb				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
8/9/90	NA	C-1a	S					X	X					
		C-1b	↓					↓	↓					> COMPOSITE
		C-1c												
		C-2a												
		C-2b												> COMPOSITE
		C-2c												
		C-3a												
		C-3b												> COMP.
		C-3c												
		C-4a												
		C-4b												> COMP
		C-4c												
		C-6a												
		C-6b												> COMP
		C-6c												
		C-7a												
		C-7b												> COMP.
		C-7c												
		C-8a												
		C-8b												> COMP
		C-8c												
		C-9a												
		C-9b											COMP.	> 48 hour TAT
		C-9c												
		C-10a												
		C-10b											COMP. >	
		C-10c												
		C-11a	↓					↓	↓					

(COMPOSITE b + c from each numbered set of samples)

Results to G. Ford
FAX (415) 874-3268
Phone (415) 874-3203

TOTAL NUMBER OF CONTAINERS: 28

custody seal 8/9/90 @ 15:00
custody seal intact [illegible] 8/10

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T.R. Kalle	8/9/90 5:00 PM	Jeff [illegible]	Jeff [illegible]		

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
(VIA NCS)			K[illegible]	8/10/90 00a.

(3273)

Woodward-Clyde Consultants

500 12th Street, Suite 100, Oakland, CA 94607-4041
(415) 893-3600

Chain of Custody Record

PROJECT NO.: 90C00284

SAMPLERS: (Signature) T. R. Kalbe

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	503 Oil and Grease	Total Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
8/7/90	VA	C-11b						X	X						Composite
		C-11c													
		C-12a													
		C-12b													Composite
		C-12c													
		C-17a													
		C-17b													composite
		C-17c													
		C-18a													
		C-18b													composite
		C-18c													
		C-19a													
		C-19b													composite
		C-19c													
		C-20a													
		C-20b													composite
		C-20c													

48 hour TAT

results to G. Ford or B. Copeland
FAX (415) 874-3268
Phone (415) 874-3203

TOTAL NUMBER OF CONTAINERS: 17 coolers

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T. R. Kalbe	8/9/90 5:00 pm	Jeff Nicholas	Jeff Nicholas		

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
(VIA NCS)				8/10/90 0800

3297

Woodward-Clyde Consultants

500 12th Street, Suite 100, Oakland, CA 94607-4041
(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C00284

SAMPLERS: (Signature) T.R. Kalla

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	503 Oil and Grease	Total Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
8/10/90	LNA	C-5a						X	X						- discrete
		C-5b													Composite
		C-5c													
		C-13a													- discrete
		C-13b													Composite
		C-13c													
		C-14a													- discrete
		C-14b													Composite
		C-14c													
		C-15a													- discrete
		C-15b													Composite
		C-15c													
		C-16a													- discrete
		C-16b													Composite
		C-16c													

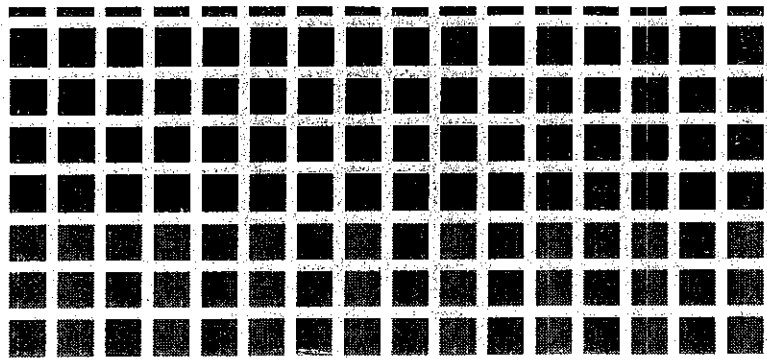
48 hour TAT
Results to George Ford
or Bill Copeland
FAX (415) 874-3268
Phone (415) 874-3203

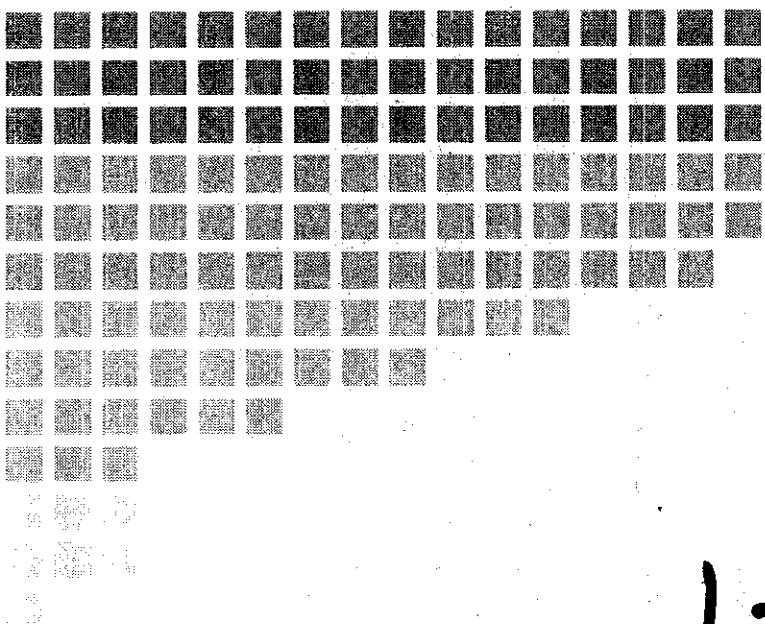
TOTAL NUMBER OF CONTAINERS: 15

custody seal 8/10/90 @ 19:30 custody not broken

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T.R. Kalla	8/10/90 10:30	8/10/90 16:30			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
(via NCS)				8/10/90 2300





1-16-89

■ Subsurface Consultants, Inc.

REPORT
PNA AND LEAD CONTAMINATED SOIL
AND SUMP REMEDIATION
13TH AND JEFFERSON STREETS
OAKLAND, CALIFORNIA
SCI 430.005

Prepared for:

Mr. John Esposito
Bramalea Pacific, Ltd.
1221 Broadway, Suite #1800
Oakland, California 94612

By:

R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/91)

REGISTERED PROFESSIONAL ENGINEER
RUSS WILLIAM RUDOLPH
No. GE 000741
GEOTECHNICAL
STATE OF CALIFORNIA

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

REGISTERED PROFESSIONAL ENGINEER
JAMES P. BOWERS
No. GE 000157
Exp. _____
GEOTECHNICAL
STATE OF CALIFORNIA

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

January 16, 1989

James P. Bowers, PE
R. William Rudolph, Jr., PE

LETTER OF TRANSMITTAL

TO: Mr. John Esposito
Bramalea Pacific, Ltd.
1221 Broadway, Suite #1800
Oakland, California 94612

DATE: January 16, 1989
PROJECT: PNA and Lead Contaminated Soil and Sump Remediation/13th-Jefferson
SCI JOB NUMBER: 430.005

WE ARE SENDING YOU:

__1__ copies
X of our final report
__ a draft of our report
__ a Service Agreement
__ a proposed scope of services
__ specifications
__ grading/foundation plans
__ soil samples/groundwater samples
__ an executed contract
__ _____

X if you have any questions, please call
__ for your review and comment
__ please return an executed copy
__ for geotechnical services
__ with our comments
__ with Chain of Custody documents
X for your use
__ _____
__ _____

REMARKS:

COPIES TO: (2) Ms. Lois Parr, City of Oakland, Office of Economic Development/Employment, 1417 Clay Street, Oakland, CA
(1) Mr. Tim Brown, Crosby, Heafey, Roach & May, 1999 Harrison Street, Oakland
(1) Mr. Donnell Choy, Attorney, City of Oakland, One City Hall Plaza, Oakland, CA
✓(1) Ms. Katherine Chesick, Alameda County Health Agency, Division of Hazardous Materials, 80 Swan Way, Suite #200, Oakland, CA

BY: James P. Bowers
James P Bowers

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

I INTRODUCTION

This report summarizes the results of an investigation conducted by Subsurface Consultants, Inc. (SCI) regarding polynuclear aromatic hydrocarbon (PNA) and lead soil contamination, and a concrete sump containing oily wastes at a site near the southeast corner of the intersection of 13th and Jefferson Streets in Oakland. SCI previously conducted a preliminary environmental assessment of the block bounded by 13th, 14th and Jefferson Streets, and Martin Luther King, Jr. Way. The results of this study were presented in a report dated September 14, 1988.

Briefly, the previous environmental assessment revealed elevated levels of polynuclear aromatic hydrocarbons (PNAs) and lead in a sample which was composited from soils obtained of Borings 19 and 20 (see Plate 1). Analyses did not reveal the presence of PNAs nor elevated concentrations of lead, in other portions of the block. Subsequently, soil samples were analyzed from two additional test borings (32 and 33) drilled adjacent to Borings 19 and 20 to identify the location of the contaminated soils. The relative location of the borings is shown on Plate 1.

Previous studies by others revealed the presence of a concrete sump containing oily wastes. The sumps location is shown on Plate 1. Analytical tests indicated that in addition to petroleum hydrocarbons, the wastes also contained elevated

concentrations of several heavy metals, methylene chloride, xylenes, and polychlorinated biphenols (PCBs). Subsequent studies by SCI (report dated September 14, 1988) did not detect significant contamination of the soils surrounding the sump.

II FIELD INVESTIGATION

Borings 32 and 33 were drilled with a truck-mounted rig, equipped with 8-inch-diameter, hollow-stem augers. The drilling and sampling equipment was thoroughly steam-cleaned prior to introduction into each borehole to reduce the likelihood of cross-contamination between borings. Our geologist logged the borings and obtained samples of the materials encountered. Boring logs are presented on Plates 2 and 3. The soils are classified in accordance with the Unified Soil Classification System, described on Plate 4.

Soil samples were retained in 2.0-inch-diameter brass liners. The sample liner ends were covered with Teflon sheeting. Plastic caps were placed over the sheeting and sealed with plastic tape. The samples were placed in an ice chest following collection and remained under refrigeration until delivery to the analytical laboratory. Samples delivered to the laboratory were accompanied by chain-of-custody records, copies of which are enclosed.

Twenty (20) test pits were excavated at the locations shown on Plate 2 to explore shallow soil conditions in the area. The

pits were excavated with a backhoe and extended 3 to 4 feet below existing grades. The soils exposed in the pits were logged by our geologist. Logs of the test pits are presented in Table 1.

Soil samples were obtained from Test Pits, 1, 10, 11, 14 and 16 by driving a brass sample liner into the soil. Prior to sampling, 3 to 4 inches of soil was removed from the side of the pit in the area where sampling was to occur. The samples were prepared/handled in the manner previously described.

Table 1. TEST PIT SUMMARY

Test Pit No.	Depth	Material Encountered
1	0 - 4"	Concrete Slab
	4" - 3-6"	Brown clayey sand (SC) medium dense, moist with bricks & rubble (fill)
2	0 - 4"	Concrete Slab
	4" - 2'9"	Fire debris (fill)
	2'9" - 4'	Brown clayey sand (SC) medium, dense, moist
3	0 - 3"	Concrete Slab
	3" - 2'6"	Fire debris (fill)
	2'6"	Concrete Slab
4	0 - 4"	Concrete Slab
	4" - 3'4"	Fire debris (fill)
	3'4" - 4'6"	Brown clayey sand (SC) medium, dense, moist
5	0 - 4'6"	Concrete Slab
	4'6" - 3'	Fire debris (fill)
	3' - 4'6"	Brown clayey sand (SC) medium, dense, moist

Test Pit	Depth	Material Encountered
6	0 - 4"	Concrete Slab
	4" - 3'6"	Fire debris (fill)
	3'6" - 4'	Brown clayey sand (SC) medium, dense, moist
7	0 - 4"	Concrete Slab
	4" - 3'	Fire debris (fill)
	3' - 4'3"	Brown clayey sand (SC) medium, dense, moist
8	0 - 4"	Concrete Slab
	4" - 3'	Fire debris (fill)
	3' - 3'3"	Brown clayey sand (SC) medium, dense, moist
9	0 - 4"	Concrete Slab
	4" - 2'	Fire debris (fill)
	2' - 4'10"	Brown clayey sand (SC) medium, dense, moist
10	0 - 4"	Concrete Slab
	4" - 3'	Fire debris (fill)
	3' - 4'	Brown clayey sand (SC) medium, dense, moist
11	0 - 4"	Concrete Slab
	4" - 3'6"	Fire debris (fill)
	3'6"	Concrete Slab
12	0 - 4"	Concrete Slab
	4" - 3'	Fire debris (fill)
	3' - 4'6"	Brown clayey sand (SC) medium, dense, moist
13	0 - 4"	Concrete Slab
	4" - 3'6"	Brown clayey sand (SC) medium, dense, moist
14	0 - 4"	Concrete Slab
	4" - 3'6"	Brown clayey sand (SC) medium, dense, moist
15	0 - 4"	Concrete Slab
	4" - 2'6"	Fire debris (fill)
	2'6" - 5'	Brown clayey sand (SC) medium, dense, moist

Test Pit	Depth	Material Encountered
16	0 - 4"	Concrete Slab
	4" - 3'	Fire debris (fill)
	3' - 4'	Brown clayey sand (SC) medium, dense, moist
17	0 - 4"	Concrete Slab
	4" - 3'	Fire debris (fill)
	3' - 5'	Brown clayey sand (SC) medium, dense, moist
18	0 - 4"	Concrete Slab
	4" - 4'	Brown clayey sand (SC) medium, dense, moist
19	0 - 4"	Concrete Slab
	4" - 4'	Brown clayey sand (SC) medium, dense, moist
20	0 - 4"	Concrete Slab
	4" - 3'6"	Brown clayey sand (SC) medium, dense, moist

III SURFACE AND SUBSURFACE CONDITIONS

A. Surface Conditions

As discussed in our previous report, the initial study area encompasses an entire city block, and measures approxiamtely 200- by 300-feet in plan. The site has recently been cleared of all above grade structures and is enclosed by a chain link fence. Concrete slabs-on-grade exist in most areas except in the northeastern corner, where soil is exposed at the groundsurface. This unpaved area represents a basement that has been filled in. Similarly, a small area near the southeastern corner of the block has soil exposed at the groundsurface; the slabs were removed during demolition and subsurface studies. The area is essentially level and void of vegetation.

A concrete sump exists on the property adjacent to 13th Street. The sump measures approximately 30 inches square in plan. Its depth is approximately 4 feet. The top of the sump is flush with the concrete slab and is covered with a steel plate. A black oily sludge exists in the lower portions of the sump.

A 6-inch-diameter water well also exists in the area. Its location is shown on Plates 1 and 2. The well has a metal casing and extends about 215 feet below ground. The well head is set below grade in a concrete vault. For more information regarding the well, please refer to SCI's report dated September 14, 1988.

B. **Subsurface Conditions**

Fill was encountered at the surface in Borings 32 and 33. Soil conditions near the northeastern corner of the site (Boring 32) consist of a dark brown silty sand fill extending to a depth of about 11 feet. The fill contains fragments of glass, wood, rubble and brick, and is believed to represent material used to backfill a basement.

The surface soil in the southeast corner, i.e., near Boring 33, is fill consisting predominantly of a dark brown to black silty sand and light gray sandy silt. The fill extends to depths of about 3.5 feet. These soils contain fragments of glass, wood, and brick. Below the fill in both borings, and extending to depths of approximately 18 feet, are dense, naturally deposited clayey sands. Below these clayey sands are dense silty sands containing low to nominal quantities of silt and clay. These comparatively clean sands extended to the depths explored.

The test pits excavated near Boring 33 generally confirmed the soil conditions described above. However, it became apparent that much of the shallow fill encountered in Test Boring 33 was fire related debris/waste. The fill contains significant quantities of ash and other materials generated by the incomplete combustion of building materials. The fill in the area of the test pits is of limited extent. The fire related debris/fill was not observed in Test Pits 1, 13, 14, 18, 19 or 20. The approximate extent of the fire debris fill is indicated on Plate 2.

Deeper test borings drilled during previous studies indicate that groundwater exists at a depth of approximately 26 feet below the groundsurface.

IV ANALYTICAL TESTING

Soil samples were transmitted to Curtis and Tompkins, Ltd., a laboratory certified by the California Department of Health Services (DHS) to conduct hazardous waste testing. Samples from Test Borings 32 and 33, and Test Pits 1, 10, 11, 14, and 16 were analyzed for PNAs in accordance with EPA Method 8100. The analytical test results are summarized in Table 2.

Table 2. POLYNUCLEAR AROMATIC HYDROCARBONS CONCENTRATIONS IN SOIL

Boring	Depth (ft)	Chemical/Chemical Analysis	Concentration (mg/kg)[1]
32	4.0	EPA Method 8100[2] Chemicals	ND[3]
32	10.0	EPA Method 8100 Chemicals	ND
33	2.0	EPA Method 8100 Chemicals	
		Naphthalene	110
		Acenaphthylene	190
		Acenaphthene	ND
		Fluorene	34
		Phenanthrene	1,200
		Anthracene	100
		Fluoranthene	1,100
		Pyrene	1,100
		Benzo(a)anthracene	210
		Chrysene	280
		Benzo(b)flouranthene	330
		Benzo(k)flouranthene	140
		Benzo(a)pyrene	420
		Indeno(1,2,3-cd)pyrene	370
		Dibenzo(a,h)anthracene	39
		Benzo(g,h,i)perylene	440
33	5.0	EPA Method 8100 Chemicals	ND
33	13.0	EPA Method 8100 Chemicals	ND

---

1 Mg/kg = milligrams per kilogram or parts per million (ppm)

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

3 ND = None detected, chemicals not present at concentrations above detection limits

Table 2. POLYNUCLEAR AROMATIC HYDROCARBONS CONCENTRATIONS IN SOIL (continued)

Test Pit	Depth (ft)	Chemical/Chemical Analysis	Concentration (mg/kg)[1]
1	1.5	EPA Method 8100[2] Chemicals	ND[3]
10	2.0	EPA Method 8100 Chemicals	ND
10	3.5	EPA Method 8100 Chemicals	ND
11	1.0	EPA Method 8100 Chemicals	ND
		Naphthalene	ND
		Acenaphthylene	7
		Acenaphthene	ND
		Fluorene	ND
		Phenanthrene	30
		Anthracene	5
		Fluoranthene	71
		Pyrene	93
		Benzo(a)anthracene	37
		Chrysene	38
		Benzo(b)flouranthene	61
		Benzo(k)flouranthene	20
		Benzo(a)pyrene	69
		Indeno(1,2,3-cd)pyrene	86
		Dibenzo(a,h)anthracene	12
		Benzo(g,h,i)perylene	110
14	2.0	EPA Method 8100 Chemicals	ND
16	1.5	EPA Method 8100 Chemicals	ND

---

1 Mg/kg = milligrams per kilogram or parts per million (ppm)

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

3 ND = None detected, chemicals not present at concentrations above detection limits

Selected soil samples from the borings and test pits were also analyzed for the presence of total and extractable lead. The analytical test results are summarized in Table 3.

Table 3. SUMMARY OF LEAD CONCENTRATIONS IN SOIL

Test Boring	Sample Depth (ft)	Total Lead[1] (mg/kg)[2]	Extractable Lead[3] (mg/L)[4]
32	4.0	46	1.4
32	10.0	23	NR
33	2.0	250	15
33	5.0	ND	NR
33	13.0	ND	NR

Test Pit	Sample Depth (ft)	Total Lead[1] (mg/kg)[2]	Extractable Lead[3] (mg/L)[4]
1	1.5	20	NR
10	2.0	1300	28
10	3.5	ND[5]	NR
11	1.0	300	8.4
14	2.0	ND	NR[6]
16	1.5	400	63

---

1 EPA 7420 method of analysis
2 milligrams per kilogram or parts per million (ppm)
3 California WET Extraction 6670, digestion EPA 3050
4 milligrams per liter or parts per million (ppm)
5 ND = not detected, Chemicals not present at concentrations above detection levels
6 NR = test not requested

V CONCLUSIONS AND RECOMMENDATIONS

A. PNA and Lead Contamination

In general, the studies to date have revealed elevated concentrations of PNAs and lead in the shallow fill near the corner of Jefferson and 13th Streets. The approximate extent of the contaminated soils is shown on Plate 2. Lead was also detected at comparatively low concentrations in the basement backfill near the corner of 14th and Jefferson Streets (Boring 32). However, for reasons discussed subsequently, we currently do not consider these lead concentrations to be indicative of a problem requiring remediation.

The PNAs detected on the property are regulated by the US EPA as priority pollutants. They are known or suspected carcinogens and are considered hazardous under state and federal regulations. The PNA concentrations are sufficiently high that they should be remediated.

Lead was detected in the fill near the corner of 13th and Jefferson Streets, as well as in the fill encountered in Test Boring 32. The significance of the lead concentrations can be put in perspective by comparing the detected concentrations to the Total Threshold Limit Concentration (TTLC) and to the Soluble threshold Limit Concentration (STLC) values of lead, as defined in Title 22 of the California Administrative Code. If the total concentration of lead in a soil exceeds the metals corresponding

TTLC value, the soil meets the criteria for classification as a hazardous waste. Likewise, if the soluble or extractable concentration of lead in a soil sample exceeds the metals corresponding STLC value, the soil would also be classified as a hazardous waste. The TTLC concentration for lead is 1000 mg/kg; the STLC value for lead is 5.0 mg/kg.

The lead concentrations (Table 3) in the fill encountered in Boring 32 are well below TTLC and STLC hazardous waste criteria. However, the lead concentrations in the fill near the corner of 13th and Jefferson Streets exceed the STLC and in some cases, TTLC values. Consequently, these fill materials are classified as hazardous wastes in accordance with state criteria, and should be remediated.

Although lead is not generally considered a naturally occurring element in soil in the area, it is commonly encountered in surface soils. Its origin is judged to be airborne automobile and industrial emissions. Concentrations similar to those detected in the fill in Test Boring 32 are routinely encountered, and are frequently considered to represent "background" levels. At this time, we do not consider the lead concentrations in the Boring 32 samples to be indicative of a problem requiring remediation nor further investigation.

B. Extent of Soil Cleanup

The borings and pits in the area indicate that the lateral and vertical extent of the contaminated fill is limited to the southeast corner of the block, and is largely located within the

property boundary. Based on visual observations and the analytical data, the lead and PNA contamination appears to be limited to the fill which extends to depths varying from 2 to 3.5 feet, and averages about 3 feet. Given the limited extent of the contaminated soils and the nature of the chemicals involved, we believe that the most efficient and economical method of remediation will be to remove the contaminated materials by excavation and have them disposed of at a suitable hazardous waste facility. We recommend that the area identified on Plate 2 be excavated to a depth of about 3 feet during the remediation process. The depth and lateral extent of excavation will vary somewhat, and should be evaluated by an SCI representative during construction. The soils should be excavated to the extent that non-detectable concentrations of PNAs and lead are encountered. To confirm that the contaminated soils have been satisfactorily removed, samples of the soils beyond the limits of excavation should be analyzed for the presence of PNAs and lead.

C. **Probable Sources of PNAs and Lead**

Many of the PNA compounds detected are coal tar derivatives and/or are produced as a result of the incomplete combustion of organic materials. The source of the fill containing PNAs on the property is currently uncertain. However, we judge that the PNAs and lead found in the fill are likely associated with the fire related debris. The Hotel Metropole existed in the area and burned down in 1918. Although unconfirmed, we suspect that the fire related debris fill may be associated with this event. The

lead is likely associated with the lead flashing and other building components commonly used during the era.

D. Groundwater Contamination

Groundwater exists at moderate depths (about 26 feet) at the site and hence, the risk of groundwater contamination must be considered a possibility. However, analytical tests indicate that PNAs and lead are not present in the soils below the fill at concentrations above detection limits, nor were they encountered in the groundwater composites analyzed during our previous assessment of the block. The Regional water Quality Control Board may require that groundwater monitoring wells be installed so that groundwater quality can be checked.

E. Sump

The concrete sump on the property contains an oily sludge containing elevated concentrations of oil and grease, methylene chloride, several heavy metals, and PCBs. Analytical tests performed by SCI did not reveal that significant quantities of contaminants have been released by the sump into the surrounding soils. We conclude that it will be most practical and cost effective to remove the sump and its contents during remediation of the PNA contaminated soil. Analytical tests should be conducted on soil samples below the sump, following its removal, to confirm that any contaminated soils have been removed.

F. Contaminated Material Disposal

The PNA and lead contaminated soil, and the sump and its contents, should be disposed of in an appropriate hazardous waste

facility. The materials should be manifested and transported by EPA registered hazardous waste haulers. The contractor performing the work should be registered with the US EPA and other regulatory agencies, and comply with pertinent federal, state and local laws.

G. Excavation Backfilling

The excavations resulting from soil and sump removal should be cleaned of loose materials, and backfilled with properly compacted, imported soil. The imported fill should contain at least 20 percent silt and clay. In addition, it should have a liquid limit less than 40 percent and a plasticity index less than 15 percent. All fill should be compacted to at least 90 percent relative compaction, in accordance with the ASTM D1557 test procedure. Fill should be placed and compacted in layers not exceeding 8 inches in loose thickness.

H. Runon/Runoff and Dust Control

During construction, the contractor should take the necessary precautions to limit surface water runoff from flowing into the excavations. If excavations remain open during a period of anticipated heavy rainfall, the excavation should be covered. We should review the contractor's proposed runoff and run-on control plan prior to excavation. In addition, the contractor should implement procedures to minimize dust during soil excavation.

List of Attached Plates:

Plate 1	Site Plan
Plate 2	Test Pit Locations and Extent of Soil Remediation
Plates 3 and 4	Logs of Borings 32 and 33
Plate 5	Unified Soil Classification System
Appendix	Chain-of-Custody Documents Analytical Test Reports

Distribution:

1 copy: Mr. John Esposito
Bramalea Pacific, Ltd.
1221 Broadway, Suite #1800
Oakland, California 94612

2 copies: Ms. Lois Parr
City of Oakland
Office of Economic Development and Employment
1417 Clay Street
Oakland, California 94612

1 copy: Mr. Tim Brown
Crosby, Heafey, Roach & May
1999 Harrison Street
Oakland, California 94612

1 copy: Mr. Donnell Choy, Attorney
City of Oakland
One City Hall Plaza
Oakland, California 94612

1 copy: Ms. Katherine Chesick
Alameda County Health Agency
Division of Hazardous Materials
80 Swan Way, Suite 200
Oakland, California 94621

GTT:JPB:RWR:clh

14th STREET

SIDEWALK

BASEMENT
(BACKFILLED)

20
32

RAMP DOWN

BASEMENT (E)

19
33

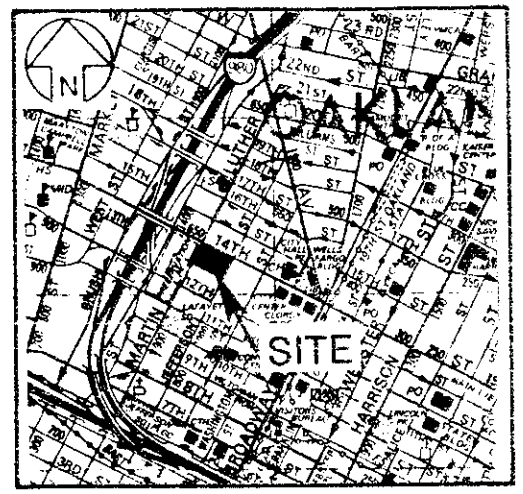
WELL

18
SUMP

MARTIN LUTHER KING, JR. WAY

JEFFERSON STREET

13th STREET



VICINITY MAP

TEST BORING

TEST BORING
(previous study)

TRUE NORTH

N

REFERENCE
NORTH

N

APPROXIMATE SCALE (feet)

0 50 100

SITE PLAN

Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.005	10/4/88	

PLATE 1

TEST BORING
TEST PIT
PROPERTY LINE
FENCE
AREA OF PNA & LEAD CONTAMINATED SOIL REMOVAL

BASEMENT (E)

REMOVE AND DISPOSE OF SUMP AND CONTENTS

EXISTING 6" WELL

JEFFERSON STREET

DRIVEWAY

SIDEWALK

PARKING LOT

SIDEWALK

13th STREET

APPROXIMATE SCALE (feet)
0 20 40

TEST PIT LOCATIONS AND EXTENT OF SOIL REMEDIATION

Subsurface Consultants

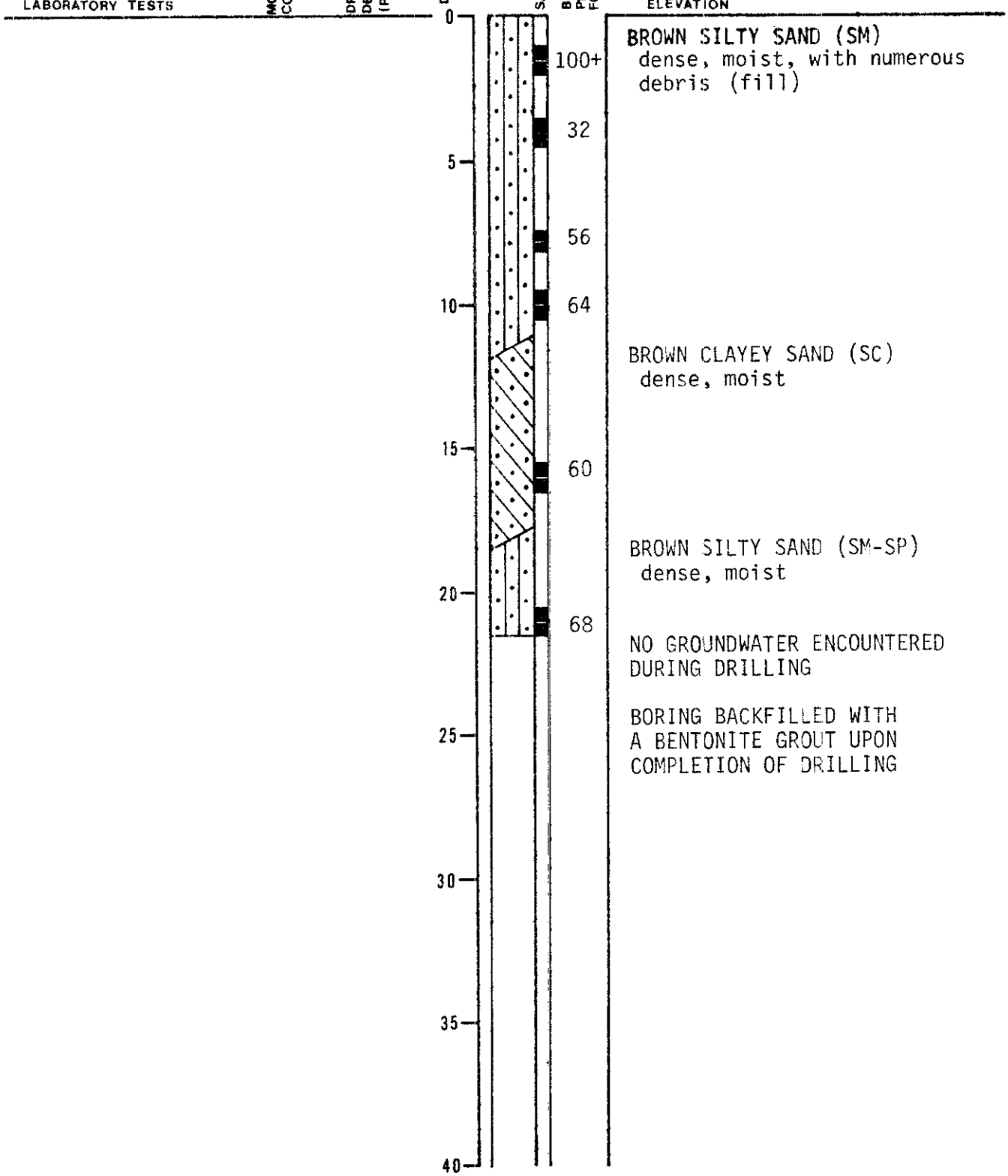
13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.005	10/27/88	

PLATE 2

LOG OF TEST BORING 32

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 10/12/88
ELEVATION --



Subsurface Consultants

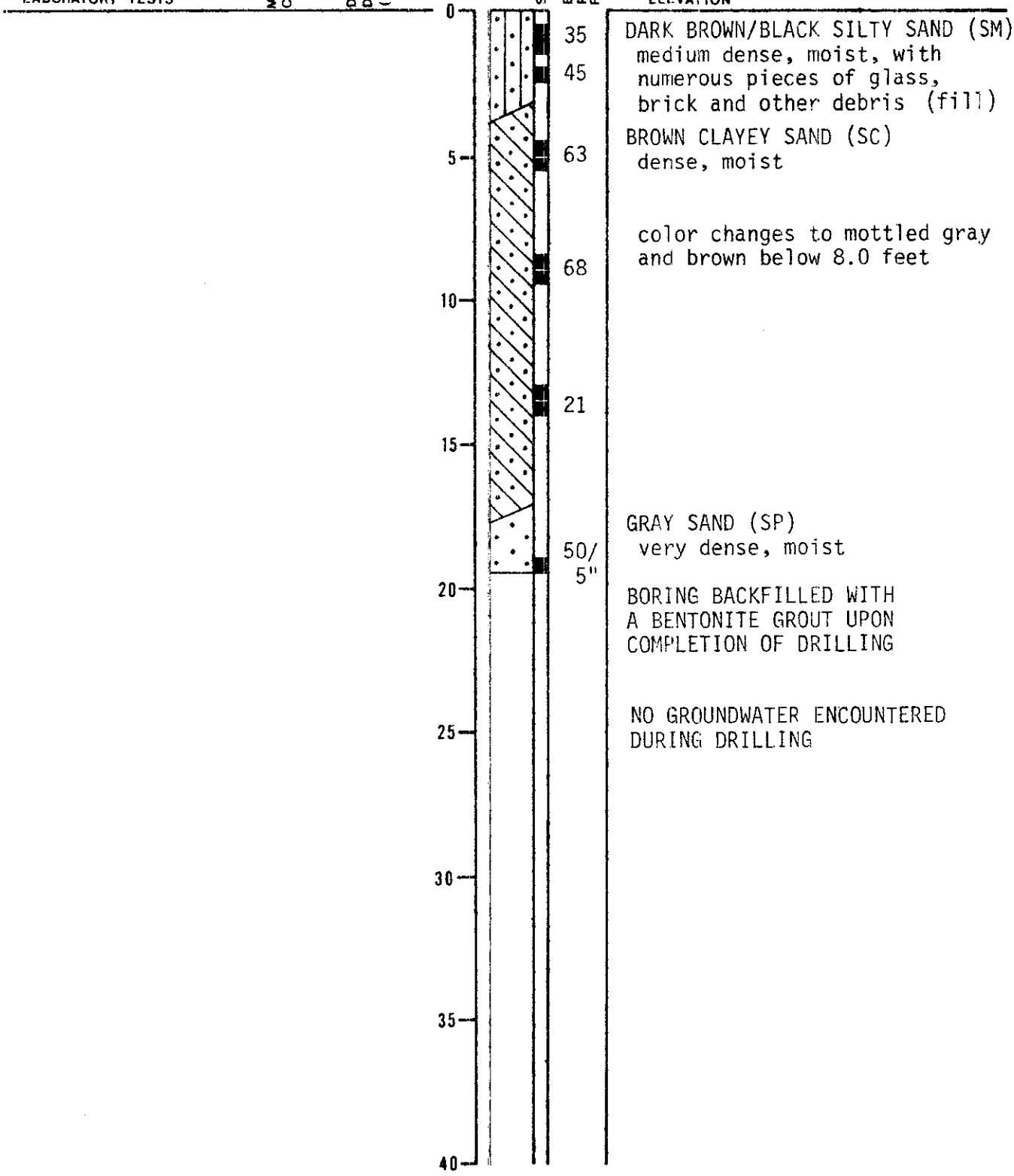
13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.005	10/18/88	

PLATE 3

LOG OF TEST BORING 33

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 10/17/88
ELEVATION --

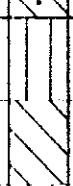
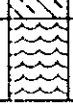


Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.005	10/18/88	

PLATE 4

GENERAL SOIL CATEGORIES			SYMBOLS		TYPICAL SOIL TYPES
COARSE GRAINED SOILS More than half is larger than No. 200 sieve	GRAVEL More than half coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines	GW		Well Graded Gravel, Gravel-Sand Mixtures
			GP		Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM		Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC		Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND More than half coarse fraction is smaller than No. 4 sieve size	Clean sand with little or no fines	SW		Well Graded Sand, Gravelly Sand
			SP		Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM		Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC		Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS More than half is smaller than No. 200 sieve	SILT AND CLAY Liquid Limit Less than 50%		ML		Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL		Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL		Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY Liquid Limit Greater than 50%		MH		Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH		Inorganic Clay of High Plasticity, Fat Clay
			OH		Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT		Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.005	10/18/88	

PLATE 5

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 15951-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT: JEFFERSON ST.
JOB #: 430.005
SAMPLE ID: 32 @ 4.0

DATE RECEIVED: 10/14/88
DATE ANALYZED: 10/18/88
DATE REPORTED: 10/18/88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	1.0
Acenaphthylene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	1.0
Phenanthrene	ND	1.0
Anthracene	ND	1.0
Fluoranthene	ND	1.0
Pyrene	ND	1.0
Benzo(a)anthracene	ND	1.0
Chrysene	ND	1.0
Benzo(b)flouranthene	ND	1.0
Benzo(k)flouranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenzo(a,h)anthracene	ND	5.0
Benzo(ghi)perylene	ND	5.0

ND = None Detected.

QA/QC SUMMARY

Duplicate: Relative % Difference	9
Average Spike Recovery %	82

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

LABORATORY NUMBER: 15951-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT: JEFFERSON ST.
JOB #: 430.005
SAMPLE ID: 32 @ 10.0

DATE RECEIVED: 10/14/88
DATE ANALYZED: 10/18/88
DATE REPORTED: 10/18/88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	1.0
Acenaphthylene	ND	1.0
Acenaphthene	ND	1.0
Fluorene	ND	1.0
Phenanthrene	ND	1.0
Anthracene	ND	1.0
Fluoranthene	ND	1.0
Pyrene	ND	1.0
Benzo(a)anthracene	ND	1.0
Chrysene	ND	1.0
Benzo(b)flouranthene	ND	1.0
Benzo(k)flouranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenzo(a,h)anthracene	ND	5.0
Benzo(ghi)perylene	ND	5.0

ND = None Detected.

QA/QC SUMMARY

Duplicate: Relative % Difference	9
Average Spike Recovery %	82

Curtis & Tompkins, Ltd., Analytical Laboratories Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 15951-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT: JEFFERSON ST.
JOB #: 430.005
SAMPLE ID: 33 @ 2.0

DATE RECEIVED: 10/14/88
DATE ANALYZED: 10/18/88
DATE REPORTED: 10/18/88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	110	5.0
Acenaphthylene	190	5.0
Acenaphthene	ND	5.0
Fluorene	34	5.0
Phenanthrene	1,200	5.0
Anthracene	100	5.0
Fluoranthene	1,100	5.0
Pyrene	1,100	5.0
Benzo(a)anthracene	210	5.0
Chrysene	280	5.0
Benzo(b)flouranthene	330	5.0
Benzo(k)flouranthene	140	5.0
Benzo(a)pyrene	420	5.0
Indeno(1,2,3-cd)pyrene	370	15
Dibenzo(a,h)anthracene	39	15
Benzo(ghi)perylene	440	15

ND = None Detected.

QA/QC SUMMARY

Duplicate: Relative % Difference	9
Average Spike Recovery %	82

TT

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710 Phone (415) 486-0900

LABORATORY NUMBER: 16129
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET
SAMPLE ID: 33 @ 5.0

DATE RECEIVED: 11-04-88
DATE ANALYZED: 11-04-88
DATE REPORTED: 11-08-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	0.33
Acenaphthylene	ND	0.33
Acenaphthene	ND	0.33
Fluorene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Fluoranthene	ND	0.33
Pyrene	ND	0.33
Benzo(a)anthracene	ND	0.33
Chrysene	ND	0.33
Benzo(b)flouranthene	ND	0.33
Benzo(k)flouranthene	ND	0.33
Benzo(a)pyrene	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	1.65
Dibenzo(a,h)anthracene	ND	1.65
Benzo(ghi)perylene	ND	1.65

ND = None Detected.

Steven P. Brennan
LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley CA 94710. Phone (415) 486-0900

LABORATORY NUMBER: 15951-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT: JEFFERSON ST.
JOB #: 430.005
SAMPLE ID: 33 @ 13.0

DATE RECEIVED: 10/14/88
DATE ANALYZED: 10/18/88
DATE REPORTED: 10/18/88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	0.33
Acenaphthylene	ND	0.33
Acenaphthene	ND	0.33
Fluorene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Fluoranthene	ND	0.33
Pyrene	ND	0.33
Benzo(a)anthracene	ND	0.33
Chrysene	ND	0.33
Benzo(b)flouranthene	ND	0.33
Benzo(k)flouranthene	ND	0.33
Benzo(a)pyrene	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	1.65
Dibenzo(a,h)anthracene	ND	1.65
Benzo(ghi)perylene	ND	1.65

ND = None Detected.

QA/QC SUMMARY

Duplicate: Relative % Difference	9
Average Spike Recovery %	82

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710 Phone (415) 486-0900

DATE RECEIVED: 12-05-88
DATE REPORTED: 12-13-88

LAB NUMBER: 16346

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 6 SOIL SAMPLES

PROJECT: JEFFERSON STREET PNA'S
JOB NUMBER: 430.005

RESULTS: SEE ATTACHED

Jon Wong for CBG
Laboratory Director

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

LABORATORY NUMBER: 16346-1
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET PNA'S
SAMPLE ID: TP #1 @ 1' 6"

DATE RECEIVED: 12-05-88
DATE ANALYZED: 12-09-88
DATE REPORTED: 12-13-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	0.33
Acenaphthylene	ND	0.33
Acenaphthene	ND	0.33
Fluorene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Fluoranthene	ND	0.33
Pyrene	ND	0.33
Benzo(a)anthracene	ND	0.33
Chrysene	ND	0.33
Benzo(b)flouranthene	ND	0.33
Benzo(k)flouranthene	ND	0.33
Benzo(a)pyrene	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	1.65
Dibenzo(a,h)anthracene	ND	1.65
Benzo(ghi)perylene	ND	1.65

ND = None Detected.

QA/QC SUMMARY

Average Spike Recovery %	63

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16346-2
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET PNA'S
SAMPLE ID: TP #10 @ 2'

DATE RECEIVED: 12-05-88
DATE ANALYZED: 12-09-88
DATE REPORTED: 12-13-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	5
Acenaphthylene	ND	5
Acenaphthene	ND	5
Fluorene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Fluoranthene	ND	5
Pyrene	ND	5
Benzo(a)anthracene	ND	5
Chrysene	ND	5
Benzo(b)flouranthene	ND	5
Benzo(k)flouranthene	ND	5
Benzo(a)pyrene	ND	5
Indeno(1,2,3-cd)pyrene	ND	25
Dibenzo(a,h)anthracene	ND	25
Benzo(ghi)perylene	ND	25

ND = None Detected.

QA/QC SUMMARY

Average Spike Recovery %	63

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710 Phone (415) 486-0900

LABORATORY NUMBER: 16346-3
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET PNA'S
SAMPLE ID: TP #10 @ 3 1/2"

DATE RECEIVED: 12-05-88
DATE ANALYZED: 12-09-88
DATE REPORTED: 12-13-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	0.33
Acenaphthylene	ND	0.33
Acenaphthene	ND	0.33
Fluorene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Fluoranthene	ND	0.33
Pyrene	ND	0.33
Benzo(a)anthracene	ND	0.33
Chrysene	ND	0.33
Benzo(b)flouranthene	ND	0.33
Benzo(k)flouranthene	ND	0.33
Benzo(a)pyrene	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	1.65
Dibenzo(a,h)anthracene	ND	1.65
Benzo(ghi)perylene	ND	1.65

ND = None Detected.

QA/QC SUMMARY

Average Spike Recovery %	63

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16346-4
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET PNA'S
SAMPLE ID: TP #11 @ 1'

DATE RECEIVED: 12-05-88
DATE ANALYZED: 12-09-88
DATE REPORTED: 12-13-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	5
Acenaphthylene	7	5
Acenaphthene	ND	5
Fluorene	ND	5
Phenanthrene	30	5
Anthracene	5	5
Fluoranthene	71	5
Pyrene	93	5
Benzo(a)anthracene	37	5
Chrysene	38	5
Benzo(b)flouranthene	61	5
Benzo(k)flouranthene	20	5
Benzo(a)pyrene	69	5
Indeno(1,2,3-cd)pyrene	86	25
Dibenzo(a,h)anthracene	12	25
Benzo(ghi)perylene	110	25

ND = None Detected.

QA/QC SUMMARY

Average Spike Recovery %	63

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16346-5
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET PNA'S
SAMPLE ID: TP #14 @ 2'

DATE RECEIVED: 12-05-88
DATE ANALYZED: 12-09-88
DATE REPORTED: 12-13-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	0.33
Acenaphthylene	ND	0.33
Acenaphthene	ND	0.33
Fluorene	ND	0.33
Phenanthrene	ND	0.33
Anthracene	ND	0.33
Fluoranthene	ND	0.33
Pyrene	ND	0.33
Benzo(a)anthracene	ND	0.33
Chrysene	ND	0.33
Benzo(b)flouranthene	ND	0.33
Benzo(k)flouranthene	ND	0.33
Benzo(a)pyrene	ND	0.33
Indeno(1,2,3-cd)pyrene	ND	1.65
Dibenzo(a,h)anthracene	ND	1.65
Benzo(ghi)perylene	ND	1.65

ND = None Detected.

QA/QC SUMMARY

Average Spike Recovery %	63

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16346-6
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET PNA'S
SAMPLE ID: TP #16 @ 1 1/2'

DATE RECEIVED: 12-05-88
DATE ANALYZED: 12-09-88
DATE REPORTED: 12-13-88

EPA Method 8100: Polynuclear Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 3550

COMPOUND	RESULT mg/Kg	DETECTION LIMIT mg/Kg
Naphthalene	ND	5
Acenaphthylene	ND	5
Acenaphthene	ND	5
Fluorene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Fluoranthene	ND	5
Pyrene	ND	5
Benzo(a)anthracene	ND	5
Chrysene	ND	5
Benzo(b)flouranthene	ND	5
Benzo(k)flouranthene	ND	5
Benzo(a)pyrene	ND	5
Indeno(1,2,3-cd)pyrene	ND	25
Dibenzo(a,h)anthracene	ND	25
Benzo(ghi)perylene	ND	25

ND = None Detected.

QA/QC SUMMARY

Average Spike Recovery %	63

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, C A 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16150
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005/JEFFERSON STREET

DATE RECEIVED: 11-08-88
DATE ANALYZED: 11-09,11
DATE REPORTED: 11-11-88

TOTAL AND EXTRACTABLE LEAD IN SOILS

Method References:
Total Lead: Digestion by EPA 3050/Analysis by EPA 7420
Extractable Lead: Waste Extraction Test, CAC Title 22, Section 66700

LAB ID	CLIENT ID	TOTAL LEAD (mg/Kg)	EXTRACTABLE LEAD (mg/L)
16150-1	32 @ 4.0	46	1.4
16150-2	32 @ 10.0	23	N/R
16150-3	33 @ 2.0	250	15
16150-4	33 @ 13.0	ND(2.5)	N/R
16150-5	33 @ 5.0	ND(2.5)	N/R

N/R = NOT REQUESTED.

ND= NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN PARENTHESES.

QA/QC SUMMARY:

	TOTAL LEAD	EXTRACTABLE LEAD
RPD %	11	3
SPIKE RECOVERY %	94	102

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

LAB NUMBER: 16480
CLIENT: SUBSURFACE CONSULTANTS
REPORT ON: 6 SOIL SAMPLES
JOB #: 430.005/JEFFERSON STREET

DATE REQUESTED: 12-21-88
DATE ANALYZED: 12-28-88
DATE REPORTED: 12-30-88

LAB ID	CLIENT ID	TOTAL LEAD (mg/Kg)
16480-1	TP #1 @ 1'6"	20
16480-2	TP #10 @ 2'	1,300
16480-3	TP #10 @ 3 1/2"	ND(0.05)
16480-4	TP #11 @ 1'	300
16480-5	TP #14 @ 2'	ND(0.05)
16480-6	TP #16 @ 1 1/2'	400

ND = Not Detected; Limit of detection indicated in parentheses.

QA/QC SUMMARY

%RPD	1
%Spike Recovery	98

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 16510
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: JEFFERSON STREET PNA'S

DATE RECEIVED: 12-30-88
DATE ANALYZED: 01-05-89
DATE REPORTED: 01-06-89

TOTAL AND EXTRACTABLE LEAD IN SOILS

Method References:
Extractable Lead: Waste Extraction Test, CAC Title 22, Section 66700
Analysis by EPA 7420

LAB ID	CLIENT ID	EXTRACTABLE LEAD (mg/L)
16510-1	TP# 11 @ 1'	8.4
16510-2	TP# 10 @ 2'	28
16510-3	TP# 16 @ 1 1/2'	63

QA/QC SUMMARY:

	TOTAL LEAD	EXTRACTABLE LEAD
RPD %		<1
SPIKE RECOVERY %		100

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LAB NUMBER: 16510-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.005
PROJECT NAME: JEFFERSON STREET PNA'S

DATE RECEIVED: 12-30-88
DATE ANALYZED: 01-03-89
DATE REPORTED: 01-06-89

POLYCHLORINATED BIPHENYLS (PCB'S)
METHOD: EPA 608
EXTRACTION METHOD: EPA 3550-SONICATION

LAB ID	CLIENT ID	AROCLOR	CONCENTRATION (ug/L)	MDL (ug/L)
16510-1	TP# 11 @ 1'	PCB 1016	ND	1.0
		PCB 1221	ND	1.0
		PCB 1232	ND	1.0
		PCB 1242	ND	1.0
		PCB 1248	ND	1.0
		PCB 1254	ND	1.0
		PCB 1260	ND	1.0

ND = NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN LAST COLUMN.

QA/QC SUMMARY

%RPD	3
%RECOVERY	124

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: [illegible] Street PNA

SCI Job Number: 488.005

Project Contact at SCI: Tom Terp

Sampled By: Tom Terp

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: RAPID ~~[redacted]~~ VERBAL RESULTS BY TVES, 10/18/88

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
32[illegible]4C	S	T	10/13/88		PNA's	EPA 8100
32[illegible]10C	S	T	10/13/88		PNA's	EPA 8100
33[illegible]2C	S	T	10/13/88		PNA's	EPA 8100
22[illegible]12C	S	T	10/12/88		PNA's	EPA 8100

* * * * * *

Released by: [signature] Date: 10/14/88

Released by Courier: _____ Date: _____

Received by Laboratory: Stephen L. Jensen Date: 10/14/88

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: Jefferson Street PNA

SCI Job Number: 430.005

Project Contact at SCI: Tom Tebb or Jim Bowers

Sampled By: Tom Tebb

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: Results by Monday (PM)

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
33@5.0	S	T	10.13.88		PNA's	EPA 8100

* * * * * *

Released by: [signature] Date: 11/4/88

Released by Courier: _____ Date: _____

Received by Laboratory: Gabriella Stephan Date: 11/4/88

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAI' OF CUSTODY RECORD
& ANA_YTICAL TEST REQUEST

Project Name: Jefferson Street PNA's

SCI Job Number: 430.005

Project Contact at SCI: Jim Bowers

Sampled By: C O'Dea (SCI)

Analytical Laboratory: Curtiss & Thompkins

Analytical Turnaround:

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
TP# 1@1½'	S	T	12/5/88		PNA's	EPA 8100
TP# 10@2'	S	T	12/5/88		PNA's	" "
TP# 10@3½'	S	T	12/5/88		PNA's	" "
TP# 11@1'	S	T	12/5/88		PNA's	" "
TP# 14@2'	S	T	12/5/88		PNA's	" "
TP# 16@1½'	S	T	12/5/88		PNA's	" "

* * * * * *

Released by: C O'Dea (SCI) Date: 12/5/88

Released by Courier: Date:

Received by Laboratory: Gabriella Stephan. Date: 12/5/88

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

James P. Bowers, PE
R. William Rudolph, Jr., PE

91 JAN 14 PM 2:57

January 10, 1991
SCI 430.010

Mr. William Meckel
East Bay Municipal Utility District
Wastewater Department - MS59
P.O. Box 24055
Oakland, California 94623

Quarterly Monitoring Report #3
Wastewater Discharge
1330 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Meckel:

This letter presents the third quarterly monitoring results from a groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit #001-00009, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the third quarter of operation (October 10, 1990 through January 10, 1991) approximately 253,078 gallons of treated water have been discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 22 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethlybenzene (BTXE) have been reduced to non detectable concentrations. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the third quarter are presented in Table 1. Analytical test reports and Chain-of-Custody documents are also attached.

The analytical test results appear to indicate that biological activity within the primary holding tank, which was documented during the second quarter, is on-going. Hydrocarbon concentrations of approximately 1500 parts per billion are entering the primary holding tank and no detectable concentrations of hydrocarbons are leaving the tank before passing through the carbon treatment system. Therefore, organic loading of the carbon treatment system has been minimal.

On December 12, 1990, operation of the groundwater extraction pump and treatment system was temporarily halted. We anticipate that the system will be turned back on in mid January. Monitoring will continue as before.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

SOC:JB:sld

Attachments: Table 1 - Contaminant Concentrations In Water
Analytical Test Reports
Chain of Custody Documents

cc: Mr. John Esposito
Bramalea Pacific

Ms. Lois Parr
Oakland Redevelopment Agency, OEDE

Ms. Kathrine Chesick
ACHCSA

Mr. Lester Feldman
RWQCB

Mr. Donnell Choy
City of Oakland

Mr. Roy Ikeda
Crosby, Heafey, Roach and May

Table 1. Contaminant Concentrations in Water

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene[2] (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
WI[4]-18	10/15/90	1500	ND[5]	9.0	1.1	91
I[6]-18		ND	ND	ND	ND	ND
B[7]-18		ND	ND	ND	ND	ND
E[8]-18		ND	ND	ND	ND	ND
WI-19	10/29/90	1400	430	66	0.8	90
I-19		ND	ND	ND	ND	ND
B-19		ND	ND	ND	ND	ND
E-19		ND	ND	ND	ND	ND
WI-20	11/12/90	2000	500	12	6.0	160
I-20		ND	ND	ND	ND	ND
B-20		ND	ND	ND	ND	ND
E-20		ND	ND	ND	ND	ND
WI-21	11/26/90	1500	430	39	0.84	110
I-21		ND	ND	ND	ND	ND
B-21		ND	ND	ND	ND	ND
E-21		ND	ND	ND	ND	ND
WI-22	12/11/90	1500	460	24	0.9	110
I-22		ND	ND	ND	ND	ND
B-22		ND	ND	ND	ND	ND
E-22		ND	ND	ND	ND	ND
	12/12/90	Temporarily Stopped Pumping				

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1 TVH = Total Volatile Hydrocarbons, EPA 8015/5030
2 BTXE = Analyses by EPA 8020/5030
3 ug/L = Micrograms per liter or parts per billion (ppb)
4 WI = Well Influent, i.e. wastewater from well prior to discharge into the primary holding tank
5 ND = Not detected at concentrations above detection limits; see test reports for detection limits
6 I = Influent at primary carbon vessel
7 B = Between carbon vessels
8 E = Effluent

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 10/15/90
DATE REPORTED: 10/24/90

LAB NUMBER: 101944

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101944
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 10/15/90
DATE ANALYZED: 10/23/90
DATE REPORTED: 10/24/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101944-1	WI-18	1,500	ND(0.5)	9.0	1.1	91
101944-2	I-18	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101944-3	B-18	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101944-4	E-18	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	96

Curtis & Tompkins, Ltd., Analytical Laboratories Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 10/30/90
DATE REPORTED: 11/02/90

LAB NUMBER: 102108

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102108
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 10/30/90
DATE ANALYZED: 11/02/90
DATE REPORTED: 11/02/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
102108-1	WI-19	1,400	430	66	0.8	90
102108-2	I-19	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102108-3	B-19	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102108-4	E-19	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102281
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 11/15/90
DATE ANALYZED: 11/19/90
DATE REPORTED: 11/28/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
102281-1	WI-20	2,000	500	12	6.0	160
102281-2	I-20	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102281-3	B-20	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102281-4	E-20	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	94

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 11/27/90
DATE REPORTED: 12/07/90

LAB NUMBER: 102385

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: FOUR WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102385
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 11/27/90
DATE ANALYZED: 11/28/90
DATE REPORTED: 12/07/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
102385-1	WI-21	1,500	430	39	0.84	110
102385-2	I-21	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
102385-3	B-21	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
102385-4	E-21	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	9
RECOVERY %	100

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 12/11/90
DATE REPORTED: 12/20/90

LAB NUMBER: 102517

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: FOUR WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 102517
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 12/11/90
DATE ANALYZED: 12/13/90
DATE REPORTED: 12/20/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
102517-1	WI-22	1500	460	24	0.9	110
102517-2	I-22	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
102517-3	B-22	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
102517-4	E-22	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	87

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Jean Carson

Sampled By: " "

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-18	W	V×2	10/15/90		TVH/BTXE	
I-18	W	V×2	10/15/90		TVH/BTXE	
B-18	W	V×2	10/15/90		TVH/BTXE	
E-18	W	V×2	10/15/90		TVH/BTXE	

* * * * * *

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: [signature] Date: 10/15/90 4:50 pm

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-19	W	V x 2	10/29/90		TVH/BTXE	
I-19	W	V x 2	10/29/90		TVH/BTXE	
R-19	W	V x 2	10/29/90		TVH/BTXE	
E-19	W	V x 2	10/29/90		TVH/BTXE	

* * * * * *

Released by: [signature] Date: 10/30/90

Released by Courier: _____ Date: _____

Received by Laboratory: Joanne Beattie Date: 10/30/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Charlie Pearson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-20	W	V x 2	11/12/90		TVH/BTXE	
I-20	W	V x 2	11/12/90		TVH/BTXE	
B-20	W	V x 2	11/12/90		TVH/BTXE	
E-20	W	V x 2	11/12/90		TVH/BTXE	

* * * * * *

Released by: [signature] Date: NOV-15-90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 11/15/90 11:54

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: FERNANDO VELEZ

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-2.1	W	V x 2	11/26/90		TVH/BTXE	
I-2.1	W	V x 2	"		TVH/BTXE	
B-2.1	W	V x 2	"		TVH/BTXE	
E-2.1	W	V x 2	"		TVH/BTXE	

* * * * * *

Released by: Dennis Alexander Date: 11-27-90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 11-27-90 14:5

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

102517

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK EXTRACTION

Job Number: 430.010

Project Contact at SCI: SEAN CARSON

Sampled By: FERNANDO VELEZ

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-22	W	V×2	12/11/90		TVH/BTXE	
D-22	W	V×2	12/11/90		TVH/BTXE	
B-22	W	V×2	12/11/90		TVH/BTXE	
E-22	W	V×2	12/11/90		TVH/BTXE	

* * * * * *

Released by: [signature] Received by: _____ Date: _____

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 3:42pm PJ 11/90

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

[1] Sample Type: W = Water, S = Soil, O = Other (specify)
[2] Container Type: V = VOA, P = Plastic, G = Glass, T = Brass Tube, O = Other (specify)

NOTES TO LABORATORY:
Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

James P. Bowers, PE
R. William Rudolph, Jr., PE

October 9, 1990
SCI 430.010

Mr. William Meckel
East Bay Municipal Utility District
Wastewater Department - MS59
Post Office Box 24055
Oakland, California 94623

Second Quarterly Monitoring Report
Wastewater Discharge
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Meckel:

This letter presents the second quarterly monitoring results from our groundwater treatment plant at 1330 Martin Luther King, Jr. Way. Monitoring of treated effluent discharge has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit No. 001-00009, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon-contaminated groundwater.

During the second quarter of operation (July 9 through October 9, 1990) approximately 346,510 gallons of treated water have been discharged into the EBMUD sanitary sewer system. The treatment plant performance has been excellent to date. The analytical results from 17 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethyl benzene (BTXE) have been reduced to nondetectable concentrations. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the second quarter are presented in Table 1. Analytical test reports and chain-of-custody documents are also attached.

Enhanced biological activity has been observed and recorded in the primary holding tank and is evidenced by the fact that hydrocarbon concentrations in the outflow from the tank (samples I-12 through I-17) are significantly lower than in the water going into the tank (samples WI-12 through WI-17). The tank has a closed top and hence, we judge that volatilization of organics is limited. We have observed a decrease in hydrocarbon concentrations entering the carbon columns over time, which, in our opinion, is due to increasing biologic activity in the holding tank. For all sampling events during this quarter, except Event No. 14, no detectable concentrations of organics have entered the carbon system, i.e., the organics have been completely consumed by bioactivity in the

holding tank. Therefore, organic loading of the carbon treatment system has been minimal.

On October 1, 1990, approximately 4,000 gallons of contaminated groundwater from a nearby source were discharged into the primary holding tank and treated by the system. Details regarding the source of the water and the analytical test results are discussed in a letter to you dated September 24, 1990. Chlorinated hydrocarbon concentrations were relatively low, up to 9.9 ug/L of tetrachloroethylene (PCE). During our sampling event on the following day (10/2/90), a sample of the effluent was analyzed for these compounds (EPA 8010). The analytical results indicate that no detectable concentrations of the previously detected compounds, chloroform or PCE were present in the effluent.

Because the organic loading on the granular-activated carbon (GAC) system has been minimal during the last quarter and is currently nondetectable, we estimate that breakthrough of the primary carbon unit will theoretically not occur. However, at your request, we have estimated breakthrough based on source concentrations. Assuming a hydrocarbon concentration of 3000 ug/L, and the current daily treatment volume, we estimate that breakthrough will occur in approximately 750 days.

As indicated in Table 1, lead has not been detected in any of the influent or effluent samples. For this reason, we request that our monitoring program be modified to eliminate the lead analysis currently being performed. Additionally, we request in the interest of minimizing costs, that EBMUD reduce their sampling frequency from six times per year to three times per year. We believe that this is reasonable given the excellent performance of the system and that no detectable concentrations of organics have been observed during the EBMUD monitoring program.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

SOC:JPB:gf

Attachments: Table 1 - Contaminant Concentrations in Water
Analytical Test Reports
Chain-of-Custody Documents

cc: Mr. John Esposito, Bramalea Pacific
Ms. Lois Parr, Oakland Redevelopment Agency, OEDE
Ms. Katherine Chessick, ACHCSA
Mr. Lester Feldman, RWQCB
Mr. Donnel Choy, City of Oakland
Mr. Roy Ikeda, Crosby, Heafy, Roach & May

ltr430.010

Table 1. CONTAMINANT CONCENTRATIONS IN WATER

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	Total Lead (mg/L)[4]	VOCs[2] (ug/L)
I[5]-11	7/9/90	ND[6]	ND	ND	ND	ND	ND	
B[7]-11		ND	ND	ND	ND	ND	ND	
E[8]-11		ND	ND	ND	ND	ND	ND	
WI[9]-12	7/23/90	3800	790	150	10	140	ND	
I-12		ND	ND	ND	ND	ND	ND	
B-12		ND	ND	ND	ND	ND	ND	
E-12		ND	ND	ND	ND	ND	ND	
WI-13	8/7/90	1600	600	29	1.4	54	ND	
I-13		ND	ND	ND	ND	ND	ND	
B-13		ND	ND	ND	ND	ND	ND	
E-13		ND	ND	ND	ND	ND	ND	
WI-14	8/20/90	2900	570	96	ND	120	ND	
I-14		490	28	24	14	60	ND	
B-14		ND	ND	ND	ND	ND	ND	
E-14		ND	ND	ND	ND	ND	ND	
WI-15	9/4/90	2700	540	78	1.1	110	ND	
I-15		ND	ND	ND	ND	ND	ND	
B-15		ND	ND	ND	ND	ND	ND	
E-15		ND	ND	ND	ND	ND	ND	
WI-16	9/17/90	1400	390	53	0.9	86	ND	
I-16		ND	ND	ND	ND	ND	ND	
B-16		ND	ND	ND	ND	ND	ND	
E-16		ND	ND	ND	ND	ND	ND	
WI-17	10/2/90	2500	330	70	0.8	130	ND	
I-17		ND	ND	ND	ND	ND	ND	
B-17		ND	ND	ND	ND	ND	ND	
E-17		ND	ND	ND	ND	ND	ND	ND

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1 TVH = Total Volatile Hydrocarbons, EPA 8015/5030

2 VOCs = Volatile Organic Compounds, EPA 8010

3 ug/L = Micrograms per liter or parts per billion (ppb)

4 mg/L = Milligrams per liter or parts per million (ppm)

5 I = Influent at primary carbon vessel

6 ND = Not detected at concentrations above detection limits; see test reports for detection limits

7 B = Between carbon vessels

8 E = Effluent

9 WI = Well Influent, i.e. wastewater from well prior to discharge into the primary holding tank

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/09/90
DATE REPORTED: 07/11/90

LAB NUMBER: 101010

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

M.S. Printer
QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101010
CLIENT: SUBSURFACE CONSULTANTS
LOCATION: MLK EXTRACTION
PROJECT #: 430.010

DATE RECEIVED: 07/09/90
DATE ANALYZED: 07/10/90
DATE REPORTED: 07/11/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101010-1	I-11	ND	mg/L	0.05
101010-3	E-11	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101010
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 07/09/90
DATE ANALYZED: 07/11/90
DATE REPORTED: 07/11/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101010-1	I-11	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101010-2	B-11	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101010-3	E-11	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	110

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DATE RECEIVED: 07/23/90
DATE REPORTED: 07/25/90

LAB NUMBER: 101139

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101139
CLIENT: SUBSURFACE CONSULTANTS
LOCATION: MLK GW EXTRACTION
PROJECT #: 430.010

DATE RECEIVED: 07/23/90
DATE ANALYZED: 07/23/90
DATE REPORTED: 07/25/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101139-1	WI-12	ND	mg/L	0.05
101139-4	E-12	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	100

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101139
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 07/23/90
DATE ANALYZED: 07/24/90
DATE REPORTED: 07/25/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101139-1	WI-12	3,800	790	150	10	140
101139-2	I-12	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101139-3	B-12	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101139-4	E-12	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	102

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DATE RECEIVED: 08/07/90
DATE REPORTED: 08/13/90

LAB NUMBER: 101320

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK GW

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101320
CLIENT: SUBSURFACE CONSULTANTS
LOCATION: MLK GW
PROJECT #: 430.010

DATE RECEIVED: 08/07/90
DATE ANALYZED: 08/08/90
DATE REPORTED: 08/13/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101320-1	WI-13	ND	mg/L	0.05
101320-4	E-13	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101320
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK GW

DATE RECEIVED: 08/07/90
DATE ANALYZED: 08/09/90
DATE REPORTED: 08/13/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030, 8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101320-1	WI-13	1,600	600	29	1.4	54
101320-2	I-13	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101320-3	B-13	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101320-4	E-13	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	85

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DATE RECEIVED: 08/20/90
DATE REPORTED: 08/23/90

LAB NUMBER: 101422

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK GW

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101422
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK GW

DATE RECEIVED: 08/20/90
DATE ANALYZED: 08/21/90
DATE REPORTED: 08/23/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101422-1	WI-14	ND	mg/L	0.05
101422-4	E-14	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101422
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK GW

DATE RECEIVED: 08/20/90
DATE ANALYZED: 08/22/90
DATE REPORTED: 08/23/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101422-1	WI-14	2,900	570	96	ND(0.5)	120
101422-2	I-14	490	28	24	14	60
101422-3	B-14	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101422-4	E-14	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	84

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DATE RECEIVED: 09/04/90
DATE REPORTED: 09/05/90

LAB NUMBER: 101559

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK GW

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101559
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK GW

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/05/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101559-1	WI-15	ND	mg/L	0.05
101559-4	E-15	ND	mg/L	0.05

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101559
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK GW

DATE RECEIVED: 09/04/90
DATE ANALYZED: 09/05/90
DATE REPORTED: 09/05/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101559-1	WI-15	2,700	540	78	1.1	110
101559-2	I-15	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101559-3	B-15	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101559-4	E-15	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	11
RECOVERY, %	98

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
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DATE RECEIVED: 09/17/90
DATE REPORTED: 09/20/90

LAB NUMBER: 101665

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK GW

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101665
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK GW

DATE RECEIVED: 09/17/90
DATE ANALYZED: 09/19/90
DATE REPORTED: 09/20/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101665-1	WI-16	ND	mg/L	0.05
101665-4	E-16	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101665
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK GW

DATE RECEIVED: 09/17/90
DATE ANALYZED: 09/20/90
DATE REPORTED: 09/20/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101665-1	WI-16	1,400	390	53	0.9	86
101665-2	I-16	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101665-3	B-16	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101665-4	E-16	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	106

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2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 10/02/90
DATE REPORTED: 10/08/90

LAB NUMBER: 101824

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101824
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 10/02/90
DATE ANALYZED: 10/04/90
DATE REPORTED: 10/08/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101824-1	WI-17	2,300	330	70	0.8	130
101824-2	I-17	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101824-3	B-17	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101824-4	E-17	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101824
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 10/02/90
DATE ANALYZED: 10/03/90
DATE REPORTED: 10/08/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101824-1	WI-17	ND	mg/L	0.05
101824-4	E-17	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101824-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
SAMPLE ID: E-17

DATE RECEIVED: 10/02/90
DATE ANALYZED: 10/04/90
DATE REPORTED: 10/08/90

EPA 80:0
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
chloromethane	ND	2.0
bromomethane	ND	2.0
vinyl chloride	ND	2.0
chloroethane	ND	2.0
methylene chloride	ND	1.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
1,2-dichloroethene (total)	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	ND	1.0
1,1,1-trichloroethane	ND	1.0
carbon tetrachloride	ND	1.0
bromodichloromethane	ND	1.0
1,2-dichloropropane	ND	1.0
cis-1,3-dichloropropene	ND	1.0
trichloroethylene	ND	1.0
1,1,2-trichloroethane	ND	1.0
trans-1,3-dichloropropene	ND	1.0
dibromochloromethane	ND	1.0
2-chloroethyl vinyl ether	ND	1.0
bromoform	ND	2.0
tetrachloroethene	ND	1.0
1,1,2,2-tetrachloroethane	ND	1.0
chlorobenzene	ND	1.0
1,3-dichlorobenzene	ND	1.0
1,2-dichlorobenzene	ND	1.0
1,4-dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	88

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-11	W	V x 2	7/9/90		TVH/BTXE	
		P-1	7/9/90		Lead	7421
B-11	W	V x 2	7/9/90		TVH/BTXE	
E-11	W	V x 2	7/9/90		TVH/BTXE	
		P x 1			Lead	7421

* * * * * *

Released by: [signature] Date: 7/9/90

Released by Courier: Date:

Received by Laboratory: [signature] Date: 7/9/90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-12	W	V x 2	7/23/90		TVH/BTXE	
	W	P x 1	7/23/90		Total lead	7421
I-12	W	V x 2	7/23/90		TVH/BTXE	
B-12	W	V x 2	7/23/90		TVH/BTXE	
E-12	W	V x 2	7/23/90		TVH/BTXE	
		P x 1	7/23/90		Lead	7421

* * * * * *

Released by: _____ Date: July 23-90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 7/23/90 9:00a

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK GW

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: " "

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-13	W	V x 2	8/7/90		TVH/BTXE	
		P x 1	"		Lead	EPA 7421
I-13	W	V x 2	8/7/90		TVH/BTXE	
B-13	W	V x 2	8/7/90		TVH/BTXE	
E-13	W	V x 2	8/7/90		TVH/BTXE	
		P x 1	8/7/90		Lead	EPA 7421

* * * * * *

Released by: [signature] Date: 8/7/90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 8/7/90 340

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK GW

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Charlie Pearson

Analytical Laboratory: Curtis + Tompkins Ltd.

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-14	W	V x 2	8/20/90		TVH/BTXE	
		P x 1	"		Lead EPA	7421
I-14	W	V x 2	8/20/90		TVH/BTXE	
B-14	W	V x 2	8/20/90		TVH/BTXE	
E-14	W	V x 2	8/20/90		TVH/BTXE	
		P x 1	"		Lead EPA	7421

* * * * * *

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: [signature] Date: 8/21/90 10:05A

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications...contact SCI at (415) 268-0461

Chain of Custody Form

Attn: Sean Carson

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94107
(415) 486-0900

Samplers _____

Job Description Martin Luther King

Job Number 430,002

Client Contact SCI, Sean Carson

Recorder _____

Matrix: Water	Soil	Waste	Oil			#Containers	Method Preserved: H_2SO_4	HNO3	Ice	None	Other	Sample Number	Sampling Date: Yr	Mo	Dy	Time	SAMPLE NOTES
X						1			X			WH-14	90	08	29	2000	VOA
X						1						WH-14	90	08	29		VOA
X						1						WH-14	90	08	29		Plastic Bottle
X						1						H-14	90	08	29		VOA
X						1						I-14	90	08	29		VOA
X						1						B-14	90	08	29		VOA
X						1						B-14	90	08	29		VOA
X						1						E-14	90	08	29		VOA
X						1						E-14	90	08	29		VOA
X						1						E-14	90	08	29		Plastic Bottle

ANALYSIS REQUESTED															
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method-	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's	TVH-EPA 8015 / 5030 Mod 8020	TEH-EPA 8015	Total Lead	Organic Lead	Lead 7421
										X				
										X				
														X
										X				
										X				
										X				
										X				
										X				
										X				
														X

Laboratory Notes :

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Charles A Peeman 8/20/90	
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature)
	Mary Printz 8/20/90 3:15 pm

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, CA 94710
Phone: 415-486-0900
FAX: 415-486-0532

Samplers _____

Job Description _____

Job Number 490.010

Client Contact SUBSURFACE CONSULTANTS

Recorder _____

Matrix						#Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES	ANALYSIS REQUESTED															
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time		EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	CAM 17 Metals	EPA PP Metals (#)	TPH Method-	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pest's&PCB's					
✓						1						I-10	90	06	25	1000																
✓						1						E-10	90	06	25	1000																
✓						1						I-10	90	06	25	1000																
✓						1						I-10	90	06	25	1000																
✓						1						B-10	90	06	25	1000																
✓						1						E-10	90	06	25	1000																
✓						1						B-10	90	06	25	1000																

Laboratory Notes :

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) 6.25.90

VERBAL ADDITIONS / CANCELLATIONS TO ANALYSIS REQUEST SHEET

CLIENT: Subsurface Consultants DATE: 5-3-90

REQUESTED BY: Sean Carson TIME: 10:20 (am) pm

RECORDED BY: mp

Current Lab ID (Previous Lab ID)	Client ID	Circle matrix	Specify add or cancel	Analysis	Due date
100352-1 (-)	'Influent' ↓ change to I-1	soil water other			
100352-2 (-)	'Between' ↓ change to B-1	soil water other			
100352-3 (-)	'Effluent' ↓ change to E-1	soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			

Original in job jacket. Copies to analytical departments.

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK GW

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis - Tompkins Ltd

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-15	W	V x 2	9/4/90		TVH/BTXE	
		P x 1	9/4/90		Lead	EPA 7421
I-15	W	V x 2	9/4/90		TVH/BTXE	
B-15	W	V x 2	9/4/90		TVH/BTXE	
E-15	W	V x 2	9/4/90		TVH/BTXE	
		P x 1	9/4/90		Lead	EPA 7421

* * * * * *

Released by: _____ Date: 9/4/90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 9/4/90 3:19p

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK E/W

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Charlie Pearson

Analytical Laboratory: Curtis + Tompkins (Ltd)

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-16	W	V×2 P×1	9/17/90		TVH/BTXE Lead	EPA 7421
I-16	W	V×2	9/17/90		TVH/BTXE	
B-16	W	V×2	9/17/90		TVH/BTXE	
E-16	W	V×2 P×1	9/17/90		TVH/BTXE Lead	EPA 7421

* * * * * *

Released by: [signature] Date: 9/17/90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 9/17/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.00

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins Ltd.

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-17	W	V x 2	10/2/90		TVH/BTXE	
		P x 1	10/2/90		Lead 7421	
I-17	W	V x 2	10/2/90		TVH/BTXE	
B-17	W	V x 2	10/2/90		TVH/BTXE	
E-17	W	V x 4	10/2/90		TVH/BTXE VOCs	8015/8020 8010
		P x 1	10/2/90		Lead 7421	

* * * * * *

Released by: [signature] Date: 10-02-90

Released by Courier: Date:

Received by Laboratory: [signature] Date: 02-OCT-90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

James P. Bowers, PE
R. William Rudolph, Jr., PE

July 9, 1990
SCI 430.010

Mr. William Meckel
East Bay Municipal Utility District
Wastewater Department - MS59
P.O. Box 24055
Oakland, California 94623

Quarterly Monitoring Report
Wastewater Discharge
1330 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Meckel:

This letter records data generated during monitoring of our groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent discharge has been performed in accordance with criteria specified in the EBMUD Wastewater Discharge Permit #001-00009, issued to the City of Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

The wastewater treatment system began operation on May 2, 1990. The plant has been under continuous operation, except for minor electrical maintenance which necessitated that the system be temporarily shut down. The system has performed satisfactorily and has reduced total volatile hydrocarbons (TVH) and benzene, toluene, xylene and ethylbenzene (BTXE) to non-detectable concentrations after treatment by the primary carbon column. No indications of breakthrough have occurred in the primary carbon column. The results of the water quality data generated to date are presented in the attached Table. Analytical test reports and Chain-of-Custody documents are also attached.

Flow volumes have been recorded through July 9, 1990. Approximately 226,260 gallons of treated water have been discharged into the EBMUD sanitary sewer system. We estimate breakthrough for the primary carbon unit will occur in approximately 550 days using current loading data.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

JPB:SOC:nf

Attachments: Analytical Test Reports
Chain-of-Custody Documents

cc: Mr. John Esposito
Ms. Lois Parr
Ms. Katherine Chesick
Mr. Lester Feldman
Mr. Donnel Choy
Mr. Roy Ikeda

Table 1. Contaminant Concentrations in Wastewater

Sample	Date	TVH[1] ug/L[2]	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Total Xylenes ug/L	Total Lead
I[4]-1	5/2/90	13,000	350	870	ND[3]	1300	
B[5]-1		ND	ND	ND	ND	ND	
E[6]-1		ND	ND	ND	ND	ND	
I-2	5/3/90	4100	340	240	ND	610	
B-2		ND	ND	ND	ND	ND	
E-2		ND	ND	ND	ND	ND	
I-3	5/4/90	1400	160	ND	ND	310	ND
B-3		ND	ND	ND	ND	ND	
E-3		ND	ND	ND	ND	ND	ND
I-4	5/7/90	460	29	ND	ND	93	ND
B-4		ND	ND	ND	ND	ND	
E-4		ND	ND	ND	ND	ND	ND
I-5	5/9/90	ND	ND	ND	ND	.73	ND
B-5		ND	ND	ND	ND	ND	
E-5		ND	ND	ND	ND	ND	ND
I-6	5/11/90	55	ND	ND	ND	ND	ND
B-6		ND	ND	ND	ND	ND	
E-6		ND	ND	ND	ND	ND	ND
I-7	5/14/90	ND	ND	ND	ND	ND	ND
B-7		ND	ND	ND	ND	ND	
E-7 (Raised pump in well)		ND	ND	ND	ND	ND	ND
I-8	5/29/90	350	ND	1.7	ND	4.1	ND
B-8		ND	ND	ND	ND	ND	
E-8		ND	ND	ND	ND	ND	ND
I-9	6/11/90	260	41	15	ND	11	ND
B-9		ND	ND	ND	ND	ND	
E-9		ND	ND	ND	ND	ND	ND
I-10[7]	6/25/90	6000	1300	250	ND	200	ND
B-10		ND	ND	ND	ND	ND	
E-10		ND	ND	ND	ND	ND	ND

[1] TVH = Total Volatile Hydrocarbons
[2] ug/L = Micrograms per liter or parts per billion (ppb)
[3] ND = not detected at concentrations above detection limit; see test reports for detection limits
[4] I = Influent at carbon vessel
[5] B = Between carbon vessels
[6] E = Effluent
[7] Influent sample obtained from well pump discharge line

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 05/02/90
DATE REPORTED: 05/04/90

LAB NUMBER: 100352

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.002
LOCATION: MLK EXTRACTION WELL

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100352
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.002
JOB LOCATION: MLK EXTRACTION WELL

DATE RECEIVED: 05/02/90
DATE ANALYZED: 05/04/90
DATE REPORTED: 05/04/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100352-1	I-1	13,000	350	870	ND(50)	1,300
100352-2	B-1	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
100352-3	E-1	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	112

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/03/90
DATE REPORTED: 05/07/90

LAB NUMBER: 100363

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.002
LOCATION: MLK EXTRACTION WELL

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100363
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.002
JOB LOCATION: MLK EXTRACTION WELL

DATE RECEIVED: 05/03/90
DATE ANALYZED: 05/07/90
DATE REPORTED: 05/07/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100363-1	I-2	4,100	340	240	ND(5.0)	610
100363-2	B-2	ND(50.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
100363-3	E-2	ND(50.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	109

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/04/90
DATE REPORTED: 05/09/90

LAB NUMBER: 100390

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 540.002
LOCATION: 14TH & MLK

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

LABORATORY NUMBER: 100390
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 540.002
LOCATION: 14TH & MLK

DATE RECEIVED: 05/04/90
DATE ANALYZED: 05/07/90
DATE REPORTED: 05/09/90

ANALYSIS: LEAD
METHOD REFERENCE: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100390-1	I-3	ND	mg/L	0.05
100390-3	E-3	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY:

RPD, %	1
RECOVERY, %	100

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100390
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 540.002
JOB LOCATION: 14TH & MLK

DATE RECEIVED: 05/04/90
DATE ANALYZED: 05/09/90
DATE REPORTED: 05/09/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100390-1	I-3	1,400	160	ND(1.0)	ND(1.0)	310
100390-2	B-3	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
100390-3	E-3	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	105

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/07/90
DATE REPORTED: 05/09/90

LAB NUMBER: 100401

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.002
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins Ltd

LABORATORY NUMBER: 100401
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.002
LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/07/90
DATE ANALYZED: 05/08/90
DATE REPORTED: 05/09/90

ANALYSIS: LEAD
METHOD REFERENCE: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100401-1	I-4	ND	mg/L	0.05
100401-3	E-4	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY:

RPD, %	2
RECOVERY, %	99

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100401
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.002
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/07/90
DATE ANALYZED: 05/09/90
DATE REPORTED: 05/09/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100401-1	I-4	460	29	ND(0.50)	ND(0.50)	93
100401-2	B-4	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
100401-3	E-4	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	105

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 05/11/90
DATE REPORTED: 05/15/90

LAB NUMBER: 100466

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.002
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100466
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.002
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/11/90
DATE ANALYZED: 05/15/90
DATE REPORTED: 05/15/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100466-1	1-5	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	0.73
100466-2	B-5	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
100466-3	E-5	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	106

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/11/90
DATE REPORTED: 05/15/90
PAGE 1 OF 3

LAB NUMBER: 100467

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.002
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100467
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.002
LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/11/90
DATE ANALYZED: 05/15/90
DATE REPORTED: 05/15/90

ANALYSIS: LEAD
METHOD REFERENCE: EPA 7421

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100467-1	I-6	ND	mg/L	0.05
100467-3	E-6	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY:

RPD, %	4
RECOVERY, %	99

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100467
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.002
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/11/90
DATE ANALYZED: 05/15/90
DATE REPORTED: 05/15/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100467-1	I-6	55	ND(0.50)	ND(0.50)	ND(0.50)	1.0
100467-2	B-6	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
100467-3	E-6	ND(50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	106

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/16/90
DATE REPORTED: 05/18/90

LAB NUMBER: 100500

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.002
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 100500
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.002
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/16/90
DATE ANALYZED: 05/18/90
DATE REPORTED: 05/18/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100500-1	I-7	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100500-2	B-7	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100500-3	E-7	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	85

Curtis & Tompkins, Ltd., Analytical Laboratories, since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/29/90
DATE REPORTED: 06/01/90

LAB NUMBER: 100617

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100617
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/29/90
DATE ANALYZED: 05/30/90
DATE REPORTED: 05/31/90

ANALYSIS: LEAD IN AQUEOUS SOLUTIONS
METHOD REFERENCE: EPA 7421

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100617-1	I-8	ND	mg/L	0.05
100617-3	E-8	ND	mg/L	0.05

QA/QC SUMMARY:

RPD, %	<1
RECOVERY, %	100

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100617
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 05/29/90
DATE ANALYZED: 05/31/90
DATE REPORTED: 06/01/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100617-1	I-8	350	ND(1.0)	1.7	ND(1.0)	4.1
100617-2	B-8	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100617-3	E-8	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	112

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 06/11/90
DATE REPORTED: 06/13/90

LAB NUMBER: 100764

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

M. E. Printeza
QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 100764
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 06/11/90
DATE ANALYZED: 06/12/90
DATE REPORTED: 06/13/90

ANALYSIS: LEAD
METHOD REFERENCE: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100764-1	I-9	ND	mg/L	0.05
100764-3	E-9	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY:

RPD, %	3
RECOVERY, %	106

LABORATORY NUMBER: 100764
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 06/11/90
DATE ANALYZED: 06/13/90
DATE REPORTED: 06/13/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100764-1	I-9	260	41	15	ND(1.0)	11
100764-2	B-9	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100764-3	E-9	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	109

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 06/25/90
DATE REPORTED: 06/28/90

LAB NUMBER: 100888

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 WATER SAMPLES

PROJECT #: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 100888
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 06/25/90
DATE ANALYZED: 06/26/90
DATE REPORTED: 06/28/90

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100888-1	I-10	ND	mg/L	0.05
100888-3	E-10	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 100888
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.010
JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 06/25/90
DATE ANALYZED: 06/28/90
DATE REPORTED: 06/28/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
100888-1	I-10	6,000	1,300	250	ND(5.0)	200
100888-2	B-10	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
100888-3	E-10	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	105

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction Well

SCI Job Number: 430.002

Project Contact at SCI: Sean Carson

Sampled By: John Wolfe

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

	Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-1	INFLUENT	W	V	5/2/90		TVH/BTXE	8015 / 602
B-1	BETWEEN	W	V	5/2/90		TVH/BTXE	8015/602
E-1	EFFLUENT	W	V	5/2/90		TVH/BTXE	8015/602

* * * * * *

Released by: Dennis Aligand Date: 5-2-90

Released by Courier: Date:

Received by Laboratory: Nancy Patten Date: 5-2-90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction Well

SCI Job Number: 430.002

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-2	W	V	5/3/90		TVH/BTXE	8015/602
B-2	W	V	5/3/90		TVH/BTXE	8015/602
E-2	W	V	5/3/90		TVH/BTXE	8015/602
*	*	*	*	*	*	

Released by: Dennis Alexander Date: 5-3-90

Released by Courier: Date:

Received by Laboratory: Nancy Gruber Date: 5/3/90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 14th & Martin Luther King

SCI Job Number: 540.002

Project Contact at SCI: S. Carson

Sampled By: JTW

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: ~~[illegible]~~ (RAPID)

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-3	~~W~~ W	2-Voa	5/4/90		TVH/BTXE	
	~~Plastic~~ W	1-plastic	5/4/90		Lead	
B-3	W	2-VOA	5/4/90		TVH/BTXE	
E-3	W	2 VOA	5/4/90		TVH/BTXE	
	W	1 plastic	5/4/90		lead	

* * * * * *

Released by: John Wolf Date: 5/4/90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 5-4-90 17:15

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MUK Extraction

SCI Job Number: 430.002

Project Contact at SCI: Sean Carson

Sampled By: " "

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-4	W	VOA-2	5/7/90		TVH/BTXE	
I-4	W	P			LEAD	
B-4	W	VOA-2	5/7/90		TVH/BTXE	
E-4	W	VOA-2	5/7/90		TVH/BTXE	
E-4	W	P	"		LEAD	

* * * * * *

Released by: Dennis Alsford Date: 5-7-90

Released by Courier: Date:

Received by Laboratory: Nancy Ritter Date: 5/7/90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

100466

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.002

Project Contact at SCI: Sean Carson

Sampled By: " "

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-5	W	V.2	5/9/90		TVH/BTXE	
B-5	W	V.2	5/9/90		TVH/BTXE	
E-5	W	V.2	5/9/90		TVH/BTXE	
*	*	*	*	*	*	

Released by: _____ **Date:** _____

Released by Courier: _____ **Date:** _____

Received by Laboratory: Nancy Arattem **Date:** 5/11/90 3:30

Relinquished by Laboratory: _____ **Date:** _____

Received by: _____ **Date:** _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

100467

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.002

Project Contact at SCI: Sean Carson

Sampled By:

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-6	W	V-2	5/11/00		TVH/BTXE	
		P-1	5/11/00		Lead	7421
B-6	W	V-2	5/11/00		TVH/BTXE	
E-6	W	V-2	5/11/00		TVH/BTXE	
		P-1	5/11/00		Lead	7421

* * * * * *

Released by: Date:

Released by Courier: Date:

Received by Laboratory: Date: 5/11/00 350P

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.002

Project Contact at SCI: Sean Carson

Sampled By: " "

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-7	W	V x 2	5/14/90		TVH/BTXE	
B-7	W	V x 2	5/14/90		TVH/BTXE	
E-7	W	V x 2	5/14/90		TVH/BTXE	

* * * * * *

Released by: [signature] Date: 5/[illegible]

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 5/16/90 [illegible]

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 48 hr

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-5	W	2-VOAs	5/29/90		TVH/BTXE	
		1x Plastic			Total Lead	7421
B-8	W	2-VOAs	5/29/90		TVH/BTXE	
E-8	W	2-VOAs	5/29/90		TVH/BTXE	
		1 Plastic			Total Lead	7421

* * * * * *

Released by: _____ Date: 5/29/90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 5/29/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 48 hr

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-9	W	V x 2	6/11/90		TVH/BTXE	
		P x 1	6/11/90		Total Lead	EPA 7421
B-9	W	V x 2	6/11/90		TVH/BTXE	
E-9	W	V x 2	6/11/90		TVH/BTXE	
		P x 1	6/11/90		Total Lead	EPA 7421

* * * * * *

Released by: [signature] Date: 6/11/90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 6/11/90 3:40

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)

[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:

-Notify SCI if there are any anomalous peaks on GC or other scans

-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

100884

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander & Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 48 hrs

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
I-10	W	V x 2	6/25/90		TVH/BTXE	8015/8020
		P x 1	6/25/90		Tot Lead	EPA 7421
B-10	W	V x 2	6/25/90		TVH/BTXE	8015/8020
E-10	W	V x 2	6/25/90		TVH/BTXE	8015/8020
		P x 1	6/25/90		Tot Lead	EPA 7421

Released by: Jairo LOPEZ Date: 06/25/90 1:00

Released by Courier: Date:

Received by Laboratory: Date: 6/25/90 1:00

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
- Notify SCI if there are any anomalous peaks on QC or other scans
- Questions/clarifications...contact SCI at (415) 268-0461

Bramalea Pacific, Inc.

May 23, 1990

Mr. Cecil Felix
San Francisco Regional Water
Quality Control Board
1800 Harrison Street, Suite 700
Oakland, CA 94612

Re: Reclaimed Water Usage
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Felix:

This letter identifies the intended uses of reclaimed water generated from the groundwater treatment plant near 1330 Martin Luther King, Jr. Way in Oakland. Subsurface Consultants, Inc. (SCI), our consultants, have submitted a letter to you dated May 23, 1990. This document requests a waiver of Waste Discharge Requirements and provides details of the treatment system and the ongoing monitoring program approved by the East Bay Municipal Utility District (EBMUD). Bramalea Pacific is an agent for the Redevelopment Agency of the City of Oakland and is the property manager for the City Center Plaza area. Given the water use restrictions in effect in the Bay Area, Bramalea Pacific is seeking permission to utilize treated groundwater for a variety of uses in the City Center Plaza area of Oakland. The treated water is currently being discharged into the EBMUD sanitary sewer system.

The intended uses of the water will be for washing sidewalks, watering plants, and other similar activities in the City Center Plaza area. Given the water use restrictions in effect in the Bay Area, Bramalea Pacific is seeking permission to utilize treated groundwater for a variety of uses in the City Center Plaza area of Oakland. The treated water is currently being discharged into the EBMUD sanitary sewer system.

The intended uses of the water will be for washing sidewalks, watering plants, and other similar activities in the City Center Plaza area. The City Center area is generally located between Broadway, Clay, 12th and 14th Streets in downtown Oakland. The actual quantity of reclaimed water to be used is uncertain. However, estimate that our daily usage could be up to approximately 1000 to 2000 gallons.

The water to be used will have been treated by an activated carbon absorption treatment system. A relatively rigorous sampling and analysis program has been implemented by SCI to check that the treatment system is operating properly. Consequently, we consider the water to be of high quality and a resource not to be wasted given the current drought conditions.

If you have any questions, please call.

Yours Very Truly,

Jay Mancini
Director of Development

JM/468/cj

James P. Bowers, PE
R. William Rudolph, Jr., PE

Katherine Chesick Copy

May 23, 1990
SCI 430.010

Mr. Cecil Felix
San Francisco Regional Water Quality
Control Board
1800 Harrison Street, Suite 700
Oakland, California 94612

Waiver Application
Waste Discharge Requirements
Groundwater Treatment Plant
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Felix:

This letter requests that the Redevelopment Agency of the City of Oakland be (1) granted permission to utilize remediated groundwater for a variety of cleaning and landscaping purposes, and (2) exempted from San Francisco Regional Water Quality Control Board (RWQCB) Water Reclamation Disposal requirements. Subsurface Consultants, Inc. (SCI) has been retained to perform soil and groundwater remediation at the referenced site. Our remediation efforts are being coordinated with the Alameda County Health Care Services Agency (Ms. Katherine Chesick), and have been underway for more than a year.

In brief, soil and groundwater have been impacted in the area as a result of a leaking gasoline fuel tank. Groundwater is currently being extracted, treated using granular activated carbon, and then discharged into the sanitary sewer system under permit with the East Bay Municipal Utility District (EBMUD). A relatively rigorous monitoring program has been implemented to check that the treatment system is functioning properly. The treatment system has been in continuous operation for about one month. The analytical data generated to date indicates that the system is working well, reducing organic chemical concentrations to below detection limits. Prior to its use at this site, the water treatment facility was in continuous operation for more than a year at a nearby Oakland project treating groundwater contaminated with gasoline constituents. Similar, successful results were achieved with regard to system performance.

■ Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

We propose, on behalf of the Redevelopment Agency of the City of Oakland, the property owner, to use the treated groundwater for sidewalk washing, landscape irrigation, and other similar uses in the City Center Plaza area of Oakland. The water will be pumped from the treated effluent holding tank into small trailer- or truck-mounted tanks prior to its use. The actual quantity of water to be used is uncertain. However, we judge that the daily usage could be as high as 1000 to 2000 gallons.

In support of our application, we have prepared the attached documents which provide detailed descriptions of the site, project history, remediation strategies, treatment system design, and our monitoring program.

If you require additional background data or have any questions, please call. We look forward to your favorable review of the attached documents and your approval of our requests.

Yours very truly,

Subsurface Consultants, Inc.

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

SOC:JPB:RWR:mbl

Attachments: Plates 1 and 2
Background Document

GROUNDWATER TREATMENT FACILITY
OLD FIREHOUSE SITE
14TH AND MARTIN LUTHER KING, JR. WAY
OAKLAND, CALIFORNIA

I SITE HISTORY

The site comprises a one-block parcel, bounded by Martin Luther King, Jr. Way, and Jefferson, 13th and 14th Streets. The site was previously occupied by the City of Oakland's Firehouse No. 1. A 550-gallon underground gasoline storage tank was located beneath the sidewalk in front of the firehouse along Martin Luther King, Jr. way. The tank leaked an unknown quantity of gasoline into the underlying soil and groundwater. The initial phase of soil remediation has been completed, and consisted of excavating soil in accessible areas, aerating the materials and subsequently backfilling the excavation. Our studies indicate that free floating gasoline, and contaminated soil and groundwater remain below street areas northwest of the previous tank.

Off-site remediation is underway and consists of (1) free product removal, (2) groundwater extraction and treatment, and (3) contaminated soil remediation. Contaminated groundwater is being extracted and remediated using activated carbon adsorption methods. The treated water is currently being discharged under permit to the EBMUD sanitary sewer system.

An extraction well has been installed in Martin Luther King, Jr. Way, south of 14th Street, as shown on Plate 1. The contaminated groundwater extracted from the well is stored in an influent tank and subsequently treated on-site by an activated

carbon adsorption unit owned by the City of Oakland Redevelopment Agency. A rigorous monitoring plan has been implemented to check that the treatment system is operating properly. The treatment facility has been fully operational for the past month or more. Prior to its use at this site, the treatment system was in continuous operation for more than a year at a nearby Oakland project treating groundwater contaminated by gasoline.

II WASTEWATER QUALITY

Ten groundwater monitoring wells presently exist around the site. The wells are sampled on a quarterly basis and the groundwater is analyzed for total volatile hydrocarbons (TVH), as gasoline, benzene, toluene, xylene and ethylbenzene (BTXE) and ethylene dibromide (EDB). Groundwater from one of the wells (Well 39) was also analyzed for volatile organic chemicals (VOC's) according to EPA Method 624 and Title 26 metals. Analytical test results are summarized below. Well 28 is currently being used as an extraction well. The Well 28 data represents the concentrations that are currently being processed by the treatment facility.

Groundwater Contaminant Concentrations (ppb)[4]

Contaminant	Well 39	Extraction Well (Well 28)
TVH[1]	9300	1400
Benzene	4500	160
Toluene	760	ND
Total Xylenes	310	310
Ethylbenzene	150	ND
Ethylene dibromide (EDB)	4	
1,-2-dichloroethane (DCA)	36	
Other EPA 624 Chemicals[2]	ND[3]	
barium	220	
Other Title 26 metals	ND	

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1 TVH = Total volatile hydrocarbons
2 VOC's = Volatile organic compounds
3 ND = None detected at concentrations above detection limits
4 ppb = ug/L = micrograms per liter = parts per billion

The groundwater treatment system is currently in operation. The extraction well is currently being pumped at a rate of 3 gpm. Analytical tests performed by SCI have confirmed that the system is operating properly, and reducing TVH and BTXE concentrations to below detection limits.

During the first two weeks of treatment plant operation, samples were obtained daily for the first week and three times per week for the second. Water samples were taken (1) before it entered the two carbon adsorption units, (2) between the carbon units, and (3) after the water exits the second GAC unit (effluent). The results of several sampling events are shown below. The data demonstrates that all detectable hydrocarbons are adsorbed into the primary carbon unit.

Contaminant Concentrations at Treatment Plant (ppb)

	TVH	Benzene	Toluene	Ethyl-benzene	Total Xylenes
Date: 5/2/90					
I-1 (influent)	13000	350	870	ND	1300
B-1 (between)	ND	ND	ND	ND	ND
E-1 (effluent)	ND	ND	ND	ND	ND
Date: 5/3/90					
I-2	4100	340	240	ND	610
B-2	ND	ND	ND	ND	ND
E-2	ND	ND	ND	ND	ND
Date: 5/4/90					
I-3	1400	160	ND	ND	310
B-3	ND	ND	ND	ND	ND
E-3	ND	ND	ND	ND	ND

III SITE/TREATMENT SYSTEM LAYOUT

The Site Plan, Plate 1, shows the relative locations of the project site and groundwater treatment system. The treatment system is located adjacent to Martin Luther King, Jr. Way near its intersection with 14th Street. The treated groundwater is stored in a 21,000 gallon tank on-site.

IV SCHEMATIC FLOW DIAGRAM

The attached preliminary Schematic Flow Diagram shows the principal components of the groundwater treatment system, Plate 2. The sediment filtration apparatus has been designed and assembled by Loprest, Inc. of Rodeo, California. The system

incorporates additional measures to reduce and/or eliminate clogging of the carbon adsorption system by suspended solids in the influent groundwater.

V DESCRIPTION OF GROUNDWATER TREATMENT SYSTEM

The objective of the treatment system is to remove total volatile hydrocarbons (TVH), dissolved gasoline components; principally benzene, ethylbenzene, toluene and xylenes (BTXE), and ethylene dibromide (EDB) and 1,2 dichloroethane (DCA) from recovered groundwater prior to discharge to EBMUD. As shown in the Schematic Flow Diagram, Plate 2, the treatment facility consists of the following major equipment items:

A. A pretreatment holding tank,

B. A particle filtration system (with filter feed tank),

C. Two pumps in parallel,

D. Granular activated carbon (GAC) adsorption columns (two columns in series), and

E. An effluent holding tank.

The system has been sized using a design flow rate of 50 gpm, but will be capable of handling larger flows, if needed. Because the flow of groundwater requiring treatment is not expected to exceed 15 gpm, the system capacity is well in excess of that needed.

The function of each of the system components is described in the following paragraphs.

The **pretreatment holding tank** is designed to capture any large particles or free-floating petroleum product that may be collected along with the recovered groundwater. If not removed in pretreatment operations, these constituents could constrict flow and ultimately hinder the ability of the downstream GAC columns to perform their primary function, removing dissolved organics, such as BTXE.

The operating principle of the holding tank is the following: If water with insoluble matter is allowed to flow very slowly, heavy material will sink and light material will float. Both separated materials are then removed from the forward-flowing groundwater stream.

The holding tank has been designed to achieve a horizontal velocity of less than 0.10 ft/min at the hydraulic design rate of 50 gal/min maximum flow. This should be more than adequate to remove most particles with a specific gravity of 1.05 or greater. Particle removal efficiency should be higher for the low flow velocities resulting from the expected average inflow of 15 gpm. Free floating hydrocarbon product, should any be recovered, will be prevented from escaping the tank by an underflow weir 4-feet deep, as shown on the Schematic Flow Diagram, Plate 2.

The holding tank has a capacity of 21,000 gallons, which will provide approximately 24 hours of retention at a flow rate of 15 gal/min. It is covered to limit atmospheric releases of any free or dissolved hydrocarbon constituents.

The **particle filtration system** will provide a second measure of pretreatment. This process will consist of a feed tank, and cartridge and bag filters with a one micron pore size, sufficient to trap any suspended material that escapes the holding tank. The filter media can be changed manually. The need for media changes will be determined by pressure readings ahead of the filter unit. The system was assembled by Loprest, Inc.

The **GAC columns** are skid-mounted units supplied by Calgon Corporation. Each pressure vessel is made of carbon steel and holds 2000 pounds of GAC. The GAC units are run in series. Valving are provided so that other flow configurations will be possible, if necessary. The system can be backflushed periodically to eliminate channelling within the GAC columns.

Spent GAC will be replaced by Calgon. GAC will be replaced when contaminant breakthrough occurs, as indicated by the self-monitoring program described in Section VI. For purposes of this project, "breakthrough" has been defined to

occur when the effluent concentration between the GAC columns exceeds 25 percent of the influent concentration, or if detectable concentrations of TVH/BTXE or EDB are present in the effluent from the polishing GAC unit.

The two GAC columns were specified by Calgon to treat 50 gal/min of influent groundwater for essentially complete removal of BTXE and other hydrocarbon constituents. Because two columns will be provided, the facility will have essentially greater than 100 percent GAC redundancy at the design flow rate of 15 gpm.

The **effluent holding tank** is a tank with a capacity of 21,000 gallons. This will provide effluent detention of approximately 24 hours at the design flow rate of 15 gpm. The tank will be equipped with a submersible pump which will be used to fill water trucks.

VI SELF-MONITORING PROGRAM

The self-monitoring program consists of frequent facility inspections and periodic chemical analysis of influent groundwater, intermediate process water, and treated effluent water quality. Total flow through the system is also recorded.

The facility inspections consist of a walk-through to check for leaks or other abnormal conditions. Pressure readings are recorded at the following points to check for possible plugging

due to suspended solids build-up in either the filtration or GAC units:

A. Upstream of P-20
B. Downstream of P-20 (ahead of adsorption unit)
C. Upstream of the GAC train
D. Intermediate point for GAC train
E. Effluent from the GAC train

Note that the system is equipped with a high-level control in T-20 which will shut off the influent wells in the event that significant pressure build-up between inspections causes the tank to overfill.

Flow readings (as measured by the flow totalizer) are recorded.

Samples for chemical analysis will be collected from the following locations:

A. Directly upstream of the lead GAC column
B. Between columns of the GAC process train
C. Effluent from the GAC train

Thus, three groundwater samples are collected for each sampling event. Sampling also includes quality assurance/quality control samples (field blank and field duplicate). A total of five

samples are submitted to the laboratory each time the system is tested. Four samples will be analyzed.

Groundwater samples are collected in 40 ml vials with Teflon-lined septa and transported to the laboratory in coolers under Chain-of-Custody procedures. All samples are being analyzed for TVH, BTXE and total lead using EPA Methods 8015, 602 and 7421 respectively, with sample preparation method 5030 (purge and trap) for VOC's. Samples are stored under refrigeration at 4°C until analyzed. All analyses are performed by Curtis & Tompkins, Ltd., a state certified laboratory.

Initial sampling frequency is high. Sampling will be reduced as experience is gained with the system, assuming that all EBMUD discharge criteria are satisfied. The following sampling schedule has been implemented.

A. Daily samples for the first week, with all analyses to be provided on a 24-hour turnaround basis.

B. Samples three times weekly during the second and third weeks, with all analyses to be provided on a 24-hour turnaround basis.

C. Samples bi-weekly from the fourth week until breakthrough of the lead GAC column is anticipated. All analyses to be provided on a 5-day turnaround basis.

D. Samples will be obtained weekly, starting one month prior to the point at which breakthrough is predicted to occur. These weekly samples will be obtained from the sampling port situated between the columns of the GAC process train. Analytical turnaround will be 48 hours.

The above sampling schedule will be duplicated each time the replacement of the GAC occurs.

14TH STREET

MARTIN LUTHER KING JR. WAY

FREE PRODUCT

GROUNDWATER

EXTRACTION WELL

GATE

PUMP CONTROL PANEL

STORAGE LOCKER

COMPRESSOR AND TANK

FREE PRODUCT TANK

INFLUENT TANK

EFFLUENT TANK

PUMPS AND FILTER

GAC COLUMNS

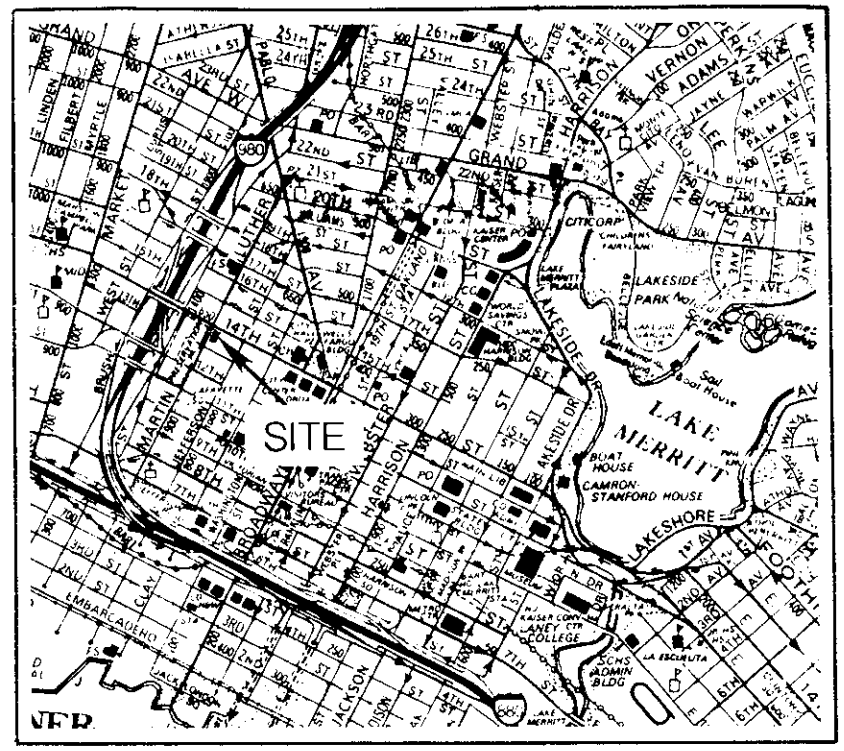
GATE

BASEMENT WALL

ELECTRIC ROOM

RAMP

TO EBMUD



VICINITY MAP

LEGEND

APPROXIMATE EXTENT OF FREE PRODUCT PLUME

PROPOSED EXTRACTION WELL

N

PROJECT NORTH

APPROXIMATE SCALE (feet)

0 20 40

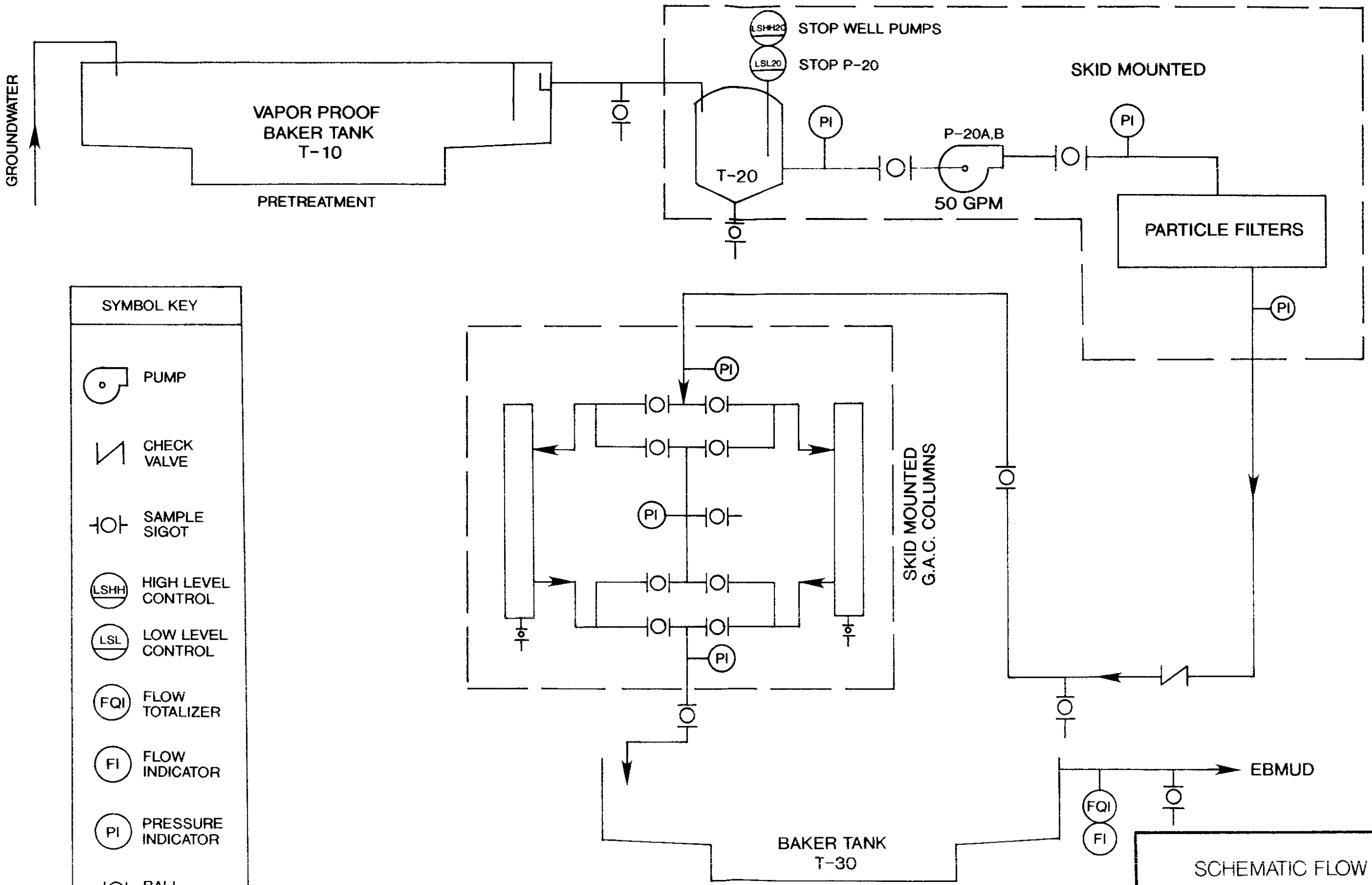
SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING, JR WAY–OAK

JOB NUMBER	DATE	APPROVED
430.002	5/24/90	

PLATE 1



SCHEMATIC FLOW DIAGRAM

Subsurface Consultants

MARTIN LUTHER KING JR. WAY

JOB NUMBER	DATE	APPROVED
430.002	12/18/89	

PLATE 2

James P. Bowers, PE
R. William Rudolph, Jr., PE

90 MAR 14 PM 4:30

March 12, 1990
SCI 430.002

Mr. William Meckel
Wastewater Control Representative
East Bay Municipal Utility District
Wastewater Department-NS 59
Post Office Box 24055
Oakland, California 94623

Proposed Modification to Sampling Plan
Self Monitoring Program
Wastewater Discharge Permit Application
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Meckel:

In response to our recent conversations, we would like to propose revisions to the self monitoring program for the groundwater remediation project at 1330 Martin Luther King, Jr. Way in Oakland. A wastewater discharge permit application (dated January 16, 1990) was submitted to you previously. We are proposing to modify the frequency at which influent and effluent sampling occurs. All other aspects of the self monitoring program will remain the same as those recorded in our January 16, 1990 application.

The initial sampling frequency will be high to enable us to promptly evaluate system performance soon after start-up. The sampling frequency will be expanded as experience is gained with the system, assuming that all EBMUD discharge criteria are satisfied. The sampling frequency will be expanded as we approach the point at which breakthrough is estimated to occur on the first GAC column. Breakthrough will be estimated based upon actual organic chemical loading rates recorded during system operation. The water treatment system has been in operation previously at a nearby site. It was used to remove very low concentrations of fuel hydrocarbons from groundwater. Because the loading rates were very low, we have conservatively estimated that the first GAC column has lost only 1 to 2 percent of its adsorptive capacity. This data will be incorporated into our breakthrough time estimate calculations.

As stated previously, it is proposed that all aspects of the self monitoring program remain the same as those specified in our previous application, except for those modifications presented below. We propose the following modified sampling schedule.

A. Daily samples for the first week, with all the analyses to be provided on a 24-hour turnaround basis.

B. Samples three times weekly during the second and third weeks with all analyses to be provided on a 24-hour turnaround basis.

C. Samples bi-weekly from the fourth week until breakthrough of the first GAC column is anticipated. All analyses will be performed on a 5-day turnaround basis.

   During this period, samples will be obtained at the following points in the system.

   1. Influent (ahead of T-20).

   2. Between columns of the GAC process train.

   3. Effluent from the GAC train.

D. Samples will be obtained weekly, starting one month prior to the point at which breakthrough is predicted to occur. These weekly samples will be obtained from the sampling port situated between the columns of the GAC process train. Analytical turnaround will be 48 hours.

It is proposed that the above sampling schedule be duplicated each time the replacement of the GAC occurs.

As previously stated, we will report the analytical results to you promptly and obtain your approval prior to making any changes in the self-monitoring program that may be appropriate as the project progresses.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
President
Geotechnical Engineer 157 (expires 3/31/91)

JPB:clh:mbl

cc: Mr. John Esposito, Bramalea Pacific
Ms. Lois Parr, City of Oakland, Office of Economic Development
✓Ms. Katherine Chesick, Alameda County Health Services Agency
Mr. Donnell Choy, City of Oakland, City Attorney Office
Mr. Roy Ikeda, Crosby, Heafey, Roach & May

James P. Bowers, PE
R. William Rudolph, Jr., PE

January 16, 1990
SCI 430.002

Mr. William Meckel
Wastewater Control Representative
East Bay Municipal Utility District
Wastewater Department - MS 59
Post Office Box 24055
Oakland, California 94623

Wastewater Discharge Permit Application
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Meckel:

This letter and enclosed application package serve as a Wastewater Discharge Permit Application for a groundwater remediation project at 1330 Martin Luther King, Jr. Way (MLK Jr. Way) in Oakland, California. Subsurface Consultants, Inc. (SCI) has been retained by Bramalea Pacific, the property agent to the Oakland Redevelopment Agency, to perform soil and groundwater remediation at the site. The property is owned by the City of Oakland. SCI previously performed an underground fuel tank leak assessment, and recorded the results in a report dated July 29, 1988.

In brief, it is proposed to extract gasoline contaminated groundwater, treat it utilizing activated carbon filtering methods, and discharge the treated groundwater into the East Bay Municipal Utility District (EBMUD) sanitary sewer system.

At sometime in the future, we anticipate that it will be desireable to utilize the treatment facility to remediate gasoline contaminated groundwater simultaneously from two other adjacent City of Oakland sites. One is situated at the northwest corner of the intersection of 13th and Jefferson Streets; the other is situated at the northeast corner of 12th Street and MLK Jr. Way. Prior to introducing contaminated groundwater from these two sites, we will submit a revised application to EBMUD.

I SITE HISTORY

The site comprises a 1-block parcel, bounded by Martin Luther King, Jr. Way, and Jefferson, 13th and 14th Streets. The site was previously occupied by the City of Oakland's Firehouse No. 1. A 550-gallon underground gasoline storage tank was located beneath the sidewalk in front of the firehouse along Martin Luther King, Jr. Way. The tank leaked an unknown quantity of gasoline into the underlying soil and groundwater. The initial phase of soil remediation has been completed, and consisted of excavating soil in accessible areas, aerating the materials and subsequently backfilling the excavation. Our studies indicate that free floating gasoline, and contaminated soil and groundwater remain in areas northwest of the previous tank. The attached Plate 1 shows the approximate extent of the free and dissolved product plumes in groundwater.

II PROCESS DESCRIPTION

Off-site remediation is proceeding, and will essentially consist of (1) free product removal, (2) groundwater extraction and treatment, and (3) contaminated soil remediation. Contaminated groundwater will be remediated using activated carbon filtering methods. It is proposed that the treated effluent be discharged to the EBMUD sanitary sewer system.

An extraction well will be installed in the central portion of MLK Jr. Way, south of 14th Street, as shown on Plate 1. The free product (gasoline) will be recovered from the well using a specially designed separator pump. Free product will be pumped into a double contained waste storage tank. Contaminated groundwater will be extracted from the well using a separate pump, stored in an influent tank, and treated on-site by an activated carbon filtration unit owned by the City of Oakland. The water will then be analyzed for the appropriate contaminants and discharged into the East Bay Municipal Utility District (EBMUD) sanitary sewer system.

III WASTEWATER QUALITY

Ten groundwater monitoring wells presently exist around the site. The wells are sampled on a quarterly basis and the groundwater is analyzed for total volatile hydrocarbons (TVH), as gasoline, benzene, toluene, xylene and ethylbenzene (BTXE) and ethylene dibromide (EDB). Groundwater from one of the wells (Well 39) was also analyzed for volatile organic chemicals

(VOC's) according to EPA Method 624 and Title 26 metals. Water from Well 39 us considered representative of some of the most severely impacted groundwater. Once pumping is initiated, contaminate concentrations should decrease significantly due to dilution. Groundwater that was extracted during a pump test in an adjacent well (Well 28) was sampled and analyzed for TVH and BTXE after several hours of pumping. Analytical tests results are summarized below. We judge that the Well 28 data is representative of the concentrations that will be received by the treatment facility.

Groundwater Contaminant Concentrations (ppb)

Contaminant	Well 39	Well 28
TVH[1]	9300	460
Benzene	4500	100
Toluene	760	31
Total Xylenes	310	12
Ethylbenzene	150	2.2
Ethylene dibromide (EDB)	4	
1,-2-dichloroethane (DCA)	36	
Other EPA 624 Chemicals[2]	ND[3]	
barium	220	
Other Title 26 metals	ND	

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1 TVH = Total volatile hydrocarbons
2 VOC's = Volatile organic compounds
3 ND = None detected at concentrations above detection limits
4 ppb = ug/L = micrograms per liter = parts per billion

SCI will perform analytical tests for TVH, BTXE and EDB on raw groundwater and treated wastewater to be discharged into the EBMUD sanitary sewer system, as part of the initial testing of the treatment system. The analytical data will be provided to EBMUD prior to any discharge of treated groundwater to the sewer system. It is anticipated that the groundwater treatment system will reduce all previously detected contaminants in the discharge stream to below detection limits.

IV WATER BALANCE CALCULATIONS

Based upon the results of pump testing and groundwater extraction operations at nearby sites where similar soil conditions exist, we estimate that a 24-inch-diameter extraction well will produce up to approximately 5 gallons per minute to the

groundwater treatment system. Up to three extraction wells may ultimately be operated at this facility. Assuming all three wells are pumped, it is estimated that approximately 15 gallons per minute will be delivered to the groundwater treatment system or 21,600 gallons per day. The groundwater treatment system is capable of treating approximately 50 gallons per minute. Therefore, contaminated groundwater could run through the system twice, if necessary, and still keep up with incoming contaminated groundwater quantities. Discharging treated groundwater will always be limited to less than 25,000 gallons per day in accordance with EBMUD and Regional Water Quality Control Board (RWQCB) regulations. The life of the project is unknown at this time and is dependent upon rather complex hydrogeologic and contaminant transport parameters. However, estimates indicate that most of the contaminated groundwater could be pumped from the site within two years. Therefore, the total volume of water delivered into the EBMUD sewer system over a two year period would be about 15.8 million gallons.

V SITE/TREATMENT LAYOUT

The Site Plan, Plate 1, shows the relative locations of the project site and groundwater treatment system. The treatment system will be located adjacent to Martin Luther King, Jr. Way near its intersection with 14th Street. The treated groundwater will be discharged to EBMUD through the City of Oakland's sanitary sewer collector system. A connection to the sewer system will be made at an existing 4 inch lateral servicing the basement on the property.

VI SCHEMATIC FLOW DIAGRAM

The attached preliminary Schematic Flow Diagram shows the principal components of the groundwater treatment system, Plate 2. Note that this system is closely modeled after the system used at the EBMUD site at 10th and Franklin Streets, and is the same system used at the 1111 Broadway site in Oakland. The sediment filtration apparatus has been designed and assembled by Loprest, Inc. of Rodeo, California. The system incorporates additional measures to reduce and/or eliminate clogging of the carbon filtering system by suspended solids in the influent groundwater.

VII DESCRIPTION OF GROUNDWATER TREATMENT SYSTEM

The objective of the treatment system is to remove Total Volatile Hydrocarbons (TVH), dissolved gasoline components; principally benzene, ethylbenzene, toluene and xylenes (BTXE),

and ethylene dibromide (EDB) and 1,2 dichlorethane (DCA) from recovered groundwater prior to discharge to EBMUD. As shown in the Schematic Flow Diagram, Plate 2, the treatment facility will consist of the following major equipment items:

A. A pretreatment holding tank,

B. A particle filtration system (with filter feed tank),

C. Two pumps in parallel,

D. Granular activated carbon (GAC) absorption columns (two columns in series), and

E. An effluent holding tank.

The system has been sized using a design flow rate of 50 gpm, but will be capable of handling larger flows, if needed. Because the flow of groundwater requiring treatment is not expected to exceed 15 gpm, the system capacity is well in excess of that needed.

The function of each of the system components is described in the following paragraphs.

The **pretreatment holding tank** is designed to capture any large particles or free-floating petroleum product that may be collected along with the recovered groundwater. If not removed in pretreatment operations, these constituents could constrict flow and ultimately hinder the ability of the downstream GAC columns to perform their primary function, removing dissolved organics, such as BTXE.

The operating principle of the holding tank is the following: If water with insoluble matter is allowed to flow very slowly, heavy material will sink and light material will float. Both separated materials are then removed from the forward-flowing groundwater stream.

The holding tank has been designed to achieve a horizontal velocity of less than 0.10 ft/min at the hydraulic design rate of 50 gal/min maximum flow. This should be more than adequate to remove most particles with a specific gravity of 1.05 or greater. Particle removal efficiency should be higher for the low flow velocities resulting from the expected average inflow of 15 gpm. Free floating hydrocarbon product, should any be recovered, will be

prevented from escaping the tank by an underflow weir 4-feet deep, as shown on the Schematic Flow Diagram, Plate 2.

The holding tank will have a capacity of 21,000 gallons, which will provide approximately 24 hours of retention at a flow rate of 15 gal/min. It will also be covered to limit atmospheric release of any free or dissolved hydrocarbon constituents.

The **particle filtration system** will provide a second measure of pretreatment. This process will consist of a feed tank, and cartridge and bag filters with a one micron pore size, sufficient to trap any suspended material that escapes the holding tank. The filter media can be changed manually. The need for media changes will be determined by pressure readings ahead of the filter unit. The particle filtration system used for this project is similar in design to that used at the EBMUD site and the same unit that was used at the 1111 Broadway site. The system was assembled by Loprest, Inc., a subcontractor on the EBMUD dewatering project.

The **GAC columns** will be skid-mounted units supplied by Calgon Corporation. Each pressure vessel is made of carbon steel and will hold 2000 lbs of GAC. The GAC units will be run in series. Valving will be provided so that other flow configurations will be possible, if necessary. The system can be backflushed periodically to eliminate channelling within the GAC columns.

Spent GAC will be replaced by Calgon. GAC will be replaced when contaminant breakthrough occurs, as indicated by the self-monitoring program described in Section VIII. For purposes of this project, "breakthrough" will be defined as either of the following:

1. Two successive intermediate column samples with BTXE levels equal to or greater than the influent samples. This would indicate that the absorption capacity of the lead column had been exhausted.

2. Two successive samples from the polishing GAC column with BTXE levels of 50 percent of the discharge criteria established by EBMUD. This would indicate a possibility of exceeding EBMUD criteria, if the GAC were not replaced.

The two GAC columns were specified by Calgon to treat 50 gal/min of influent groundwater for essentially complete removal of BTXE and other hydrocarbon constituents. Because two columns will be provided, the facility will have essentially greater than 100 percent GAC redundancy at the design flow rate of 15 gpm.

The **effluent holding tank** will be a tank with a capacity of 21,000 gallons. This will provide effluent detention of approximately 24 hours at the design flow rate of 15 gpm.

VIII SELF-MONITORING PROGRAM

The self-monitoring program proposed for this project will consist of daily facility inspections and periodic chemical analysis of influent groundwater, intermediate process water, and treated effluent water quality. Total flow through the system will also be recorded.

The daily facility inspections will consist of a walk-through to check for leaks or other abnormal conditions. Pressure readings will be recorded at the following points to check possible plugging due to suspended solids build-up in either the filtration or GAC units:

A. Upstream of P-20

B. Downstream of P-20 (ahead of filtration unit)

C. Upstream of the GAC train

D. Intermediate point for GAC train

E. Effluent from the GAC train

Note that the system is equipped with a high-level control in T-20 which will shut off the influent wells in the event that significant pressure build-up between inspections causes the tank to overfill.

Flow readings for the previous 24-hour period (as measured by the flow totalizer) will be recorded daily.

Samples for chemical analysis will be collected from the following locations:

A. Influent (ahead of T-20)

B. Between columns of the GAC process train

C. Effluent from the GAC train

D. Final effluent before discharge (T-30)

Thus, six groundwater samples will be collected for each sampling event. Sampling will include quality assurance/quality control samples (field blank and field duplicate). A total of eight samples will be submitted to the laboratory each time the system is tested.

Groundwater samples will be collected in 40 ml vials with Teflon-lined septa and transported to the laboratory in coolers under chain-of-custody procedures. All samples will be analyzed for TVH, BTXE and EDB using EPA Methods 8015, 602 and 504 respectively, with sample preparation method 5030 (purge and trap). Samples will be stored under refrigeration at 4°C until analyzed. All analyses will be performed by Curtis & Tompkins, Ltd., a state certified laboratory.

Initial sampling frequency will be high. Sampling will be reduced as experience is gained with the system, assuming that all EBMUD discharge criteria are satisfied. The following sampling schedule is proposed:

A. Daily samples for the first week, with all analyses to be provided on a 24-hour turnaround basis.

B. Samples three times weekly during the second and third weeks, with all analyses to be provided on a 24-hour turnaround basis.

C. Samples once per week for the fourth through eighth weeks, with all analyses to be provided on a 48-hour turnaround basis.

D. Samples bi-weekly for the duration of the project with analyses to be provided on a 48-hour turnaround basis.

SCI will consult with EBMUD regarding possible or necessary modifications to the self-monitoring program, as the project progresses. Any changes to the self-monitoring program would be subject to EBMUD approval.

IX SPILL PREVENTION AND CONTAINMENT PLAN

Groundwater will be piped into a closed treatment system. Facility inspections will be carried out daily to check for leaks or other abnormal conditions. Daily pressure readings will be taken both upstream and downstream of the filtration unit. The system is also equipped with a high level control which will shut off the dewatering wells in the event of significant pressure build-up in the treatment system between inspections.

Worker health and safety guidelines for handling, analysis, and disposal of contaminated soil and groundwater have been addressed in plans prepared for Bramalea by SCI.

X ENVIRONMENTAL PERMITS

Groundwater protection ordinance permit numbers have been obtained from the Alameda County Flood Control and Water Conservation District, Zone 7 for the monitoring wells installed at the site to date.

The required notification under Section 13272 of the California Water code has been made to the California Regional Water Quality Control Board, San Francisco Bay Region. In addition, the California Department of Health, Toxic Substance Control Division, and the Alameda County Department of Health have been advised of the presence of petroleum hydrocarbons at the site. SCI will coordinate contacts with these agencies over the course of the project.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
President
Geotechnical Engineer 157 (expires 3/31/91)

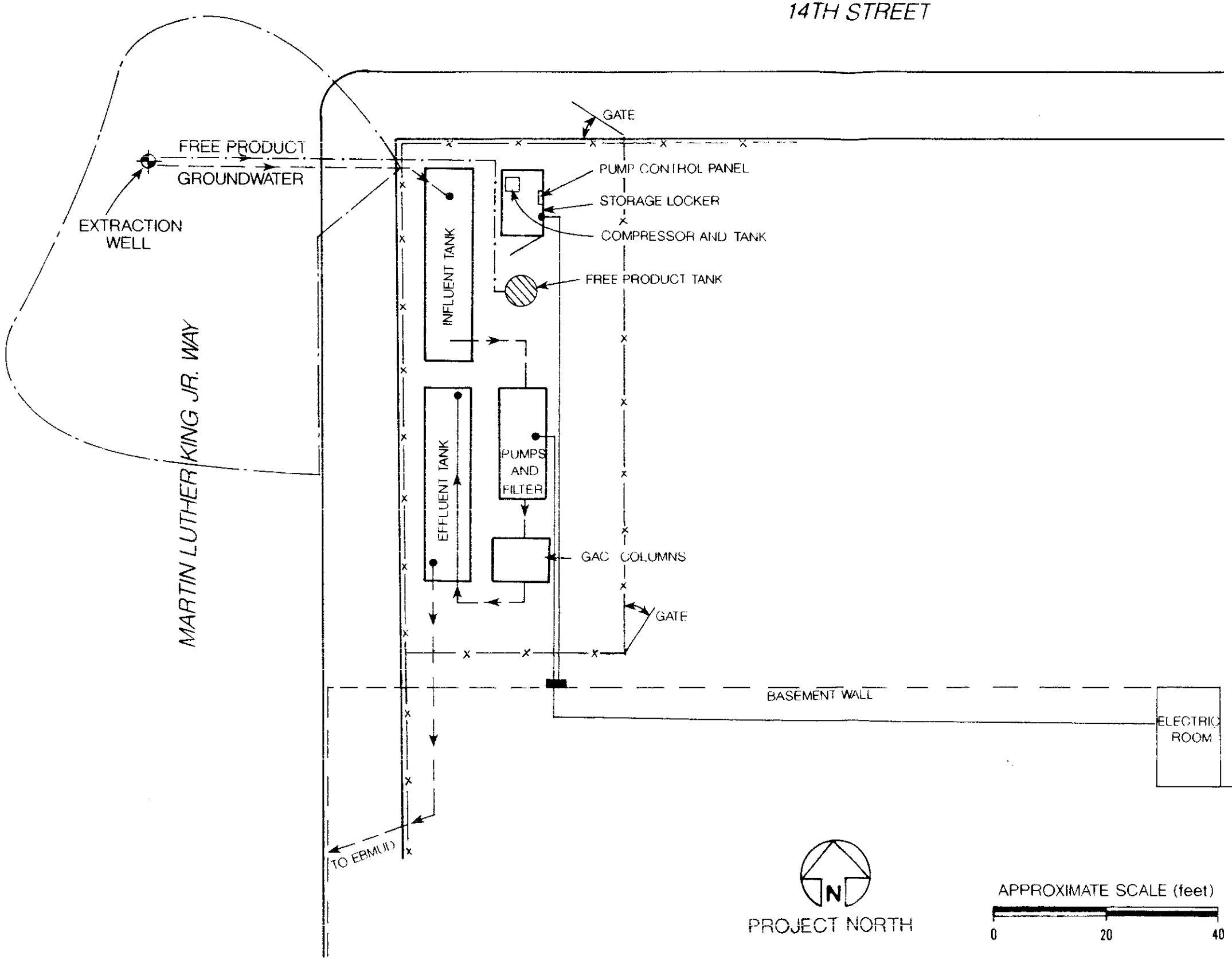
SOC:JPB:RWR:clh:mbl

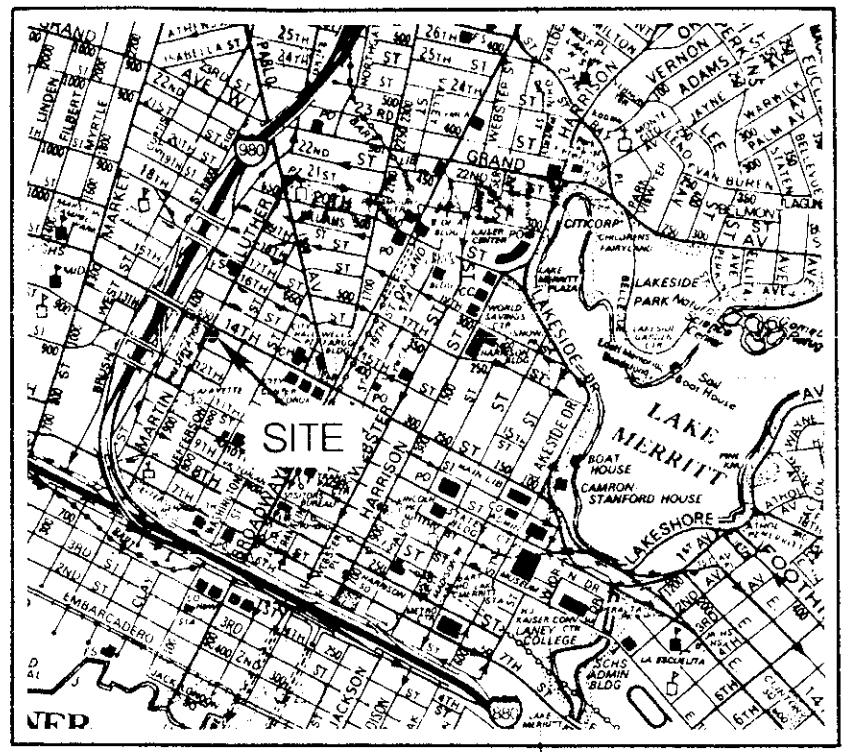
List of Attached Plates:

Plate 1	Site Plan
Plate 2	Schematic Flow Diagram

Distribution:

1 copy:	Mr. John Esposito Bramalea Pacific 1221 Broadway, Suite 1800 Oakland, California 94612
1 copy:	Ms. Lois Parr City of Oakland Office of Economic Development & Employment 475 14th Street, 1st Floor Oakland, California 94612
1 copy:	Ms. Katherine Chesick Alameda County Health Care Services Agency 80 Swan Way, Suite 200 Oakland, California 94621
1 copy:	Mr. Lester Feldman Regional Water Quality Control Board 1800 Harrison Street, 7th Floor Oakland, California 94612
1 copy:	Mr. Donnell Choy City of Oakland City Attorney Office 505 14th Street, 8th Floor Oakland, California 94612
1 copy:	Mr. Roy Ikeda Crosby, Heafey, Roach & May 1999 Harrison Street Oakland, California 94612





VICINITY MAP

LEGEND

APPROXIMATE EXTENT OF FREE PRODUCT PLUME

PROPOSED EXTRACTION WELL

SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING, JR. WAY–OAK.

JOB NUMBER	DATE	APPROVED
430.002	11/13/89	

PLATE 1

Wastewater Discharge Permit Application

EBMUD

PERMIT NUMBER

APPLICANT BUSINESS NAME

Redevelopment Agency of the City of Oakland

ADDRESS OF PREMISE DISCHARGING WASTEWATER	BUSINESS MAILING ADDRESS
1330 Martin Luther King, Jr. Way	1417 Clay Street, 2nd Floor
STREET ADDRESS	STREET ADDRESS
Oakland, CA 94612	Oakland, CA 94612
CITY ZIP CODE	CITY ZIP CODE

CHIEF EXECUTIVE OFFICER

Julia T. Brown, Esq.	Director of Redevelopment Agency
NAME	TITLE
1417 Clay Street, 2nd Floor	Oakland, CA 94612
STREET ADDRESS	CITY ZIP CODE

PERSON TO BE CONTACTED ABOUT THIS APPLICATION	PERSON TO BE CONTACTED IN EVENT OF EMERGENCY
James P. Bowers	James P. Bowers
NAME	NAME
Senior Project Manager 268-0461	268-0461 758-9066
TITLE PHONE	DAY PHONE NIGHT PHONE

DOCUMENTATION TO BE RETURNED WITH THE PERMIT APPLICATION:

- [X] PROCESS DESCRIPTION
- [X] WATER BALANCE CALCULATIONS
- [X] WASTEWATER STRENGTH DATA BASE
- [X] SCHEMATIC FLOW DIAGRAM
- [ ] BUILDING LAYOUT DIAGRAM
- [X] DESCRIPTION OF PRETREATMENT SYSTEM
- [X] SELF-MONITORING METHOD
- [X] SPILL PREVENTION AND CONTAINMENT PLAN
- [X] A LIST OF ALL ENVIRONMENTAL PERMITS (e.g. Air, Hazardous Waste)
- [ ] OTHER _____ SPECIFY

PROVISIONS

Applicant will comply with the District Wastewater Control Ordinance and all applicable rules and regulations.

Applicant will report to EBMUD, Wastewater Department any changes, permanent or temporary, to the premise or operations that significantly change the quality or volume of the wastewater discharge or deviation from the terms and conditions under which this permit is granted.

CERTIFICATION

I have personally examined and am familiar with the information submitted in this document and attachments. To the best of my knowledge the submitted information is true, accurate and complete.

TYPE OR PRINT

Name Julia T. Brown, Esq. _____ SIGNATURE

Title Director of Redevelopment Agency 1/17/90 DATE

James P. Bowers, PE
R. William Rudolph, Jr., PE

90 JUN 14 AM 10: 22

June 13, 1990
SCI 430.007

Well Destruction

Mr. Wyman Hong
Alameda County Flood Control and
Water Conservation District
Zone 7
5997 Parkside Drive
Pleasanton, California 94566

Well Destruction Report
Well No. 1 (SCI Designation)
Permit No. 90198
13th and Jefferson Streets
Oakland, California

Dear Mr. Hong:

This letter serves as a Well Destruction Report and describes the methods and materials used to destroy a well near 13th and Jefferson Streets in Oakland, California. Subsurface Consultants, Inc. (SCI) encountered the well during an environmental assessment of the property for Bramalea Pacific, an agent of the City of Oakland Redevelopment Agency, the property owner. The owner of the property originally desired to retain the well for future use. A letter submitted to Mr. Craig Mayfield of your organization, dated November 10, 1988, requested permission to do so. Subsequently, the well casing was found to be severely corroded and hence, unusable.

The well was located approximately 98.5 feet west of Jefferson Street and 41.0 feet north of 13th Street, as shown on the attached Site Plan, Plate 1. The well consisted of an 8-inch-diameter steel casing and was approximately 215 feet deep, measured from street grade. At the time of well destruction, the well was situated within an excavation extending approximately 15 feet below street grade. The casing was removed to this level. The casing was observed to be in direct contact with native soil.

Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

Exploration Drilling Services of Redwood City, California, performed the well destruction on March 27, 1990. The abandonment consisted of setting a 1-1/2-inch-diameter steel grout pipe to within several feet of the bottom of the well and pumping neat cement into it. The grout pipe remained below the grout surface until the casing was fully grouted. Approximately 6 cubic yards of cement grout (27 sacks of cement per cubic yard) were pumped into the well.

If you have any questions regarding abandonment of the well, please call.

Yours very truly,

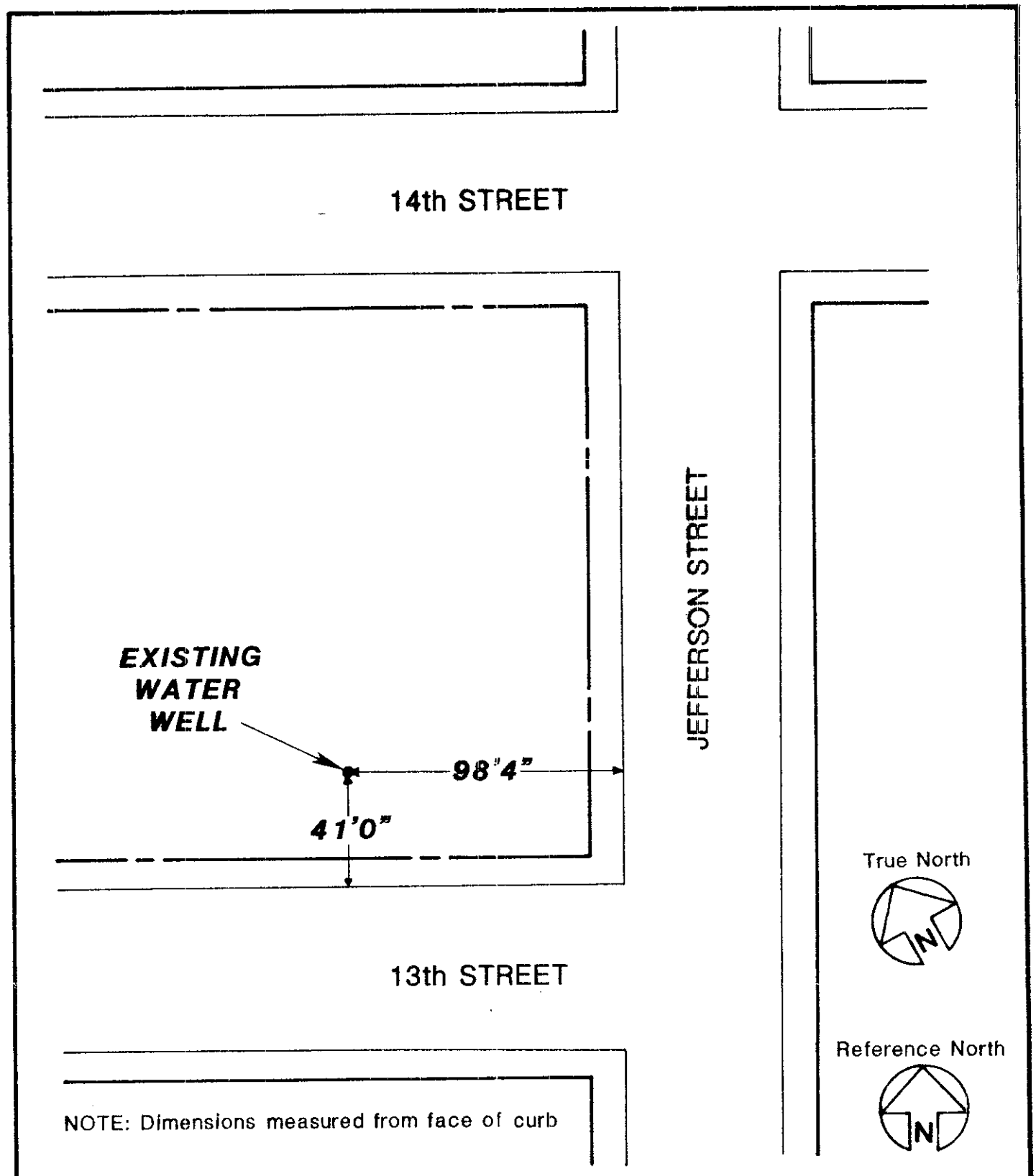
Subsurface Consultants, Inc.

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

SOC:JPB:RWR:mbl

Attachments: Plate 1
Well Destruction Permit

cc: Mr. John Esposito, Bramalea Pacific
Ms. Lois Parr, City of Oakland
Mr. Roy Ikeda, Crosby, Heafy, Roach & May
Mr. Donnell Choy, City of Oakland
Ms. Katherine Chesick, Alameda County Health Services Agency



WELL LOCATION

Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.005	11/10/88	

PLATE 1

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 13th + Jefferson Streets
Oakland, CA

CLIENT
Name City of Oakland OE
Address 1417 Clay St. Phone 273 3816
City Oakland Zip 94612

APPLICANT
Name Subsurface Consultants, Inc
Sean Carson
Address 171 12th St Suite 201 Phone 268-0461
City Oakland CA Zip 94607

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	___	Well Destruction	X

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other ___

DRILLER'S LICENSE NO. 431604

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter 8" in. Depth * ft.
Surface Seal Depth ___ ft. Number **

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 3/27/90
ESTIMATED COMPLETION DATE 3/27/90

I hereby agree to comply with all requirements of this Permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Sean D Carson Date 3/26/90

FOR OFFICE USE

PERMIT NUMBER 90198
LOCATION NUMBER 1S/4W 35C80

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

(E.) WELL DESTRUCTION. See attached.

* 230 feet
** One well

Approved Wyman Hong Date 26 Mar 90
Wyman Hong

12/1989

James P. Bowers, PE
R. William Rudolph, Jr., PE

July 16, 1990
SCI 430.007

Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

Well Destruction Report
Well Number 2 (SCI designation)
Permit No. 90225
13th and Jefferson Streets
Oakland, California

Dear Mr. Esposito:

This letter describes the methods and materials used to destroy a well near 13th and Jefferson Streets in Oakland, California. Subsurface Consultants, Inc. (SCI) encountered the well during excavation of gasoline contaminated soils at the site. The top of the well was encountered approximately 7 feet below street grade.

The well was located approximately 70 feet north of 13th Street and 63 feet west of Jefferson Street in Oakland, California, as shown on the attached Site Plan, Plate 1. The well consisted of an 8-inch-diameter steel casing positioned inside a 14-inch-diameter steel casing. The 14-inch casing was observed to be very corroded and appeared much older than the 8-inch casing. The 14-inch casing was in direct contact with native soils. The annulus between the 8 and 14 inch casings had been filled with sand. The well extended approximately 55 feet below the adjacent street grades. The top of the well was clogged with bricks and oily debris. Groundwater was encountered approximately 25 feet below street grade. A sample of the well water was obtained by SCI prior to well destruction and analytically tested. Analytical test results are summarized below.

■ Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

Table 1. CONTAMINANT CONCENTRATIONS IN WELL 2 WATER

Sample	TEH[1] mg/L[5]	O&G[2] mg/L	Benzene ug/L[6]	Other[3] VOCs ug/L	PNAs[4] ug/L
Well 2	ND[7]	50	6	ND	ND

---

1 TEH = Total Extractable Hydrocarbons, EPA 8015/3550
2 O&G = Oil and Grease, Method SMWW 503E
3 VOCs = Volatile Organic Compounds: EPA Methods 601 and 602
4 PNAs = Polynuclear Aromatic Hydrocarbons
5 mg/L = milligrams per liter or parts per million (ppm)
6 ug/L = micrograms per liter or parts per billion (ppb)
7 ND = None detected at concentrations above detection limits. See analytical test reports for detection limits

The analytical results indicate that the well water contained low concentrations of oil and grease and benzene, a soluble constituent of gasoline. The well is situated in an area where gasoline contamination is present. The benzene is likely the result of this problem.

Initially, the 8-inch casing was removed utilizing a hoisting cable. Next, an 18-inch steel casing was driven into the ground around the outside of the remaining 14 inch well casing. The corroded 14-inch casing was subsequently drilled out using cable-tool drilling equipment. Cement grout was then pumped into the 18-inch casing using tremmie methods, displacing the water upwards. The tremmie pipe and the 18-inch casing remained below the grout/water interface so that a continuous column of grout was constructed. Approximately 8 cubic yards of neat cement grout (11 sacks of cement per cubic yard) were pumped into the well.

The water and drilling cuttings from the well were placed into a steel waste storage bin. The material was removed from the site under manifest by Hydro Tech, Inc. to the Valley Rock Disposal facility in Orland, California, which exclusively handles the disposal of drilling cuttings. Prior to disposal, a variety of chemical analyses were performed on the cuttings. The results are summarized below.

Table 2. CONTAMINANT CONCENTRATIONS IN DRILLING CUTTINGS

Sample	TEH[1] mg/kg[6]	O&G[2] mg/kg	Title 26 Metals mg/kg	BTXE[3] ug/kg[7]	Semi VOC's[4] ug/kg	PCB's[5] ug/kg
Cuttings	ND	180	ND	ND	ND	ND

---

1 TEH = Total Extractable Hydrocarbons, EPA 8015/3550
2 O&G = Oil and Grease, Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene, Ethylbenzene
4 Semi-VOC's = Semi Volatile Organics, EPA 8270
5 PCB's = Polychlorinatedbiphenyls, EPA 8270
6 mg/kg = milligrams per kilogram or parts per million (ppm)
7 ug/kg = micrograms per kilogram or parts per billion (ppb)
8 ND = None detected at concentration above detection limits. See analytical test reports for detection limits

Groundwater monitoring wells have been constructed down-gradient of Well 2 as part of an assessment evaluating gasoline contamination. It is anticipated that groundwater remediation in the area will be required, and will be initiated in the near future.

If you have any questions regarding abandonment of this well, please call.

Yours very truly,

Subsurface Consultants, Inc.

Sean O Carson

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

SOC:JPB:RWR:nf

Attachments: Plate 1 - Site Plan
Well Destruction Permit
Analytical Test Results
Chain-of-Custody Documents

cc: Ms. Lois Parr
City of Oakland

Mr. Roy Ikeda
Crosby, Heafy, Roach & May

Mr. Donnell Choy
City of Oakland

Ms. Katherine Chesick
Alameda County Health Care Services Agency

Mr. Wyman Hong
Alameda County Flood Control and Water Conservation District
Zone 7

11 April 1990

ZONE 7
WATER RESOURCES ENGINEERING
GROUNDWATER PROTECTION ORDINANCE

CITY OF OAKLAND
13TH STREET AND JEFFERSON STREET
OAKLAND
WELL 1S/4W 35C80
PERMIT 90225

Destruction Requirements

1. Drill out the well so that casing, seal, and gravel pack are removed to the bottom of the well.

2. Using a tremie pipe, fill the hole to 2 feet below the lower of finished grade or original ground with neat cement.

3. After seal has set, backfill the remaining hole with compacted material.

These destruction requirements as proposed by John DeLucchi of DeLucchi Well & Pump meet or exceed the Zone 7 minimum requirements.

Curtis & Tompkins, Ltd., Analytical Laboratories Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 09/07/89
DATE REPORTED: 09/14/89

LAB NUMBER: 18210

CLIENT: SUBSURFACE CONSULTANTS, INC.

REPORT ON: 1 WATER SAMPLE

JOB #: 430.003
LOCATION: 13th AND JEFFERSON WELL

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18210
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.003
LOCATION: 13th AND JEFFERSON WELL

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/11/89
DATE REPORTED: 09/14/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18210-1A	WELL 2	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	<1
Spike: % Recovery	102

Curtis & Tompkins, Ltd

LAB NUMBER: 18210
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.003
LOCATION: 13th AND JEFFERSON WELL

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/12/89
DATE REPORTED: 09/14/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18210-1A	WELL 2	50	mg/L	20

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	81

LABORATORY NUMBER: 18210-1B
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.003
SAMPLE ID: WELL 2

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/07/89
DATE REPORTED: 09/14/89

EPA 601
Purgeable Halocarbons in Water

Compound	Result ug/L	LOD ug/L
chloromethane	ND	1
bromomethane	ND	1
vinyl chloride	ND	1
chloroethane	ND	1
methylene chloride	ND	1
trichlorofluoromethane	ND	1
1,1-dichloroethene	ND	1
1,1-dichloroethane	ND	1
1,2-dichloroethene (total)	ND	1
chloroform	ND	1
freon 113	ND	1
1,2-dichloroethane	ND	1
1,1,1-trichloroethane	ND	1
carbon tetrachloride	ND	1
bromodichloromethane	ND	1
1,2-dichloropropane	ND	1
cis-1,3-dichloropropene	ND	1
trichloroethylene	ND	1
1,1,2-trichloroethane	ND	1
cis-1,3-dichloropropene	ND	1
dibromochloromethane	ND	1
2-chloroethylvinyl ether	ND	1
bromoform	ND	1
tetrachloroethylene	ND	1
1,1,2,2-tetrachloroethane	ND	1
chlorobenzene	ND	1
1,3-dichlorobenzene	ND	1
1,2-dichlorobenzene	ND	1
1,4-dichlorobenzene	ND	1

ND = None Detected. Limit of detection (LOD) in last column.

QA/QC:

Duplicate: Relative % Difference	25
Average Spike Recovery %	98

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18210-1B
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.003
SAMPLE ID: WELL 2

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/07/89
DATE REPORTED: 09/14/89

EPA 602: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	DETECTION LIMIT ug/L
Benzene	6	1
Toluene	ND	1
Ethyl Benzene	ND	1
Total Xylenes	ND	1
Chlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = None Detected

QA/QC SUMMARY

RPD %	25
SPIKE RECOVERY %	98

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18210-1B
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.003
SAMPLE ID: WELL 2

DATE RECIEVED: 09/07/89
DATE ANALYZED: 09/12/89
DATE REPORTED: 09/14/89

EPA METHOD 610
POLYNUCLEAR AROMATIC HYDROCARBONS IN WATER

COMPOUND	Results mg/L	LOD mg/L
Naphthalene	ND	5
Acenaphthylene	ND	5
Acenaphthene	ND	5
Fluorene	ND	5
Phenanthrene	ND	5
Anthracene	ND	5
Pyrene	ND	5
Benzo(a)anthracene	ND	5
Chrysene	ND	5
Benzo(b)fluoranthene	ND	5
Benzo(k)fluoranthene	ND	5
Fluoranthene	ND	5
Benzo(a)pyrene	ND	5
Indeno(1,2,3-cd)pyrene	ND	5
Dibenzo(a,h)anthracene	ND	5
Benzo(ghi)perylene	ND	5

ND = None Detected, Limit of detection appears in far right column.

QA/QC:

Duplicate, Relative % Difference	6
Average Spike Recovery %	73

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th & Jefferson Well

SCI Job Number: 430.003

Project Contact at SCI: Jim Bowers

Sampled By: D. Alexander

Analytical Laboratory: Curtis & Tompkins, LTD.

Analytical Turnaround: 5 DAY

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
Well 2	W	G (1000 ml)	9/6/89		TPH	
Well 2	W	V (2)	9/6/89		O&G	
					EPA 601	
					EPA 602	
Well 2	W	G(2)(1000ml)	9-8-89		EPA 610 -	PNA's

* * * * * *

Released by: Dennis Alexander Date: 9-7-89

Released by Courier: Date:

Received by Laboratory: Nancy J. Wilson Date: 9/7/89

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/08/90
DATE REPORTED: 05/22/90

LAB NUMBER: 100413

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SLUDGE SAMPLE

PROJECT #: 430.007
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LAB NUMBER: 100413
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.007
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 05/08/90
DATE ANALYZED: 05/15/90
DATE REPORTED: 05/22/90

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
100413-1	SLUDGE	180	mg/Kg	50

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	89

LABORATORY NUMBER: 100413
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.007
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 05/08/90
DATE EXTRACTED: 05/16/90
DATE ANALYZED: 05/16/90
DATE REPORTED: 05/22/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
100413-1	SLUDGE	ND	ND	10

ND = Not Detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	85

LABORATORY NUMBER: 100413-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.007
SAMPLE ID: SLUDGE

DATE RECEIVED: 05/08/90
DATE ANALYZED: 05/09/90
DATE REPORTED: 05/22/90

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	5	EPA 6010
Arsenic	ND	2.5	EPA 6010
Barium	ND	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	ND	0.5	EPA 6010
Chromium (total)	ND	0.5	EPA 6010
Cobalt	ND	0.5	EPA 6010
Copper	ND	1	EPA 6010
Lead	ND	2.5	EPA 7420
Mercury	ND	0.1	EPA 7471
Molybdenum	ND	0.5	EPA 6010
Nickel	ND	0.5	EPA 6010
Selenium	ND	2.5	EPA 7841
Silver	ND	1	EPA 6010
Thallium	ND	5	EPA 6010
Vanadium	ND	1	EPA 6010
Zinc	ND	0.5	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	5	102	Mercury	9	107
Arsenic	15	122	Molybdenum	<1	103
Barium	16	105	Nickel	1	114
Beryllium	1	95	Selenium	2	80
Cadmium	20	96	Silver	<1	78
Chromium	4	122	Thallium	7	100
Cobalt	<1	105	Vanadium	<1	105
Copper	15	117	Zinc	2	109
Lead	4	116			

LABORATORY NUMBER: 100413-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.007
LOCATION: 13TH & JEFFERSON
SAMPLE ID: SLUDGE

DATE RECEIVED: 05/08/90
DATE ANALYZED: 05/11/90
DATE REPORTED: 05/22/90

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	14
RECOVERY, %	100

LABORATORY NUMBER: 100413-1
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.007
CLIENT ID: SLUDGE

DATE RECEIVED: 05/08/90
DATE EXTRACTED: 05/16/90
DATE ANALYZED: 05/17/90
DATE REPORTED: 05/22/90

EPA METHOD 8270: BASE/NEUTRAL AND ACID EXTRACTABLES IN SOILS & WASTES
EXTRACTION METHOD: EPA 3550 SONICATION

ACID COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Phenol	ND	330
2-Chlorophenol	ND	330
2-Nitrophenol	ND	1650
2,4-Dimethylphenol	ND	330
2,4-Dichlorophenol	ND	330
4-Chloro-3-methylphenol	ND	330
2,4,6-Trichlorophenol	ND	330
2,4-Dinitrophenol	ND	1650
4-Nitrophenol	ND	1650
2-Methyl-4,6-dinitrophenol	ND	1650
Pentachlorophenol	ND	1650
BASE/NEUTRAL COMPOUNDS		
N-Nitrosodimethylamine	ND	330
Bis(2-chloroethyl)ether	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl)ether	ND	330
N-nitrosodi-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
Bis(2-chloroethoxy)methane	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
Hexachlorobutadiene	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Dimethyl phthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
Acenaphthene	ND	330
2,4-Dinitrotoluene	ND	330
Fluorene	ND	330
Diethyl phthalate	ND	330
4-Chlorophenylphenyl ether	ND	330
N-Nitrosodiphenylamine	ND	330
1,2-Diphenylhydrazine	ND	330
4-Bromophenylphenyl ether	ND	330

LABORATORY NUMBER: 100413-1
CLIENT ID: SLUDGE

BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	REPORTING LIMIT ug/kg
Azobenzene	ND	330
Hexachlorobenzene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Dibutylphthalate	ND	330
Fluoranthene	ND	330
Benzidine	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
Benzo (a) anthracene	ND	330
3,3'-Dichlorobenzidine	ND	1650
Chrysene	ND	330
Bis (2-ethylhexyl)phthalate	ND	330
Di-n-octyl phthalate	ND	330
Benzo (b) fluoranthene	ND	330
Benzo (k) fluoranthene	ND	330
Benzo (a) pyrene	ND	330
Indeno (1,2,3-cd) pyrene	ND	330
Dibenzo (a,h) anthracene	ND	330
Benzo (ghi) perylene	ND	330
HSL COMPOUNDS		
Aniline	ND	330
Benzoic Acid	ND	1650
2-Methylphenol	ND	330
4-Methylphenol	ND	330
2,4,5-Trichlorophenol	ND	1650
Aniline	ND	330
Benzyl Alcohol	ND	330
4-Chloroaniline	ND	330
2-Methylnaphthalene	ND	330
2-Nitroaniline	ND	330
3-Nitroaniline	ND	330
Dibenzofuran	ND	330
4-Nitroaniline	ND	330

LABORATORY NUMBER: 100413-1
CLIENT ID: SLUDGE

COMPOUND	RESULT ug/kg	REPORTING LIMIT ug/kg
CHLORINATED PESTICIDES		
alpha-BHC	ND	330
beta-BHC	ND	330
gamma-BHC	ND	330
delta-BHC	ND	330
Heptachlor	ND	330
Aldrin	ND	330
Heptachlor Epoxide	ND	330
Endosulfan I	ND	330
4,4'-DDE	ND	330
Dieldrin	ND	330
Endrin	ND	330
Endosulfan II	ND	330
4,4'-DDD	ND	330
Endrin Aldehyde	ND	330
Endosulfan Sulfate	ND	330
4,4'-DDT	ND	330
Chlordane	ND	1650
Toxaphene	ND	1650
Methoxychlor	ND	1650
Aroclor 1016	ND	1650
Aroclor 1221	ND	1650
Aroclor 1232	ND	1650
Aroclor 1242	ND	1650
Aroclor 1248	ND	1650
Aroclor 1254	ND	1650
Aroclor 1260	ND	1650

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Compound	%Recovery	Compound	%Recovery
2-Fluorophenol	52	Nitrobenzene-d5	31
Phenol-d5	44	2-Flourobiphenyl	39
2,4,6-Tribromophenol	23	Terphenyl	27

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.007

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SLUDGE	S	G x 2	5/8/90		Title 26 Metals	
					TEH	
					BTXE	
					O+G	
					8270 with PCB's	
*	*	*	*	*	*	

Released by: Dennis Alexander Date: 5-8-90

Released by Courier: _____ Date: _____

Received by Laboratory: Nancy A Patton Date: 5-8-90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

NON HAZARDOUS WASTE MANIFEST

Generators' Name and Address:

City of Oakland Office of Economic Develop
and Employment, 1417 Clay St.
Oakland, California 94612

Phone No.: 415 273-3816 contact: Lois Parr

Transporter: Hydro Tech

Designated Disposal Facility Name and Address:

Valley Rock Products
P.O Box 68, Orland, CA

Description of Waste: Drill Cuttings

Estimated Quantity of Waste: 15 yds³

Special Handling Instructions: gloves.

Generator/Representative:

(Name)	(Signature)	(Date)
[illegible] for City of Oakland OEDE	[signature]	6/14/90

Transporter's Acknowledged Receipt of Material:

(Name)	(Signature)	(Date)
Lew Cook	[signature]	6-14-90

Disposal Facility Acknowledged Receipt of Material:

(Name)	(Signature)	(Date)

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 13th and Jefferson
Oakland

CLIENT
Name City of Oakland (OED&E)
Address 1417 Clay Street Phone
City Oakland, CA. Zip 94612

APPLICANT
Name DeLucchi Well & Pump, Inc.
Address 35137 Mission Phone 793-2822
City Fremont, CA. Zip 94536-1598

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	___	Well Destruction	X

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable X Other ___

DRILLER'S LICENSE NO. C57-394454

WELL PROJECTS
Drill Hole Diameter 16 In. Maximum
Casing Diameter ___ In. Depth 50 ft.
Surface Seal Depth 50 ft. Number ___

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ In. Depth ___ ft.

ESTIMATED STARTING DATE April 12, 1990
ESTIMATED COMPLETION DATE April 13, 1990

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE J.M. DeLucchi Date 4/11/90

FOR OFFICE USE

PERMIT NUMBER 90225
LOCATION NUMBER 1S/4W 35C80

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after comple of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal Industrial wells or 20 feet for domestic Irrigation wells unless a lesser depth specially approved. Minimum seal depth monitoring wells is the maximum depth practic or 20 feet.

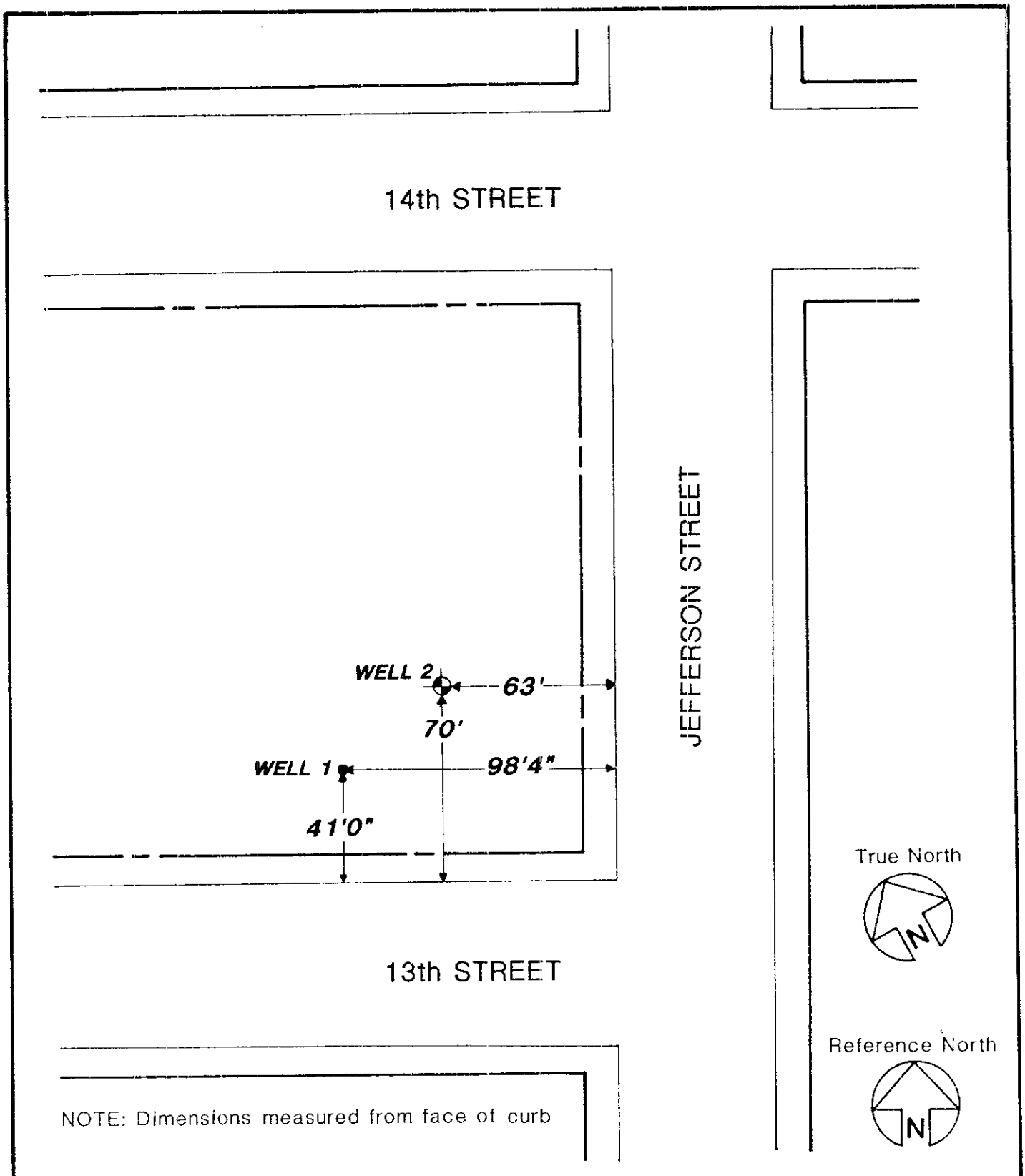
C. GEOTECHNICAL. Backfill bore hole with compacted tings or heavy bentonite and upper two feet with pacted material. In areas of known or suspe contamination, tremied cement grout shall be use place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with cor placed by tremie.

(E.) WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 11 Apr
Wyman Hong

APR 17



WELL LOCATIONS

Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.007	11/10/88	

PLATE 1

13th & Jefferson, Oakland
1330 MLK Jr. Way, Oakland

4/5/90

4:17 Spoke with Jim Bowers. He said they hit the limits of the "bad dirt" (this bad dirt has been ↳ at 13th & Jefferson excavated. The excavation is being backfilled with the clean dirt that was removed ~~from the hole~~ ~~was excavated~~ to get to the bad dirt. The bad dirt was aerated on site and then hauled off to the dump (Class III, Redwood landfill) - 8,500 9,000 cubic yards of soil was hauled off!

A second ~~A~~ well was found on the property - originally was a 14" diameter well, was rebuilt with an 8" steel casing inside the 14" casing. The annular space had been filled. The well water had some benzene & oil & grease - (The well is about 50-60 feet deep) Oily, tarry material ~~was~~ found in the well. About 37' down, the casing was broken - sands flowing into the well. This well will be abandoned by removing the 8" casing, drilling a casing into the ground ~~around~~ (outside of) the 14" casing. The inside of the well will be cleaned/drilled out & slurry filled. Jim will permit this through Zone 7.

The "200' well (the first well) was abandoned already by tremie cement slurry into the well.

A pocket of PNA contaminated soil was found ~ 20 feet from the main PNA contaminated soil area. This soil has been excavated & is awaiting disposal.

Remaining to do:

1) Obtain permit from EBMUD for H_2O treatment (TTU). System is set up & ready to go to treat
   a) water from MLK (1330) → dissolved product. Skimmer system will be installed to remove free product only if regular pump to remove free product doesn't work.
   b) water from 13th & Jefferson

2) After free product problem at 1330 MLK dealt w/ then dissolved product H_2O treatment will be stepped up.

3) Soil cleanup.

Jim will be getting several reports to me documenting work to date.

Woodward-Clyde Consultants

Engineering & sciences applied to the earth & its environment

November 14, 1991

Mr. Paul Smith
Alameda County Department of
Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Subject: City Center Garage West Site
12th and Jefferson Streets, Oakland

Dear Mr. Smith:

BACKGROUND

As discussed in Woodward-Clyde Consultants' ("WCC") August 21, 1991 letter to you, recent excavation to construct shoring and foundations for a parking garage on the City Center Garage West site uncovered soil containing a petroleum product suspected to be gasoline in an area adjacent to 12th Street. A plan view (Figure 1) and an elevation view (Figure 2) showing the location of the petroleum hydrocarbon-bearing soil are attached.

The petroleum-bearing soil, located approximately 130 feet west of Jefferson Street, was found to extend vertically from about elevation 23 feet (City of Oakland Datum (C.O.O.D.)) to about elevation 16 feet and laterally for about 10 feet. No evidence of soil contamination was observed, based on odors or stains, below about elevation 16 feet. Contaminated soil within the excavation was separately stockpiled, analyzed and aerated in accordance with the guidelines established by the Bay Area Air Quality Management District, and disposed at the BFI/Vasco Road Sanitary Landfill in accordance with local, State, and Federal regulations.

CLOSURE SOIL SAMPLES

In order to evaluate whether contaminated soil occurred below about elevation 16 feet C.O.O.D., WCC collected four soil samples, designated GW3 through GW6, on August 27, 1991. The soil samples were taken from the lower sidewall and floor of the excavation. The locations of the samples are shown on Figure 2.

The samples were collected in 4-inch-long by 2-inch-diameter brass tubes with plastic end caps. The samples were labeled and immediately placed in a cooled ice chest for transport to the Chromalab, Inc. analytical laboratory, using chain-of-custody procedures. The samples were analyzed by EPA Method 8015 for gasoline, diesel, and motor oil and EPA Method 8020 for benzene, toluene, ethyl benzene, and xylenes (BTEX). As shown in the attached analytical data,

500 12th Street, Suite 100 • Oakland, CA 94607-4014 • (510) 893-3600 • Fax (510) 874-3268

no petroleum hydrocarbons as gasoline, diesel, or motor oil or BTEX were reported by the analytical laboratory at concentrations exceeding their respective detection limits.

GROUNDWATER SAMPLES

Because a multi-story parking structure is now being constructed on the site, it was not feasible to install a groundwater monitoring well within 10 feet of the spill in the downgradient direction. Instead, WCC collected groundwater samples for chemical analysis from 4 screened soil borings on September 20, 1991. One soil boring CCW-4 was drilled at the location of the TPH-contaminated soil. The remaining 3 borings, CCW-1, -2, and -3, were located approximately 20 feet apart in the approximate downgradient groundwater flow direction. The locations of the borings are shown on Figure 1. The borings were extended to approximately elevation minus 3 feet (City of Oakland Datum), approximately 8 feet below the groundwater surface. A dedicated machine-slotted 2-inch-diameter PVC well screen with end cap was inserted into each soil boring after the augers had been withdrawn.

After the groundwater levels had equilibrated for a short period, one groundwater sample was recovered from each screened boring. These samples, designated CCW-1 through CCW-4, were collected using a teflon bailer. The sampled water was placed in 40 ml VOA sample bottles. The sample containers were immediately labeled and placed in a cooled ice chest for transport, under chain-of-custody procedures, to the Chromalab, Inc. analytical laboratory. After the samples were taken, the screened casing was removed and the soil borings were backfilled with a sand/cement grout, in accordance with the requirements of Alameda County Zone 7.

The groundwater samples were analyzed by EPA Method 8015 for gasoline and by EPA Method 8020 for BTEX. As shown in the attached analytical data, no petroleum hydrocarbons as gasoline or BTEX were reported by the analytical laboratory at concentrations exceeding their respective detection limits.

CONCLUSIONS

The results of the chemical analyses of the closure soil samples and groundwater samples indicate that TPH as gasoline, diesel, or motor oil are not present in the soil below approximately elevation 16 feet C.O.O.D. There exists a buffer zone of uncontaminated soil approximately 11 feet thick between the lowest occurrence of contaminated soil and the groundwater. The laboratory analyses of groundwater indicate that TPH as gasoline and BTEX are not present in groundwater beneath the sidewalk adjacent to 12th Street or beneath the City

Center Garage West excavation. Based on the results, we conclude that the petroleum leak at this

location has had no effect on the local groundwater, and that no further investigation or remedial action at this location is warranted.

If you have any questions, please call me at 874-3192 or George Ford at 874-3203 .

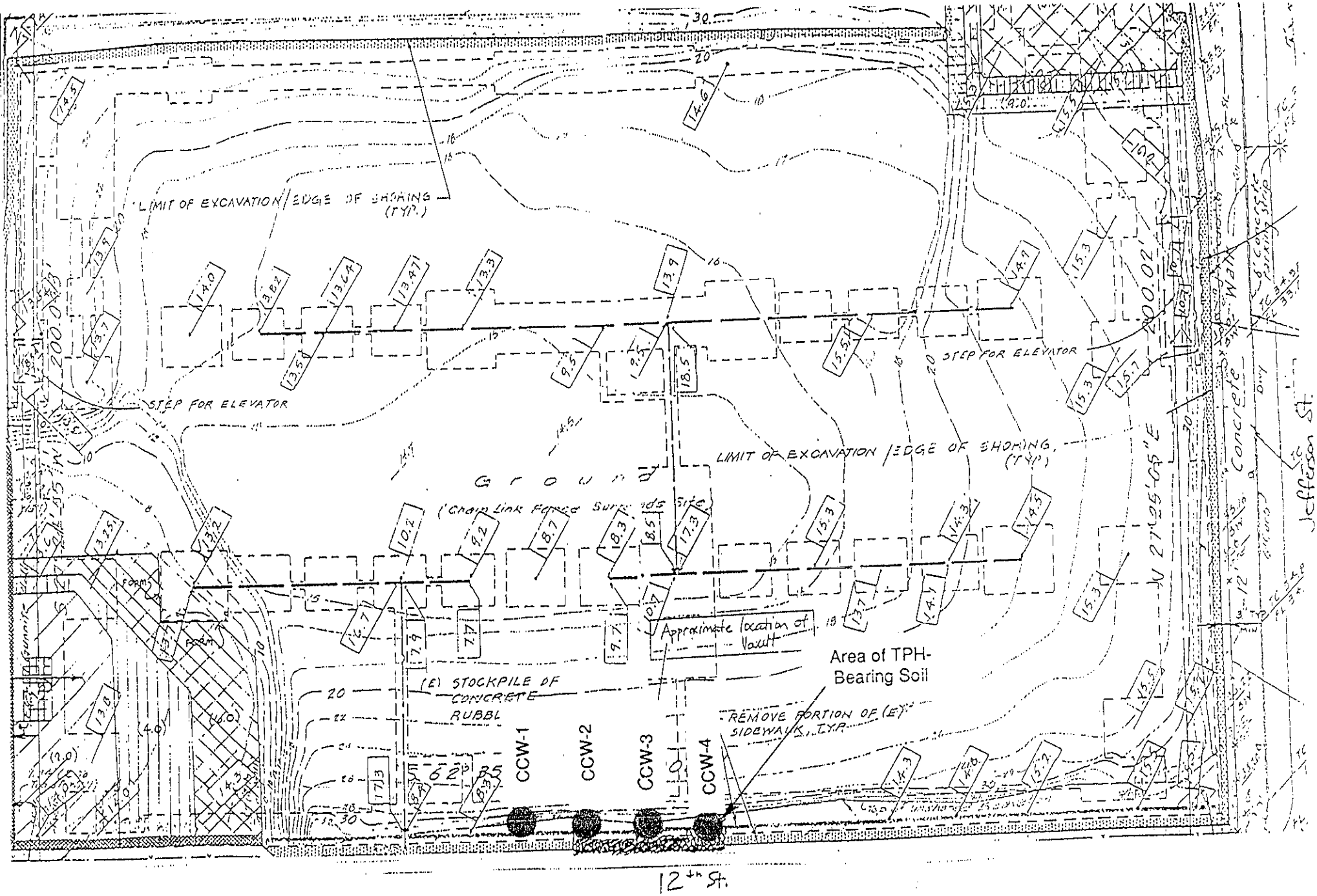
Yours truly,
WOODWARD-CLYDE CONSULTANTS

William B. Copeland
Assistant Project Geologist

George A. Ford
Associate

Attachments: Figure 1, City Center Garage West Site Plan
Figure 2, Elevation Showing Location of Hydrocarbon-Bearing Soil
Chemical Analytical Data

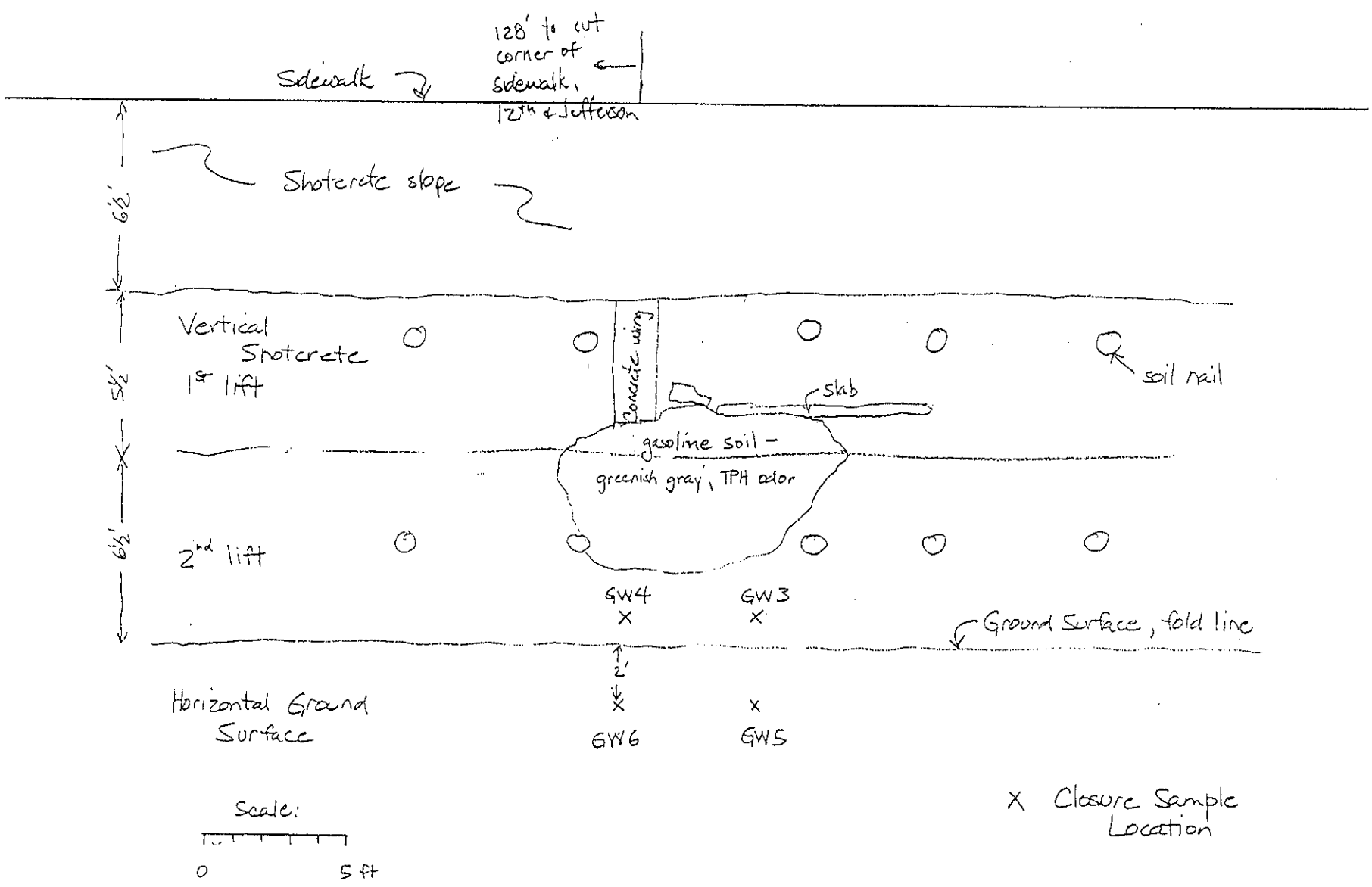
cc: City Center Garage West Associates, c/o Mr. Matt Sherrill, Bramalea Pacific, Inc.
Ms. Lois Parr, Redevelopment Agency of the City of Oakland
Mr. Lester Feldman, SFRWQCB



Scale:

0 40 ft.

Project No. 91C0334B	City Center Garage West	Site Plan, Groundwater Sampling Locations	Figure 1
Woodward-Clyde Consultants			



Project No. 91C0334B	City Center Garage West	Elevation View, Soil Sampling Locations	Figure 2
Woodward-Clyde Consultants			

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

September 27, 1991 ChromaLab File No.: 0991150

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Four water samples for Gasoline/BTEX analysis

Project Number: 91C0334B
Date Sampled: Sept. 20, 1991 Date Submitted: Sept. 20, 1991
Date Extracted: Sept. 25, 1991 Date Analyzed: Sept. 25, 1991

RESULTS:

Sample I.D.	Gasoline (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl Benzene (µg/l)	Total Xylenes (µg/l)
CCW-1	N.D.	N.D.	N.D.	N.D.	N.D.
CCW-2	N.D.	N.D.	N.D.	N.D.	N.D.
CCW-3	N.D.	N.D.	N.D.	N.D.	N.D.
CCW-4	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	87.6%	94.4%	102.7%	98.9%	105.9%
DUP SPIKE REC.	91.8%	97.1%	100.7%	95.4%	98.6%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/ 8015	602	602	602	602

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by pp)
Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

September 3, 1991 ChromaLab File No.: 0891247

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Four soil samples for Gasoline/BTEX and TEPH analyses

Project Number: 91C02334B
Date Sampled: August 27, 1991 Date Submitted: August 27,1991
Date Extracted: Aug. 29-30,1991 Date Analyzed: Aug. 29-30,1991

RESULTS:

Sample I.D.	Gasoline (mg/kg)	Diesel (mg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl Benzene (µg/kg)	Total Xylenes (µg/kg)	Motor Oil (mg/kg)
GW3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
GW4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
GW5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
GW6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	87.6%	101.1%	91.9%	104.1%	107.6%	106.9%	----
DUP SPIKE REC	100.5%	92.7%	87.3%	82.7%	83.4%	82.5%	----
DET. LIMIT	1.0	1.0	5.0	5.0	5.0	5.0	10
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	3550/ 8015

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

August 21, 1991

Mr. Paul Smith
Alameda County Department of
Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Subject: City Center Garage West Site
12th and Jefferson Streets, Oakland

Dear Mr. Smith:

On August 11, 1991, ongoing excavation to construct shoring and foundations for a parking garage on the City Center Garage West site uncovered soil containing a hydrocarbon suspected to be kerosene in an area adjacent to 12th Street. Gasoline-bearing soils and fill containing oil and grease and lead have been removed from this site as described in the April 15, 1991 Woodward-Clyde Consultants ("WCC") report titled "City Center Garage II Remediation Program, City Center Garage II Parcel, Oakland, California" that was previously submitted to you.

WCC identified green-colored native sandy soil with a gasoline odor that was originally exposed by Rios Grading, Inc. workers during excavating operations. The soil occurs beneath an exposed edge of a concrete slab. The slab, approximately 10 feet beneath the sidewalk, forms the floor of a soil-filled, former sidewalk vault located on the north side of 12th Street, approximately 130 feet west of Jefferson Street. A plan view (Figure 1) and an elevation view (Figure 2) showing the location of the hydrocarbon-bearing soil are attached.

On August 16, 1991, Rios Grading, under the observation of WCC, excavated the remaining hydrocarbon-bearing soil from the area within the building foundation excavation. The contaminated soil was found to extend from about elevation 23 feet to about elevation 16 feet. No evidence of contamination was seen below about elevation 16 feet. The total volume of soil removed was about 8 cubic yards.

Two discrete soil samples from the apparently most highly contaminated zone were taken for chemical analysis. The samples were collected in 4-inch-long by 2-inch-diameter brass tubes with plastic end caps. The samples were immediately placed in a cooled ice chest for transport to the State-certified Chromalab analytical laboratory.

The samples were analyzed by EPA Methods 8015 for gasoline, 8020 for BTEX, and 8240 for solvents. The attached laboratory reports show that the reported concentrations of an unknown hydrocarbon, possibly kerosene, are 680 ppm and 880 ppm. No other compound was reported at a concentration exceeding the respective detection limit.

As with other projects in the City Center area, the contaminated soil excavated during this project will be separately stockpiled, analyzed, aerated (if applicable), and disposed in a Class

III landfill in accordance with local, State, and Federal regulations.

Sub-horizontal borings for soil nails, shown on Figure 2, did not encounter an underground tank within the sidewalk vault area. WCC will observe the installation of future soil nail borings in the area of this contamination to evaluate the extent of hydrocarbon contamination beneath 12th Street. These borings may be installed during the week of August 26.

WCC does not expect to encounter additional contaminated soil as the excavation deepens. We will collect additional soil samples to confirm this expectation and to document that hydrocarbons do not extend beyond the observed depth. Also, we consider the possibily of groundwater contamination as a result of this soil contamination unlikely due to the approximate 10-foot to 12-foot distance between the base of the soil contamination and the groundwater table.

The Contractor and affected subcontractors on this project have developed project-specific health and safety plans to guide their performance of the work.

We look forward to discussing the progress of the current cleanup effort and any future work. If you have any questions, please call me at 874-3203 or Bill Copeland at 874-3192.

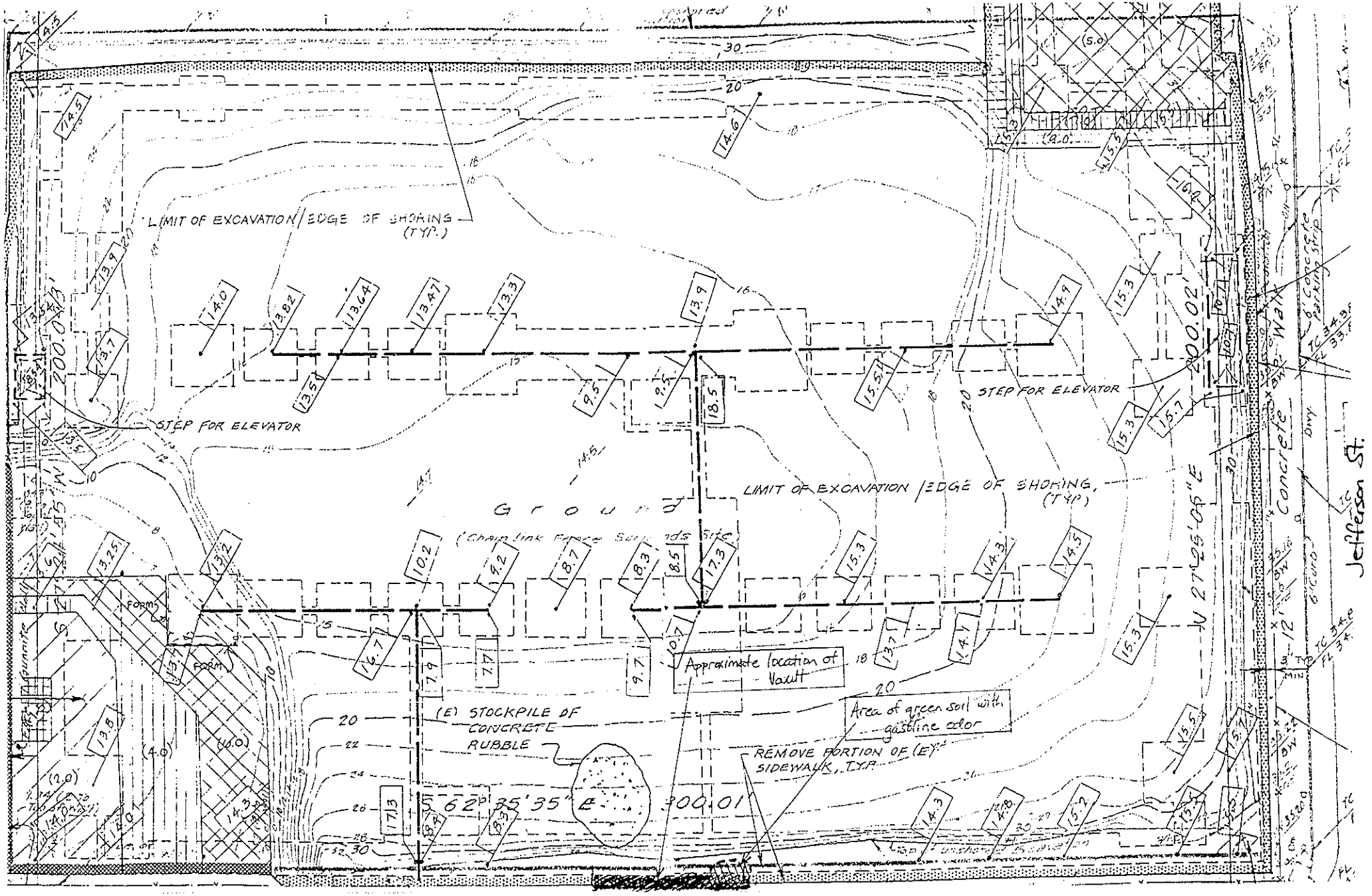
Yours truly,
WOODWARD-CLYDE CONSULTANTS

George A. Ford
Associate

William B. Copeland
Assistant Project Geologist

Attachments: Figure 1, City Center Garage West Site Plan
Figure 2, Elevation Drawing of Location with Hydrocarbon-Bearing Soil
Chemical Analytical Data

cc: Mr. Matt Sherrill, Bramalea Pacific, Inc.
Ms. Lois Parr, Redevelopment Agency of the City of Oakland
Mr. Lester Feldman, SFRWQCB



Scale:

0 40 ft.

Project No. 91C0334B	City Center Garage West	Site Plan	Figure 1
Woodward-Clyde Consultants			

City Center Garage West — W. Copeland 8/13/91

Soil Containing Gasoline (?) Under 12th Street Sidewalk

Project No. 91C0334B	City Center Garage West	Figure 2
Woodward-Clyde Consultants	Elevation View	

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

August 20, 1991 ChromaLab File No.: 0891135

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Two rush soil samples for Gasoline/BTEX analysis

Project Name: CITY CENTER GARAGE WEST
Project Number: 91C0334B
Date Sampled: August 16, 1991 Date Submitted: August 16,1991
Date Exracted: August 19, 1991 Date Analyzed: August 19,1991

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
GW1	680*	N.D.	N.D.	N.D.	N.D.
GW2	880*	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	83.0%	81.7%	94.1%	91.9%	90.9%
DET. LIMIT	1.0	25	25	25	25
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

*Unknown hydrocarbon that shows up in gasoline range. Possibly kerosene.

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

5 DAYS TURNAROUND

Analytical Laboratory (E694)

August 20, 1991 ChromaLab File # 0891135 A

Client: Woodward-Clyde Consult. Attn: Bill Copeland
Date Sampled: Aug. 16, 1991 Date Submitted: Aug. 16, 1991
Date of Analysis: Aug. 19, 1991

Project Number: 91C0334B
Project Name: City Center Garage West
Sample I.D.: GW-1
Method of Analysis: EPA 8240 Detection Limit: 10 µg/kg*

COMPOUND NAME	µg/kg	Spike Recovery
CHLOROMETHANE	N.D.	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	95.3% 90.4%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
BENZENE	N.D.	---
TRICHLOROETHENE	N.D.	92.4% 91.7%
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	90.5% 88.4%
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
ETHYL BENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	89.6% 84.7%
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	N.D.	---
ACETONE	N.D.	---
METHYL ETHYL KETONE	N.D.	---
METHYL ISOBUTYL KETONE	N.D.	---

*Detection limit raised due to presence of hydrocarbons in sample.

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

TELECOPY TRANSMITTAL

DATE: 7/12, 1990
TIME: 11:55 AM/PM

TO: Ms. Kathryn Chesick

FIRM: Alameda County Department of Environmental Health

TELECOPY NUMBER: (415) 568-3706

FROM: Mr. George Ford

TOTAL NUMBER OF PAGES INCLUDING COVER SHEET: 5

MESSAGE:

SHOULD YOU HAVE ANY QUESTIONS / PROBLEMS WITH THIS TRANSMITAL,

PLEASE CONTACT: _____ or _____.
PHONE NUMBERS: (415) _____ (415) _____

OUR TELECOPY NUMBER IS (415) 874-3268

Consulting Engineers, Geologists
and Environmental Scientists

Offices in Other Principal Cities

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

July 12, 1990

Project: 90C0028A

Ms. Kathryn Chesick
Alameda County Department
of Environmental Health
Hazardous Materials Division
80 Swan Way
Oakland, California 94621

Subject: City Center Garage II Soil Removal Activities

Dear Ms. Chesick:

This letter describes a soil removal and disposal program that will be undertaken about July 13 at the proposed City Center Garage II project, located between Jefferson Street and Martin Luther King, Jr. Way and 12th and 13th Streets in Oakland. The purpose of this work is to remove soil containing elevated concentrations of lead from the site, so that construction of a new garage structure may proceed on schedule.

BACKGROUND

In order to prepare for construction of a new parking garage with six levels of above-ground parking and two levels of below-ground parking, the Redevelopment Agency of the City of Oakland (Agency), owner of the property, and Bramalea Pacific, Inc., the developer of the new garage, have been working over the last few months to remove and dispose of soil containing gasoline from a corner of the property that was formerly occupied by an automotive service station. Woodward-Clyde Consultants (WCC) has been assisting the Agency and Bramalea in performing this work. During the course of soil sampling and analysis performed for the removal and disposal of the soil containing gasoline, elevated concentrations of lead were identified in fill soil that lies immediately beneath the surface of the existing, ground-level parking lot at the site. An initial quantity of about 1300 cubic yards of fill containing an average lead concentration of approximately 70 parts-per-million (ppm) was disposed at the Zanker Material Recovery Systems landfill in San Jose in mid-June. Subsequent sampling and analysis performed in late June on fill remaining beneath the paved portions of the site indicates small portions of the fill contain concentrations of lead ranging up to at least 2600 ppm, although most of the fill contains lead concentrations of lead of less than

10 ppm. The elevated lead concentrations occur in several restricted areas as shown on Figure 1 (attached). The soil sampling data suggests that the contaminated fill occurs within the upper 2 feet immediately beneath the surface of the parking lot, and that native soil beneath the fill does not have elevated concentrations of lead.

DISPOSAL PROGRAM

An evaluation of the available disposal options for the contaminated fill indicates that it is most cost-effective to remove and dispose of the soil directly in the Class I disposal facility operated by Chemical Waste Management, Inc. at Kettleman Hills, California. Because of the impending August 8, 1990 Environmental Protection Agency (EPA) ban on land disposal of untreated wastes, it is necessary to deliver the soil to the disposal facility prior to August 8th. Scheduling difficulties at the Kettleman Hills Facility further require that the soil be delivered to the facility as soon as possible. Based on these constraints, the Agency and Bramalea, with WCC's concurrence, have elected to begin removing and transporting the soil as soon as possible. Bramalea has authorized HSR, Inc., the contractor for this phase of the project, to begin preparing the site for removal of the soil. HSR began removing the asphalt pavement overlying the contaminated fill beginning on Monday, July 9. We expect that HSR will be ready to haul the first loads of soil to the disposal facility on July 13 or 16, and that soil removal and hauling will be completed by about July 27. WCC will perform closure sampling of the excavation during and after the soil removal operations, in order to document that the soil containing excessive concentrations of lead have been removed. The closure sampling data will be submitted to you in a letter report upon completion of the project.

HEALTH AND SAFETY ISSUES

The soil removal, hauling and disposal will be performed in strict accordance with standard procedures developed for handling soil containing elevated concentrations of lead. These procedures are described in health and safety plans developed specifically for this project by HSR and WCC. The plans will include recommendations for protective equipment for personnel working on the job, measures to protect the general public from exposure, decontamination procedures for personnel and equipment, and procedures to be used in an emergency. We have included a copy of WCC's and HSR's current health and safety plans for this project for your reference. HSR holds a State of California Hazardous Substances Removal and Remedial Actions certification, and HSR's employees on this project have completed CERCLA/SARA training and have OSHA CFR 1919.120 certifications. HSR successfully completed a similar soil removal project on the adjacent Old Firehouse block in 1989, and have extensive experience performing this type of work. All soil hauling will be performed by California DHS-registered Hazardous Waste Haulers.

Woodward-Clyde Consultants

We would be happy to discuss any questions you may have or give you a tour of the work area. Please feel free to call me at 415-874-3203 if you have any questions, or, you may contact Keith Dorsa at HSR at 408-971-7288.

Yours truly,

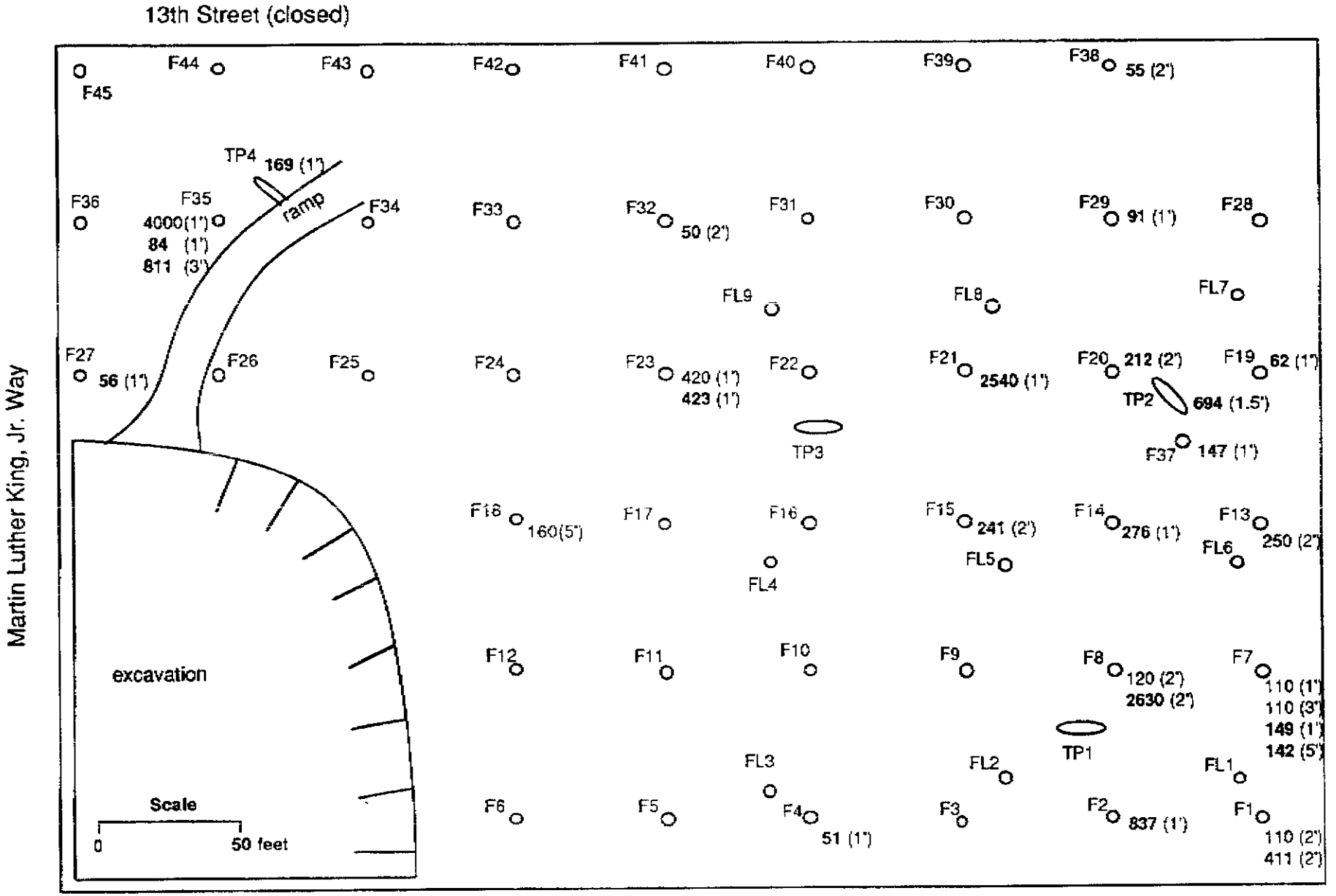
WOODWARD-CLYDE CONSULTANTS

George A. Ford
Senior Project Geologist

GAF/smp
90C0028AL3/COT

Attachments: 1) Figure 1 - Site Plan
2) WCC Health and Safety Plan
3) HSR, Health and Safety Plan

cc: Mr. John Esposito, Bramalea Pacific, Inc.
Ms. Lois R. Parr, Redevelopment Agency of the City of Oakland
Mr. R. Keith Dorsa, HSR, Inc.



Legend
250 = Oil and Grease > 100 ppm
423 = Total Lead >50 ppm
(depth in parenthesis)

Project No. 90C0028A	City Center Garage II	Fill Sampling Results	Figure 1
Woodward-Clyde Consultants			

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

July 12, 1990

Project: 90C0028A

Ms. Kathryn Chesick
Alameda County Department
of Environmental Health
Hazardous Materials Division
80 Swan Way
Oakland, California 94621

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Yours truly,

WOODWARD-CLYDE CONSULTANTS

George A. Ford
Senior Project Geologist

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cc: Mr. John Esposito, Bramalea Pacific, Inc.
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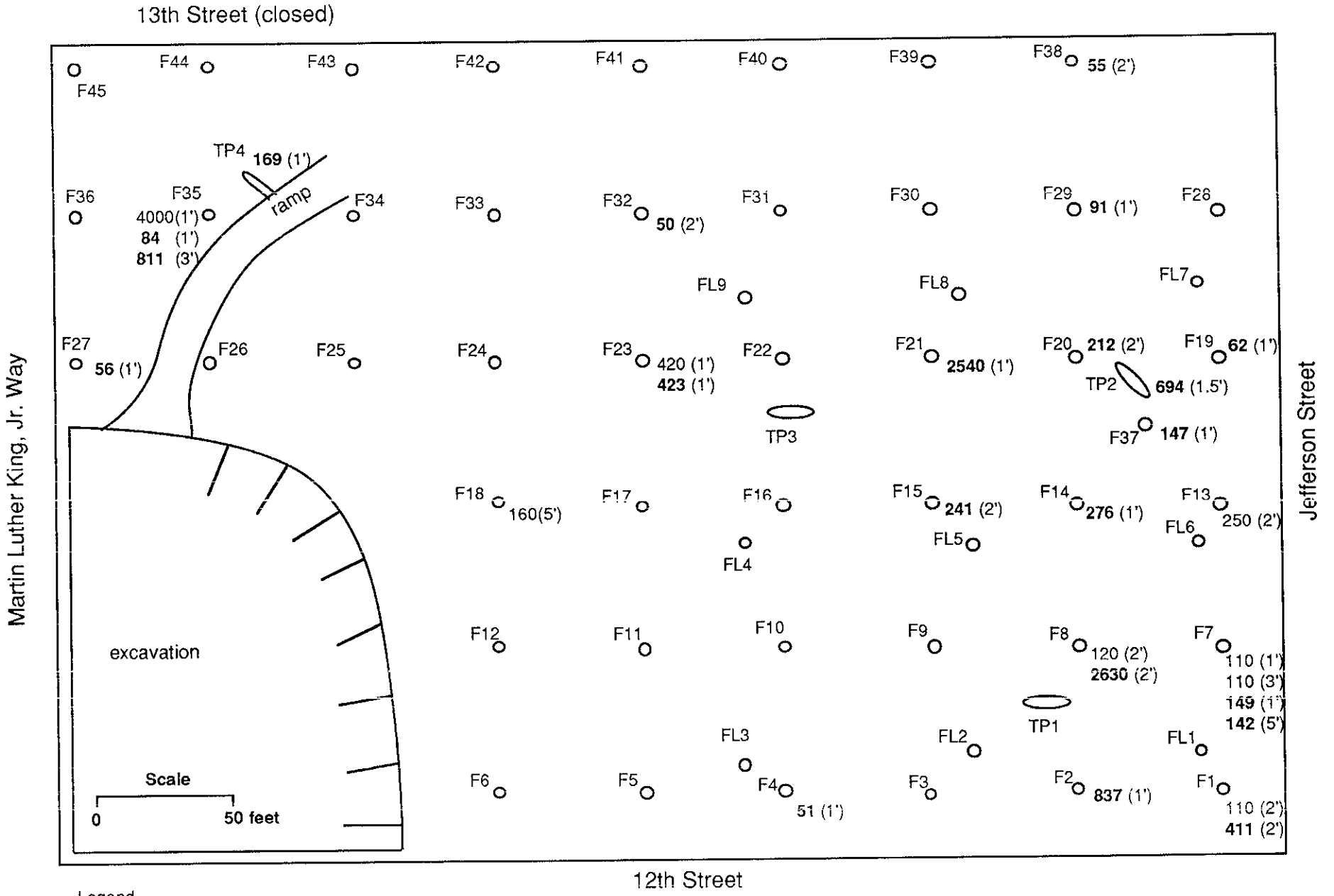

Legend
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(depth in parenthesis)

Project No. 90C0028A	City Center Garage II	Fill Sampling Results	Figure 1
Woodward-Clyde Consultants			

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

ADDENDUM TO OP HS-507

CITY CENTER GARAGE II
OAKLAND, CALIFORNIA

29 June 1990

APPROVALS

Eric Masamori
Eric Masamori
Health and Safety Officer, Oakland

6/29/90
Date

John Doherty
John Doherty
Corporate Health and Safety

6/29/90
Date

As Project Manager for the above named project, I have read the attached Health and Safety Plan and agree to assume responsibility for implementing its provisions. To the best of my knowledge, the site descriptions and description of work are substantially accurate and complete to the extent necessary to assess project health and safety needs.

George A. Ford
George Ford
Project Manager

7-11-90
Date

INTRODUCTION

This addendum must be attached to the original health and safety plan (OP HS-507). This health and safety plan addresses the lead contamination found on the site.

BACKGROUND

Previous shallow surface soil sample data revealed several areas contaminated with high levels of lead (up to 2600 ppm in soil). The site, previously a parking lot, is known to have contained automotive businesses in the northeast and southwest corners. There are no known spills of gasoline, however, gasoline contamination has been found in the soil. The source of the high lead contamination is not known at this time.

SCOPE OF WORK

The areas containing high concentrations of lead are to be investigated. Test pits will be dug to determine the vertical extent of the lead contamination.

ANTICIPATED HAZARDS-CHEMICAL

The risk of chemical exposure to lead can be reduced by the use of good engineering controls. Lead in soil is primarily an ingestion and inhalation hazard. Exposures can be minimized by reducing airborne dust levels and proper decontamination of samples, equipment and personnel.

ANTICIPATED HAZARDS-PHYSICAL

The physical hazards are addressed in Operating Procedure HS-507.

DUST CONTROL MEASURES

Dust control measures (wetting of soil and surrounding area) shall be used to minimize the generation of airborne dust whenever possible. Do not saturate the soil as this will increase the likelihood of slipping. Proper dust control measures can eliminate the airborne dust generated during work operations.

PERSONAL PROTECTIVE EQUIPMENT

The following personal protective equipment shall be worn during drilling and soil sampling operations.

Tyvek coveralls (uncoated) optional
Nitrile or neoprene gloves
Rubber/neoprene safety boots or leather safety shoes with boot covers
Eye protection
Hard hat
Ear plugs or muffs. Hearing protection shall be worn when noise levels exceed 85 dBA. If verbal communication with a person two feet away requires one to raise his/her voice to be heard, the level of background noise will usually be greater than 85 dBA.
Half- or full-face respirators with organic vapor-HEPA cartridges (color coded yellow and magenta) shall be available for all members of the field team. If sufficient dust control can not be maintained, the respirators shall be donned.

The above guidelines shall also be followed by personnel involved with handling the soil during excavation and transport of the contaminated soil.

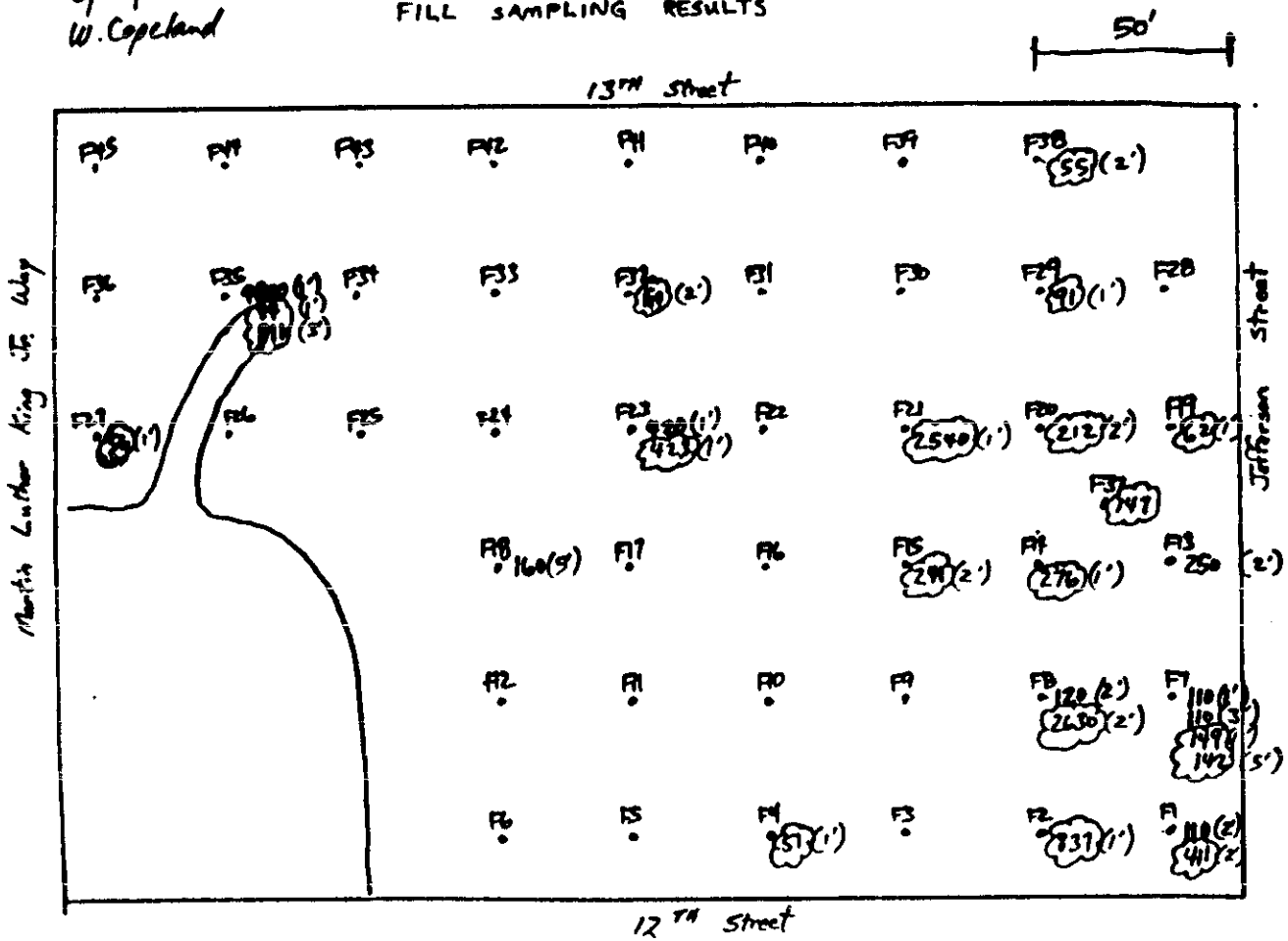
DECONTAMINATION

Personnel shall follow the decontamination procedures outlined in HS-512 (attached).

6-28-90
PS/WCC

6/26/90
W. Copeland

CITY CENTER GARAGE II
FILL SAMPLING RESULTS



(Note, F21 = 2540 ppm)

{423} = total Pb > 50 ppm (depth in parentheses)
250 = Oil and Grease > 100 ppm

Notes:

① Lead concentrations exceeding 1000 ppm would generally be considered hazardous was

② 4800 ppm oil & grease concentration reported F35 would require treatment prior to posal in any local landfill.

③ Test results are preliminary.

512.1 Personnel Decontamination

512.2 Purpose

Personnel engaged in investigations of sites for hazardous materials can become contaminated in several ways, including being splashed with liquid chemical products or contaminated water while drilling, developing, testing, and sampling wells; handling chemical wastes, contaminated soil or water, or contaminated equipment; walking on contaminated soil or through contaminated surface water; and contact with chemical vapors, dusts, fumes, and mists. Although protective clothing helps prevent the wearer from becoming contaminated, contamination can occur. Decontamination reduces dermal exposure time. It also prevents hazardous materials from being transferred from protective clothing to wearer and to clean areas where unprotected individuals could be exposed.

Decontamination consists of removing contaminated clothing and washing the skin to remove contaminants. How extensive the decontamination process must be depends primarily on the types of contaminants and the nature of on-site activities planned. As the toxicity of the contaminants and the magnitude of potential contamination of personnel increases, the decontamination process becomes increasingly more extensive and thorough. This operating procedure describes decontamination processes for Level C operations. Procedures for Level B operations must be developed on a site-by-site basis. Level D protection is permitted only in areas where no exposure is anticipated; hence, no decontamination is required.

512.3 Responsible Authority

Decontamination operations at each hazardous waste site shall be supervised by the Site Safety Officer (See Section 2.0 for Site Safety Officer qualifications).

512.3 Decontamination Procedures

512.3.1 Equipment Worn

- One-piece, hooded, chemical-resistent splash suit (example: polyethylene- or Saranex-coated Tyvek coverall)
- Full-face respirator with cannister or cartridges
- Hard hat
- Chemical-resistant safety boots with or without boot covers

- Inner and outer gloves

§12.3.2 Decontamination Facility Set-up.

The decon facility should have a minimum of four stations: (1) segregated equipment drop station, (2) coverall, boot, and glove wash and rinse station, (3) coverall and outer glove removal station, and (4) respirator, boots, and inner glove removal station. Figure §13-1 shows the arrangement of these stations.

512.3.3 Station 1 - Segregated Equipment Drop

Deposit equipment used in the exclusion zone (e.g. tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on a plastic drop cloth or in plastic-lined containers.

512.3.4 Station 2 - Boot Wash and Rinse

Step into the first container of decontamination solution and scrub bottom and sides of boots up to taped area to remove gross contamination. After boots have been scrubbed, step into the second container of decontamination solution and repeat the washing process. Finally, step into container of rinse water and rinse boots thoroughly. Proceed to Station 3.

512.3.5 Station 3 - Outer Glove Wash and Rinse

Place gloved hands in container of decontaminatin solution and wash gloves. Use a brush if necessary. After washing the gloves, place hands in container of rinse water and rinse gloves thoroughly. This station and Station 2 may be combined into one station if protective equipment is not grossly contaminated.

512.3.6 Station 4 - Coverall and Outer Glove Removal

If used, remove tape from legs and wrists as well as from coverall zipper. Then, remove coverall and gloves in that order. Care must be taken to prevent transfer of contaminants from coverall to underclothes. Transfer can be minimized by rolling or folding the coverall as it is being removed so that the coverall is turned inside-out. Place tape, coveralls, and outer gloves in the plastic-lined receptacle provided at this station.

S12.3.7 Station 5 - Respirator, Boot, and Inner Glove Removal

Remove respirator and boots and place them in receptacles provided at this station. Remove inner gloves and discard in receptacle provided.

S12.3.8 Station 6 - Hand and Face Wash and Street Shoe Donning

Wash, rinse, and dry hands and face, then don street shoes. If highly toxic, corrosive, or skin absorbable chemicals are known to be present, a shower facility should be set-up in the support area and personnel required to shower before leaving the site.

S12.4 Level of Protection for Decontamination Personnel

Personnel assisting in the decontamination process must wear the same personal protective equipment worn by personnel being decontaminated.

S12.5 Decontamination Solution

A decontamination solution should be capable of removing or converting to a harmless substance the contaminant of concern without harming the object being decontaminated. The preferred solution is a mixture of detergent and water, which is a relatively safe option compared to chemical decontaminants. A solution recommended for decontaminating boots and gloves consists of 1 to 1.5 tablespoons of Alconox per gallon of warm water. Skin surfaces should be decontaminated by washing with hand soap and water. The decontamination solution must be changed when it no longer foams or when it becomes extremely dirty. Rinse water must be changed when becomes discolored, begins to foam, or when the decontamination solution cannot be removed

S12.6 Decontamination Equipment and Supplies

- 1-2 Plastic drop cloths, minimum thickness of 3 mills and minimum size of 9 x 12 feet.
- 4-7 Containers, 30-50 gallon capacity (galvanized tub, stock tank, or childrens wading pool), for washing and rinsing.
- 1-2 Receptacles (drums or plastic trash cans) for receiving contaminated disposable equipment and trash.
- 1-2 55-gallon drums for storage of contaminated wash and rinse water.
- Plastic bags of different sizes for temporary storage of contaminated equipment

and for lining trash receptacles.

- 2-4 Long-handled soft bristled brushes (e.g. toilet brush).
- 3-4-inch diameter plastic pipe or 4x4-inch timber to raise edges of drop cloth to contain contaminated wash and rinse water spilled during decontamination. Other methods may be used.
- Detergent (e.g. Alconox)
- Hand soap
- Fresh water
- Paper towels for drying hands, face and equipment.
- Chairs or benches for personnel to sit on while removing boots.
- Shower facility with lockers (optional)

Hazardous Waste Management Practice
Health and Safety Manual

FORM HS-507

SITE SAFETY PLAN*

FIELD INVESTIGATION OF UNDERGROUND FUEL SPILLS

Reviewed by E.M. 6-28-90

ADMINISTRATIVE INFORMATION

Project No. 8910155A Project Name City Center Garage II

Project Manager George Ford Business Unit NOG Geotechnical

SSO William Copeland HSO Eric Masamori

Date of Issue 6-28-90 Effective Dates 7-2-90 through 10-2-90

Proposed Starting Date 7-2-90

SITE INFORMATION

Location: Block bounded by 12th, 13th, Jefferson, M. L. King, Oakland

Pertinent History: Parking lot with prior history of automotive service businesses in northeast and southwest corners. Adjacent lot on north side has known low-level gasoline contamination in soil.

Material(s) Spilled: None known.

FIELD ACTIVITIES

1) Drill 12 soil borings, depth 25-30 feet
2) Install 3 monitoring wells, depth 35 feet
3) Excavate 7 test pits, depth 5 feet
4) Remove and dispose of contaminated soil

EMERGENCY TELEPHONE NUMBERS

Fire Dept. 911 Project Mgr. Day 874-3203 Eve. 383-5841

Ambulance 911 HSO Eric Masamori 874-3283

Hospital Merritt/Peralta 420-6116

* Must be used with Operating procedure HS-507

FORM HS-507
SITE SAFETY PLAN*
FIELD INVESTIGATION OF UNDERGROUND FUEL SPILLS

HOSPITAL NAME, ADDRESS, & ROUTE

Name: Merritt/Peralta Address: 30th and Telegraph, Oakland

Route: 14th Street to Broadway, left on Broadway 1 block, left on Telegraph, straight up Telegraph to 30th Street

AUTHORIZED FIELD PERSONNEL

William Copeland
Peter Solberg
George Ford
Tom Sawyer

NAME OF SUBCONTRACTORS (Field Work)

Name: Enseco Environ. Telephone No. 415-659-0404

Address: 42475-A Osgood Road, Fremont, CA 94539

Authorized Representative: Mr. Steve Stone

Name: [signature] Telephone No.

Address:

Authorized Representative: Cam Whitty Tim Collett

APPROVALS

[signature: George A. Ford] June 8, 1989
Project Manager Date

[signature: Eric Masamori] 8 June 1989, amended 6/28/90
HSO Date

CHSO* Date

* Signature required only for modified plans.

OPERATING PROCEDURE NO. HS-507

507.0 Procedures for Field Investigations of Underground Spills of Gasoline and Other Petroleum Distillate Fuels

507.1 Purpose

The purpose of this procedure is to establish sound and uniform health and safety procedures and guidelines for field operations associated with investigations of leakage of petroleum hydrocarbon fuels from underground storage tanks and pipes.

507.2 Scope

This procedure identifies the kinds of fuels and field activities to which it applies, assesses the hazards of fuels, and describes risk control measures.

507.3 Applicability

This procedure applies to (1) collection of samples of surface and subsurface soil, (2) construction, completion, and testing of groundwater monitoring wells, (3) collection of water samples from new and existing wells, and observing removal of underground fuel pipes and storage tanks at facilities that currently dispense or store (1) leaded gasoline (2) unleaded gasoline, (3) gasahol, (4) Numbers 1, 1D, 2, 2D, 4, 5, or 6 fueled oils, (5) Numbers 3, 4, or 5 jet fuel, and/or (6) used crankcase oil.

This procedure shall not be used for confined space entry (including entering trenches) or for installing or operating pilot and full-scale fuel recovery systems. It is also not applicable to field work performed at refineries, sites where spills of chemicals other than the substances listed above have occurred, and any other site or activity identified by the business unit HSO.

507.4 Responsibility and Authority

The Project Manager (PM) has overall responsibility for safe conduct of all field work, including ensuring full implementation of this procedure by project staff and subcontractors assisting with field work. The PM shall assign a Site Safety Officer (SSO) to attend to day-to-day health and safety matters in the field or, if qualified, may elect to serve as SSO. The SSO must be on site whenever work by employees of WCC or its subcontractors is being performed at the site. Both the PM and SSO are authorized to suspend work when working conditions become too hazardous and to remove from the site any WCC and subcontractor employee whose conduct endangers the health and safety of the employee or of others.

507.5 Hazard Evaluation

Petroleum distillate fuels are mixtures of aliphatic and aromatic hydrocarbons. The predominant types of compounds in fuels are paraffins (e.g., pentane hexane), naphthenes (e.g., cyclohexane) and aromatics (e.g., benzene, toluene, polynuclear aromatics). Gasoline contains about 80 percent paraffins, 6 percent naphthenes, and 14 percent aromatics. JP-1 and 4 contain up to 48 percent paraffin, 38 percent naphthenes, and 20 percent aromatics. Fuel oils and certain jet fuels (JP-3 and 5) contain about 10 percent parafin, up to 23 percent naphthenes, and up to 78 percent non-volatile aromatic hydrocarbons. Gasahol is gasoline containing 10 to 40 percent ethyl alcohol. To improve their burning properties, compounds such as tetraethyl-lead and ethylene dibromide are often added to automotive and aviation fuels.

Petroleum distillate fuels exhibit relatively low acute inhalation and dermal toxicity. Concentrations of 160 to 270 ppm gasoline vapor have been reported to cause eye, nose, and throat irritation in people after several hours of exposure. Levels of 500 to 900 ppm have been reported to cause

irritation and dizziness in one hour and 2,000 ppm has been reported to cause mild anesthesia in 30 minutes. Gasoline, kerosene, and some jet fuels will cause severe eye irritation on contact with the eye and low to moderate skin irritation on contact with the skin.

Ingestion of 10 to 15 grams (2 to 3 teaspoons) of gasoline has caused death in children. In adults, ingestion of 20 to 50 grams may produce severe symptoms of poisoning. Secondary pneumonia may occur (if gasoline or other fuels are aspirated passed into the lungs) upon ingestion.

Some gasoline additives, such as ethylene dichloride, ethylene dibromide, and tetraethyl- and tetramethyl-lead are highly toxic materials; however, their concentrations in gasoline are so low that their contribution to the overall toxicity of gasoline is negligible in most instances.

Petroleum distillate fuels are flammable. Under certain conditions, this property presents a greater risk than toxicity. Five of the 13 substances covered by this procedure are classified by the Federal Department of Transportation as flammable liquids as all five have flash points of 100 degrees F or less. These fuels are gasoline, gasahol, JP-1, JP-4, and No. 1 fuel oil. Lower explosive limits of the 12 fuels range from 0.6 to 1.4 percent (6,000 to 14,000 ppm).

507.4 Health and Safety Requirements

507.6.1 Health and Safety Clearance

WCC employees as well as subcontractor employees assigned to perform field activities covered by this procedure must have active health and safety clearance statuses, which mean that during the past 12 months, they have been cleared by a physician to wear respirators and perform their field assignments and have satisfied health and safety training requirements specified in 29 CFR 1910.120(e).

507.6.2 Health and Safety Briefing

Before field work begins, all field personnel, including subcontractor employees, must be briefed on their work assignments and the provisions of this procedure, and each person briefed must be given a copy of this document and each must acknowledge receipt and willingness to comply by submitting a signed safety compliance agreement to the WCC Project Manager. Individuals refusing to sign the agreement will be prohibited from working at the site.

507.6.3 Personal Protective Equipment

Equipment listed below must be available on-site in appropriate sizes for use when needed.

- NIOSH-approved full- or half-face respirator with organic vapor cartridges (color coded black). Respirators must be worn when total airborne hydrocarbon action levels are reached or exceeded (see Section 507.6.5).

- Saranex or polyethylene coated Tyuek coveralls. Coat coveralls must be worn when product quantities of fuel are encountered and when fuel-saturated soil is handled.

- Safety goggles or glasses. Must be worn when working within 10 feet of operating heavy equipment (e.g., drill rig, backhoe). Must be splash-proof when handling concentrated fuel product.

- Nitrile or neoprene gloves. Must be worn when handling contaminated soil or water or drilling or digging into contaminated soil.

- Neoprene or butyl rubber safety boots, calf-length. Must be worn when walking on obviously contaminated soil and when working within 10 feet of operating heavy equipment.

- Hardhat. Must be worn when working within 10 feet of operating heavy equipment.

507.6.4 Explosion Hazard and Evacuation

When measurements with a combustible gas meter (CGM) indicate the presence of combustible gas levels equal o or exceeding the explosivity action level (see Section 507.6.5.2) in the work area, the following action must be taken.

- Extinguish all possible ignition sources in the work area (e.g., shut down electrically and fuel powered motors).

- Move personnel at least 100 feet away from work area

- Leave CGM in work area and return to work area only if CGM alarm goes off and remains off for at least 15 minutes

- Contact Health and Safety Officer (HSO).

- Prepare incident report and submit to HSO.

507.6.5 Vapor Monitoring

507.6.5.1 Monitoring Instruments

The preferred instrument is a combustible gas meter (CGM) with LEL and 0-500 ppm scales calibrated with hexane. If the CGM available for use does not have a ppm scale, a photoionization or flame-ionization meter shall be used in combination with the CGM.

507.6.5.2 Action Levels

The toxicity action levels given below are based on the ACGIH TLV for gasoline of 300 ppm adjusted to comply with the new OSHA benzene standard and are meter readings equivalent to 10 percent of the TLV. Respirators must be worn when meter readings averaged over 15 minutes equal or exceed the action level.

Instrument	Calibration Gas	Action Level (ppm)
Combustible gas meter	Hexane	30
Combustible gas meter	Methane	13
Photoionization meter with 10 to 10.2 eV lamp	Benzene*	6
Photoionization meter with 10 to 10.2 eV lamp	Isobutylene	10
Flame-ionization meter (OVA-128)	Methane	30

*NOTE: Although the calibration gas purchased from HNU is isobutylene, the concentration identified on the cylinder for calibration of HNUs with 10.2 eV lamps is a equivalence.

The explosivity action level is 20 percent of LEL for hexane calibrated CGMs and 47 percent of LEL for methane calibrated CGMs. The CGM alarm must be set to sound at the action level.

507.6.5.3 Monitoring Guidelines

Vapor monitoring should be performed as often as necessary and wherever necessary to protect field personnel from hazardous vapors. Monitoring must be performed by individuals trained in the use and care of the required instruments. Because toxicity action levels are considerably lower than explosivity action levels, monitoring efforts should focus initially on detection of toxic vapors. The presence of explosive levels of gases and vapors should be performed only when gas/vapor concentrations

exceed the ppm range of the monitoring instruments and when explosive levels are expected (e.g., inside tanks and other enclosed spaces).

During drilling operations, vapor emissions may be measured continuously or periodically. If vapors are measured continuously and the instrument must be unattended, the sample intake orifice or, in the case of instruments that operate by diffusion, the detector, must be positioned in a safe place downwind of the borehole and the instrument alarm set to sound at the action level.

If the alarm sounds while monitoring continuously for toxic concentrations, the sample intake orifice/detector should be moved so that vapor concentrations in the breathing zones of individuals closest to the boring are measured. Decisions regarding respirator use should be based on breathing zone vapor concentrations. If the alarm sounds while continuously monitoring fire explosive concentrations. If the alarm sounds while continuously monitoring fire explosive concentrations, initiate shut-down and evacuation procedures immediately. If vapor emissions are measured periodically, they should be measured whenever the boring is open. Measurements may be limited to breathing zone air.

Vapor emissions from trenches should be measured while the trench is being dug. The monitoring instrument should be placed near the backhoe operator and the instrument alarm set at the action level.

507.6.6 Area Control

Access to hazardous and potential hazardous areas of spill sites must be controlled to reduce the probability of occurrence of physical injury and chemical exposure of field personnel, visitors, and the public. A hazardous or potentially hazardous area includes any area where (1) field personnel are required to wear respirators, (2) borings are being drilled with powered augers, or (3) excavating operations with heavy equipment are being performed.

The boundaries of hazardous and potentially hazardous areas must be identified by cordons, barricades, or emergency traffic cones or posts, depending on conditions. If such areas are left unattended, signs warning of the danger and forbidding entry must be placed around the perimeter if the areas are accessible to the public. Trenches and other large holes must be guarded with wooded or metal barricades spaced no further than 20 feet apart and connected with yellow or yellow and black nylon tape not less than 3/4-inches wide. The barricades must be placed no less than two feet from the edge of the excavation or hole.

Entry to hazardous areas shall be limited to individuals who must work in those areas. Unofficial visitors must not be permitted to enter hazardous areas while work in those areas is in progress. Official visitors should be discouraged from entering hazardous areas, but may be allowed to enter only if they agree to abide by the provisions of this document, follow orders issued by the site safety officer, and are informed of the potential dangers that could be encountered in the areas.

507.6.7 Decontamination

Field decontamination of personnel and equipment is not required except when contamination is obvious (visually or by odor). Recommended decontamination procedures follow.

507.6.7.1 Personnel

Gasoline, kerosene, jet fuel, and gasahol should be removed from skin using a mild detergent and water. Hot water is more effective than cold. Liquid dishwashing detergent is more effective than hand soap.

507.6.7.2 Equipment

Gloves, respirators, hardhats, boots and goggles should be cleaned as described under personnel; however, if boots do not become clean after washing with detergent and water, wash then with a strong solution of trisodium phosphate and hot water.

Sampling equipment, augers, vehicle undercarriages, and tires should be steam cleaned. The steam cleaner is a convenient source of hot water for personnel and protective equipment cleaning.

507.6.8 Smoking

Smoking and open flames are strictly prohibited at sites under investigation.

507.6.9 Inerting of Tanks

Whenever WCC personnel must be present during removal or transport of fuel storage tanks, the SSO or designee must determine whether or not the procedures to be used by the firm responsible for tank removal/transport agree with procedures recommended by the American Petroleum Institute (attached). If the firm's procedures, especially those addressing removal/inactivation of flammable vapors, disagree substantially with API's procedures, the PM and HSO must be notified immediately (by telephone if possible). In turn, the PM shall inform the client that WCC personnel will not report to the site during tank removal/transport operations unless proper procedures are used. If the firm responsible for tank removal/transport is under subcontract to WCC, it must be required to follow API procedures.

507.8 Reporting

Form HS-502 must be completed and delivered to the HSO for each accident or incident involving WCC personnel. The form is available from the HSO.

The Site Safety Officer shall prepare a safety completion report after field work has been completed and deliver it to the HSO. The report shall contain an evaluation of the adequacy of the safety plan, summaries of each accident and safety incident, including safety infractions by site personnel (subcontractors included), air quality monitoring data (if collected) and description of decisions based on them, and recommendation for improving safety at similar sites.

OPERATING PROCEDURE NO. HS-510

510.0 Safety Procedures for Trench Construction and Other Excavating Operations

510.1 Purpose

This procedure contains general safety requirements for excavating and trenching operations and work performed therein. The requirements are consistent with standards established by the Occupational Safety and Health Administration (OSHA) and described in 29 CFR 1926, Subpart P. The latter should be consulted for additional information.

510.2 Primary Responsibility

The WCC project manager is responsible for ensuring that employees of WCC and of firms contracted by WCC comply with the requirements.

510.3 Applicability

This procedure is applicable to all WCC projects in which trenching or other excavating operations, exclusive of borings, are performed by WCC personnel or personnel employed by firms under contract to WCC. It is also applicable to WCC projects requiring WCC personnel or personnel of firms under contract to WCC to enter trenches and other types of excavations.

510.4 Requirements

510.4.1 Preliminary Requirements

When planning any excavating operation, obtain a permit, if required, from the proper authority.

Before digging, determine if underground installations, such as sewer, water, fuel, or electrical lines are to be encountered, and if so, determine the exact locations of the lines. Information can be obtained by contacting Underground Service Alert (consult local telephone directory for toll-free number), local utility companies, and the owner of the property on which excavating operations are planned.

Trees, boulders, and other surface encumbrances, located so as to pose a potential hazard to employees must be removed or made safe before the operation begins.

510.4.2 Placement of Excavated Materials

Excavated materials must be placed at least two feet from the edge of the excavation and precautions must be taken to prevent the materials from falling into the excavation.

510.4.3 Working in Excavations

510.4.3.1 Shoring and Sloping

Excavations in which personnel are required to work must be shored or sloped to an angle of repose if the depth of the excavation is five (5) feet or more. When a shoring system is used, it shall consist of hydraulic shores or the equivalent, with sheathing or sheet piling as needed. The shoring system must be properly designed and installed to sustain all existing and expected loads. For details on shoring and sloping, consult 29 CFR, Subpart P, Sections 1926.650 to 1926.653.

510.4.3.2 Access

When work is to be performed in an excavation, safe access to the excavation must be provided by means of ladders, stairs, or ramps. Trenches four or more feet deep must have ladders spaced no less than 25 feet apart, and the ladders must extend at least three feet above grade.

510.4.3.3 Hazardous Atmospheres

At sites where oxygen deficiency or hazardous concentrations of flammable or toxic vapors or gases may be encountered in excavations, the atmosphere in the excavations must be tested by the project safety officer or other qualified person before work in an excavation begins and at appropriate intervals afterward.

510.4.4 Inspection of Excavations

Excavations must be inspected daily by the project or site safety officer. If no safety officer has been assigned to the project, inspections must be made by the project manager. If evidence for potential caveins or slides is apparent, all work in the excavation must be suspended until necessary steps have been taken to safeguard employees.

510.4.5 Operation of Vehicles Near Excavations

When vehicles or heavy equipment must operate near an excavation, the sides of the excavation must be shored or braced as necessary to withstand forces exerted by the superimposed load. Stop logs or other types of secure barriers must be installed at the edges of the excavations.

510.4.6 Bell-Bottom Pier Holes

Employees working in bell-bottom pier holes must be protected by a substantial casing that extends the full depth of the shaft. The employees must wear a shoulder harness secured to a full-time tended lifeline.

510.4.7 Bridges and Walkways

Walkways or bridges with standard guardrails must be provided where employees or equipment are required or permitted to cross over excavations. Pedestrian walkways shall be of sufficient strength to permit a vertical deflection of no more than 0.5 inch when a 250-pound weight is applied to the center of the walkway. All bridges intended for vehicular traffic must be constructed to withstand twice the load of the heaviest vehicle expected.

510.4.8 Barricades and Fences

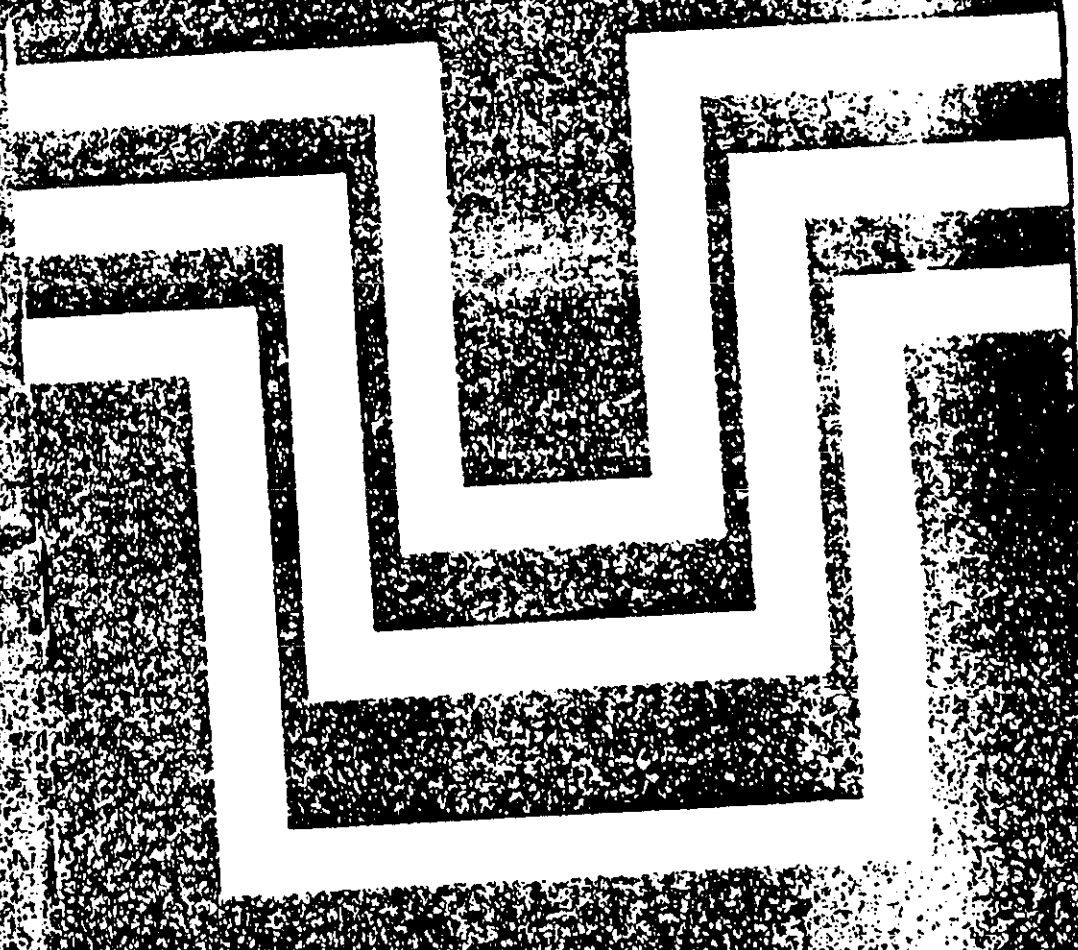
Excavated areas must be completely guarded on all sides with barricades or fences, as appropriate. If barricades are used, they must be spaced no more than 20 feet apart and shall not be less than 35 inches high when erected. A yellow or yellow and black tape, at least 0.75 inches wide, shall be stretched between the barricades.

510.4.9 Backfilling

Excavated areas must be backfilled as soon as practical after work is completed, and all associated equipment must be removed from the area.

Excavating and Trenching Operations

U.S. Department of Labor
Occupational Safety and Health Administration
1995 (Revised)
OSHA 2226



U.S. Department of Labor
William E. Brock, Secretary

Occupational Safety and Health Administration
Patrick R. Tyson, Acting Assistant Secretary
1985 (Revised)

OSHA 2226

A Word About OSHA

The Occupational Safety and Health Act of 1970 was adopted by Congress ". . . to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources." While strict compliance with the OSHA standards will help ensure a good level of safety and health on the job, those standards can prescribe only minimum requirements for all the workplaces they cover.

What finally makes workplace safety and health a reality is a diligent and committed management and workforce operating as a team, dedicated to sound health and safety education and training and good work habits.

The High Cost of Cave-ins

Excavation and trenching cave-ins result in more than one hundred fatalities annually in the United States. With little or no warning, an unsupported, improperly-shored or sloped trench or excavation wall can collapse, trapping workers below in seconds. For each fatality there are an estimated fifty related serious injuries annually. In addition to human losses due to excavating and trenching accidents, the financial costs can be staggering—property damage, work stoppage, and workers' compensation among others.

Planning for Safety

Most on-the-job problems and accidents are a direct result of inadequate planning when preparing the bid. Correcting mistakes in shoring and/or sloping after work has begun slows down the operation, adds to the cost, and increases the possibility of an excavation failure. The contractor should build safety into the pre-bid planning in the same way all of the other pre-bid factors are considered.

It is a good idea for contractors to develop safety checklists, prior to working up a bid, to make certain that there is adequate information about the jobsite and that all needed items are on hand.

Before preparing a bid these specific conditions should be taken into account:

- Traffic,
- Nearness of structures and their conditions,
- Soil,
- Surface and ground water,
- The water table,
- Overhead and underground utilities, and
- Weather.

These and other conditions can be determined by jobsite studies, observations, test borings, and consultations with local officials and utility companies. Underground installations—sewer, telephone, water, fuel and electric lines—that may be encountered in the digging must be located. If underground installations are uncovered, OSHA regulations require that they be properly supported. The contractor must contact the utility companies involved and inform them of the proposed work before starting the trench or excavation.

Once all the necessary specific information about the jobsite is ascertained, the contractor is ready to determine the amount, kind and cost of the safety equipment needed. A careful inventory of the safety items on hand must be made before deciding what additional safety material must be acquired. No matter how many trenching, shoring and backfilling jobs have been done in the past, each job should be approached with the utmost care and preparation.

Before Beginning the Job

It is important, before beginning the job, for the contractor to establish a safety and health policy. It should be put in writing or made verbal and should reflect the contractor's own attitude toward jobsite safety.

To be sure safety policies are implemented effectively, there must be cooperation from supervisors; employee groups, including unions; and individual employees. Each supervisor must understand the degree of responsibility and authority he or she holds in a particular area. For effective labor support, affected unions should be notified of construction plans and asked to cooperate.

Before beginning work, employees should be taught to recognize hazards and safety precautions they must take. No employee should operate a piece of equipment without first being trained properly to handle it and fully alerted to its potential hazards.

Once the job gets underway, it will be important for the contractor to be kept informed of the safety aspects of the work as well as the work progress in general. Therefore, in the planning stages it will be necessary to incorporate procedures for fast notification and investigation of accidents.

On-the-Job Follow-up

Follow-up involves a series of inspections to detect hazards and correct jobsite situations before cave-ins or other accidents occur. Receiving daily reports, acting on these reports, and making personal visits to the jobsite will help to ensure that everyone is meeting job safety responsibilities.

Larger and more complex operations should have a full-time safety official who makes recommendations to improve the implementation of the safety plan. In a smaller operation, the safety official may be part-time and probably will be a supervisor.

Supervisors are the contractor's representatives on the job. Supervisors should conduct inspections, investigate accidents and anticipate hazards. They should be responsible for meeting on-the-job employee safety training and education needs. It should also be their responsibility to take precautions to guard against potential hazards, get the necessary worker cooperation in safety matters, and make frequent reports to the contractor.

Leadership by example is more necessary in safety than in almost any other field of jobsite activity. It is essential that every manager, regardless of status, wear safety shoes, safety glasses, a hard hat and any other prescribed gear when visiting the jobsite.

Employees must also take an active role in job safety. The contractor and supervisor should make certain that the workers have had proper training in the use of the prescribed protective gear and equipment, that they are indeed wearing and using the equipment correctly, and that they are using safe work practices.

On-site Safe Practices

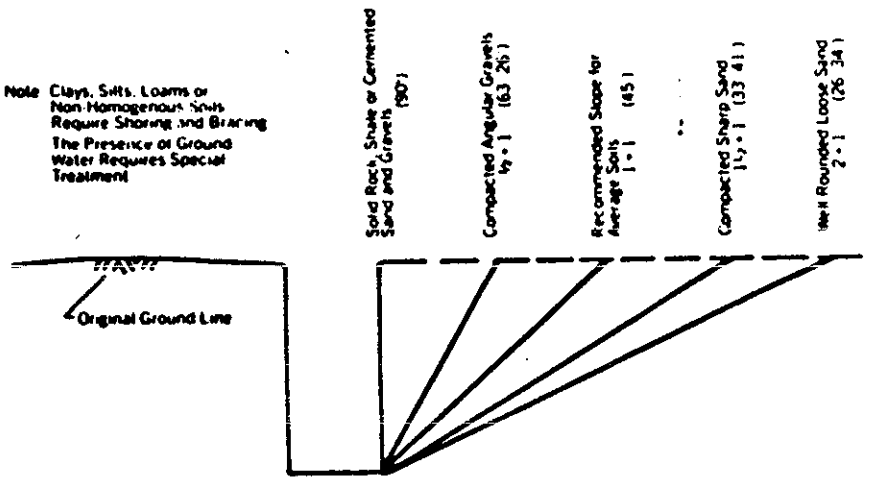
According to the OSHA construction safety and health standards, a trench is referred to as a narrow excavation in which the depth is greater than the width, although the width is not greater than 15 feet. An excavation is any mechanically-made cavity or depression in the earth's surface. This can include excavations for anything from cellars to highways.

OSHA requires that, in all excavations, employees exposed to danger from moving ground shall be protected by a shoring system, sloping of the ground, or some other equivalent means.

In addition, OSHA requires that all trenches over 5 feet deep in either hard and compact or soft and unstable soil be sloped, shored, sheeted, braced or otherwise supported and that trenches less than 5 feet in depth also be effectively protected when hazardous ground movement may be expected.

One method of ensuring the safety and health of workers in a trench or excavation is to slope the sides of the cut to the "angle of repose," the greatest angle above the horizontal plane at which a material will lie without sliding. The angle of repose varies with different kinds of soil, and must be determined on each individual project. When an excavation has water conditions, silty material or loose boulders, or when it is being dug in areas where erosion, deep frost, or slide planes are apparent, the angle of repose must be flattened. (See figure 1.)

Figure 1.



APPROXIMATE ANGLE OF REPOSE FOR SLOPING OF SIDES OF EXCAVATIONS

A second method of protection is shoring-sheeting which can be either tightly placed timber shores, bracing, trench jacks, piles, or other materials installed in a manner strong enough to resist the pressures surrounding the excavation. (See figure 2.)

Contractors also may use a trench shield, a prefabricated movable structure composed of steel plates welded to a heavy steel frame. Timber, aluminum or other suitable construction may also be used. OSHA standards permit the use of a trench shield (also known as a welder's hut) as long as the protection it provides is equal to or greater than the protection that would be provided by the appropriate shoring system. (See figure 3.)

Designing Adequate Protection

Designing a support system is a complex operation because of the number of factors involved. Some of the considerations the contractor must take into account are:

- Soil classification,
- Depth of cut,
- Water content of soil,
- Changes due to weather and climate,
- Superimposed loads,
- Vibrations, and
- Other operations in the vicinity.

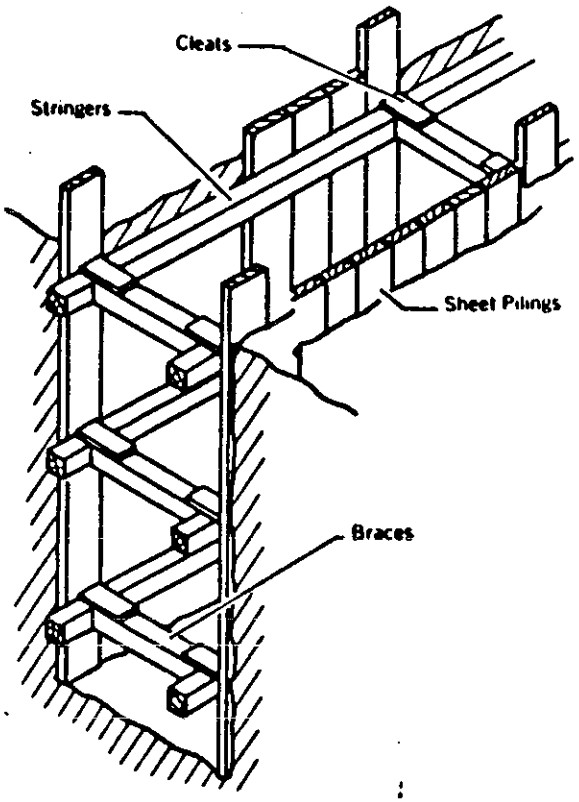
Soil Classification

The type(s) of soil must be identified to determine proper protective measures. Excavations in wet soil, sandy soil, or areas that have been backfilled, are relatively unstable and must have strong support. Even hard rock sometimes can be hazardous; faults in the strata can make it unstable when cut.

Weather Conditions

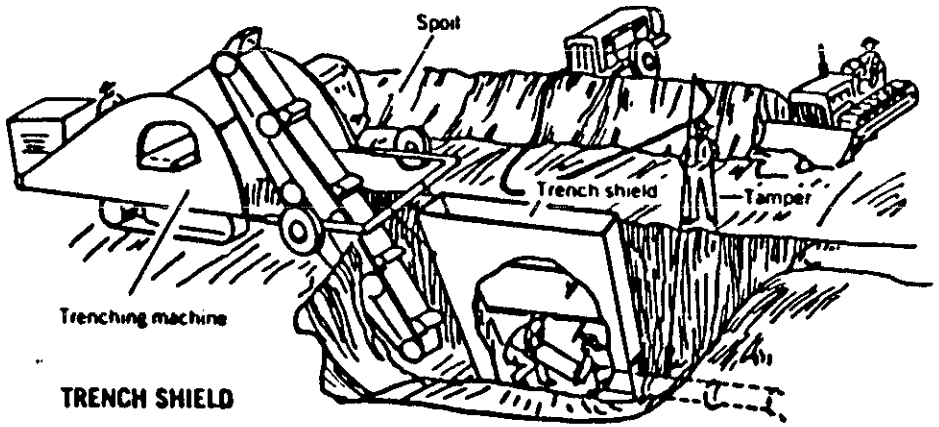
Changing weather conditions and climate also greatly affect how strong a shoring system must be. Excess water from rain or melting snow loosens the soil, drastically increasing the pressure on the shoring system. A rainstorm can turn a stable trench side that required only light bracing into a mass of loose soil, posing an immediate threat to the employees working within. Shoring frozen ground presents another potential problem—a sudden thaw can undermine an entire section of shoring. Even excessively dry conditions can reduce the cohesiveness of the soil.

Figure 2.



ONE EXAMPLE OF SEVERAL TYPES OF SHEETING

Figure 3.



TRENCH SHIELD

Large excavations, in particular, are subject to changing weather conditions because they are generally open for longer periods of time than are trenches. Shoring for these excavations should provide long-range protection for a variety of weather conditions. In some cases, additional precautions are necessary to protect excavation sides or faces, such as covering them with plastic sheeting or spraying the soil bank with a moisture-limiting chemical.

Superimposed Loads

Superimposed loads in the vicinity of a trench or excavation increase the pressure on excavation faces. Heavy equipment and materials such as pipes or timbers should be kept as far back from the excavation as possible. When heavy loads must be located near an excavation, the walls must be braced, sheet-piled, or shored to safely support the extra weight. In some cases, it may be necessary to lessen the pressure of these loads. Pile drivers or cranes, for example, should be mounted on wooden mats or heavy planking to spread the weight more evenly.

Buildings, curbs, trees, utility poles, and other structures adjoining the excavation area also can place more stress on a trench side than it can safely accommodate. In these instances, OSHA requires that shoring, bracing, or underpinning be provided as necessary to protect workers. This will also prevent the dislocation of the soil beneath the structures in the vicinity.

In addition, spoil, the excavated material, can exert great pressure on the excavation walls. Spoil must be stored 2 feet or more from the edge of the excavation, and be retained in an effective manner.

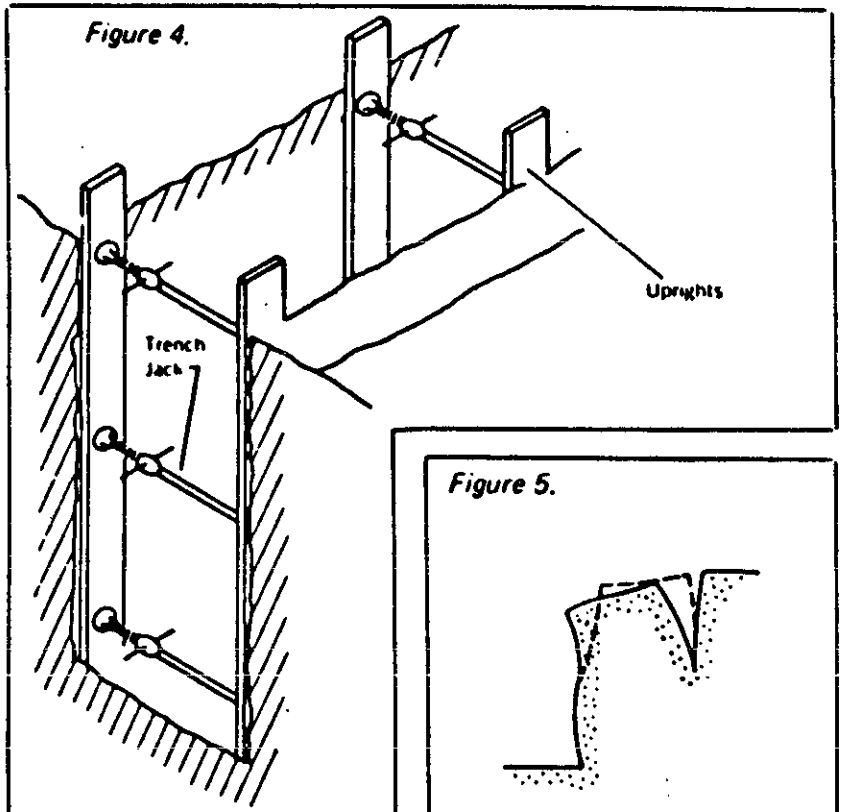
Vibrations

Vibrations or sudden shock from passing vehicles or railways, blasting, equipment such as trucks or pile drivers, and some tools can contribute to cave-ins by loosening the soil. Even machines operated in nearby buildings, such as punch presses, can create enough vibration to endanger a shoring system. If these conditions exist near an excavation site, stronger support is vital.

Installing the Protection

Whatever support system is used, workers should always apply shoring by starting from the top of the trench or excavation and working down. In installing the shoring, care must be taken to

Figure 4.



TRENCH JACKS IN TRUE HORIZONTAL POSITION AND SPACED VERTICALLY

Figure 5.

AVOID DANGEROUS OVERHANGS!

place the cross beams or trench jacks in the true horizontal position and to space them vertically at appropriate intervals. The braces also must be secured to prevent sliding, falling or kickouts. (See figure 4.)

All materials used for shoring must be in good condition, free of defects, and of the right size. Timber with large or loose knots should not be used.

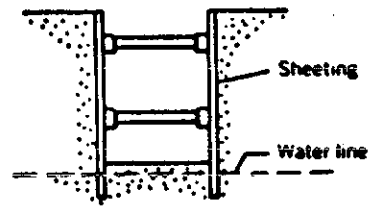
Installation of the shoring should closely follow the excavation work. The longer a trench is left unsupported, the greater the chance of a cave-in. (See figure 5.) Even if no work is being done in them, dirt walls will slough off, causing dangerous overhangs.

Special Precautions

Sometimes the contractor will have to guard against an unstable excavation bottom, such as when working below the water line. Sheeting may have to be driven below the bottom of such an excavation to add to the soil stability. (See figure 6.)

OSHA standards require that diversion dikes and ditches or other suitable means be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water causes soil erosion and softening and should not be allowed to accumulate in a trench or excavation.

Figure 6.



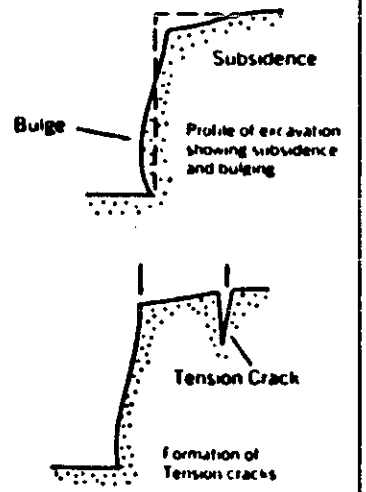
EXCAVATION BOTTOM BELOW WATER LINE

SHEETING SHOULD BE DRIVEN BELOW BOTTOM

Inspections

Shoring systems must be inspected daily by a competent person. Inspections also are required after rainstorms or any change in conditions that can increase the possibility of a cave-in or slide. If dangerous ground movements are apparent, such as subsidence or tension cracks, all work in the excavation must be stopped until the problem has been corrected. (See figure 7.)

Figure 7.



WHEN SUBSIDENCE OR TENSION CRACKS ARE APPARENT-STOP ALL WORK AND CORRECT PROBLEM

Quick Exits

In case of an emergency, workers must be able to leave the trench quickly. According to OSHA regulations, when employees are required to be in trenches 4-feet deep or more, adequate means of exit, such as a ladder or steps, must be provided and located so as to require no more than 25 feet of lateral travel.

After the Work Is Completed

As soon as work is completed, the trench should be backfilled as the shoring is dismantled. After the trench has been cleared, workers should remove the shoring from the bottom up,taking care to release jacks or braces slowly. In unstable soil, ropes should be used to pull out the jacks or braces from above.

Remember

OSHA regulations for trenching and excavation work leave no room for risk-taking; they require that safe working conditions be provided for all employees working in excavations.

A greater awareness of the safety problems to be overcome in excavations—on the part of the employer who designs the protection and the employee who installs it—will help end cave-in hazards in construction.

For More Information

Regulations for excavating, trenching, and shoring are contained in Subpart P, Part 1926 of the Code of Federal Regulations. (See Appendix.) Other OSHA construction standards may also appiy.

Part 1926 covers the safety and health regulations for construction. Copies of the complete set of OSHA standards for construction may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Ask for *Construction Industry : Part 1926/1910* (OSHA 2207).

Additional information on trenching and excavation may be obtained from the OSHA office nearest you.

Subpart P—Excavations, Trenching, and Shoring

1926.650—General protection requirements.

(a) Walkways, runways, and sidewalks shall be kept clear of excavated material or other obstructions and no sidewalks shall be undermined unless shored to carry a minimum live load of one hundred and twenty-five (125) pounds per square foot.

(b) If planks are used for raised walkways, runways, or sidewalks, they shall be laid parallel to the length of the walk and fastened together against displacement.

(c) Planks shall be uniform in thickness and all exposed ends shall be provided with beveled cleats to prevent tripping.

(d) Raised walkways, runways, and sidewalks shall be provided with plank steps on strong stringers. Ramps, used in lieu of steps, shall be provided with cleats to insure a safe walking surface.

(e) All employees shall be protected with personal protective equipment for the protection of the head, eyes, respiratory organs, hands, feet, and other parts of the body as set forth in Subpart E of this part.

(f) Employees exposed to vehicular traffic shall be provided with and shall be instructed to wear warning vests marked with or made of reflectorized or high visibility material.

(g) Employees subjected to hazardous dusts, gases, fumes, mists, or atmospheres deficient in oxygen, shall be protected with approved respiratory protection as set forth in Subpart D of this part.

(h) No person shall be permitted under loads handled by power shovels, derricks, or hoists. To avoid any spillage employees shall be required to stand away from any vehicle being loaded.

(i) Daily inspections of excavations shall be made by a competent person. If evidence of possible cave-ins or slides is apparent, all work in the excavation shall cease until the necessary precautions have been taken to safeguard the employees.

1926.651—Specific excavation requirements.

(a) Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

(b) Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.

(c) The walls and faces of all excavations in which employees are exposed to danger from moving ground shall be guarded by a shoring system, sloping of the ground, or some other equivalent means.

(d) Excavations shall be inspected by a competent person after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased if necessary.

(e) The determination of the angle of repose and design of the supporting system shall be based on careful evaluation of pertinent factors such as: Depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, overlying material, or stored material; and vibration from equipment, blasting, traffic, or other sources.

(f) Supporting systems, i.e., piling, cribbing, shoring, etc., shall be designed by a qualified person and meet accepted engineering requirements. When tie rods are used to restrain the top of sheeting or other retaining systems, the rods shall be securely anchored well back of the angle of repose. When tight sheeting or sheet piling is used, full loading due to ground water table shall be assumed, unless prevented by weep holes or drains or other means. Additional stringers, ties, and bracing shall be provided to allow for any necessary temporary removal of individual supports.

(g) All slopes shall be excavated to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting.

(h) The angle of repose shall be flattened when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.

(i) (1) In excavations which employees may be required to enter, excavated or other material shall be effectively stored and retained at least 2 feet or more from the edge of the excavation.

(2) As an alternative to the clearance prescribed in subparagraph (1) of this paragraph, the employer may use effective barriers or other effective retaining devices in lieu thereof in order to prevent excavated or other materials from falling into the excavation.

(j) Sides, slopes, and faces of all excavations shall meet accepted engineering requirements by scaling, benching, barricading, rock bolting, wire meshing, or other equally effective means. Special at-

tention shall be given to slopes which may be adversely affected by weather or moisture content.

(k) Support systems shall be planned and designed by a qualified person when excavation is in excess of 20 feet in depth, adjacent to structures or improvements, or subject to vibration or ground water.

(l) Materials used for sheeting, sheet piling, cribbing, bracing, shoring, and underpinning shall be in good serviceable condition, and timbers shall be sound, free from large or loose knots, and of proper dimensions.

(m) Special precautions shall be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation or a fill, particularly when the separation is less than the depth of the excavation. Particular attention also shall be paid to joints and seams of material comprising a face and the slope of such seams and joints.

(n) Except in hard rock, excavations below the level of the base of footing of any foundation or retaining wall shall not be permitted, unless the wall is underpinned and all other precautions taken to insure the stability of the adjacent walls for the protection of employees involved in excavation work or in the vicinity thereof.

(o) If the stability of adjoining buildings or walls is endangered by excavations, shoring, bracing, or underpinning shall be provided as necessary to insure their safety. Such shoring, bracing, or underpinning shall be inspected daily or more often, as conditions warrant, by a competent person and the protection effectively maintained.

(p) Diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water shall not be allowed to accumulate in an excavation.

(q) If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above and near an excavation, the side of the excavation shall be sheet-piled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.

(r) Blasting and the use of explosives shall be performed in accordance with Subpart U of this part.

(s) When mobile equipment is utilized or allowed adjacent to excavations, substantial stop logs or barricades shall be installed. If possible, the grade should be away from the excavation.

(t) Adequate barrier physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

(u) If possible, dust conditions shall be kept to a minimum by the use of water, salt, calcium chloride, oil, or other means.

(v) In locations where oxygen deficiency or gaseous conditions are possible, air in the excavation shall be tested. Controls, as set forth in Subparts D and E of this part, shall be established to assure acceptable atmospheric conditions. When flammable gases are present, adequate ventilation shall be provided or sources of ignition shall be eliminated. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, basket stretcher, etc., shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.

(w) Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.

(x) Where ramps are used for employees or equipment, they shall be designed and constructed by qualified persons in accordance with accepted engineering requirements.

(y) All ladders used on excavation operations shall be in accordance with the requirements of Subpart L of this part.

1926.652—Specific trenching requirements.

(a) Banks more than 5 feet high shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. Refer to Table P-1 as a guide in sloping of banks. Trenches less than 5 feet in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement may be expected.

(b) Sides of trenches in unstable or soft material, 5 feet or more in depth, shall be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect the employees working within them. See Tables P-1, P-2 (following paragraph (l) of this section).

(c) Sides of trenches in hard or compact soil, including embankments, shall be shored or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each ½-foot horizontal. When the outside diameter of a pipe is greater than 6 feet, a bench of 4-foot minimum shall be provided at the toe of the sloped portion.

(d) Materials used for sheeting and sheet piling, bracing, shoring, and underpinning, shall be in good serviceable condition, and timbers used shall be sound and free from large or loose knots, and

shall be designed and installed so as to be effective to the bottom of the excavation.

(e) Additional precautions by way of shoring and bracing shall be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

(f) Employees entering bell-bottom pier holes shall be protected by the installation of a removable-type casing of sufficient strength to resist shifting of the surrounding earth. Such temporary protection shall be provided for the full depth of that part of each pier hole which is above the bell. A lifeline, suitable for instant rescue and securely fastened to a shoulder harness, shall be worn by each employee entering the shafts. This lifeline shall be individually manned and separate from any line used to remove materials excavated from the bell footing.

(g) (1) Minimum requirements for trench timbering shall be in accordance with Table P-2.

(2) Braces and diagonal shores in a wood shoring system shall not be subjected to compressive stress in excess of values given by the following formula:

$$S = 1300 - \frac{20L}{D}$$

$$\text{Maximum ratio } \frac{L}{D} = 50$$

Where:

L = Length, unsupported, in inches.

D = Least side of the timber in inches.

S = Allowable stress in pounds per square inch of cross-section.

(h) When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps shall be provided and located so as to require no more than 25 feet of lateral travel.

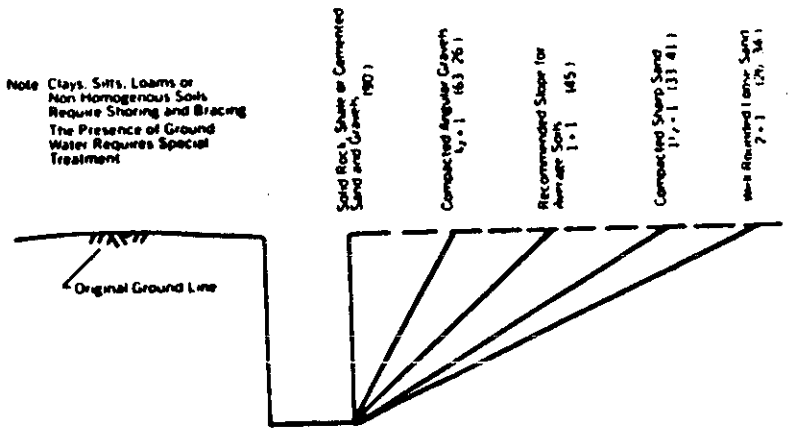
(i) Bracing or shoring of trenches shall be carried along with the excavation.

(j) Cross braces or trench jacks shall be placed in true horizontal position, be spaced vertically, and be secured to prevent sliding, falling, or kickouts.

(k) Portable trench boxes or sliding trench shields may be used for the protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they shall be designed, constructed, and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench.

(l) Backfilling and removal of trench supports shall progress together from the bottom of the trench. Jacks or braces shall be released slowly and, in unstable soil, ropes shall be used to pull out the jacks or braces from above after employees have cleared the trench.

Table P-1



APPROXIMATE ANGLE OF REPOSE
FOR SLOPING OF SIDES OF EXCAVATIONS

1926.653—Definitions applicable to this subpart.

(a) "Accepted engineering requirements (or practices)"—Those requirements or practices which are compatible with standards required by a registered architect, a registered professional engineer, or other duly licensed or recognized authority.

(b) "Angle of repose"—The greatest angle above the horizontal plane at which a material will lie without sliding.

(c) "Bank"—A mass of soil rising above a digging level.

(d) "Belled excavation"—A part of a shaft or footing excavation, usually near the bottom and bell-shaped; i.e., an enlargement of the cross section above.

(e) "Braces (trench)"—The horizontal members of the shoring system whose ends bear against the uprights or stringers.

(f) "Excavation"—Any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation. If installed forms or similar structures reduce the depth-to-width relationship, an excavation may become a trench.

(g) "Faces"—See paragraph (k) of this section.

(h) "Hard compact soil"—All earth materials not classified as running or unstable.

(i) "Kickouts"—Accidental release or failure of a shore or brace.

(j) "Sheet pile"—A pile, or sheeting, that may form one of a continuous interlocking line, or a row of timber, concrete, or steel piles, driven in close contact to provide a tight wall to resist the lateral pressure of water, adjacent earth, or other materials.

(k) "Sides," "Walls," or "Faces"—The vertical or inclined earth surfaces formed as a result of excavation work.

(l) "Slope"—The angle with the horizontal at which a particular earth material will stand indefinitely without movement.

(m) "Stringers" (wales)—The horizontal members of a shoring system whose sides bear against the uprights or earth.

(n) "Trench"—A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.

(o) "Trench jack"—Screw or hydraulic type jacks used as cross bracing in a trench shoring system.

(p) "Trench shield"—A shoring system composed of steel plates and bracing, welded or bolted together, which support the walls of a trench from the ground level to the trench bottom and which can be moved along as work progresses.

Table P 2

TRENCH SHORING - MINIMUM REQUIREMENTS

Depth of trench	Kind or condition of earth	Size and spacing of members										
		Uprights		Stringers		Cross braces[1]				Maximum spacing		
						Width of trench						
		Minimum dimension	Maximum spacing	Minimum dimension	Maximum spacing	Up to 3 feet	3 to 6 feet	6 to 9 feet	9 to 12 feet	12 to 15 feet	Vertical	Horizontal
Feet		Inches	Feet	Inches	Feet	Inches	Inches	Inches	Inches	Inches	Feet	Feet
5 to 10	Hard, compact	3 x 4 or 2 x 6	6			2 x 6	4 x 4	4 x 6	6 x 6	6 x 8	4	6
	Likely to crack	3 x 4 or 2 x 6	3	4 x 6	4	2 x 6	4 x 4	4 x 6	6 x 6	6 x 8	4	6
	Soft, sandy, or filled	3 x 4 or 2 x 6	Close sheeting	4 x 6	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8	4	6
	Hydrostatic pressure	3 x 4 or 2 x 6	Close sheeting	6 x 8	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8	4	6
10 to 15	Hard	3 x 4 or 2 x 6	4	4 x 6	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8	4	6
	Likely to crack	3 x 4 or 2 x 6	2	4 x 6	4	4 x 4	4 x 6	6 x 6	6 x 8	8 x 8		6
	Soft, sandy, or filled	3 x 4 or 2 x 6	Close sheeting	4 x 6	4	4 x 6	6 x 6	6 x 8	8 x 8	8 x 10	4	6
	Hydrostatic pressure	3 x 6	Close sheeting	8 x 10	4	4 x 6	6 x 6	6 x 8	8 x 8	8 x 10	4	6
15 to 20	All kinds or conditions	3 x 6	Close sheeting	4 x 12	4	4 x 12	6 x 8	8 x 8	8 x 10	10 x 10	4	6
Over 20	All kinds or conditions	3 x 6	Close sheeting	6 x 8	4	4 x 12	8 x 8	8 x 10	10 x 10	10 x 12	4	6

[1] Trench jacks may be used in lieu of, or in combination with, cross braces.

Shoring is not required in solid rock, hard shale, or hard slag

Where desirable, steel sheet piling and bracing of equal strength may be substituted for wood

(q) "Unstable soil"—Earth material, other than running, that because of its nature or the influence of related conditions, cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.

(r) "Uprights"—The vertical members of a shoring system.

(s) "Wales"—See paragraph (m) of this section.

(t) "Walls"—See paragraph (k) of this section.

OSHA RELATED PUBLICATIONS

The following related publications may be obtained from:

The United States Department of Labor - OSHA
OSHA Publications Distribution - Room S-4203
Washington, D.C. 20210

Consultation Services for the Employer (OSHA 3047)
All About OSHA (OSHA 2056)
Ground-Fault Protection on Construction Sites (OSHA 3007)
Construction Industry Digest (OSHA 2207)
OSHA: Safety and Health is our Middle Name (OSHA 3076)

U.S. Department of Labor
Occupational Safety and Health Administration
Regional Offices

Region I
(CT*, MA, ME, NH, RI VT*)
16-18 North Street
1 Dock Square Building
4th Floor
Boston, MA 02109
Telephone (617) 223-6710

Region II
(NJ, NY*, Puerto Rico*, Virgin Islands*)
1 Astor Plaza Room 3445
1515 Broadway
New York, NY 10036
Telephone: (212) 944-3432

Region III
(DC, DE, MD*, PA, VA*, WV)
Gateway Building, Suite 2100
3535 Market Street
Philadelphia PA 19104
Telephone (215) 596-1201

Region IV
(AL, FL, GA, KY*, MS, NC*, SC*, TN*)
1375 Peachtree Street N E
Suite 587
Atlanta, GA 30367
Telephone: (404) 347-4495

Region V
(IL, IN*, MI*, MN*, OH, WI)
230 South Dearborn Street
32nd Floor, Room 3244
Chicago, IL 60604
Telephone (312) 353-2220

Region VI
(AR, LA, NM*, OK, TX)
525 Griffin Square Building, Room 602
Dallas, TX 75202
Telephone (214) 767-4731

Region VII
(IA*, KS, MO, NE)
911 Walnut Street Room 406
Kansas City MO 64106
Telephone (816) 374-5861

Region VIII
(CO, MT, ND, SD, UT*, WY*)
Federal Building Room 1554
1961 Stout Street
Denver CO 80294
Telephone (303) 844-3061

Region IX
(American Samoa, AZ*, CA*, Guam, HI*, NV*, Pacific Trust Territories)
PO Box 36017
450 Golden Gate Avenue
San Francisco, CA 94102
Telephone (415) 556-7260

Region X
(AK*, ID, OR*, WA*)
Federal Office Building
Room 6003
909 First Avenue
Seattle, WA 98174
Telephone (206) 442 5930

*These states and territories operate their own OSHA-approved job safety and health programs (except Connecticut and New York whose plans cover public employees only).

HEALTH AND SAFETY COMPLIANCE AGREEMENT

I, the undersigned, have received a copy of the health and safety plan for the project identified below. I have read the plan, understand it, and agree to comply with all of the health and safety requirements therein. I understand that I may be prohibited from continuing work on the project for failing to comply.

I have __ have not __ (check one) been briefed by a project safety authority on the health and safety requirements of the project.

Project No. _____

Project Title _____

Date of Plan _____

_____
Print Name

_____
Signature

_____
Firm

_____
Date

SAFETY AND HEALTH PROTECTION ON THE JOB

CAL OSHA

State of California
Department of Industrial Relations

The California Occupational Safety and Health Act of 1973 provides job safety and health protection for workers. The Department of Industrial Relations has primary responsibility for administering the Cal/OSHA program. Job safety and health standards are promulgated by the Occupational Safety and Health Standards Board. Employers and employees are required to comply with these standards. Enforcement is carried out by the Division of Occupational Safety and Health within the Department of Industrial Relations.

EMPLOYERS AND EMPLOYEES

California law requires every employer to provide employment and a place of employment which are safe and healthful for the employees therein. Employers and employees are required to comply with the occupational safety and health standards contained in Title 8 of the California Code of Regulations and all rules, regulations and orders pursuant to Division 5 of the California Labor Code which are applicable to their employment and actions on the job.

COMPLIANCE WITH JOB SAFETY AND HEALTH REQUIREMENTS

To ensure compliance with State job safety and health requirements, the Division of Occupational Safety and Health conducts periodic jobsite inspections. The inspections are made by trained safety engineers and industrial hygienists.

The law provides that an authorized representative of the employer and a representative of the employees be given an opportunity to accompany the safety engineer/industrial hygienist for the purpose of aiding the inspection. Where there is no authorized employee representative, the safety engineer/industrial hygienist talks with a reasonable number of employees about the safety and health conditions in the workplace.

Every employee has the right to bring unsafe or unhealthful conditions to the attention of the safety engineer/industrial hygienist making the inspection. In addition, any employee who believes unsafe or unhealthful conditions exist at the worksite has the right to notify the Division of Occupational Safety and Health. The Division upon request will withhold the names of employees who submit or make statements during an inspection or investigation.

If the Division of Occupational Safety and Health believes that an employer has violated a safety and health standard or order, it issues a citation to the employer. Each citation specifies a date by which the alleged violation must be corrected. The law provides for mandatory penalties against employers of up to $2,000 for each serious violation and for optional penalties of up to $1,000 for each general violation. Penalties of up to $2,000 per day may be proposed for failure to correct serious violations and up to $1,000 per day may be proposed for failure to correct general violations by the abatement date. Also any employer who willfully or repeatedly violates any occupational safety and health standard or order may be assessed civil penalties of not more than $20,000 for serious violations and $10,000 for general violations.

A willful violation that causes death or permanent impairment of the body of any employee results upon conviction in a fine of not more than $10,000 or imprisonment of not more than six months, or both. A second conviction, after a first conviction, doubles these maximum penalties.

While governmental entities may be cited on the same basis as other employers, and abatement dates set, civil penalties will not be assessed.

An employer who receives a citation, Order to Take Special Action, or Special Order must post it prominently at or near the place of the violation for three working days, or until the unsafe condition is corrected, whichever is longer, to warn employees of danger that may exist there. Any employee may protest the time allowed for correction of the violation.

COMPLAINTS

Employees or their representatives who believe unsafe or unhealthful conditions exist in their workplace have the right to file a complaint with any office of the Division of Occupational Safety and Health and thereby to request an inspection. The Division keeps confidential the names of complainants unless they request otherwise.

An employee may not be fired or punished in any way for filing a complaint about unsafe or unhealthful working conditions or using any other right given to employees by the Cal/OSHA law. An employee of a private employer who believes that he/she has been fired or punished for exercising such rights may file a complaint about this discrimination with the nearest office of the Department of Industrial Relations - Division of Labor Standards Enforcement (State Labor Commissioner) or with the San Francisco office of the U.S. Department of Labor, Occupational Safety and Health Administration. Employees of state or local government agencies may file discrimination complaints only with the State Labor Commissioner. Consult your local telephone directory for the office nearest you.

OTHER EMPLOYEE RIGHTS

Any employee has the right to refuse to perform work which would violate the Cal/OSHA Act or any occupational safety or health standard or order where such violation would create a real and apparent hazard to the employee or other employees.

Employers who use any substance listed as a hazardous substance in Section 339 of Title 8 of the California Code of Regulations or subject to the Federal Hazard Communication Standard (29 CFRS 1910.1200) must provide employees with information on the contents of material safety data sheets (MSDS), or equivalent information about the substance which trains employees to use the substance safely.

Employers shall make available on a timely and reasonable basis a material safety data sheet on each hazardous substance in the workplace upon request of an employee collective bargaining representative, or an employee's physician.

Employees have the right to see and copy their medical records and accurate records of employee exposure to potentially toxic materials or harmful physical agents.

Any employee has the right to observe monitoring or measuring of employee exposure to hazards conducted pursuant to Cal/OSHA standards. Employers must tell their employees when they are being or have been exposed to concentrations of harmful substances higher than the exposure limits allowed by Cal/OSHA standards, and the corrective action being taken.

For information and assistance, contact the nearest office of the Division of Occupational Safety and Health. See addresses below.

The law requires each employer in California to post this poster conspicuously in each workplace.

CONSULTATION SERVICE

In order to encourage voluntary compliance, Cal/OSHA provides free, upon request a full range of occupational safety and health consulting services. The Cal/OSHA Consultation Service is separate from Cal/OSHA enforcement activities.

OFFICES OF THE DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

HEADQUARTERS: San Francisco 525 Golden Gate Ave. 94102 (415) 557-1946

Regional Offices

*Los Angeles	6150 Van Nuys Blvd., Ste. 310, Van Nuys, 91401	(818) 901-5422
Sacramento	2422 Arden Way, Suite B-53, 95825	(916) 920-6127
San Francisco	455 Golden Gate Ave., Room 1171, 94102	(415) 557-8640
Santa Ana	28 Civic Center Plaza, 92701	(714) 558-4476

District Offices

Bakersfield	4800 Stockdale Highway, Suite 212, 93309	(805) 395-2718
*Berkeley Oakland	1111 Jackson Street, Room 1005, Oakland, 94607	(415) 464-1177
*Concord	1981 No. Broadway #230, Walnut Creek, 94596	(415) 676-5333
*Covina	1317 W. Foothill Blvd., First Floor, Upland, 91786	(714) 985-2250
Fresno	2550 Mariposa St., Room 4000, 93721	(209) 445-5302
Long Beach	245 West Broadway, Suite 245, 90802	(213) 590-5069
*Los Angeles	3550 West Sixth St., Room 431, 90020	(213) 252-7829
*Modesto	31 E. Channel St., Room 418, Stockton, 95202	(209) 576-6260
*Redding	2135 Akard Ave., Room 10, 96001	(916) 225-2886
Sacramento	2422 Arden Way, Suite B-55, 95825	(916) 920-6123
San Bernardino	303 West Third St., Room 640, 9240*	(714) 383-4321
San Diego	7807 Convoy Court, Suite 150, 92111	(619) 237-7325
San Francisco	455 Golden Gate Ave., Room 1193, 94102	(415) 557-1677
*San Jose	828 South Bascom Ave., Suite 120, 95128	(408) 277-1260
*San Mateo	455 Golden Gate Ave., Rm. 300, San Fran. 94102	(415) 557-1677
Santa Ana	28 Civic Center Plaza, Room 552, 92701	(714) 558-4141
*Santa Fe Spgs	8535 E. Florence Ave., Ste. 200, Downey 90240	(213) 869-8855
Santa Rosa	50 "D" St., Suite 430, 95404	(707) 576-2388
Van Nuys	6150 Van Nuys Blvd., Suite 405, 91401	(818) 901-5403
Ventura	5720 Ralston St., Rm. 203, 93003	(818) 654-4581
*Vernon	8535 E. Florence Ave., Ste. 200, Downey, 90240	(213) 923-3006 (213) 862-3990

Field Offices

*Chico	2135 Akard Ave., Room 10, Redding, 96001	(916) 225-2886
Eureka	619 Second St., Room 109, 95501	(707) 445-6611
*Salinas	828 So. Bascom Ave., Ste. 120, San Jose, 95128	(408) 443-3050
Stockton	31 E. Channel St., Room 418, 95202	(209) 948-7762
*Ukiah	50 "D" Street, Ste. 430, Santa Rosa, 95404	(707) 576-2388

*** Denotes temporary location.**

CAL/OSHA CONSULTATION SERVICE

Headquarters 525 Golden Gate Ave., 2nd Fl., San Francisco, 94102 (415) 557-2870

Area Offices

Downey	8535 E. Florence Ave., Suite 200, 90240 (213) 861-9993
Fresno	1901 N. Gateway, Suite 102, 93727 (209) 445-5072
Sacramento	2424 Arden Way, Suite D-90, 95825 (916) 920-6131
San Diego	7807 Convoy Court, Suite 140, 92111 (619) 279-3771
San Francisco	350 McAllister St., Room 2003, 94102 (415) 557-1715

Persons wishing to register a complaint alleging inadequacy in the administration of the California Occupational Safety and Health Plan may do so by contacting the San Francisco Regional Office of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor (Tel: 415/995-5672). OSHA monitors the operation of State plans to assure that continued approval is merited.

TO ALL EMPLOYERS OF CALIFORNIA EMPLOYEES: Section 6408(a) of the California Labor Code requires that information shall be posted regarding protections and obligations of employees under the occupational safety and health laws. This poster meets that requirement and must be prominently posted in all places of employment in the state of California. Section 6431 of the California Labor Code provides that any employer who violates any of the posting requirements of Section 6408 of the California Labor Code shall be assessed a civil penalty of up to one thousand dollars ($1,000) for each violation.

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discrimination.

Citation

If, upon inspection, OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory penalties against employers of up to $1,000 for each serious violation and for optional penalties of up to $1,000 for each nonserious violation. Penalties of up to $1,000 per day may be proposed for failure to correct violations within the proposed time period. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $10,000 for each such violation.

Criminal penalties are also provided for in the Act. Any willful violation resulting in death of an employee, upon conviction, is punishable by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both. Conviction of an employer after a first conviction doubles these maximum penalties.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

Such voluntary action should initially focus on the identification and elimination of hazards that could cause death, injury or illness to employees and supervisors. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help, such as training.

Consultation

Free consultative assistance, without citation or penalty, is available to employers on request, through OSHA supported programs in most State departments of labor or health.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Kansas City, Missouri
New York, New York
Philadelphia, Pennsylvania
San Francisco, California
Seattle, Washington

Telephone numbers for these offices and additional area office locations are listed in the telephone directory under the United States Department of Labor in the United States Government listing.

Washington, D.C.
1985
OSHA 2203

William E. Brock, Secretary of Labor

U.S. Department of Labor
Occupational Safety and Health Administration

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or a facsimile) in a conspicuous place where notices to employees are customarily posted.

FORM HS-502
WCC HEALTH AND SAFETY INCIDENT REPORT

Project Name _____

Project Number _____

Date of Incident _____

Time of Incident _____

Location _____

TYPE OF INCIDENT (Check all applicable items)

☐ Illness ☐ Injury ☐ Fire, explosion, flash ☐ Vehicular accident

☐ Property Damage ☐ Unexpected exposure ☐ Health & safety infraction

☐ Other (describe) _____

PROJECT NAME _____ **LOCATION** _____

DESCRIPTION OF INCIDENT (Describe what happened and possible cause; identify individuals involved, witnesses, and their affiliations; and describe emergency or corrective action taken.)

_____
_____
_____
_____
_____
_____
_____
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_____
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_____
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_____
_____
_____

Reporter: _____ _____ _____
Print Name Signature Date

Reporter must deliver this report to the Business Unit Health and Safety Officer within 24 hours of the reported incident for medical treatment cases and within five days for other incidents.

Reviewed by _____ _____
Business Unit Health & Safety Officer **Date**

Distribution:

___ Corporate Health and Safety Administrator
___ Corporate Health and Safety Officer
___ Project Manager
___ Personnel Office (medical treatment cases only)

SITE SAFETY & HEALTH PLAN

Garage 2 - Hazardous Soil Remediation Project

Project Location: 12th and Martin Luther King Way, Oakland Ca.

Project Description: The Remediation of Lead Contaminated Soil

Date: July , 1990

Prepared for:

Bramalea Pacific and The City of Oakland Redevelopment Agency
1221 Broadway, Suite 1800
Oakland, Ca. 94612

Prepared by:

HSR Inc.
1540 Parkmoor Ave., Suite A
San Jose, Ca. 95128

TABLE OF CONTENTS

1.0 INTRODUCTION

A. Overview

This Project Specific Safety Plan delineates the basic safety requirements for the Lead Soil Remediation Project located at 12th and Martin Luther King Way in Oakland, California.

This project will be made up of various construction activities. Some of these activities will be of a non-hazardous nature and others will be considered hazardous in nature. This Site Safety and Health Plan will address only the hazardous work.

HSR Inc's proposed work plan for this project is as follows:

1. We will remove all light standards and store them in an on site location.

2. We will then demolish and dispose of all the light standard bases and the above ground concrete slabs.

3. We will then excavate all asphalt pavement, load it into trucks and dispose these materials at an off site location.

4. Using a track type excavator and a rubber tired loader, we will begin the excavation of the lead contaminated soils. The areas of obvious (high level) contamination will be excavated and loaded directly into trucks for disposal. Other areas, containing lower levels of contaminants, may be excavated and stockpiled for further testing. If the test results indicate continued elevated levels of lead contamination, these materials will also be disposed at a Class I disposal site.

   The contaminated soils and concrete will be loaded into licensed and certified hazardous waste transporters for disposal at the Chemical Waste Management, Class I Disposal facility located in Kettleman Hills, Ca.

Introduction Continued:

4. All loads of Class I waste will be properly manifested with all manifests being signed by the "Generator".

5. Due to the nature of the contaminants involved, dust control will be used to minimize any airborne contaminants and no on site parking will be allowed while excavating or loading the lead contaminated soils.

2.0 PROJECT SAFETY AUTHORITY

A. ON - SITE PROJECT SAFETY

Personnel responsible for the project safety are:

Mr. Keith Dorsa	Project Manager
Mr. Frank Jurado	Site Safety & Health Officer HSR Inc.
Ms. Julie Dieterley	Office Coordinator

The Site Safety and Health Officer has the authority to suspend work anytime he determines that the provisions of the plan are inadequate to insure worker safety. If the conduct of any individual is not consistent with the requirements of the Site Safety and Health Plan, the Site Safety and Health Officer will notify the following:

1. Ms. Lois Parr, with the City of Oakland Office of Economic Development and Employment at (415) 273-3692.

2. Mr. John Esposito, with Bramalea Pacific at (415) 464-8208

It will remain the responsibility of HSR Inc. to enforce compliance of the Site Safety and Health Plan.

In addition the Site Safety and Health Officer shall be responsible for the following:

Safety Supplies & Equipment Inventory

Medical Surveillance Program/Physical Examinations

Training Programs / Hazard Communications

Accident/Incident Reporting Procedures

Decontamination/Contamination Reduction Procedures

B. HSR Inc. SITE SAFETY AND HEALTH OFFICER:

The Site Safety and Health Officer reports to the HSR Inc. Project Manager and is responsible for overall safety and loss prevention functions. Responsibilities Include:

Health Surveillance of all HSR Inc. employees;

Assuring that safety procedures in effect are in compliance with all appropriate federal, state, local, and company regulations. (The most stringent of the regulations will be adopted);

Maintenance of personnel exposure monitoring records.

Assuring appropriate personal protective equipment is adequate for actual hazards of on-site conditions;

Assuring appropriate hazard areas are identified and marked;

Assuring all personnel entering the hazard area are in the appropriate levels of protection;

3.0 JOB HAZARD ANALYSIS

The anticipated contaminant to be encountered on this project is Lead. The hazards of lead are as follows:

Lead:

Lead was encountered in the soils at the site. Lead is not a naturally occurring element in this locale but it is very common to find levels of lead in the surface soils. Its primary source is generally believed to be airborne industrial and automobile emissions.

Lead was encountered in the test borings and test pits performed by Woodward-Clyde Consultants in June & July 1990. Lead is listed as a heavy metal under Title 22 of the California Administrative Code (CAC Title 22). CAC Title 22 defines the Total Threshold Limit Concentration (TTLC) of lead as 1000 mg/kg. CAC Title 22 defines the Soluble Threshold Limit Concentration (STLC) as 5.0 mg/kg.

Some of the test borings indicated the levels of are well below both the TTLC and STLC and in some cases are considered to represent background levels but some of the borings in the fill materials exceed the STLC and TTLC. Therefore; these materials will be considered as Class I Hazardous Waste and will be handled accordingly. All laboratory data was obtained from sources outside the control of HSR Inc.

Due to the above factors, it is anticipated that inhalation and dermal exposure will be the potential pathways of concern. The appropriate air-purifying respiratory protective devices, will be worn by all personnel working on the site while excavating and loading the Lead contaminated soil.

All respirators will be fitted with organic vapor type cartridges with dust pre- filters. All cartridges will be changed on a routine basis.

In addition, during the excavation activities in areas where increased levels of contaminants are encountered, personnel working on the site will monitor wind direction and speed, and make every effort to operate in an upwind direction of the excavation.

An experienced line locator service will mark the locations for all underground utilities prior to the start of any digging.

4.0 RISK ASSESSMENT SUMMARY

It is not anticipated that there will be any significant or major potential source of exposures due to the scope of work to be followed on this project. The potential of any increased risk of exposure on other workers or the surrounding community is minimal. The basic potential exposure source would originate from airborne dusts, during the excavation of the Lead contaminated soils.

Due to this potential, HSR Inc. will have the equipment on-site to provide for dust control during the excavation activities. Dust control will be maintained through the use of water trucks or available on-site water. The levels of airborne dusts will be visually monitored by HSR Inc. If any dust is noted, additional water will be added to further control the airborne dusts.

5.0 EXPOSURE MONITORING PLAN

A. General

An air quality monitoring program will be implemented to provide baseline and on-going air quality data for site operations. The program will include:

1. Air monitoring will be done during the excavation and loading of the lead contaminated soils. Woodward-Clyde will conduct the air monitoring but if HSR Inc. determines that this monitoring is not sufficient, HSR Inc. will conduct its own air monitoring.

6.0 LEVELS OF PROTECTION

A. Introduction

It is important that personal protective equipment and safety requirements be appropriate to protect against the potential hazards at the site. Protective equipment will be selected based on the contaminant type(s), concentration(s), and routes of entry. In situations where the type of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personal protective equipment.

Field personnel and visitors are required to wear the following clothing and equipment, as a minimum, while on the Garage II Project Site:

1. Hard Hat
2. Long Sleeved Shirts
3. Safety Glasses will be worn while the concrete and asphalt demolition are being performed and any time the Site Safety and Health Officer deems them to be necessary

B. Required Protection

During all phases of the Lead Soil clean-up project, all HSR Inc. personnel coming into contact with the contaminants will wear Standard Tyvek work clothing with latex gloves, at a minimum.

All personnel will wear safety glasses when demolishing any concrete. All personnel will also wear air-purifying respirators with organic vapor cartridges and dust pre-filters. If ground water is encountered, workers will switch to nitrile gloves and P/E coated Tyvek to avoid incidental splash.

HSR Inc. will provide its employees with appropriate personal protective equipment as required. If respirators are deemed necessary, only NIOSH/MSHA certified respiratory protective equipment will be utilized. Any HSR Inc. subcontractors are responsible to the supply the appropriate safety equipment for their own employees.

7.0 SITE SECURITY MEASURES

A. General

The site will be controlled by HSR Inc. to reduce the possibility of exposure to any contaminants present and to prevent the transport of these materials from the site by personnel or equipment.

A control system is required to assure that personnel and equipment working on the hazardous waste site are subjected to appropriate health and safety surveillance.

The possibility of exposure or translocation of contaminants will be reduced or eliminated in the following ways:

Setting up security or physical barriers to exclude unnecessary personnel from the general area

Minimizing the number of personnel and equipment on-site consistent with effective operations

Establishing work areas within the site to separate the clean area from the area where soil is being aerated

Establishing control points to regulate access to work areas

Conducting operations in a manner to reduce the exposure of personnel and equipment

Minimizing the airborne dispersion of contaminants

Implementing the appropriate personnel and equipment decontamination procedures

All personnel entering the site will be qualified field personnel wearing the proper level of protection. Eating, drinking, smoking and any other practices which increase the probability of hand-to-mouth transfer will be prohibited in any area of work. All field personnel will be instructed to thoroughly wash their hands and face upon leaving any area of work. Potable water will be furnished on the site.

8.0 DECONTAMINATION PROCEDURES

A. Introduction

As part of the system to prevent or reduce physical transfer of contaminants by people and/or equipment from on-site, procedures will be instituted for decontaminating anything leaving the site. These procedures include the decontamination of personnel, protective equipment, monitoring equipment, clean-up equipment, etc. Unless otherwise demonstrated, everything leaving the Garage 2 Site should be considered contaminated and appropriate methods established for decontamination shall be followed. In general, decontamination at the site will consist of washing and brushing of the equipment and trucks leaving the site.

B. Procedure

1. Respirators will be cleaned daily during the Lead clean up operation.

2. All Tyvek and other clothing will be placed in drums and disposed of as hazardous waste.

3. All trucks leaving the site will be decontaminated by the use of brooms or available water.

4. The brushes, sponges, brooms, containers, etc., used in the decontamination process must, until shown otherwise, be considered contaminated and will be properly disposed.

9.0 STANDARD OPERATING PROCEDURES

Respiratory Protection Program Guidelines

Respirators will be provided by HSR Inc. when such equipment is deemed necessary to protect the health of the employee. HSR Inc. shall provide respirators which are applicable and suitable for the purpose intended. HSR Inc. shall be responsible for the establishment and maintenance of the respiratory protective program. The Site Safety and Health Officer will approve the selection, purchase, and inspection of the models and types of respiratory protective devices.

A medical evaluation is required prior to wearing any respirator, except where emergency escape respirators are provided. The contact physician shall determine annually if any health or physical conditions exist which would prohibit a worker from being assigned to an area requiring respiratory protection. A record will be retained in the employee's medical file, which will be retained at the medical clinic or doctor's office.

Respirators shall not be worn when conditions prevent a facepiece-to-face seal. Such conditions as facial hair, scars, wrinkles, facial diseases, dentures removal, or other disorders could prevent a proper facepiece-to-face seal. In these cases, corrective action will be taken to insure a proper seal. Contact lenses shall not be worn when using any respirator.

For the safe use of any respirator, it is essential that the user be properly instructed in its operation and maintenance. Both supervisors and employees shall be so instructed. Employees shall be instructed and trained in the proper selection and use of respirators and their limitations. The employee shall use the provided respirator in accordance with instructions and training received. All training shall be documented with records retained in the employee's training files.

The HSR Inc. Respiratory Program will meet the 11 points as specified in Title 29 Code of Regulations (CFR) 1910.134 *, and The California Administrative Code (CAC) Title 8.

10.0 EMERGENCY PROCEDURES

A. Site Emergency Warning System

Several warning systems will be utilized depending on the work site conditions or emergency involved:

1. Verbal communications.

2. Vehicle horns.

3. Portable hand-held compressed gas horns.

Verbal instructions with or without assistance will be used to deal with specific incidents.

Horn signals will be used to signify an emergency warning.

One long blast will be used on-site to signify emergency evacuation of the immediate work area to a predetermined location upwind, where a head count will be taken and further instructions given.

Repeated short blasts will be used on-site or from off-site to signify evacuation of all personnel from the site.

B. Emergency Equipment

The following equipment comprises the basic emergency equipment which will be available at the work site:

1. Fire extinguishers - dry chemical
2. First Aid Kits (Including chemical burn kit)
3. Combustible gas and oxygen detector analyzers
4. Hand-held compressed gas horns
5. Appropriate spill clean-up supplies and equipment

C. General Emergency Procedures

In case of emergency or hazardous situation, the team member that observes the condition shall immediately sound the compressed gas horn.

1. Upon hearing the horn, all non-emergency communications will cease and the member giving the alarm will proceed to give the Site Safety and Health Officer the pertinent information. The first responsibility of the Site Safety and Health Officer is to prevent any further injury.
2. Power equipment will be shut down and operators will stand by for instruction.
3. Injured personnel will be transported to a clean area.
4. The HSR Inc. Office at 1540 Parkmoor Ave., San Jose, Ca. (408) 971-7288 will be notified immediately.

5. In case of fire, explosion, or hazard alarm, personnel will immediately proceed to assigned prearranged safe locations.

6. Upon arrival at the safe locations, a complete head count will be given to the Project Manager and personnel will stay at the safe locations until the area is secured.

D. Personal Injury

If an injury occurs due to an accident or exposure to a hazardous substance, the HSR Inc. Office will be notified. The Site Safety and Health Officer will be given all appropriate information concerning the nature and cause of the condition so that treatment can be initiated. The injured person will be transported to a clean area where appropriate decontamination and first aid can begin Decontamination can be omitted if it may aggravate or cause more harm to the injured party. A member of the work team will accompany the injured party to the medical facility to advise on matters concerning chemical exposure.

The Project Manager will be informed and will investigate the cause of the injury and make any necessary changes in the work procedures.

F. Ambient Monitoring Contingencies

When ambient monitoring on the downwind edge of the site indicates significantly higher than background levels of any contaminants, the Site Safety and Health Officer will immediately determine the cause, make changes to work practices or procedures, and if necessary, make changes in the site layout, and warn unprotected personnel to evacuate or don protective equipment.

G. Contingency Plan

The following procedures will be used in case of an unpredictable event:

Fire:	Use fire extinguisher if localized and call the fire department if uncontrolled
Chemical Exposure:	Follow first aid treatment specified previously
Physical Injury:	Provide first aid treatment and contact ambulance for evacuation, if appropriate

EMERGENCY CONTACT LISTING

Emergency Telephone Numbers

City of Oakland:

Fire/Ambulance	911
Police Department	911
Hospital - Merritt Hospital 350 Hawthorne Ave. Oakland, Ca.	(415) 655-4000

Directions to Merritt Hospital are given in Exhibit B

Chemical Spills: National Response Center (24 hours)	(800) 424-8802
Chemtrec: Chemical Releases (24 Hours)	(800) 424-9300
Environmental Protection Agency Emergency Response Section:	(415) 974-7511
Poison Control Center (24 hours):	(415) 428-3248
Cal-OSHA District Office	(415) 557-1677

Additional Contingency Numbers:

HSR Inc.	(408) 971-7288
HSR Inc. Mobile Telephone	(408) 221-7583
HSR Inc. Site Safety & Health Officer (On-Site)	(408) 398-3748

11.0 TRAINING REQUIREMENTS

All personnel assigned to this project will be required to demonstrate that they have completed the Initial Training Requirements (40-hrs.), according to Federal OSHA Standards under 29 CFR 1910.120.

Field personnel from HSR Inc. will attend a project-specific training program for safety issues and project work task review before beginning work. The meeting will also be attended by the Project Manager and the Site Safety and Health Officer, in addition fit testing of respiratory protective devices will be conducted as part of the safety/orientation training.

A. All HSR Inc. site personnel shall have completed training relative to the project operations plans, and the materials to be encountered during the project. This training shall be conducted by the Site Safety & Health Officer and shall include classroom and practical application exercises regarding the hazards to be expected and the protective equipment to be utilized.

   This formal training is supplemented by the daily safety briefings and site specific training as required.

12.0 MEDICAL SURVEILLANCE

HSR Inc. personnel engaged in project operations shall be participants in the Medical Surveillance program, and must be cleared by the examining physician (s) to wearing respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under Federal OSHA, 29 CFR 1910 will be observed.

Examination Requirements

All HSR Inc. personnel on-site shall have successfully completed a pre-placement or periodic medical examination in accordance with established HSR Inc. policies and procedures, and consistent with the provisions of the OSHA carcinogen standards. This examination shall include a complete medical and occupational history, physical examination, and selected biological sampling. Laboratory studies include a complete blood count (CBC), urinalysis, chemistry panel (SMAC) pulmonary function (FEV and FVC), chest x-ray, audiometry, and vision screening.

13.0 RECORDKEEPING

A. General

Recordkeeping shall be consistent with OSHA regulations in all respects. The following permanent records will be maintained in the HSR Inc. offices.

1. Safety Inspection Reports
2. Personnel Exposure Monitoring Records (spiral or bound permanent log books will be used)
3. OSHA 200 - Current to within 5 days
4. Accident reports consistent with the established HSR Inc. procedures

B. Medical Records

Permanent medical records shall be maintained in confidential files by the contract physician/medical clinic. The physician will supply HSR Inc. with a medical status document, certifying that the personnel assigned to the project are physically capable of performing their individual work tasks.

14.0 SIGNATURES

Site Safety & Health Plan Approved By:

Signature: _____ Date: _____
Name: Ross Keith Dorsa

Title: Vice President/Project Manager
HSR Inc.

Signature: _____ Date: _____
Name: Frank Jurado

Title: President/Site Safety and Health Officer
HSR Inc.

Contractor Agreements:

1. HSR Inc. certifies that the following personnel to be employed on the subject project have met the following requirements of the OSHA Hazardous Waste Operator Standard (29 CFR 1910.120) and other applicable OSHA standards.

2. HSR Inc. certifies that in addition to meeting OSHA requirements, it has received a copy of this Site Safety & Health Plan and will ensure that its employees are informed and will comply with both OSHA requirements and the guidelines in the Site Safety & Health Plan.

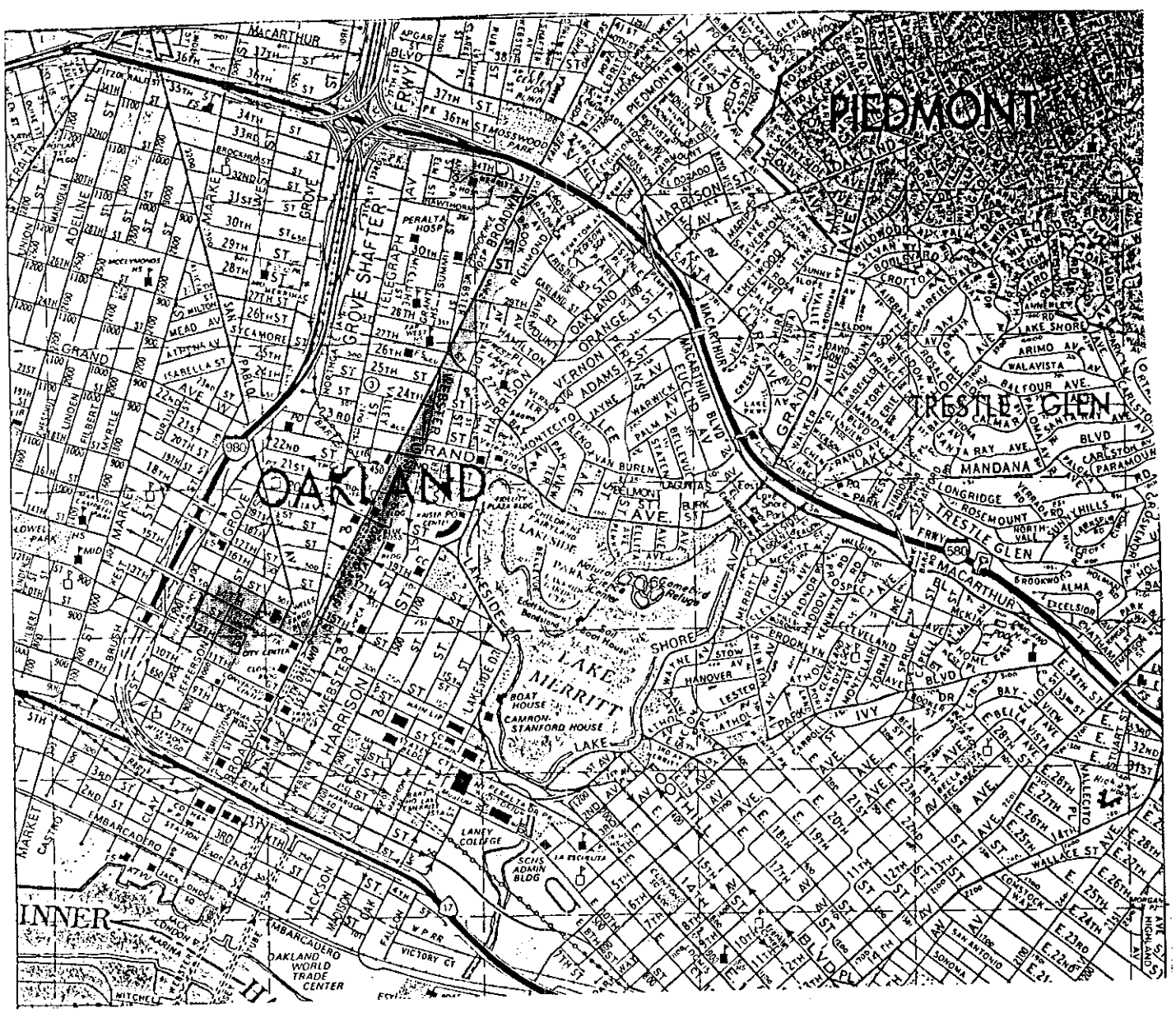
3. HSR Inc. further certifies that it has read and understands and will comply with all provisions of this Safety & Health Plan.

4. HSR Inc. certifies that the following employees have read, understand and will comply with the above Site Safety & Health Plan.

HSR Inc. Personnel	Training/Certification/Medical Examination	Signature	Date

EXHIBIT B

DIRECTIONS TO MERRITT HOSPITAL



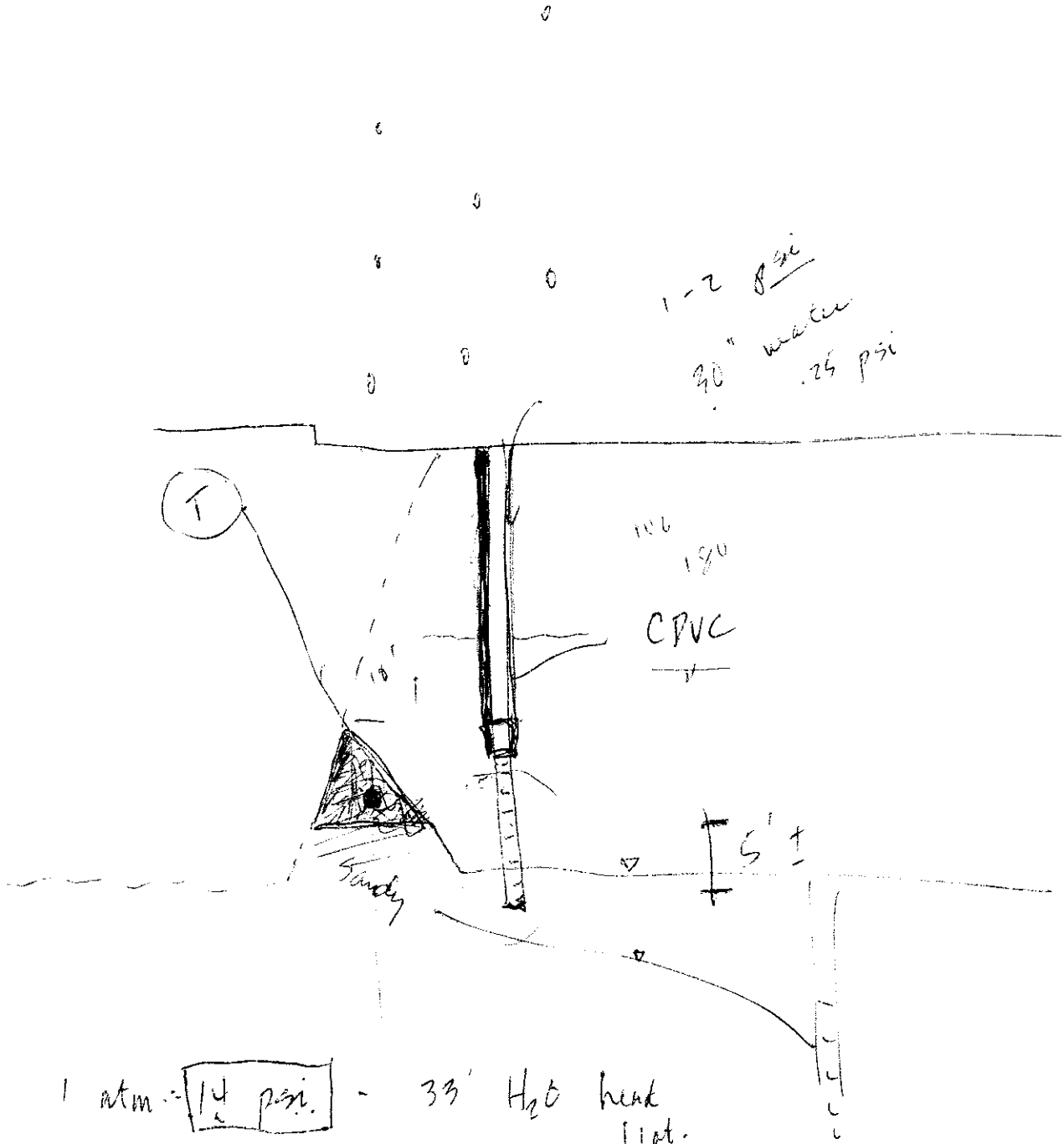
14th & Martin Luther King Jr. Way, Oakland 2/21/91

10:06 Soil vapor extraction system - cleaning soil in street (MLK & 14th)
- tour by Jim Bowers of Subsurface

also 2 GH$_2$O extraction wells (water levels drawn up by the vapor extraction system; wells bring levels back down (so soil contamination layer is exposed for vapor extraction rather than covered by ground water). Water is treated & then discharged to the sanitary sewer per EBMUD permit (self monitoring etc.). Groundwater extraction system has been operating for about 6 months (pumping mostly from one well only). Very little free product removed by this system.

System (vapor extraction system) has been in operation for about 2 weeks. Free product levels have dropped inches since the system was started up. "Closed loop" air current system set up (air into 2 extraction wells; vapors out of 6 extraction wells). BAAQMD has issued an operating permit for the extraction system burner & combusted air. Vapors extracted has ~43,00 mg/m^3 (est. 6 gal. gas per day???) System checked daily during the week in the morning. System sometimes also checked in the evening

Note: On 14th St. N. of M.L.K. Jr. Way - well has tapped into plume possibly coming from a former gas station now parking lot.



1 atm = 14 psi. - 33' H_2O head

1 atm.

.14 psi

30 in Vac 33 14psi 2 atm.

James P. Bowers, P.E.
R. William Rudolph, Jr., P.E.

91 APR 30 PM 12:02

April 26, 1991
SCI 430.011

Soil vapor extraction
MLK - 14th

Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

Status of Free Product Recovery
Off-Site Soil Remediation
Martin Luther King Jr. Way and 14th Street
Oakland, California

Dear Mr. Esposito:

This letter briefly summarizes the status of free product recovery at the referenced site. Off-site soil remediation has been underway for the past four months, utilizing soil vapor extraction technology. During remediation, we have been able to monitor changes in free product levels within our monitoring wells as well as the vapor extraction wells. With all these data points, a relatively accurate characterization of the free product plume could be developed. Over the past four months, we have observed a significant reduction in the thickness and extent of the free product. The extent of the free product plume on four different dates is presented on the attached Plates 1 through 4. The product thicknesses shown on the attached plates are those measured in the field. For reasons discussed in our previous reports, we estimate that actual product thicknesses are significantly less.

We have estimated that approximately 400 gallons of gasoline have been recovered to date by the soil vapor extraction system. This data is consistent with the significant reductions in the extent of the free product plume observed to date.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/95)

JPB:sld

Attachments: Plates 1 through 4

Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

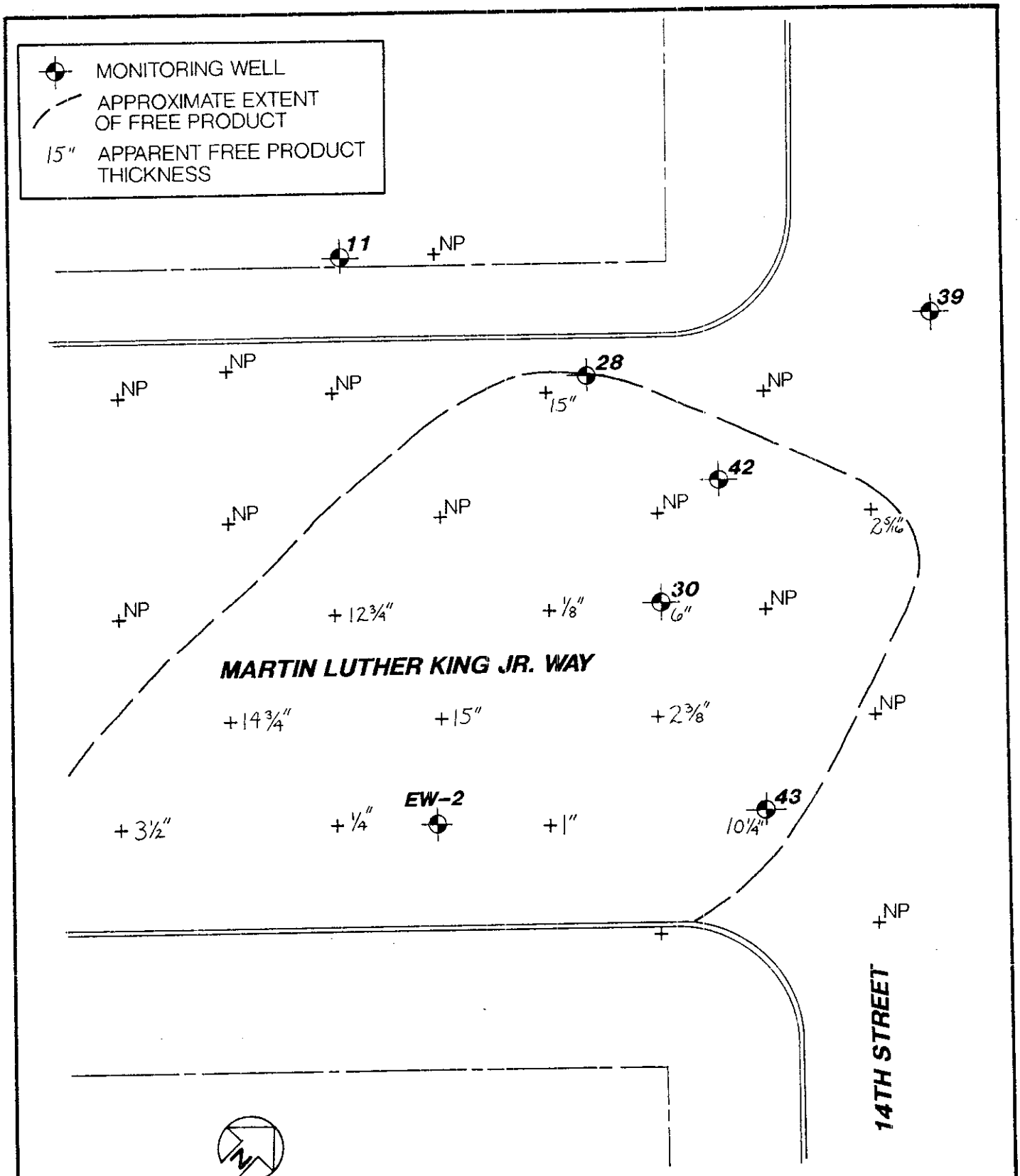
2 copies: Ms. Lois Parr
City of Oakland - OEDE
1333 Broadway, Suite 900
Oakland, California 94612

1 copy: Ms. Katherine Chesick
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California 94621

1 copy: Mr. Lester Feldman
California Regional Water Quality Control Board
1800 Harrison Street, Suite 700
Oakland, California 94612

1 copy: Mr. Donnell Choy
City of Oakland
505 14th Street, 12th Floor
Oakland, California 94612

1 copy: Mr. Roy Ikeda
Crosby, Heafey, Roach and May
1999 Harrison Street
Oakland, California 94612



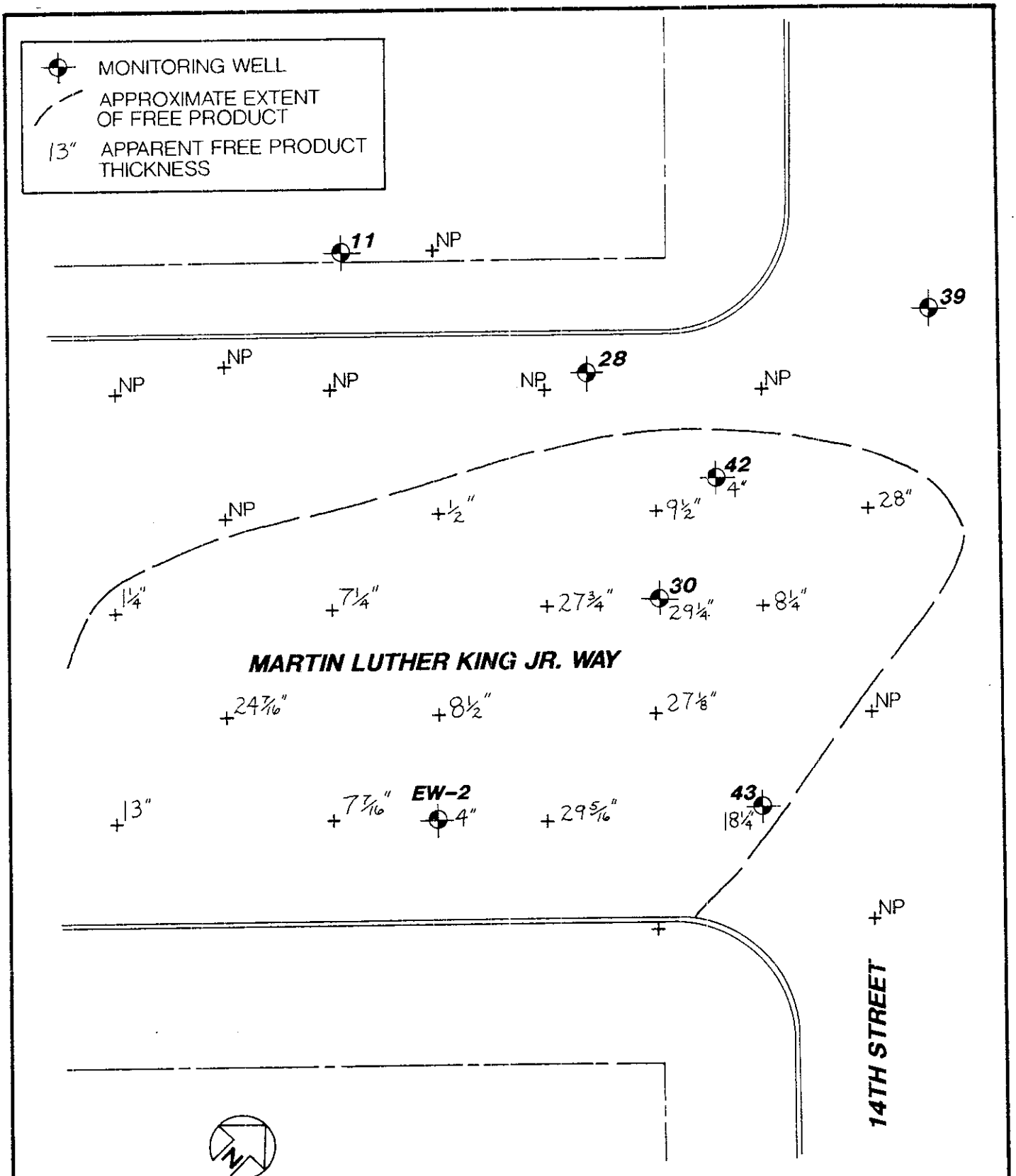
FREE PRODUCT THICKNESS
12/12/90

Subsurface Consultants

14TH & MARTIN LUTHER KING JR. WAY

JOB NUMBER	DATE	APPROVED
430.011	4/25/91	

PLATE 1



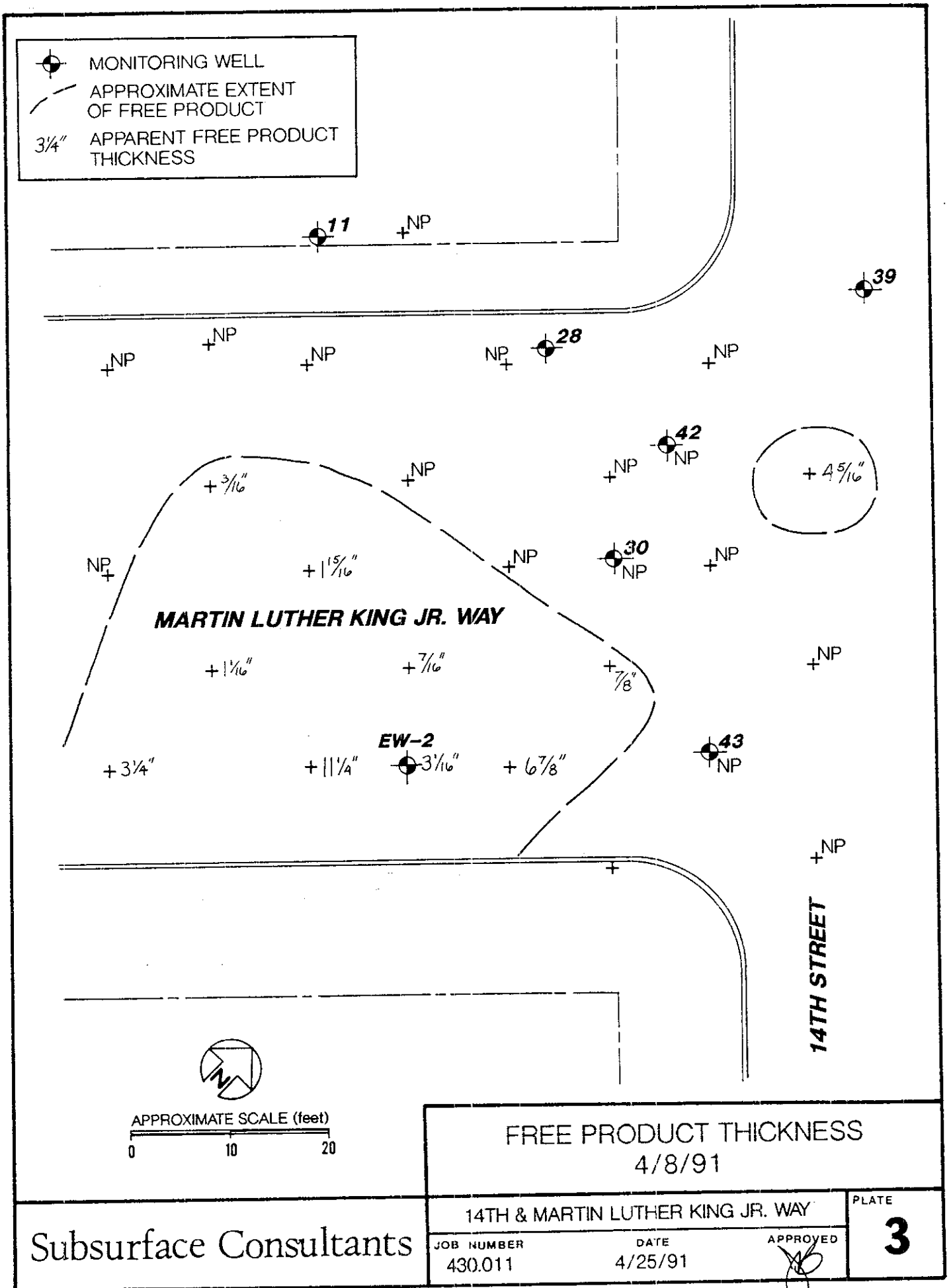
FREE PRODUCT THICKNESS
2/4/91

Subsurface Consultants

14TH & MARTIN LUTHER KING JR. WAY

JOB NUMBER	DATE	APPROVED
430.011	4/25/91	

PLATE 2



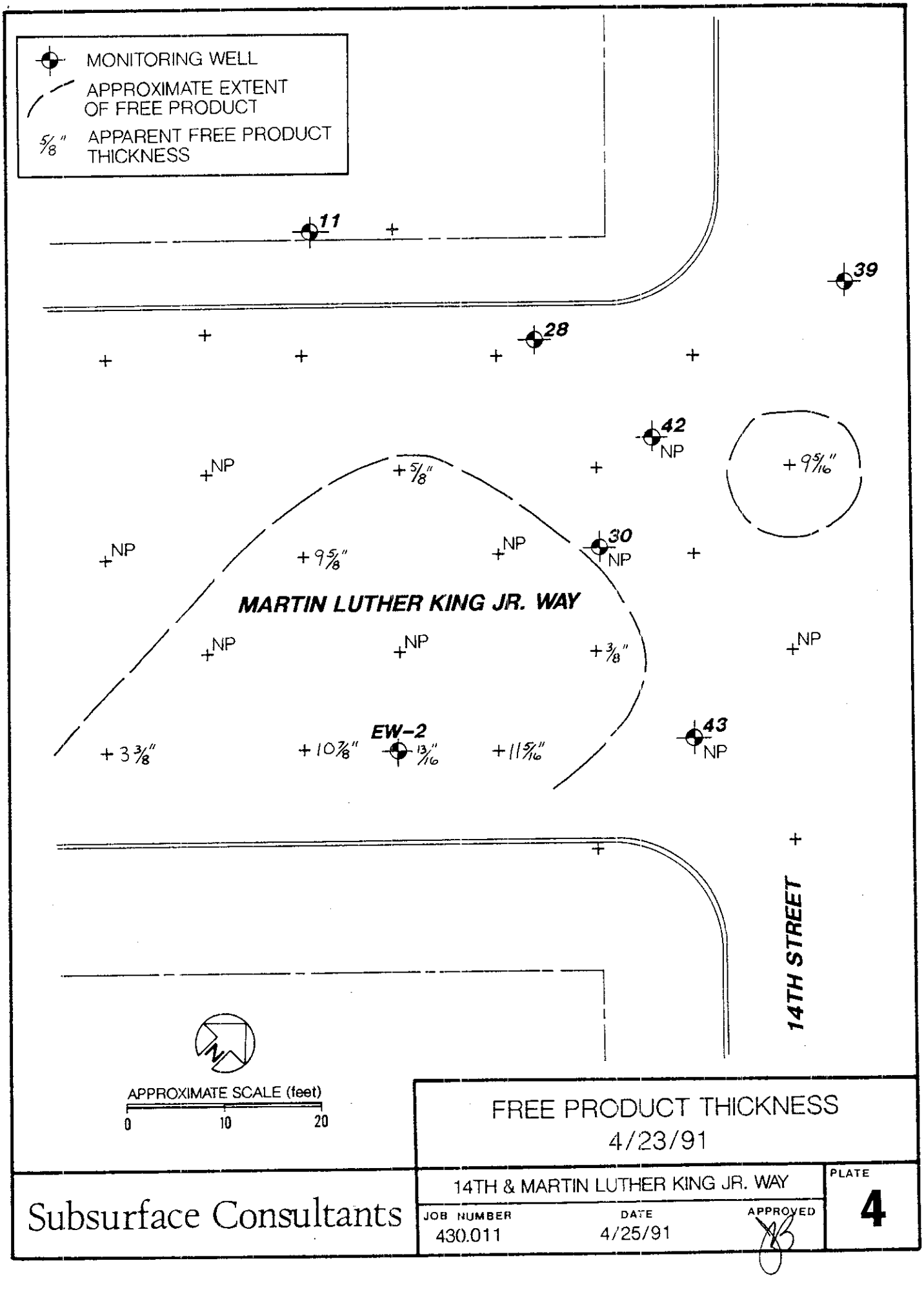
FREE PRODUCT THICKNESS
4/8/91

Subsurface Consultants

14TH & MARTIN LUTHER KING JR. WAY

JOB NUMBER	DATE	APPROVED
430.011	4/25/91	

PLATE 3



FREE PRODUCT THICKNESS
4/23/91

Subsurface Consultants

14TH & MARTIN LUTHER KING JR. WAY

JOB NUMBER	DATE	APPROVED
430.011	4/25/91	

PLATE 4

James P. Bowers, PE
R. William Rudolph, Jr., PE

August 30, 1990
SCI 430.011

Mr. John Swanson
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Permit Application
Thermal Oxidizer
Soil Vapor Extraction
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Swanson:

This letter is part of an application for the **Authority to Construct** and **Permit to Operate** a thermal oxidizer at 1330 Martin Luther King, Jr. Way in Oakland, California. The thermal oxidizer will treat gasoline vapors generated during a soil vapor extraction project located at the intersection of 14th Street and Martin Luther King, Jr. Way. (Site Plan, Plate 1).

The project will consist of remediating gasoline contaminated soils situated beneath Martin Luther King, Jr. Way by pumping contaminated soil vapor from approximately 22 wells utilizing a 5-HP industrial blower and oxidizing the gasoline laden vapor with a REMOX model RHFV-200 thermal oxidizer.

The contaminated soils resulted from a leaking underground gasoline tank. Gasoline contaminated soils within the property boundary have been removed; however the problem extends off-site beneath the roadway. A detailed characterization of the vertical and lateral extent of off-site contamination has been performed by Subsurface Consultants, Inc. (SCI) and recorded in a report, which accompanies this letter, entitled "Progress Report 2, Off-Site Contamination Investigation", dated November 6, 1989.

Our studies indicate that soil contamination is limited to an area approximately 60 x 80 feet in plan, as shown on the attached Site Plan. The contamination exists between depths of approximately 22 to 27 feet below the groundsurface. Free product is also present in this area floating on the groundwater. Groundwater is located at approximately 27 feet below street

grade. Total volatile hydrocarbon concentrations (TVH) in the contaminated soil range from approximately 1000 to 6800 parts per million (ppm). Benzene concentrations in the soil range from approximately 16 to 38 ppm.

A vapor sample was obtained by attaching a vacuum pump to an existing well which contains free product. The pump achieved a vacuum of approximately 5 inches of mercury at an approximate flow rate of 1 cubic foot per minute (cfm). The total volatile hydrocarbon concentrations in the air sample were 53,000 milligrams per cubic meter (mg/m^3) and benzene concentrations were 360 mg/m^3. The analytical test results are attached.

We estimate that the maximum total vapor flow rate generated from the network of wells to be approximately 200 cfm. At this rate, the vacuum extraction process should generate approximately 950 pounds per day of total volatile hydrocarbons and approximately 6.5 pounds per day of benzene. The thermal oxidizer will oxidize at least 99 percent of these compounds and emit not more than 9.5 pounds per day of TVH and 0.065 pounds per day of benzene.

The vapor flow rate calculations are estimates based largely on our judgement and previous experience. These calculations should be considered approximate. However, we consider them to represent conservative (maximum) estimates of flow rate and hydrocarbon emissions.

The vapor treatment system will consist of a REMOX thermal oxidizer which will heat the vapor stream to temperatures above 1400 degrees Fahrenheit (F) for a minimum retention time of .3 second. The oxidizer is capable of treating up to 200 cfm of air. Propane will be added to the vapor stream, as necessary, to maintain a minimum incineration temperature. Safety features on the oxidizer system include explosion proof controls, a flame arrester, high and low temperature shut-offs and dilution air valve. Temperature measurements will be recorded continuously on a strip chart recorder. Manufacturer's details of the REMOX system are attached for your review.

A source test will be performed during initial operation of the system to evaluate the efficiency versus temperature characteristics of the thermal oxidizer. The source test will consist of sampling the influent and the effluent at the minimum operating temperature, i.e., 1400°F. The oxidizer should be capable of achieving a minimum efficiency rating of 99 percent reduction in contaminants. The oxidizer will then be operated at

or above this minimum temperature and be monitored using a strip chart recorder.

We look forward to your approval of our requests. If you have any questions, please call. A copy of our application is attached.

Yours very truly,

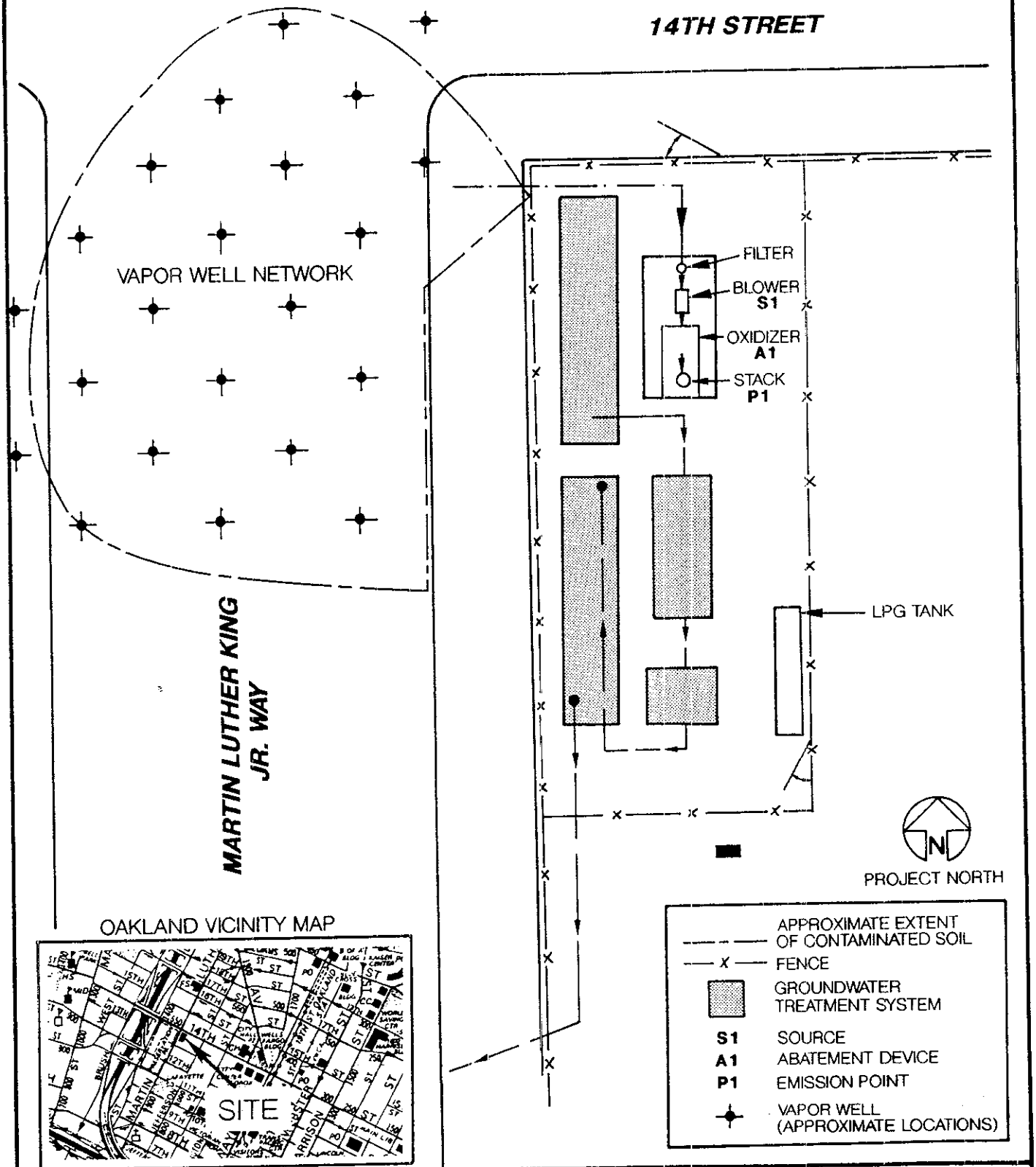
Subsurface Consultants, Inc.

Sean O. Carson
Project Manager
Civil Engineer 45074 (expires 3/31/94)

SOC:JPB:clh:mbl

Attachment: Plate 1 - Site Plan
REMOX Manufacturer's brochure
Analytical Test results
Chain-of-Custody documents
Permit Application

cc: Mr. John Esposito, Bramalea Pacific
Ms. Lois Parr, City of Oakland, Employment/Development
Ms. Katherine Chesick, ACHCSA
Mr. Lester Feldman, RWQCB
Mr. Donnell Choy, City of Oakland
Mr. Roy Ikeda, Crosby, Heafey, Roach & May



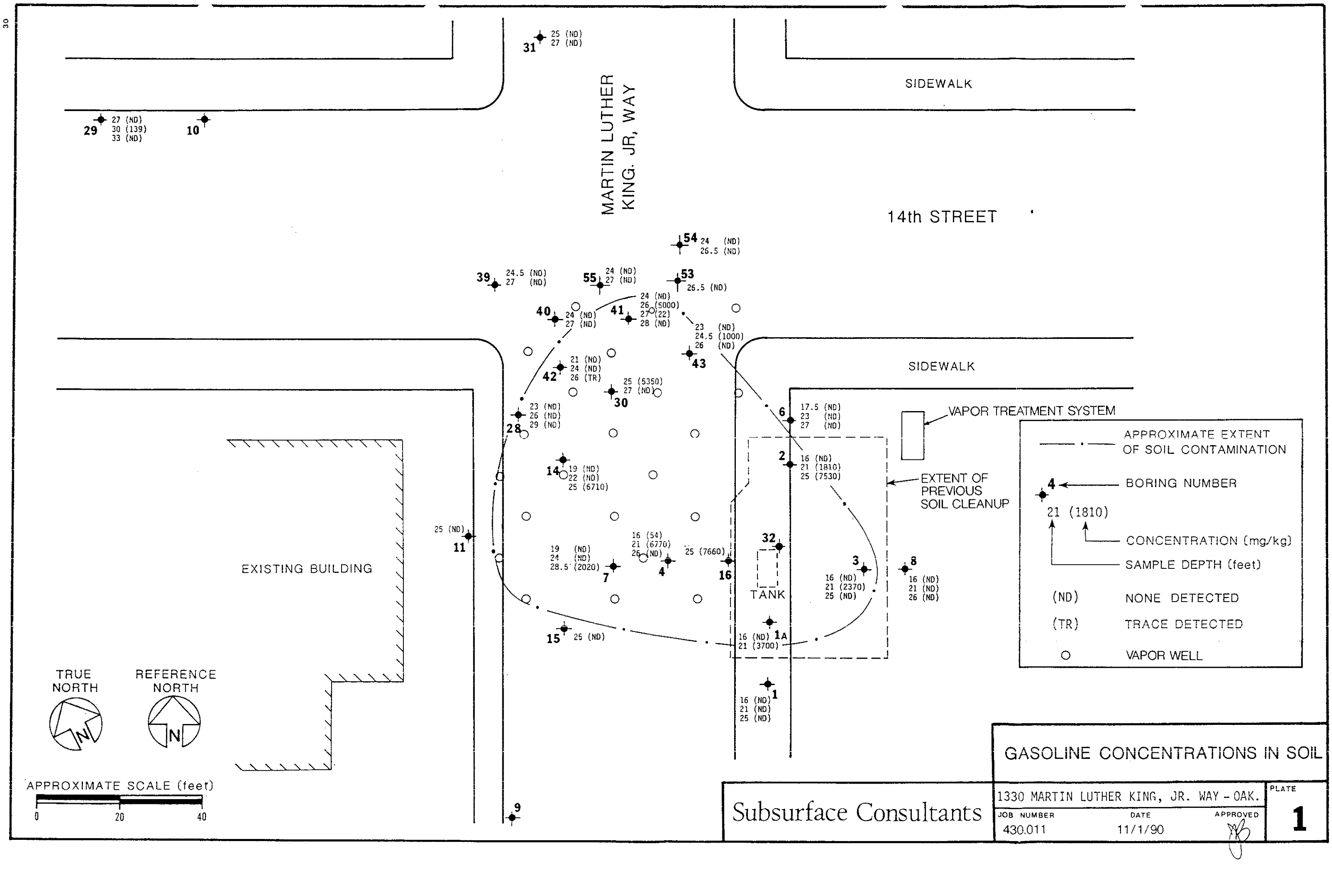
SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY – OAK.

JOB NUMBER	DATE	APPROVED
430.002	8/29/90	

PLATE 1



GASOLINE CONCENTRATIONS IN SOIL

Subsurface Consultants

1330 MARTIN LUTHER KING, JR. WAY - OAK.

JOB NUMBER	DATE	APPROVED
430.011	11/1/90	

PLATE 1

Remox Corporation

Vapor Extraction / Thermal Oxidation

VE/TO

REMOX CORPORATION

VAPOR EXTRACTION/THERMAL OXIDATION

ENVIRONMENTAL CONTROL AND
DECONTAMINATION PROCESSES

Sui
1374 Logan
Costa Mesa, CA 92
(714) 751-0

MILT SHRODE - PRESIDENT

REMOX CORPORATION

1374 Logan Avenue, Suite G Costa Mesa, Ca 92626 (714) 751 0042 FAX 751 6908

RS-214
(1-90)

Standard Specification
Remox Fume Thermal Oxidizer
For High BTU Vapors

1. Equipment Specifications

A. 1,400°F. operating temperature (1,500°F. design temperature) with 0.3 second residence time.
B. Varying flow rate (static pressure control required).
C. Fume concentration can vary from 0-Saturation
D. F.M. piping train (natural gas or propane only).
E. Natural gas burner turndown 4:1 .
F. Fume piping train with flame arrestor or velocity section (requires 2.2 PSIG pressure drop)

2. Scope of Equipment Supply

A. Vertical cylindrical oxidizer casing with a double wa insulation designed with a stainless steel radian tub in addition to refractory.
B. Combustion chamber inlet plenum.
C. Hirt Multi-jet gas burner with a gas-electric igniter pilot. The Hirt Multi-jet burner's unique design allows for intimate mixing of fuel and combustion air, which results in complete combustion and maximum heat release.
D. Main control panel housing the instruments, including the temperature indicating controller, high temperature limit, ultraviolet combustion safeguard system, purge timer, alarm silencing switch, operating lights to show normal operation, starter pushbutton, gas pilot ignition pushbutton system, ignition transformer, fan draft switch, terminal strips, control circuit fuse, and nameplates.
E. Gas piping train, including safety shutoff valves, automatic gas flow control valve, high and low gas pressure switches, pressure gauge, manual isolating valves, pilot gas regulator, pilot solenoid shutoff valve and pressure taps. All interconnecting piping mounted on the unit will be supplied, and all control items will be fully wired.
F. Fume piping train with pressure gauge, on/off valve, and flame arrestor or velocity section.
G. Temperature recorder.

3. Operating Features

A. The fume stream will enter into a separate burner system where it will then mix with the combustion air and auxiliary burner. A Hirt Multi-jet burner is used to supply the combustion gases. It is of the nozzle-mixing type and thereby eliminates the possibility of flashing back to some remote mixing device. It can be turned down, without hazard, until the fire is extinguished, and then readily re-ignited from the pilot. The burner produces a large cross-sectional area flame pattern for easy mixing with the fumes, with minimum fume bypass.

B. The combustion safeguard pilot is easily and safely applied because the pilot becomes, in effect, another burner jet. An arrangement of mixing baffles is supplied so that optimum fuel-gas-air-fume mixing is obtained which results in minimum operating temperature for economical fuel requirements.

C. In order to conserve fuel, the temperature of the oxidizer gas discharge is carefully controlled to the minimum destruction temperature.

D. An electronic controller, with thermocouple burnout safeguard, actuates a throttling electric motor-driven gas valve to hold the oxidation temperature at the set point. Should the temperature control system fail, a temperature limit will protect the blower by shutting down both the fume and the main burner gas safety shut-off valve.

E. In order to assure that the burner is not operating unless it is burning normally and the start-up sequence has been properly followed, a flame-rectification type of combustion safeguard relay is interlocked to the blower starter, draft switch, high temperature limit, and alarm howler.

F. A Factory Mutual approved main gas safety shutoff valve and pilot solenoid will be installed in the gas lines so that in case of any interlock failure the pilot and main gas will be automatically shut off, the howler sounded, and the component failure indicated by extinguishing of an operating light.

G. This system is completely automatic with the exception of a start-up sequence.

H. A hinged, dust-tight (class 12) covered panelboard will be supplied, containing all the equipment not normally mounted elsewhere, including: operating lights to show normal operation, and as an aid to troubleshooting, flame-rectification combustion safeguard system, starting pushbutton, gas pilot ignition pushbutton system, alarm with relay and silencing switch, terminal strips, control circuit fuse, and Bakelite nameplates.

4. Operating Economy

A.Remox units are able to achieve low operating costs for the following reasons:

1. We assist the customer in designing the fume gathering system so that only the minimum amount of air must be processed.
2. The burner is automatically throttled back as any vapors are present in the fume stream so that the heat of combustion of the vapors reduces the gas burner requirements at all periods and conditions of operation.
3. Temperature is controlled at the lowest permissible level with the smallest differential so that only a minimum amount of fuel is required to make up the required heat of thermal oxidation.
4. When the fume contains a minimum of 10% oxygen, it is used as the source of combustion air for the burner and the oxidation process, eliminating the need for additional extraneous heat-absorbing "outside" air (with the exception of a minimum loading).

5. Installation

Remox equipment will need at least the following items to be supplied by others:

A. Concrete foundations, pad, and steel support structure.
B. Connection of all utilities to the thermal oxidizer system terminal points, including 115 volt,single phase, 60 Hz power connection and fused and unfused disconnects and regulated pressure natural gas or LPG supply at 5 PSIG to the burner mounted on the thermal oxidizer.
C. Ducting required to and from Remox supplied equipment.

D. Any permits, air pollution control approvals, and any other regulatory documents which may be required.
E. Remote control panel and interconnecting wiring between the local and remote control panels.
F. Installation of the thermal oxidizer system.
G. Installation engineering and supervision.
H. Start-up.
I. Air pollution compliance testing.
Note: A turnkey installation, or any portion thereof, can be provided upon request.

6. Delivery
Approval drawings can be submitted within 4 weeks after receipt of your purchase order. Nominal shipment can be made within 12 weeks after our receipt of approved drawings. If a shorter time schedule is desired, it can be provided upon request depending upon the schedule for existing orders. Additional funds may be needed for the overtime required to meet the shortened schedule.

7. Terms
Our terms of payment are:
30% due with purchase order
30% due with submittal of general arrangement, process schematic, and piping and instrumentation diagram.
30% due before shipment
10% due within 30 days of shipment

All equipment is f.o.b. Montebello, California, exclusive of all taxes and fees.

9. Performance Guarantee

A. A performance guarantee will be available after the client provides the following analytic information about the vapor stream to be oxidized:

1. Total hydrocarbon concentration (TPH) of the vapor stream, in parts per million.

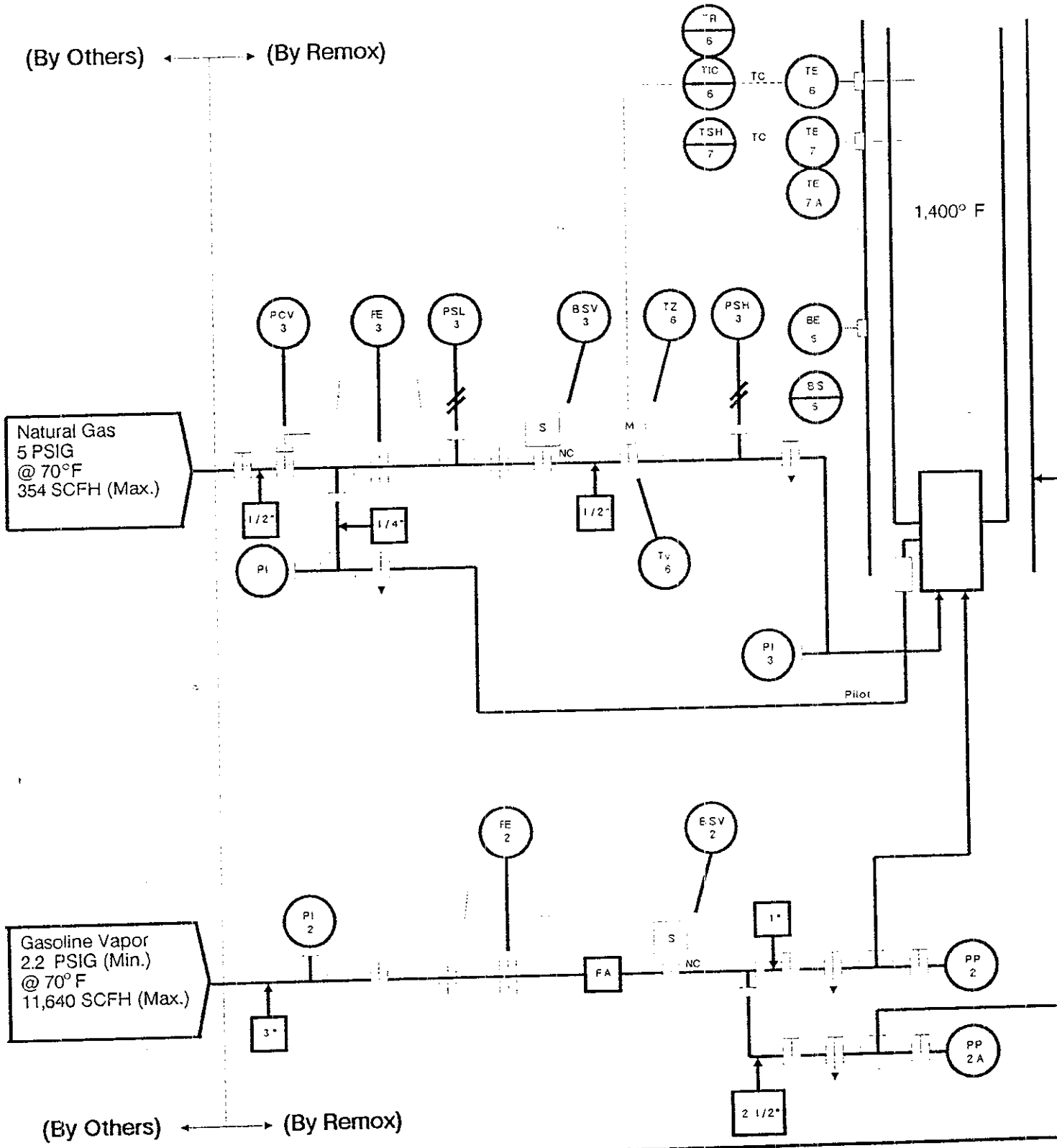
2. Flowrate of the vapor stream.

3. Additional analytical data (a gas chromatograph "footprint") to demonstrate that the chemical composition of the extracted vapors is consistent with information supplied to Remox Corporation about the vapor stream to be oxidized. The data shall be provided to Remox on a Title 22 Profile Sheet from a California DHS certified laboratory.

B. We guarantee to combust client specified total petroleum hydrocarbon vapors in the stream through the thermal oxidizer to a Destruction Rate Efficiency of 99%, but not less than 5 PPM. We will comply with the requirements of the local air pollution control authority as of the date of our proposal.

B. We will prepare the necessary thermal oxidizer drawings for approval, or for submittal to the air pollution board for permits and approvals as required.

C. Standard construction provides a 0.3 second retention time of the fumes in the combustion chamber, with capability of sustained operation at 1,500°F. For special applications, units with longer retention time and/or higher operating temperatures are available as required.



Remox Corporation

1374 Logan Ave.-Suite G-Costa Mesa, CA 92626
(714) 751-0042

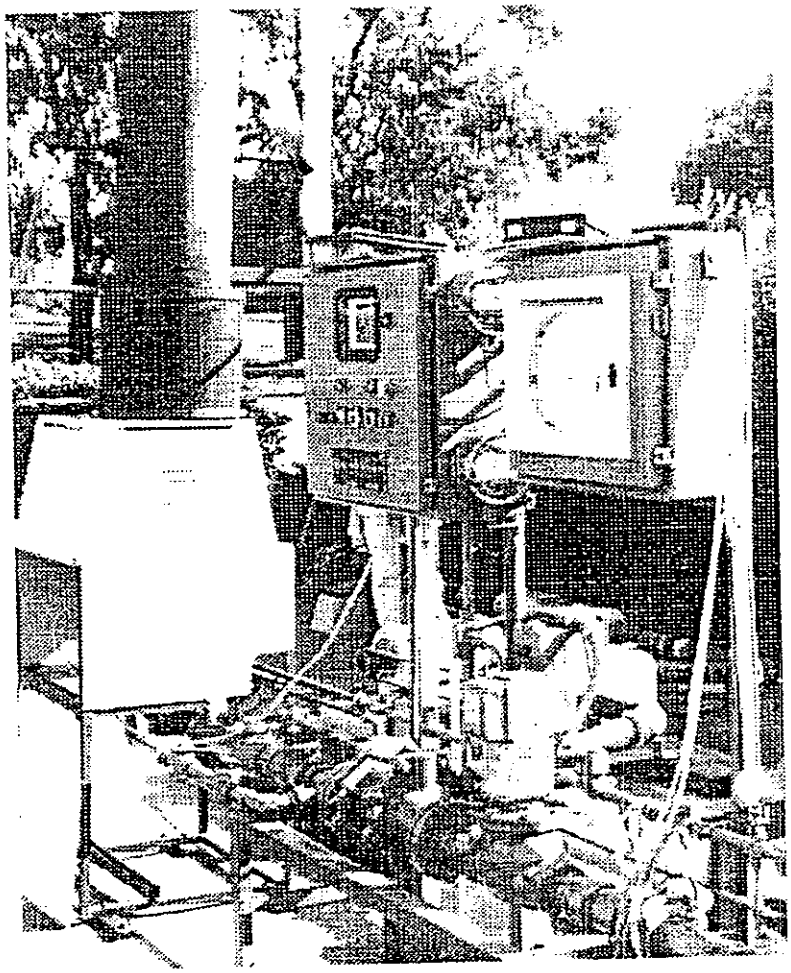
Date: 01-12-90	**Scale:** None

Title: RHFV – 200 P & I Diagram
Ref. Dwg. #1436-2C-0

File: GTOGA03.GEM

REMOX CORPORATION

1374 Logan Avenue, Suite G Costa Mesa, Ca. 92626 (714) 751-0042 FAX 751-6908

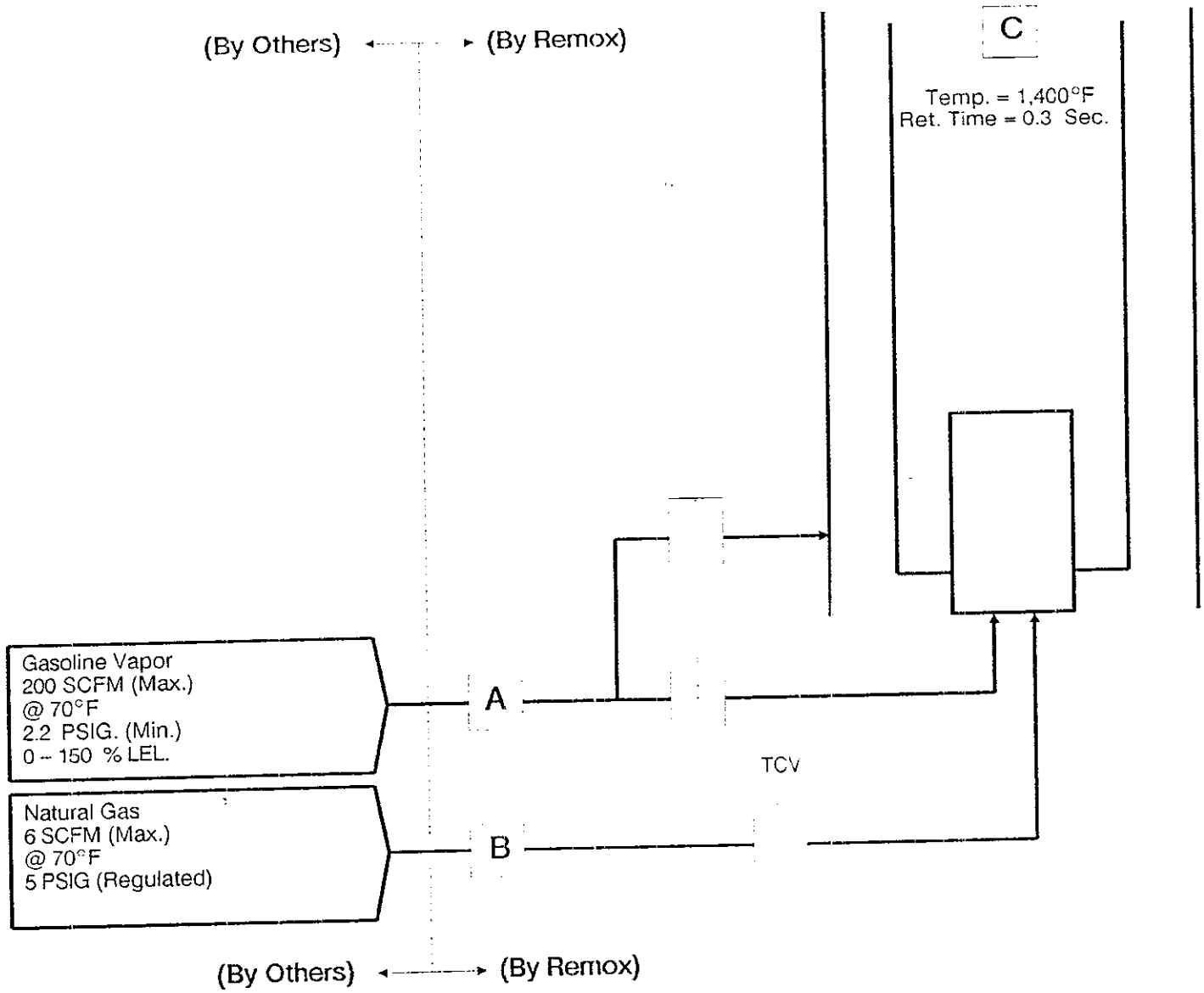


Model RHFV 200

Model RHFV 200 is now our standard unit. We can effect savings in costs by producing each one identical. We can speed up production by the use of jigs and keeping production parts in stock. This unit is designed to utilize a maximum of 200 SCFM @ 300,000 BTU/HR. If the fume concentration is hotter than 300,000 BTU/HR,you can either dilute the fume stream,cut down on the SCFM's, or set another identical unit on the fume stream in parallel to the first one. At the price of our standard unit, two units are still less expensive than one large unit designed to handle double the capacity of our standard unit.

VE/TO

Vapor Extraction/Thermal Oxidation



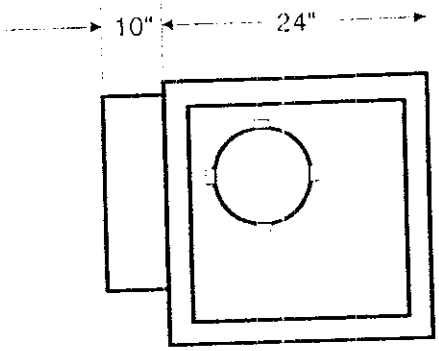
	A Gasoline Vapor			B	C
	FLOW (SCFM)	Concentration (PPM)	Heat Value (BTU/HR)	Nautral Gas (SCFH)	Flue Gas (SCFM)
Case 1	194	0	0	354	200
Case 2	194	4,560	266,000	88	200
Case 3	66.7	15,000	300,000	54	200

Remox Corporation
1374 Logan Ave.-Suite G-Costa Mesa, CA 9262
(714) 751-0042

Date: 01-12-90	Scale: None

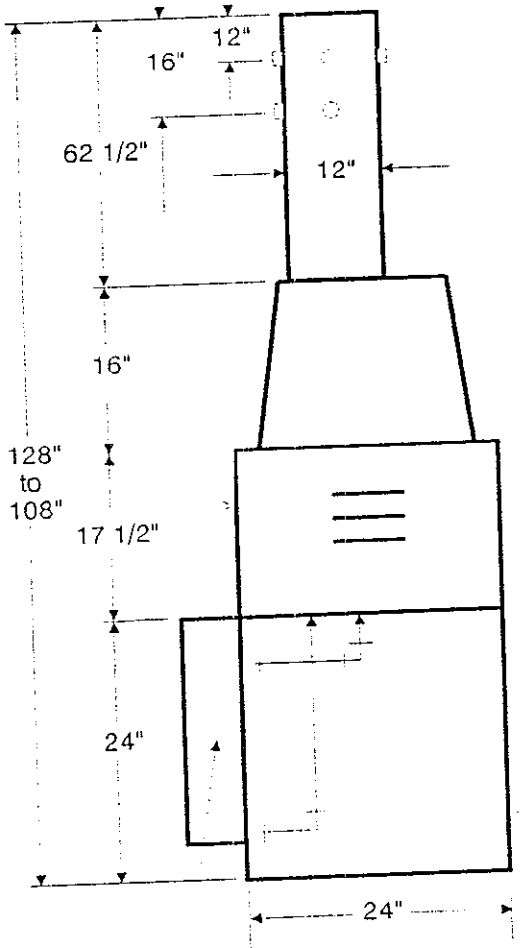
Title: RHFV – 200 Process Schematic
Ref. Dwg. #1436-30C-0

File: GTOGA02.GEM



1 1/2" Half CPLG
Welded Over
1 3/4" Dia. Hole (2)

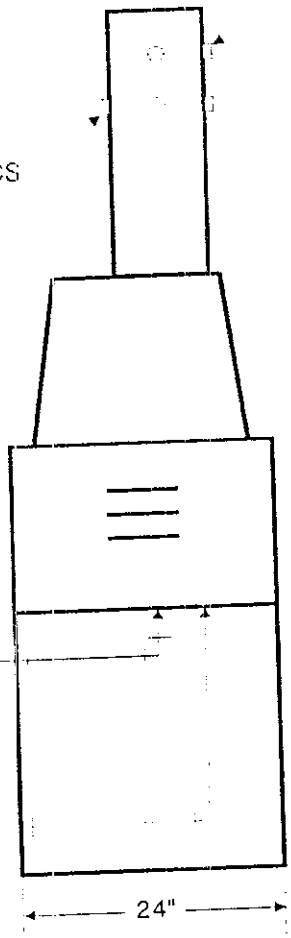
Top View



Control Panel

Right Side View

1/2" Half CPLG
Welded Over
3/4" Dia. Hole (3) PLCS



Back View

Note:
1. The pipe train and instruments add 6' horizontal to the width of the unit.
2. Clearance of at least 1.5' at each side of installed unit is necessary for technician.

Remox Corporation
1374 Logan Ave.-Suite G-Costa Mesa, CA 926
(714) 751-0042

Date: 4-11-90	Scale: None
Title: RHFV – 200 General Arrangement	

File: GTOGA01.GEM

REMOX CORPORATION

1374 Logan Avenue, Suite G Costa Mesa, Ca. 92626 (714) 751-0042 FAX 751-6908

Hirt Flaring System
Cylindrical

The Hirt Combustion Engineers' Flaring System is the result of 36 years of thermal oxidation experience. Hirt Combustion Engineers' Flaring System is designed to perform at a very high destruction and removal efficiency, and is low cost, user friendly, and maintenance simple.

Hirt Combustion Engineers and Remox Corporation guarantees conformities to the local air quality management district requirements. Both approval to construct and approval to operate.

It is general practice to design a flare with a double wall insulation. Either manual or automatic (motor operated) dampers, temperature sensor, temperature controller, site ports, pilot with flame safeguard, flame arrestor, and motor operated shut-off valve. Generally, Hirt Combustion Engineers designs for a 0.3 of a second or greater retention time (between burner and temperature sensor at up to 1,300 feet per minute combustion gas velocity).

Remox Corporation is offering the following system as a standard unit for VOC vapor recovery where the soil and/or water is contaminated by gasoline.

This system is completely automatic with the exception of a start-up sequence.

The Model RHFV 200

- **12" I.D. X 11' tall Stack
- **Aux.Fuel 5 PSIG (Regulated) 6 SCFM (MAX)
  (Natural Gas or LPG)
- **Vapor Stream 2.2 PSIG (Min.) 200 SCFM (Max)
- **24" deep X 8' wide (including Fuel & Fume train and instruments)
- **Weight 875 pounds
  300,000 BTU/HR maximum heat release (stack)

Other Models and sizes are available.

Remox Corporation

The following is a list of standard controls on Remox Models:

Auxiliary Fuel Manifold
Strip Chart Recorder
A NEMA 4 Control Package
(Temperature Control, Lights,
Switches, Flame Safeguard, etc.)

Although a higher number is available, we generally design to achieve 99% D.R.E down to 5 PPM.

The Hirt Flare is designed with a stainless steel radian tube in addition to refractory. This proven design provides for low NOx and low CO emissions.

Typically the low cost design is ideal for the following applications:

IN-SITU Soil Remediation Systems
Water Stripping Column Vapor Destruction
Tank Removal or Cleaning Vapor Destruction
Temporary Oxidizer Service

For drawings and further information, please contact Remox Corporation.

VE/TO
Vapor Extraction/Thermal Oxidation

James P. Bowers, PE
R. William Rudolph, Jr., PE

November 6, 1990
SCI 430.011

90 NOV -9 PM 2:19

Ms. Katherine Chesick
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Remediation Plan - Soil Vapor Extraction
Off-Site Soil Remediation
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Ms. Chesick:

This letter briefly describes our plan to remediate off-site gasoline-contaminated soils at the referenced site. Soil vapor extraction will be utilized. The extent of the off-site soil contamination is discussed in our report dated November 20, 1989 and is graphically shown on the attached Site Plan, Plate 1.

The soil vapor extraction system will consist of a network of wells located beneath Martin Luther King, Jr. Way, which will be connected by pipelines. A blower will apply a vacuum to the wells. Gasoline vapors extracted by the system will be treated with a thermal oxidizer prior to discharge. The treatment system will be located at the southwest corner of 14th and Martin Luther King, Jr. Way as shown on the attached plan.

The vacuum pump will consist of a 7.5 horsepower industrial blower capable of developing a vacuum Equivalent to approximately 11 inches of mercury at 200 cubic feet per minute (cfm). The soil vapors will be directed into a thermal oxidizer which will heat the vapor stream to above 1400° F and oxidize the hydrocarbons. A permit application has been submitted to the Bay Area Air Quality Management District (BAAQMD) to operate the oxidizer. The permit will be obtained prior to initiating the extraction process. The thermal oxidizer proposed for use is made by Remox Corporation. Pertinent data regarding the equipment is attached.

■ Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

Given the significant depth of the gasoline contamination and that access to the area is limited by roadways and numerous utilities, it is our opinion that soil vapor extraction is the most appropriate alternative regarding soil remediation. We will monitor system performance in accordance with the BAAQMD permit requirements. Additionally, analytical studies will be conducted by SCI during system operations to monitor the effectiveness of remediation efforts. When the soils have been successfully remediated, we will negotiate the details of the closure program with you.

We have submitted project plans to the City of Oakland Public Works Department and are presently seeking construction permits. We look forward to your favorable review of this project. Construction is planned to start in the near future. We will keep you informed of our progress and notify you when the BAAQMD permit is approved.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

SOC:JPB:RWR:clh

Attachments: Plate 1 - Site Plan, Well Layout Plan
Remox Thermal Oxidizer data

cc: Mr. John Esposito
Bramalea Pacific

Ms. Lois Parr
Oakland Redevelopment Agency - City of Oakland

Mr. Lester Feldman
Regional Water Quality Control Board

Mr. Roy Ikeda
Crosby, Heafey, Roach & May

PERMIT SERVICES DIVISION
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 Ellis Street, San Francisco, CA. 94109
(415) 771-6000

BAAQMD PLANT NO._____ APPLICATION NO._____

APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE
INDUSTRIAL SOURCES

BUSINESS NAME Redevelopment Agency City of Oakland - Office of Economic Development & Employment

MAILING ADDRESS 1333 Broadway, Suite 900 CITY/ZIP CODE Oakland, CA 94612

PLANT ADDRESS 1330 Martin Luther King, Jr. Way CITY/ZIP CODE Oakland, CA 94612

NAME OF CONTACT Ms. Lois Parr PHONE (415) 273-3692

EQUIPMENT DESCRIPTION Remox Model RHFV-200

NUMBER OF SOURCES [1] NEW CONSTRUCTION [X] MODIFICATION [ ] REPLACEMENT [ ]

RELOCATION [ ] DEMOLITION OR SHUT DOWN [ ] TRANSFER OF OWNERSHIP [ ]

ABATEMENT EQUIPMENT ONLY [ ]

HAS AN ENVIRONMENTAL IMPACT REPORT (EIR) BEEN PREPARED FOR THIS PROJECT? YES____ NO X

IF YES, BY WHOM?_____

IS THIS APPLICATION A RESULT OF A VIOLATION NOTICE? YES____ NO X

IF YES, GIVE THE VIOLATION NOTICE NUMBER: _____

TOTAL EMISSIONS FOR THIS APPLICATION: 0.065 lbs/day benzene
9.5 lbs/day TVH

EMISSIONS IN LB/HR				
TSP	NMHC	SOx	NOx	CO

TYPICAL USAGE RATE: HOURS/DAY 24 ; DAYS/WEEK 7 ; WEEKS/YEAR 365

ARE OFFSETS OR TRADEOFFS INVOLVED IN THIS APPLICATION? YES____ NO X

IF YES, GIVE DOCUMENTS AND PAGE NUMBERS ON WHICH THIS INFORMATION IS PROVIDED: _____

(OVER)

HAVE YOU PROVIDED AN AIR QUALITY ANALYSIS? YES _____ NO X

IF YES, GIVE DOCUMENTS AND PAGE NUMBERS ON WHICH THIS INFORMATION IS PROVIDED: _____

THE FOLLOWING ITEMS SHOULD ACCOMPANY THIS APPLICATION:
(a) Process Flow Diagram (if applicable) and; (b) a description or manufacturer's catalogue of equipment and air pollution abatement equipment. (See AB884 -Lists and Criteria for further details.

IMPORTANT: All information that you submit will be considered as public information unless you indicate that it is considered TRADE SECRET and give the reasons.

[✓] **ACKNOWLEDGEMENT**

SIGNATURE Lois R. Parr TITLE Project Manager, Oakland Redev. Ag

NAME (PRINTED) Lois R. Parr DATE 8/30/90

NOTE: PERMITS FOR YOUR PROJECT MAY ALSO BE REQUIRED FROM OTHER AGENCIES. FOR FURTHER INFORMATION, YOU SHOULD CONTACT THE LOCAL CITY OR COUNTY OFFICE IN WHICH THE PROPOSED PROJECT WILL BE LOCATED. ALSO, THE OFFICE OF PERMIT ASSISTANCE WITHIN THE OFFICE OF PLANNING AND RESEARCH IN SACRAMENTO IS AVAILABLE TO PROVIDE INFORMATION ON PERMITTING. THE ADDRESS IS AS FOLLOWS:

OFFICE OF PLANNING AND RESEARCH
1400 Tenth Street
Sacramento, California 95814

FORM P-101B
Revised 9/86
jrb

PERMIT SERVICES DIVISION
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CA 94109
(415) 771-6000

PLANT DATA P-201

Redevelopment Agency
City of Oakland, Office of Econ. Dev. & Employment
BUSINESS NAME

14th & Martin Luther King, Jr. Way/Soil Vapor Extraction
OTHER BUSINESS NAME[(S) IF ANY]

NAME OF PARENT COMPANY [IF ANY]

PLANT IDENTIFICATION NUMBER
* PLANT IDENTIFICATION NUMBERS ARE ASSIGNED BY THE BAAQMD. LEAVE BLANK IF NUMBER IS NOT KNOWN.

[ ] -
PLANT TELEPHONE NUMBER

PLANT ADDRESS 1330 Martin Luther King, Jr. Way
Oakland, CA 94612
CITY STATE ZIP CODE

MAILING ADDRESS 1333 Broadway, Suite 900
c/o Ms. Lois Parr
Oakland, CA 94612
CITY STATE ZIP CODE

PLANT AREA [ACRES] 1/10

NUMBER OF EMPLOYEES 1

PRINCIPAL PRODUCT Gasoline Vapor

OWNERSHIP
[ ] PRIVATE
[ ] UTILITY
[X] LOCAL GOVERNMENT
[ ] STATE GOVERNMENT
[ ] FEDERAL GOVERNMENT

PLEASE SUBMIT A NAME AND ADDRESS TO WHOM ALL CORRESPONDENCE REGARDING AIR POLLUTION CONTROL CAN BE SENT.

Mr. Sean Carson, c/o Subsurface Consultants, Inc.
CONTACT NAME AND ADDRESS

171 12th Street, Suite 201
STREET ADDRESS

Oakland, CA 94607
CITY STATE ZIP CODE

Sean O Caron
Sean O. Caron, Project Manager
NAME AND TITLE OF PERSON PREPARING THIS FORM

8/29/90
DATE

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
939 Ellis Street, San Francisco, CA 94109 (415) 771-6000

DATA FORM A
ABATEMENT DEVICE

Abatement Device: Equipment/process whose primary purpose is to reduce the quantity of pollutant(s) emitted to the atmosphere.

1. Business Name: Redevelopment Agency City of Oakland - OED & E Plant No.: _____ (If unknown, leave blank)

2. Name or Description: Thermal Oxidizer Abatement Device No.: A 1

3. Make, Model and Rated Capacity: Remox Model RHFV-200 200 CFM

4. Abatement Device Code (Table on reverse side): 3 Date of Initial Operation: Oct. 1990

5. With regard to air pollutant flow into this abatement device, what source(s) and/or abatement device(s) are immediately upstream?

S	S	S	A	A	A	A	A
S	S	S					

6. Typical Gas Stream Temperature at Inlet: 70 °F

If this form is being submitted as part of an application for an AUTHORITY TO CONSTRUCT, completion of the following table is mandatory. If not, and the Abatement Device is already in operation, completion of table is requested but not required.

	POLLUTANT	WEIGHT PERCENT REDUCTION (at typical operation)	BASIS CODE (Codes on reverse side)
7.	Particulate	%	
8.	Organics	99 %	3
9.	Nitrogen Oxides (as NO_2)	%	
10.	Sulfur Dioxide	%	
11.	Carbon Monoxide	%	
12.	Other: _____	%	
13.	Other: _____	%	

14. [x] Check box if this Abatement Device burns fuel; complete lines 1, 2 and 15-36 on Form C (using the Abatement Device No. above for the Source No.) and attach to this form.

15. With regard to air pollutant flow from this abatement device, what source(s), abatement device(s) and/or emission point(s) are immediately downstream?

S	A	A	P 1	P	P	P	P

11-30-87

Person Completing this Form: Sean O Carson Date: 8/29/90
Sean O. Carson

Abatement Device Codes

CODE	DEVICE
	ADSORBER (See VAPOR RECOVERY)
	AFTERBURNER
1	CO Boiler
2	Catalytic
3	Direct Flame
4	Flare
5	Furnace-Firebox
6	Other
	BAGHOUSE (See DRY FILTER)
	CYCLONE (See DRY INERTIAL COLLECTOR and SCRUBBER)
	DRY FILTER
7	Absolute
8	Baghouse, Pulse Jet
9	Baghouse, Reverse Air
10	Baghouse, Reverse Jet
11	Baghouse, Shaking
12	Baghouse, Simple
13	Baghouse, Other
14	Envelope
15	Moving Belt
16	Other
	DRY INERTIAL COLLECTOR
17	Cyclone, Dynamic
18	Cyclone, Multiple, (12 inches diam. or more)
19	Cyclone, Multiple, (less than 12 inches diam.)
20	Cyclone, Simple
21	Settling Chamber, Baffled/Louvered
22	Settling Chamber, Simple
23	Other
	ELECTROSTATIC PRECIPITATOR
24	Single Stage
25	Single Stage, Wet
26	Two Stage
27	Two Stage, Wet
28	Other
	INCINERATOR (See AFTERBURNER)
	KNOCK-OUT POT (See LIQUID SEPARATOR)
	LIQUID SEPARATOR
29	Knock-Out Pot
30	Mist Eliminator, Horizontal Pad, Dry
31	Mist Eliminator, Panel, Dry
32	Mist Eliminator, Spray/Irrigated
33	Mist Eliminator, Vertical Tube, Dry
34	Mist Eliminator, Other
35	Other
	MIST ELIMINATOR (See LIQUID SEPARATOR)
	SCRUBBER
36	Baffle and Secondary Flow
37	Centrifugal
38	Cyclone, Irrigated
39	Fibrous Packed
40	Impingement Plate
41	Impingement and Entrainment
42	Mechanically Aided
43	Moving Bed
44	Packed Bed
45	Preformed Spray
46	Venturi
47	Other
	SETTLING CHAMBER (See DRY INERTIAL COLLECTOR)
	SULFUR DIOXIDE CONTROL
48	Absorption and Regeneration, for Sulfur Plant
49	Claus Solution Reaction, for Sulfur Plant
50	Dual Absorption, for H_2SO_4 Plant
51	Flue Gas Desulfurization, for Fossil Fuel Combustion
52	Reduction and Solution Regeneration, for Sulfur Plant
53	Reduction and Stretford Process, for Sulfur Plant
54	Sodium Sulfite-Bisulfite Scrubber, for H_2SO_4 Plant
55	Other
	VAPOR RECOVERY
56	Adsorption, Activated Carbon/Charcoal
57	Adsorption, Silica
58	Adsorption, Other
59	Balance
60	Compression/Condensation/Absorption
61	Compression/Refrigeration
62	Condenser, Water-Cooled
63	Condenser, Other
64	Other
	MISCELLANEOUS
65	Not classified above

Basis Codes

CODES	METHOD
0	Not applicable for this pollutant
1	Source Testing or other measurement by plant
2	Source Testing or other measurement by BAAQMD.
3	Specifications from vendor.
4	Material balance by plant using engineering expertise and knowledge of process
5	Material balance by BAAQMD using engineering expertise and knowledge of process
6	Taken from AP-42 ("Compilation of Air Pollutant Emission Factors", E.P.A.)
7	Taken from literature, other than AP-42
8	Guess

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street, San Francisco, CA
(415) 771-6000 94109

DATA FORM C
FUEL COMBUSTION SOURCE

District Use Only
New [ ]
Modified [ ]
Retro [ ]

Form C is for all operations which burn fuel. If the operation also involves evaporation of any organic solvent, complete Form S and attach to this form. If the operation involves a process which generates any other air pollutants, complete Form G and attach to this form.

[X] Check box if this source has a secondary function as an abatement device for some other source(s); complete Lines 1, 2, & 7-13 on Form A (using the source number below for the Abatement Device No.) and attach to this form.

~~Redevelopment Agency~~

1. Company Name City of Oakland, OED & E Plant No. _____ (If Unknown, Leave Blank) Source No. S
2. Equipment Name and Number, or Description Thermal Oxidizer
3. Make, Model Remox Model RHEV-200 Maximum Firing Rate 300,000 BTU/Hr
4. Date of Modification or Initial Operation _____
5. Primary Use (Check One): [ ] Electrical Generation [ ] Space Heat [ ] Waste Disposal [ ] Testing
   [X] Abatement Device [ ] Cogeneration [ ] Resource Recovery [ ] Other
   [ ] Process Heat; Material Heated _____
6. SIC Number _____ (If Unknown, Leave Blank)
7. Equipment Type (Check One):

Internal Combustion	[ ] Diesel Engine [ ] Otto Cycle Engine	Displacement _____ cubic inches
	[ ] Gas Turbine [ ] Other _____	_____ hp
Incinerator	[ ] Salvage Operation [ ] Liquid Waste [ ] Pathological Waste [X] Other see below	Temperature 1410 °F Residence Time _____ Sec
Others	[ ] Boiler [X] Afterburner [ ] Flare [ ] Open Burning [ ] Other _____	[ ] Dryer [ ] Oven [ ] Furnace [ ] Kiln Material dried, baked, or heated _____

8. [ ] Yes [X] No Overfire Air? If Yes, what percent (%) _____
9. [ ] Yes [X] No Flue Gas Recirculation? If Yes, what percent (%) _____
10. [ ] Yes [X] No Air Preheat? Temperature _____ °F
11. [ ] Yes [X] No Low NOx Burners? Make, Model _____
12. Maximum Flame Temperature 1550 °F
13. Combustion Products: Wet Gas Flow Rate 200 acfm at 1410 °F
    Typical Oxygen Content _____ dry volume % or 3 wet volume %
    or _____ % excess air
14. Typical Use: Hours/Day 24 Days/Week 7 Weeks/Year 52
15. Typical % of Annual Total: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %
16. With regard to air pollutant flow, what source(s) or abatement device(s) are immediately upstream?
    S 1 S S S S S S A A A
17. With regard to air pollutant flow, what source(s), abatement device(s), and/or emission points are immediately downstream?
    S S A A P P

10/82

Person Completing This Form Sean O Carson Date 8/29/90
Sean O. Carson

FUELS

INSTRUCTIONS: Complete one line in Section A for each fuel. Section B is OPTIONAL. Please use the units at the bottom of each table. N/A means "Not Applicable".

SECTION A: Fuel Data

	Fuel Name	Fuel Code **	Total Annual Usage ***	Maximum Possible Fuel Use Rate	Typical Heat Content	Sulfur Content	Nitrogen Content (OPTIONAL)	Ash Content (OPTIONAL)
1.	LPG	160	.8	9×10^{-5}	2,500,000			
2.								
3.								
4.								
5.								

Use the appropriate units for each fuel						
Natural Gas	Therms*	BTU/Hr	N/A	N/A	N/A	N/A
Other Gas	MSCF*	MSCF/Hr	BTU/MSCF	ppm	N/A	N/A
Liquid	MGAL*	MGAL/Hr	BTU/MGAL	wt %	wt %	wt %
Solid	TONS	Ton/Hr	BTU/Ton	wt %	wt %	wt %

SECTION B: Emission Factors (OPTIONAL)

	Fuel Name	Particulates		NOx		CO		Other_____		Other_____	
		Emission Factor	**Basis	Emission Factor	**Basis	Emission Factor	**Basis	Emission Factor	**Basis	Emission Factor	**Basis
1.											
2.											
3.											
4.											
5.											

Use the appropriate units for each fuel	
Natural Gas	lb/Therm
Other Gas	lb/MSCF
Liquid	lb/MGAL
Solid	lb/Ton

NOTES:

* MSCF = thousand standard cubic feet

* MGAL = thousand gallons

* Therm = 100,000 BTU

** See tables below for Fuel and Basis Codes

*** Total Annual Usage is: Projected usage over next 12 months if equipment is new or modified.

: Actual usage for last 12 months if equipment is existing and unchanged.

FUEL CODES

CODE	FUEL	CODE	FUEL
25	Anthracite Coal	189	Natural Gas
33	Bagasse	234	Process Gas - Blast Furnace
35	Bark	235	Process Gas - CO
43	Bituminous Coal	236	Process Gas - Coke Oven Gas
47	Brown Coal	238	Process Gas - RMG
242	Bunker C Fuel Oil	237	Process Gas - Other
80	Coke	242	Residual Oil
89	Crude Oil	495	RDF
98	Diesel Oil	493	Sludge Gas
493	Digester Gas	256	Solid Propellant
100	Distillate Oil	257	Solid Waste
128	Gasoline	304	Wood - Hogged
158	Jet Fuel	305	Wood - Other
160	LPG	198	Other - Gaseous Fuels
165	Lignite	200	Other - Liquid Fuels
167	Liquid Waste	203	Other - Solid Fuels
494	Municipal Solid Waste		

BASIS CODES

CODE	METHOD
0	Not applicable for this pollutant
1	Source testing or other measurement by plant (attach copy)
2	Source testing or other measurement by BAAQMD (give date)
3	Specifications from vendor (attach copy)
4	Material balance by plant using engineering expertise and knowledge of process
5	Material balance by BAAQMD
6	Taken from AP-42 (Compilation of Air Pollutant Emission Factors, EPA)
7	Taken from literature, other than AP-42 (attach copy)
8	Guess

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
939 Ellis Street, San Francisco, CA 94109 (415) 771-6000

DATA FORM G
General Air Pollution Source

If in addition to the general process described hereon this source burns fuel, then complete Form C also.
Use specific forms if applicable: Form T (organic tankage, loading), Form S (surface coating, solvent use).

1 Business Name: Redevelopment Agency City of Oakland, Economic Development/Employment Plant No: _____ (If unknown, leave blank)

2 SIC Number: _____ Date of Initial Operation: Oct. 1990

3 Name or Description: Industrial Vacuum Blower Source No.: S 1

4 Make, Model, and Rated Capacity of Equipment: M-D Model 3204-81, Gas-Tight, 200 CFM

5 Process Code* (Column A): 7098 Materials Code* (Column B): 504 Usage Unit* (Column C): CF

6 Total throughput, last 12 months: _____ Usage Units* Max operating rate: 12,000 Usage Units*/hr

7 Typical % of total throughput: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

8 Typical operating times: 24 hrs/day 7 days/week 52 weeks/year

9 For batch or cyclic processes: _____ min/cycle _____ min. between cycles

10 Exhaust gases from source: (at max. operation) Wet gas flow rate 200 cfm at 70 °F
Approximate water vapor content 1.8 vol %

EMISSION FACTORS (at maximum operating rate)

If this form is being submitted as part of an application for an AUTHORITY TO CONSTRUCT, completion of the following table is mandatory. If not, and the Source is already in operation, completion of table is requested but not required.

If this source also burns fuel, do not include those combustion products in the emission factors below; they are accounted for on Form C. If source test or other data are available for composite emissions only, estimate from those data the emissions attributable to just the general process and show below.

[ ] Check box if factors apply to emissions after Abatement Device(s).

		EMISSION FACTORS lbs/Usage Unit*	Basis Code (see reverse)
11	Particulate		
12	Organics	0.4 lbs/hr	4
13	Nitrogen Oxides (as NO_2)		
14	Sulfur Dioxide		
15	Carbon Monoxide		
16	Other:		
17	Other:		

18 With regard to air pollutant flow from this source, what source(s), abatement device(s) and/or emission points(s) are immediately downstream?

S	S	S					
A 1	A	A	P 1	P	P	P	P

*From Tables G-1 through G-7 (See listing on reverse side)

Person Completing this Form: Sean O Carson Date: 8/29/90
Sean O. Carson

6-8-77

Basis Codes

CODES	METHOD
0	Not applicable for this pollutant
1	Source Testing or other measurement by plant
2	Source Testing or other measurement by BAAQMD
3	Specifications from vendor
4	Material balance by plant using engineering expertise and knowledge of process
5	Material balance by BAAQMD using engineering expertise and knowledge of process
6	Taken from AP-42 ("Compilation of Air Pollutant Emission Factors", E.P.A.)
7	Taken from literature, other than AP-42
8	Guess

CODE TABLES* for GENERAL AIR POLLUTION SOURCES

Table	Process
G-1	Food & Agricultural
G-2	Metallurgical (Primary Metals)
G-3	Metallurgical (Secondary Metals)
G-4	Mineral
G-5	Petroleum Refining
G-6	Incineration
G-7	Chemical/Other

*Available from the BAAQMD upon request.

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
939 Ellis Street, San Francisco, CA 94109 (415) 771-6000

DATA FORM P
Emission Point

Form P is for well-defined emission points such as stacks or chimneys only; do not use for windows, room vents, etc.

Business Name: Redevelopment Agency City of Oakland - Office of Economic Dev. & Employ. Plant No.: _____

Emission Point No.: P 1

With regard to air pollutant flow into this emission point, what source(s) and/or abatement device(s) are immediately upstream?

			S 1	S	S	
S	S	S	A 1	A	A	A

Exit Cross-section Area: .8 Square feet Height above grade: 11 Feet

Effluent Flow from Stack:

	Typical Operating Condition		Maximum Operating Condition	
Actual Wet Gas Flow Rate	90	cfm	200	cfm
Percent Water Vapor	0	Vol %	0	Vol %
Temperature	1420	°F	1550	°F

If this stack is equipped to measure (monitor) the emission of any air pollutants,

-is monitoring continuous? No

-what pollutants are monitored? None

Person Completing this Form Sean O Carson Date 8/29/90

Sean O. Carson

4-25-77

ALAMEDA COUNTY
HEALTH CARE SERVICES AGENCY
470-27TH ST., THIRD FLOOR, OAKLAND, CA 94612

13th & Jefferson
Excavation of lead & PNA
contaminated soil
~ 8/18/89

P 062 128 053

RECEIPT FOR CERTIFIED MAIL

Sent to Ms. Lois Parr

Street, Apt. No. 1417 Clay St.

P.O. Oakland 94612

PS Form 3800, Jan.

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

Certified Mailer #: P 062 128 053

August 16, 1989

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

**** NOTICE OF VIOLATION ****

Re: Remediation Requirements for Underground Gasoline Storage Tank Related Contamination at 1330 Martin Luther King Jr. Way, Oakland

Dear Ms. Parr:

Per our letter to you dated June 27, 1989 you were to have submitted a work plan addressing the remediation of underground storage tank related contamination at 1330 Martin Luther King Jr. Way in Oakland. This plan was due in our office by July 27, 1989. To date, we have not received this plan. We therefore are issuing a notice of violation and require that this plan or other written document which presents a schedule for plan submittal be submitted to our office for review within 25 days of the date of this letter.

A copy of our June 27, 1989 letter is attached for your convenience.

Should you have any questions, please contact Katherine Chesick, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

Edgar B. Howell

for Rafat A. Shahid, Chief,
Hazardous Materials Division

1<C

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☑ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Ms. Lois Parr
Oakland Redevelopment
agency
1417 Clay Street
Oakland, CA 94612

4. Article Number
P062 128 053

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X KJ Kindleman

6. Signature — Agent
X

7. Date of Delivery
9/25/89

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

RE 1330 M.L. KING WAY OAKLAND

RAS:kac

attachment

cc: James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board
Howard Hatayama, State Department of Health Services
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Katherine Chesick, Alameda County Hazardous Materials Division
Files

James P. Bowers, PE
R. William Rudolph, Jr., PE

July 21, 1989
SCI 430.002

Mr. Rafat A. Shahid
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room #200
Oakland, California 94621

Gasoline Tank Related Contamination
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. Shahid,

We are in receipt of your letter dated June 27, 1989, regarding the gasoline contamination at 1330 Martin Luther King, Jr. Way, in Oakland. During the past several months, Subsurface Consultants, Inc. (SCI) has conducted relatively extensive additional studies of the subject problem. The studies have been directed toward identifying the lateral and vertical extent of off-site soil contamination, the extent of the floating product plume, and the extent of the dissolved product plume. We believe that the studies conducted to date have addressed the problem in a relatively thorough manner. We are in the process of recording the results of these studies in a report and intend to submit it to you for review, on or before July 28 1989. We believe that this report will adequately address most, if not all, of the investigative items outlined in your letter.

US2889 7.25.89 #00.29

As you are aware, we are nearing the successful completion of our Phase 1 cleanup effort. Within the next week or so, we will submit a report to you, documenting the results of this phase of cleanup.

Since discovery of the problem, the City of Oakland has been vigorously moving ahead in their efforts to investigate and remediate this problem, as well as several others on the same block. We have attempted to keep Ms. Katherine Chesick of your office informed of our efforts. Accompanying the report that we

7.25.89

will submit to you shortly, will be a work plan describing the scope of subsequent phases of investigation, and identifying our proposed means of off-site remediation. After your review of these documents, we will be pleased to answer any questions that you may have or investigate any issues that remain unresolved.

Enclosed you will find the check you requested for $600 to cover County review costs.

We look forward to your involvement in the project. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

JPB:clh

Enclosure: check for $600

cc: Ms. Lois Parr, Oakland Development Agency
Mr. John Esposito, Bramalea Pacific
Mr. Tim Brown, Crosby, Heafey, Roach & May
Mr. Donnell Choy, City of Oakland

10/5/88

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay St., 2nd Floor
Oakland, CA 94612

Mr. James P. Bowers
Subsurface Consultants, Inc.
171 12th Street
Suite 201
Oakland, CA 94607

Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, CA 94612

Mr. Tim Brown
Crosby, Heafey, Roach & May
1999 Harrison Street
Oakland, CA 94612-3573

Mr. Donnell Choy, Attorney
City of Oakland
One City Hall Plaza
Oakland, CA 94612

1330 Martin Luther King Jr. Way, Oakland 6/6/89

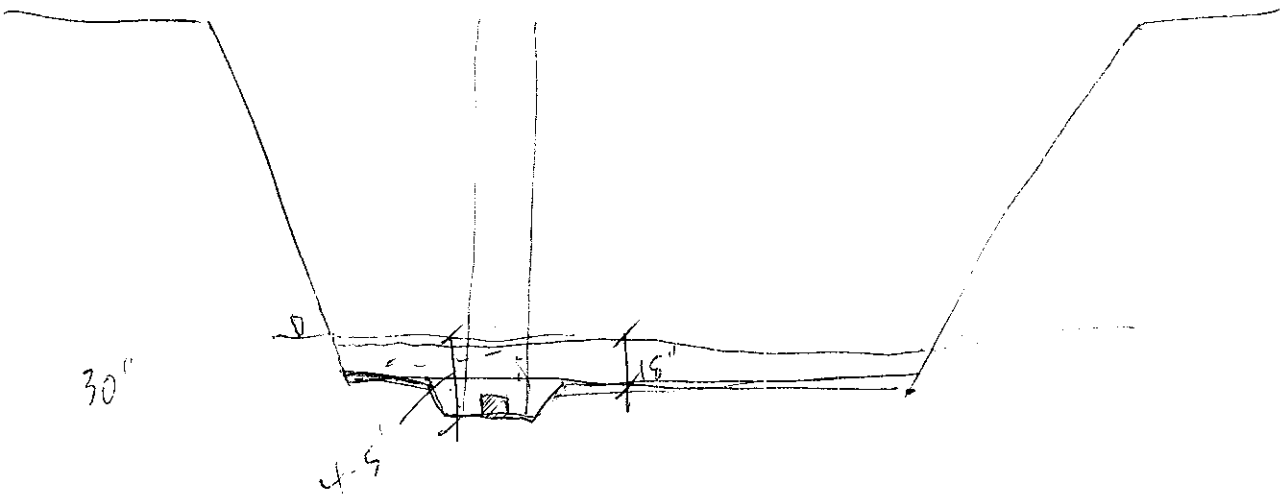
2:45 Site visit at 1330 MLK Jr. Way. Met Jim Bowers at site. He showed me how the soil aeration and replacement was progressing for the 1330 MLK Jr. Way gas tank remediation.

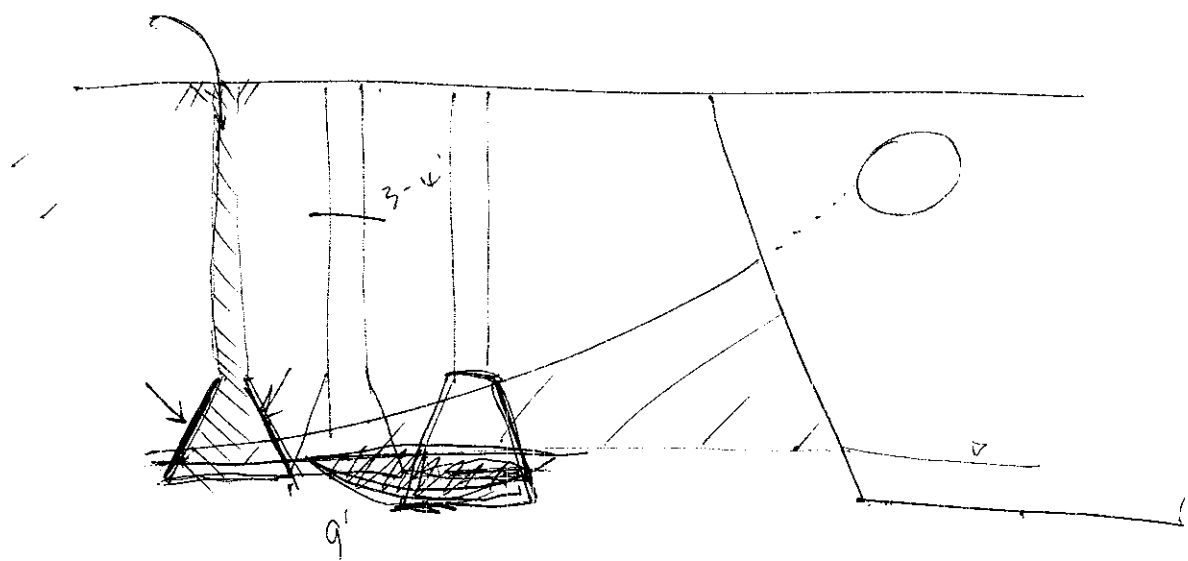
Jim explained the tank belonged to the old fire house located at 14th & MLK Jr. Way

Jim said PNAs & lead were found at the 13th & Jefferson corner of the site. Jim believes these to have come from the burning of the Hotel ~~Hotel~~ Metropole in 1918. Jim explained there are 2 to 4 feet of fire debris at that corner. The lead could be from leaded paint, lead gutters and lead flashing used on the old hotel. Jim also explained the OPD garage used to be at that corner & that there was a fuel island associated with the garage. Gas odors in the soils in that area indicate the tanks leaked. The tanks may still be in the ground.

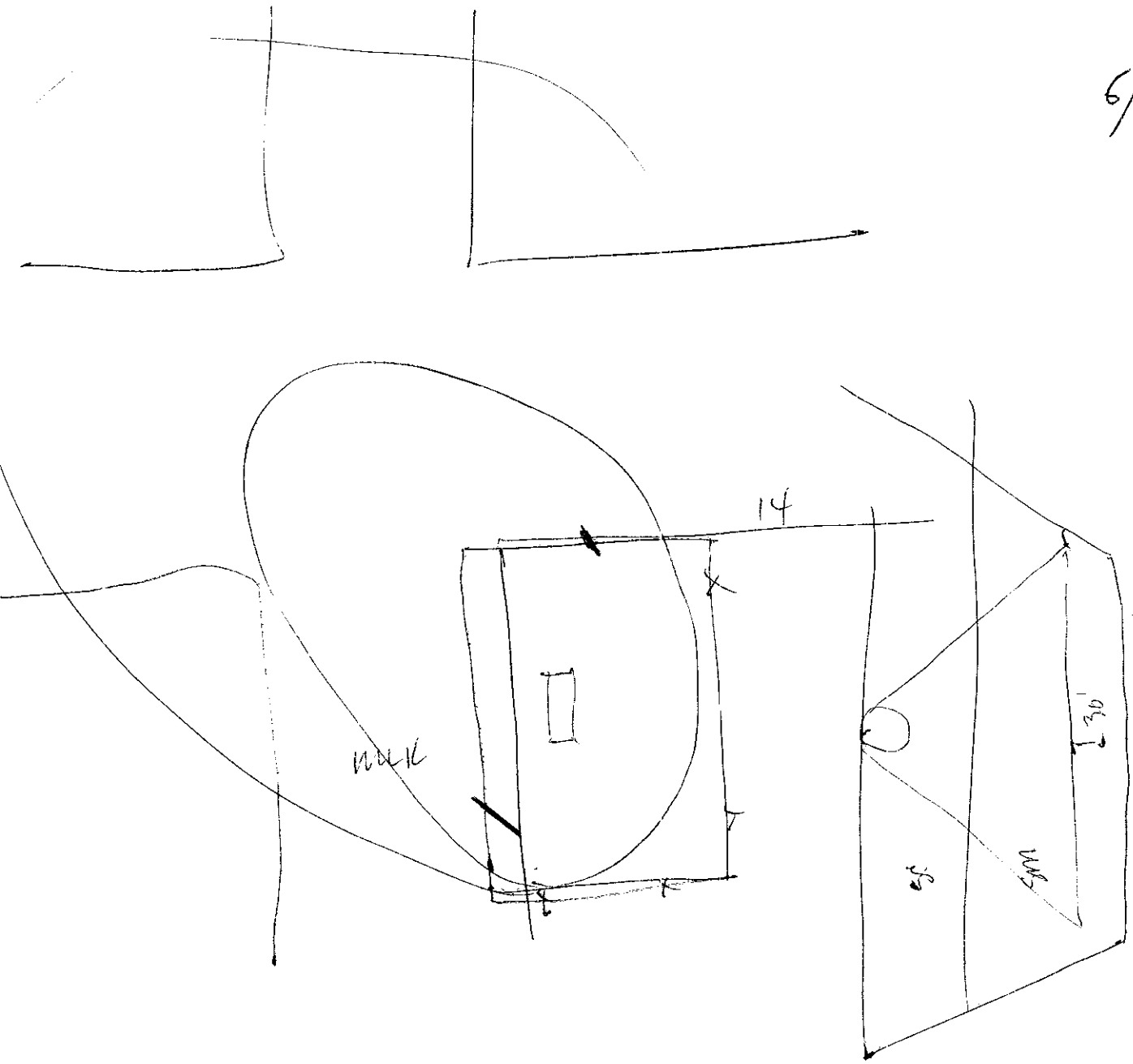
Jim said clearance for digging in the street was obtained through Public Works (Oakland) probably with assistance from the Redevelopment Agency (Oakland) which owns the site.

6/6/89





6/6/89



1330 MLK Jr. Way 12/5/88

~10:00 Spoke with Teri Ann Alexander of Subsurface Consultants. She said excavation of contaminated soil for aeration was beginning on site.

James P. Bowers, PE
R. William Rudolph, Jr., PE

November 9, 1988
SCI 430.005

6/21/89
Per discussion with Jim Bowers, this was for soil pit waste water. However, the water was ultimately hauled as hazardous waste & the EBMUD permit was not pursued
K.C.

Mr. James McCarthy
East Bay Municipal Utility District
Post Office Box 20455
Oakland, California 94623

Groundwater Remediation
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Mr. McCarthy,

Subsurface Consultants, Inc. (SCI) is presently consulting with the City of Oakland Redevelopment Agency regarding groundwater contamination at the referenced site. In general, SCI has identified a layer of floating gasoline and a contaminated groundwater plume downgradient of a previous underground storage tank. The necessary studies to remediate the problem are currently underway. As part of the remediation effort, SCI is proposing to:

1. Locally depress the groundwater table to promote extraction of free floating gasoline,

2. Utilize a product recovery pump to isolate and remove free product, and

3. Treat contaminated groundwater generated from the water level depression wells.

We have contacted Mr. Don Dahlke, Division Chief with the Regional Water Quality Control Board (RWQCB), regarding a National Pollution Discharge Elimination System (NPDES) permit to discharge the treated water. He indicated that the RWQCB recently passed Resolution No. 88-160 stating the Boards' position on the disposal of extracted groundwater from groundwater cleanup projects. This resolution requests that dischargers first pursue discharging extracted groundwater to Publicly Owned Treatment Works (POTW) prior to applying for a NPDES permit.

The East Bay Municipal Utility District (EBMUD) is the local POTW which would, under this resolution, be required to accept the treated, extracted groundwater if it were technically and economically feasible to do so. On November 3, 1988, we contacted you regarding EBMUD's ability to accept the extracted groundwater which will be generated. We would like to formally request that the City of Oakland be granted permission to discharge the water into the sanitary sewer system, assuming that the water is treated to your satisfaction. We anticipate that the initial discharges would occur in early January, 1989.

We would appreciate a written statement recording EBMUD's policy. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Jeriann Alexander

Jeriann Alexander
Project Manager

James P. Bowers

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

JNA:RWR:JPB:clh

cc: Mr. Don Dahlke, RWQCB
Mr. John Esposito, Bramalea Pacific, Ltd.
Ms. Lois Parr, City of Oakland
Mr. Donnell Choy, City of Oakland
Mr. Tim Brown, Crosby, Heafy, Roach & May
✓Ms. Katherine Chesick, Alameda County Health Agency

1330 MLK Jr. Way Oakland 10/5/88

10:40 Called Lois Parr to verify she is the owner. Lois confirmed she is acting as the site owner. She said Bramalea Pacific is acting as her agent in getting site mitigation done. Bramalea Pacific hired Subsurface Consultants. Lois asked if we could also cc John Esposito (Bramalea Pacific) Tim Brown (Crosby, Heafey, Roach & May) and Mr. Donnell Choy (Oakland City Attorney) in addition to Jim Bowers (Subsurface Consultants)

11:50 Spoke with Jim Bowers. I told him OK to go ahead with proposed aeration (Remediation Plan 1). Informed him I would be documenting the go-ahead in a letter. Also told him to aerate & sample according to BAAQMD regulations & to notify us of aeration & sampling procedures. Told him the main emphasis is to remove the free product. Jim said he was preparing a contract for free product removal. (No soil excavation happening currently). Jim said there was sufficient contamination around the tank to indicate tank is responsible for plume. He reminded me of the sample collected beneath the tank with 1,000 ppm TPH.

Jim said there is another tank at Jefferson & 13th & he will be notifying me of that.

Jim also said he will handle the site TPH problem separately from the tank problems.

P 691 211 066

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to LOIS PAPP OAKLAND Redevelopment	
Street and No. 1417 Clay St., 2nd Fl.	
P.O., State and ZIP Code OAKLAND, CA. 94612	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985

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

Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621

Telephone Number: (415) 271-4320

Certified Mail # P 691 211 066

October 6, 1988

Mrs. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

RE: Soil Excavation & Aeration at 1330 Martin Luther King, Jr. Way, Oakland,

Dear Ms. Parr:

We have reviewed the Phase 1 Remediation Plan for soil excavation and aeration at 1330 Martin Luther King, Jr., Way, in Oakland. The plan is acceptable to us and may be carried out. We require notification of the excavation and aeration proceedings as they occur. Aeration and stockpile soil sampling must be conducted according to the Bay Area Air Quality Management District's regulations.

We will be sending a letter to you shortly outlining addition site cleanup requirements. These requirements will be developed by our office and the Regional Water Quality Control Board.

If you have any questions about these matters, please contact Katherine Chesick, Hazardous Materials Specialist, at 271-4320. We look forward to working with you.

Sincerely,

Rafat A. Shahid, Chief,
Hazardous Materials Program

RAS:KC:mnc

cc: James P. Bowers, Subsurface Consultants, Inc.
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Donnell Choy, Attorney
Lisa McCann, RWQCB-SF Region
Dwight Hoenig, DOHS
Gil Jensen, Alameda County District Attorney, Consumer & Environmental Protection Agency

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *†(Extra charge)†*
2. ☐ Restricted Delivery *†(Extra charge)†*

3. Article Addressed to:
MRS. LOIS PARR
OAKLAND REDEVELOPMENT AGENCY
1417 CLAY ST., 2ND FLOOR.
OAKLAND, CA 94612

4. Article Number
P691 211 066

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
10-13-88

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

File Copy 7/22/88 JHM

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

RECEIVED JUL 29 1988 HAZARDOUS MATERIALS WASTE PROGRAM

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED Katherine Chesick DATE 7/22/88

REPORT DATE 07/08/88 | CASE #

REPORTED BY
NAME OF INDIVIDUAL FILING REPORT: James P. Bowers | PHONE: (415) 268-0461 | SIGNATURE: James P Bowers
REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER
COMPANY OR AGENCY NAME: Subsurface Consultants, Inc.
ADDRESS: 171 12th Street, Suite 201 | CITY: Oakland | STATE: CA | ZIP: 94607

RESPONSIBLE PARTY
NAME: Oakland Redevelopment Agency ☐ UNKNOWN | CONTACT PERSON: Ms. Lois Parr | PHONE: (415) 273-3692
ADDRESS: 1417 Clay Street, 2nd Floor | CITY: Oakland | STATE: CA | ZIP: 94612

SITE LOCATION
FACILITY NAME (IF APPLICABLE) | OPERATOR | PHONE: ( )
ADDRESS: 1330 Martin Luther King Jr. Way | CITY: Oakland | COUNTY: CA | ZIP: ~~94612~~ 94607
CROSS STREET: 14th Street
TYPE OF AREA ☒ COMMERCIAL ☐ INDUSTRIAL ☐ RURAL ☐ RESIDENTIAL ☐ OTHER
TYPE OF BUSINESS ☐ RETAIL FUEL STATION ☐ FARM ☒ OTHER Fire Station

IMPLEMENTING AGENCIES
LOCAL AGENCY / AGENCY NAME: Alameda County Health Care Services Agency | CONTACT PERSON: Ms. Katherine Chesick | PHONE: (415) 271-4320
REGIONAL BOARD: San Francisco | ~~Mr. Greg Zentner~~ Ms. Lisa McCann | PHONE: (415) 464-1036

SUBSTANCES INVOLVED
(1) NAME: Gasoline | QUANTITY LOST (GALLONS): ☒ UNKNOWN
(2) ☐ UNKNOWN

DISCOVERY/ABATEMENT
DATE DISCOVERED: 07/07/88 | HOW DISCOVERED ☐ TANK TEST ☐ INVENTORY CONTROL ☐ TANK REMOVAL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☒ OTHER Test Boring
DATE DISCHARGE BEGAN: ☒ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☒ REMOVE CONTENTS ☐ REPLACE TANK ☒ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☒ OTHER removed tank

SOURCE/CAUSE
SOURCE OF DISCHARGE: ☒ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☐ OTHER
TANKS ONLY/CAPACITY: 550 GAL. | AGE YRS | ☒ UNKNOWN
MATERIAL: ☐ FIBERGLASS ☒ STEEL ☐ OTHER
CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☒ CORROSION ☐ UNKNOWN ☐ SPILL ☐ OTHER

CASE TYPE
CHECK ONE ONLY: ☐ UNDETERMINED ☐ SOIL ONLY ☑ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS
CHECK ONE ONLY: ☒ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☐ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) ☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ TREATMENT AT HOOKUP (HU) ☐ NO ACTION REQUIRED (NA) ☑ OTHER (OT) in-situ soil remediation considered

COMMENTS
Discussion with James Bowers on 7/22/88 indicates soil contamination of up to 7,000 ppm hydrocarbons and groundwater contamination of up to 90 mg/l hydrocarbons. Soil contamination extends offsite across Martin Luther King Jr. Way.
K. Chesick

HSC 05 (4/87)

James P. Bowers, PE
R. William Rudolph, Jr., PE

September 23, 1988
SCI 430.002

Ms. Katherine Chesick
Alameda County Health Care Agency
Division of Hazardous Materials
80 Swan Way, #200
Oakland, California 94621

Remediation Plan - Phase 1
Soil Excavation and Aeration
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Ms. Chesick,

The City of Oakland is planning to initiate remediation of soil/groundwater contamination resulting from gasoline leakage from a tank at the referenced address. The tank was removed on June 6, 1988 under your observation. Soil and groundwater remediation will be performed in phases. The first phase will consist of excavating and aerating clayey contaminated soils that exist below the previous tank.

Soil excavation will remove soils within about 16 feet of the groundsurface within the area shown on Plate 1. These soils contain significantly more clay and silt than the underlying sandy soils. The area shown on Plate 1 represents the lateral extent of soil contamination at a depth of about 16 feet and is based on the analytical test results recorded in our July 29, 1988 report (Progress Report 1, SCI 430.002). The contaminated soils below a depth of 16 feet and extending to groundwater (which is about 26.5 feet below grade) will be remediated using in situ technologies, the details of which will be discussed with you in the near future. At this time, we seek your authorization to proceed with the first phase of remediation, i.e. excavation and aeration, prior to the coming rainy season. We will proceed with subsequent phases of remediation as soon as the engineering studies can be completed, and the necessary agency approvals are obtained. The following plan is proposed for Phase 1.

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

A. **Property Owner**

City of Oakland
Office of Economic Development and Employment
1417 Clay Street
Oakland, California 94612

Contact: Ms. Lois Parr (415) 273-3692

B. **Company Overseeing Closure (Consultant)**

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607

Contact: Mr. James P. Bowers (415) 268-0461

C. **Company Performing the Work (Contractor)**

Contractor has not been selected yet; the bidding process is currently underway. Contractor details will be submitted as soon as the selection process is complete.

D. **Location of Excavation**

1330 Martin Luther King, Jr. Way
Oakland, California 94612

E. **Previous Tank Information**

Contents	Estimated Capacity (Gallons)	Estimated Year Installed	Tank Type
Gasoline	550	mid 1940's	Steel

F. **Sampling and Analyses**

1. **Analytical Testing**

All analytical testing will be performed by a California Department of Health Services (DHS) certified analytical laboratory. The analytical tests will be performed as required by the San Francisco Bay Area Air Quality Management District, (BAAQMD). The analytical tests will be directed toward the materials stored in the tank, i.e., gasoline. The tests will include:

a. Total petroleum hydrocarbons (TPH) (as gasoline)- sample preparation using EPA Method 5030 (purge and trap); analyses using EPA Method 8015 (gas chromatography coupled to a flame ionization detector),

b. Quantification of benzene, toluene, xylene and ethylbenzene (BTXE) - sample preparation using EPA Method 5030 (purge and trap); analyses performed using EPA Method 8020 (gas chromatography coupled to a photo-ionization detector),

G. Soil Aeration

The method of soil aeration and analytical testing during aeration, will be directed toward satisfying the requirements of the BAAQMD. In general, the soil aeration method will include (1) utilizing an impermeable barrier on which to store and aerate the contaminated soils, (2) excavating the contaminated soils, storing them in a separate area and covering them with an impermeable membrane, (3) determining the TPH concentrations in the contaminated soils, (4) removing and aerating the contaminated soils, using the aeration rates required by the BAAQMD, (5) turning the aerating soils at least daily, (6) analytically testing the aerating soils to determine when the TPH concentration drops below 100 ppm, (7) storing the aerated soils in a separate area, and (8) using the aerated soil to backfill the excavation. Aeration will occur in the area shown on Plate 2. This area is currently covered by concrete slabs. Sections through the excavation are presented on Plate 3.

Prior to aeration, we will collect two soil samples for every 100 cubic yards (cy) of material to be aerated and have them analyzed for TPH by a DHS certified analytical laboratory. We understand from the BAAQMD, that BTX&E tests of the soil to be aerated are not required. Based upon the test results and requirements of the BAAQMD, the allowable rate of aeration of contaminated soil will be determined. A copy of the BAAQMD requirements "Regulation 8, Organic Compounds, Rule 40" is attached. After aeration, we will collect two soil samples for every 100 cy of aerated soil for analytical testing. Analytical tests will be conducted on composite samples as specified in the BAAQMD guidelines. In addition, in order to obtain a quick and rough estimate of the progress of soil aeration, we will collect a minimum of 4 soil samples for every 100 cy of aerated soils during aeration; the samples will be field tested with an organic vapor meter. These field and laboratory tests will allow us to estimate the rate of aeration and to confirm that the goal of a soil TPH concentration less than 100 ppm has been achieved.

Must have conformation lab analyses done

H. **Subcontractors**

1. **Analytical Laboratory**

Curtis and Tompkins, Ltd.
2323 5th Street
Berkeley, California 94710

Contact: Mr. Stephen L. Jensen
(415) 486-0900
Hazardous Waste Testing Laboratory
Certificate Number:159

I. **Miscellaneous**

1. If necessary, hazardous Waste Manifests will be completed and accompany transport of waste materials taken off-site to a disposal or reclamation facility. At the present time, no off-site disposal is planned.

2. Chain-of-Custody forms will be used to document all sample transfers from the site to the analytical laboratory.

3. A report will be submitted to you describing closure activities and presenting sample analysis results. Copies of laboratory reports and Chain-of-Custody records will be included in the report.

If you have questions regarding our Phase 1 closure plan, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

JPB:WKW:ggm

List of Attachments:

Plate 1	Site Plan
Plate 2	Soil Aeration Area
Plate 3	Excavation Profiles

Guideline Health and Safety Plan
Regulation 8, Organic Compounds, Rule 40

Distribution:

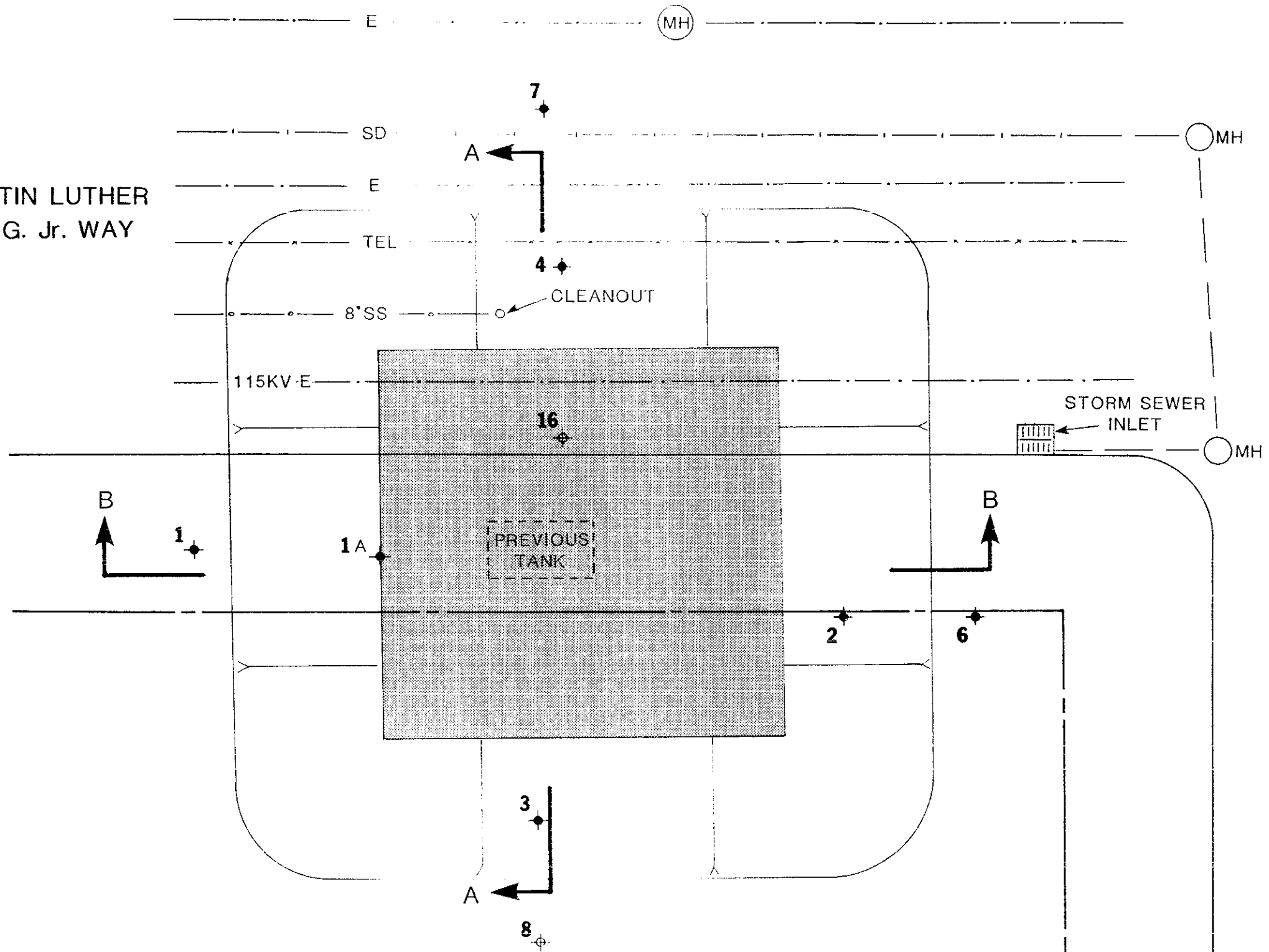
2 copies: Addressee

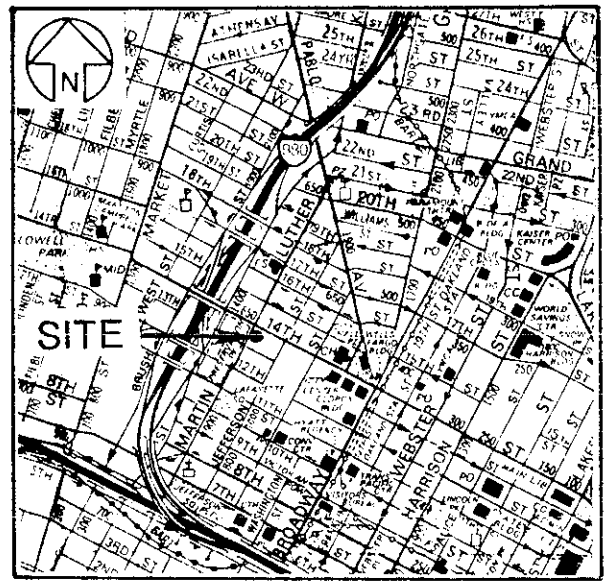
1 copy: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

1 copy: Ms. Lois Parr
City of Oakland
Office of Economic Development and Employment
1417 Clay Street
Oakland, California 94612

1 copy: Mr. Tim Brown
Crosby, Heafey, Roach & May
1999 Harrison Street
Oakland, California 94612 -3573

1 copy: Mr. Donnell Choy, Attorney
City of Oakland
One City Hall Plaza
Oakland, California 94612





VICINITY MAP

TEST BORING

MONITORING WELL

AREA OF EXCAVATION

APPROXIMATE SCALE (feet)

0 10 20

1. Remove and replace curb, gutter and sidewalk per City of Oakland Standard Details.
2. Remove and replace existing sanitary sewer, as necessary, per City of Oakland Standard Details; sewer is currently not in service.
3. 115 KV electrical line is a 6" steel pipeline pressurized (3-4 psi) with nitrogen; must remain operational; can be deactivated for as long as 1 day; to be temporarily supported during excavation.

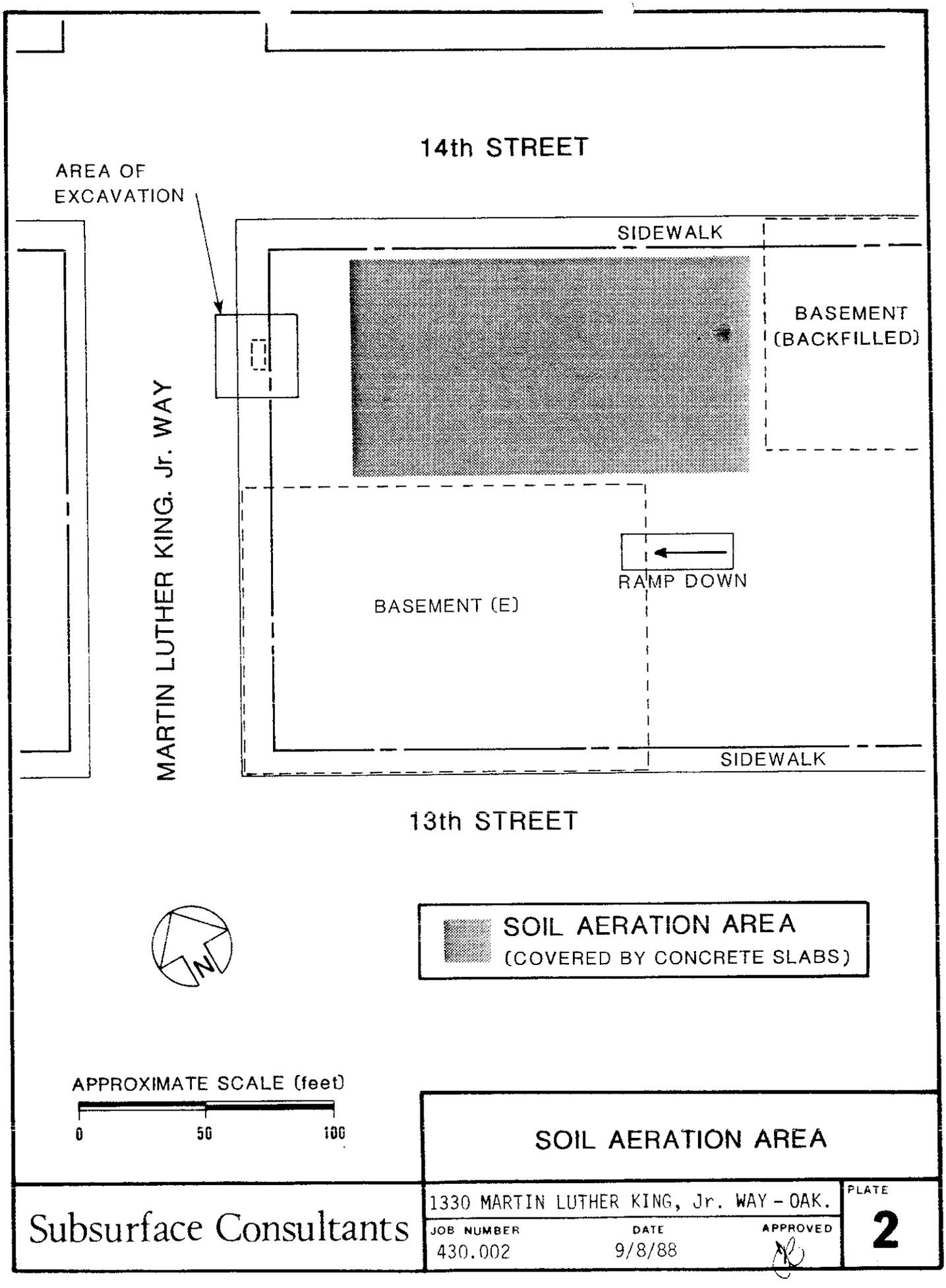
SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING, Jr. WAY – OAK.

JOB NUMBER	DATE	APPROVED
430.002	9/8/88	

PLATE 1



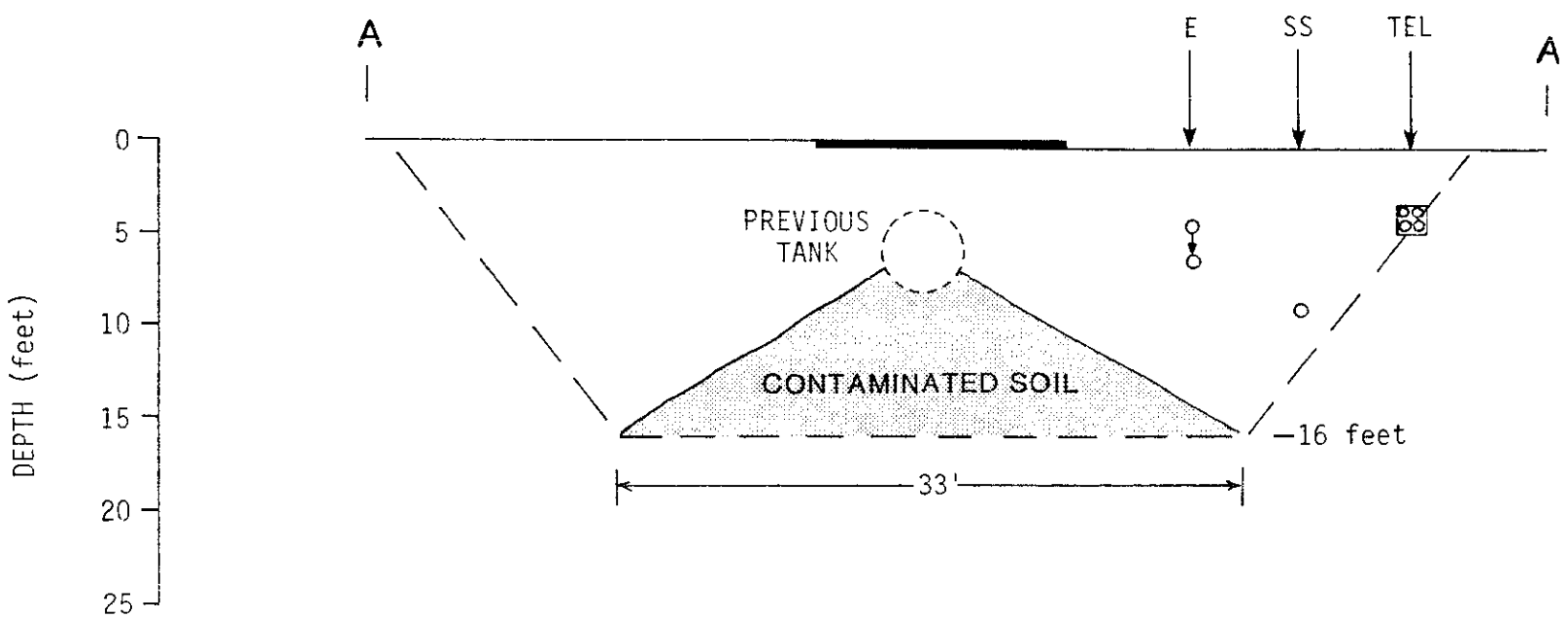
SOIL AERATION AREA

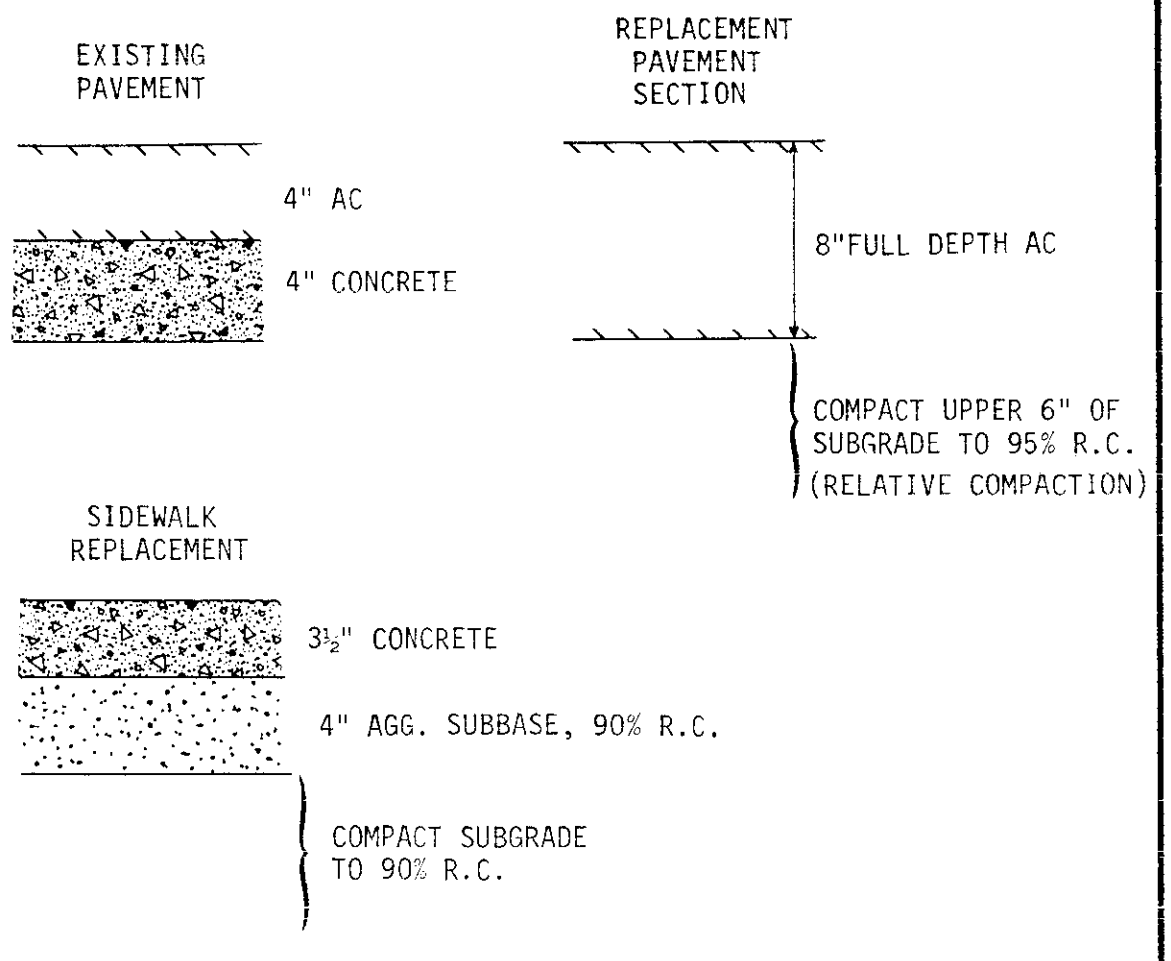
Subsurface Consultants

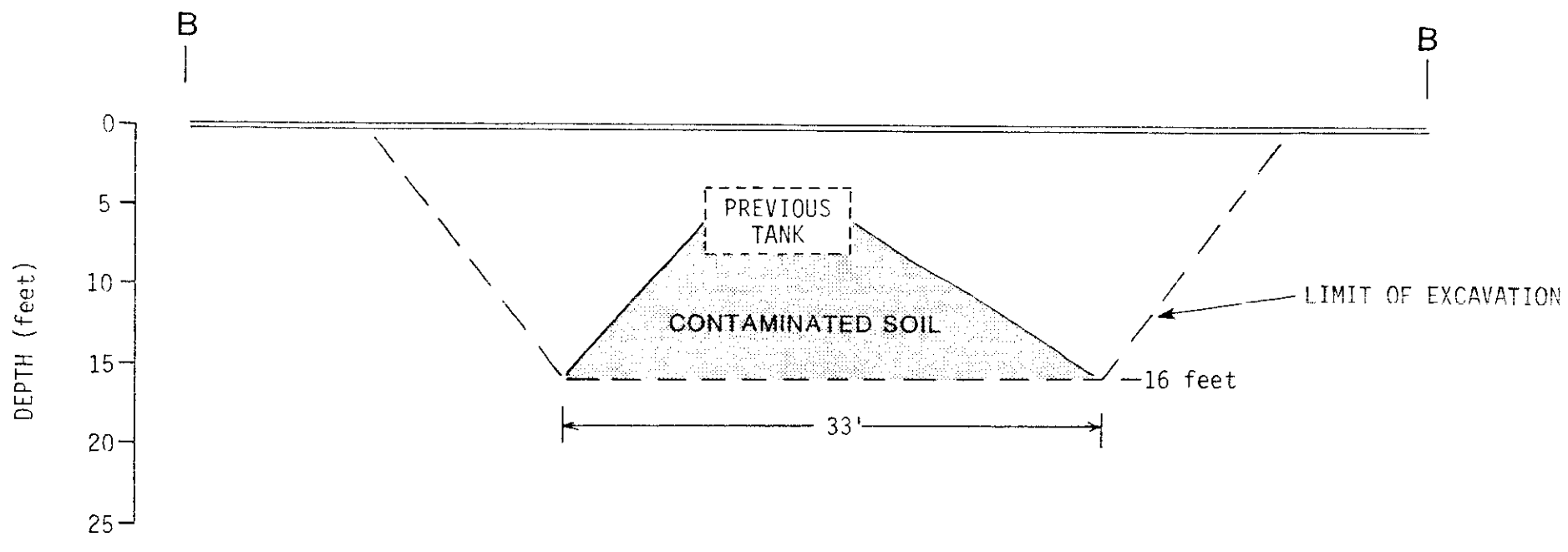
1330 MARTIN LUTHER KING, Jr. WAY - OAK.

JOB NUMBER	DATE	APPROVED
430.002	9/8/88	

PLATE 2







APPROXIMATE SCALE (feet)

0 10 20

horizontal and vertical

EXCAVATION PROFILES

Subsurface Consultants

1330 MARTIN LUTHER KING, Jr. WAY - OAK.

JOB NUMBER	DATE	APPROVED
430.002	9/23/88	

PLATE 3

REGULATION 8
ORGANIC COMPOUNDS
RULE 40

AERATION OF CONTAMINATED SOIL AND REMOVAL OF UNDERGROUND STORAGE TANKS

INDEX

BAAQMD 771-6000 (JULIE DJOCAK)

REGULATION 8
ORGANIC COMPOUNDS
RULE 40

AERATION OF CONTAMINATED SOIL
AND
REMOVAL OF UNDERGROUND STORAGE TANKS
(Adopted July 16, 1986)

8-40-100 GENERAL

8-40-101 Description: The purpose of this Rule is to limit the emission of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills; to describe an acceptable soil aeration procedure; and to describe an acceptable procedure for controlling emissions from underground storage tanks intended for removal.

8-40-110 Exemption, Storage Piles: Calculations of aeration volume under Section 8-40-204 shall not include storage piles that are covered per Section 8-40-303; nor shall they include active storage piles.

8-40-111 Exemption, Excavated Hole: The exposed surface of an excavated hole shall not be included in calculations of aerated volume under Section 8-40-204.

8-40-112 Exemption, Sampling: Contaminated soil exposed for the sole purpose of sampling shall not be considered to be aerated. Removal of soil for sampling shall not qualify a pile as "active."

8-40-113 Exemption, Non-volatile Hydrocarbons: The requirements of this Rule shall not apply if the soil is contaminated by a known organic chemical or petroleum liquid, and that chemical or liquid has an initial boiling point of 302°F or higher, provided that the soil is not heated.

8-40-200 DEFINITIONS

8-40-201 Active Storage Pile: A pile of contaminated soil to which soil is currently being added or from which soil is currently being removed. Activity must have occurred or be anticipated to occur within one hour to be current.

8-40-202 Aeration: Exposure of excavated contaminated soil to the air.

8-40-203 Aeration Depth: The smaller of the following: the actual average depth of contaminated soil; or 0.15 meters (0.5 feet) multiplied by the daily frequency with which soil is turned. The exposed surface area includes the pile of excavated soil unless the pile is covered per Section 8-40-303.

8-40-204 Aeration Volume: The volume of soil being aerated shall be calculated as follows: the exposed surface area (in square feet or square meters) shall be multiplied by the aeration depth.

8-40-205 Contaminated Soil: Soil which has an organic content, as measured using the procedure in Section 8-40-602, exceeding 50 ppm(wt).

8-40-206 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-40-207 Organic Content: The concentration of organic compounds measured in the composite sample collected and analyzed using the procedures in Sections 8-40-601 and 8-40-602.

8-40-208 Vapor Free: The process of purging gases from a tank using dry ice to replace organic vapors with an inert atmosphere.

8-40-209 Ventilation: The process of purging gases from a tank by blowing or drawing another gas through the tank.

8-40-300 STANDARDS

8-40-301 Uncontrolled Aeration: A person shall not aerate contaminated soil at a rate in excess of that specified in Table 1 for the degree of organic content. The limitations in Table 1 apply to the entire facility, and indicate the volume of contaminated soil that may be added, on any one day, to soil that is already aerating.

Table 1
Allowable Rate of Uncontrolled Aeration

ORGANIC CONTENT ppm (weight)	RATE OF UNCONTROLLED AERATION Cubic meters/day	Cubic yards/day
<50	Exempt from this Rule.	Subject to Rule 8-2.
50-100	459.0	600
100-500	91.8	120
500-1000	45.9	60
1000-2000	22.9	30
2000-3000	11.5	15
3000-4000	7.6	10
4000-5000	5.7	8
>5000	0.08	0.1

8-40-302 Controlled Aeration: Soil may be aerated at rates exceeding the limitations of 8-40-301 provided emissions of organic compounds to the atmosphere are reduced by at least 90% by weight.

8-40-303 Storage Piles: Contaminated soil which is not being aerated shall be covered except when soil is being added or removed. Any uncovered contaminated soil will be considered to be aerated. The soil may be covered with a layer of uncontaminated soil no less than six inches deep; or it may be covered with a tarp or other covering, provided no head space where vapors may accumulate is formed.

8-40-310 Underground Storage Tanks--Decommissioning: Any person wishing to permanently decommission an underground storage tank which previously contained organic compounds shall follow the following procedure:

310.1 All piping shall be drained and flushed into the tank or other container.

310.2 All liquids and sludges shall be removed, to the extent possible, from the tank. It may be necessary to use a hand pump to remove the bottom few inches of product.

310.3 Vapors shall be removed from the tank using one of the following three

methods:

3.1 The tank may be filled with water, displacing vapors and hydrocarbon liquids. Water used for this purpose must be collected and/or disposed of in a manner approved by the APCO.

3.2 Vapor freeing.

3.3 Ventilation.

8-40-311 **Vapor Freeing:** No person shall vapor free a tank containing more than 0.001 gallons of liquid organic compounds per gallon of tank capacity unless emissions of organic compounds to the atmosphere are reduced by at least 90%.

8-40-312 **Ventilation:** No person shall ventilate a tank containing more than 0.001 gallons of liquid organic compounds per gallon of tank capacity unless emissions of organic compounds to the atmosphere are reduced by at least 90%.

8-40-400 ADMINISTRATIVE REQUIREMENTS

8-40-401 **Excavation of Contaminated Soil:** The person responsible for aeration of any contaminated soil shall provide the District, by telephone, with the following information. This shall be provided no less than 24 hours prior to the spreading or heating of any contaminated soil. The District shall be notified within 24 hours if any of the parameters change.

401.1 Estimated total quantity of soil to be aerated.

401.2 Estimated quantity of soil to be aerated per day.

401.3 Estimated average degree of contamination, or total organic content of soil.

401.4 Chemical composition of contaminating organic compounds (i.e., gasoline, methylene chloride, etc.).

401.5 A description of the basis from which these estimates were derived (soil analysis test reports, etc.).

8-40-600 MANUAL OF PROCEDURES

8-40-601 **Soil Sampling:** One composite sample shall be collected and analyzed for every 50 cubic yards of excavated contaminated soil to be aerated. At least one composite sample shall be collected from each inactive, uncovered storage pile within 24 hours of excavation. Samples are not required if the soil is uncontaminated.

601.1 Each composite sample shall consist of four separate soil samples taken using the procedures described below. The soil samples shall remain separate until they are combined in the laboratory just prior to analysis.

601.2 Samples shall be taken from at least three inches below the surface of the pile. Samples shall be taken using one of the following two methods:

1.1 Samples shall be taken using a driven-tube type sampler, capped and sealed with inert materials, and extruded in the lab in order to reduce the loss of volatile materials; or

1.2 Samples shall be taken using a clean brass tube (at least three inches long) driven into the soil with a suitable instrument. The ends of the brass tube shall then be covered with aluminum foil, then plastic end caps, and finally wrapped with a suitable tape. The samples shall then be immediately placed on ice, or dry ice, for transport to a laboratory.

8-40-602 **Measurement of Organic Content:** Organic content of soil shall be determined by the Regional Water Quality Control Board's Revised Analytical Methods, Attachment 2, 11/8/85, or any other method approved by the APCO.

8-40-603 **Determination of Emissions:** Emissions of organic compounds as specified in Section 8-40-302 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7.

GUIDELINE SITE SAFETY PLAN
CONTAMINATED SOIL EXCAVATION AND AERATION
MARTIN LUTHER KING, JR. WAY & 14th STREET
OAKLAND, CALIFORNIA
SCI 430.002

Prepared for:

Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

September 23, 1988

I INTRODUCTION

This site safety plan pertains to the excavation of contaminated soils at a site located near the southwest corner of the intersection of Martin Luther King Jr. Way and 14th Street in Oakland, California. The location of the site is shown on Plate 1, Site Plan.

Subsurface Consultants, Inc. (SCI) investigated subsurface conditions at the site and recorded the results in a report dated July 29, 1988. In summary, our investigation indicates that detectable concentrations of gasoline including volatile constituents of gasoline, i.e., benzene, toluene, xylene and ethylbenzene, are present in the soil and groundwater at the site.

As part of site mitigation, an excavation measuring about 33 by 33 feet in plan and about 16 feet deep will be made to remove gasoline contaminated soils. Soil contamination below a depth of 16 feet will be mitigated using other remedial technologies. The excavated soils will be aerated in areas adjacent to the excavation in accordance with Bay Area Air Quality Management District, (BAQMD) guidelines. This Site Safety Plan outlines a personnel and work site safety program to minimize the risk of contractor actions endangering personnel and/or nearby property.

Site security ? (see bottom of p. 4)

II HEALTH AND SAFETY CONSIDERATIONS

A. Key Personnel

James P. Bowers: Health and Safety Officer/Project Manager- Responsible for planning, implementing and auditing the health and safety program for the project and supervising field sampling activities. He will be contacted if and when emergency situations develop.

G. Thomas Tebb: Field Coordinator/Project Geologist/Field Safety Officer -

Responsible for coordinating field health and safety activities.

B. Hazardous Substance Description

Light petroleum hydrocarbons (gasoline) have been detected in soil at the site. Gasoline concentrations in soil of up to 7660 mg/kg (ppm) have been measured at the site. However, within the depth of excavation, gasoline concentrations in soil are anticipated to be as high as about 2000 ppm.

C. Chemical Distribution

Gasoline appears to exist in the soils within the area to be excavated down to the groundwater table, which is situated about 26 feet below grade.

D. Chemical Hazards

Potential chemical hazards include skin and eye contact and inhalation or exposure to potentially toxic concentrations of gasoline and volatile organic chemical vapors. The identified toxic compounds that exist at the site are listed below, with

descriptions of specific health effects of each. The list includes the primary toxic constituents of gasoline (benzene, toluene, xylene and ethylbenzene).

1. Benzene

   a. **Characteristics:**

      Clear, colorless, highly flammable liquid with characteristic odor

   b. **High exposure levels may cause:**

      Acute restlessness, convulsions, depression, respiratory failure, is a suspected carcinogen

   c. **Permissible exposure level (PEL) for a time weighted average (TWA) over an eight hour period:** 1.0 ppm

2. Toluene

   a. **Characteristics:**

      Refractive, flammable liquid with benzene-like odor

   b. **High exposure levels may cause:** mild macrocytic anemia, but not leukopenia (less toxic than benzene)

   c. **PEL for an 8-hour TWA:** 100 ppm

3. Xylene

   a. **Characteristics:** Mobile, flammable liquid

   b. **High exposure levels may cause:** Narcosis

   c. **PEL for an 8-hour TWA:** 100 ppm

4. **Ethylbenzene**

a. **Characteristics:** Clear, colorless, highly flammable liquid with characteristic odor

b. **High exposure levels may cause:** Irritation to skin, nose and throat, dizziness, constriction in chest, loss of consciousness, respiratory failure.

c. **PEL for an 8-hour TWA:** 100 ppm

E. Physical Hazards

Other on-site hazards may include physical injuries due to the proximity of workers to engine-driven heavy equipment and tools. Heavy equipment used during excavation will include a backhoe and may include other equipment as part of soil removal and subsequent backfilling operations. Only trained personnel will operate machines, tools, and equipment; all will be kept clean and in good repair. Safety apparel required around heavy equipment will include a hard hat. (safety shoes?)

The perimeter of the excavation will be shored and/or sloped to create acceptably stable temporary cut slopes. All work will be performed in accordance with OSHA guidelines. The excavation area will be enclosed by fencing.

III WORK PLAN INSTRUCTIONS

A. Level of Protection

Regular surveys of the site and knowledge of the anticipated hazards will determine the level of protection and the proper safety procedures to be employed. The workers coming into contact with the excavated materials will wear disposable coveralls, disposable latex gloves, hard hat, and eye protection.

The level of protection for personnel working in the area will be upgraded if organic vapor levels in the operators' breathing zone exceed 0.5 ppm above background levels continuously for more than 5 minutes. In this event, personnel protective equipment will include double cartridge respirators for organic vapors, disposable coveralls, gloves, and hard hat with safety shield or safety glasses.

Excavation will cease, equipment will be shut down, and personnel will withdraw from the area if either (1) the organic vapor concentration in the operators' breathing zone exceeds 200 ppm for a period of 5 minutes, or (2) the organic vapor concentration two feet above the excavation exceeds 2000 ppm or ~~25~~ 10% percent of the lower explosive limit. The Health and Safety Officer will determine when personnel may return to the work area. If work proceeds in an environment where organic vapor concentrations exceed 200 ppm, a self-contained breathing apparatus or an airline respirator will be utilized by the personnel. Work will be terminated in an environment where

respirator type?
↓
half face respirator unless in excavation then use airline respirator

too high for half face respirator if benz is present

at 10 ppm when 10% LEL is present

oxygen concentrations fall below 19.5 percent, where cartridge respirators are in use.

B. Combustible Gas and Organic Vapor Monitoring

Site personnel will monitor ambient levels of combustible gas vapors using a Gastech Hydrocarbon Supersurveyor, Model 1314 and a portable Organic Vapor Analyzer (OVA). The Health and Safety Officer will be notified if organic vapor levels in the samples exceed ambient concentrations in the samples.

C. Site Entry Procedures

The general work area is shown on the Site Plan. All personnel entering the work zone will be qualified field personnel wearing the proper level of protection. Eating, drinking, smoking and any other practices which increase the probability of hand-to-mouth transfer will be prohibited in the work zone. All field personnel will be instructed to thoroughly wash their hands and face upon leaving the work area. The contractor will provide a wash area in an area designated by the Health and Safety Officer. A first aid kit and a 20-pound ABC fire extinguisher and potable water will be available at the site.

D. Decontamination Procedures

Equipment decontamination areas will be designated by the Health and Safety Officer at the start of excavation. To prevent the transfer of contamination from the work zone into clean areas, all tools will be cleaned with a high pressure, hot water washer prior to removal from the work zone. All disposable

protective clothing will be put into plastic bags and disposed of in a garbage receptacle. Excavated soils will be stockpiled in the area designated in the Remediation Plan, until chemical analyses have been performed on the soil samples. The soils will be covered with plastic sheeting prior to aeration.

In the event of a medical emergency, the injured party will be taken through decontamination procedures, if possible. However, the procedures will be omitted when it may aggravate or cause more harm to the injured party. A member of the work team will accompany the injured party to the medical facility to advise on matters concerning chemical exposure.

IV EMERGENCY MEDICAL CARE

In the event of an injury or suspected chemical exposure, the first responsibility of the Field Safety Officer will be to prevent further injury. This objective will normally require an immediate end to work until the situation is rectified. The Field Safety Officer may order evacuation of the work party.

The Field Safety Officer's primary responsibilities in the event of an accident will be evacuation, first aid, and decontamination of injured team members. The Field Safety Officer will determine safe evacuation areas and begin first aid.

V EMERGENCY PROCEDURES

A. Response to Emergency

In case of an injury, the Field Safety Officer will employ the appropriate first aid and contact off-site medical help, if appropriate. The Health and Safety Officer/Project Manager will be notified. The telephone number for Health and Safety Officer/Project Manager is **(415) 268-0461.**

If medical evacuation to a hospital is required, the route shown on Plate 2 will be followed.

B. Emergency Contacts & Telephone Numbers

Ambulance, Fire, Police: 911

Hospital - Merritt Hospital
350 Hawthorne Avenue
Oakland, California
(415) 655-4000

Chemical Spills: National Response Center (24 hours)
(800) 424-8802

Chemtrec: Chemical Releases(24-hours)
(800) 424-9300

Environmental Protection Agency
Emergency Response Section:
(415) 974-7511

Poison Control Center (24-hours):
(415) 428-3248

Cal-OSHA District Office:
Occupational Injuries
(415) 557-1677

C. Acute Exposure Symptoms and First Aid

Exposure Route	Symptoms	First Aid
Skin	Dermatitis	Wash immediately with soap and water, contact ambulance if evacuation is necessary
Eye	Irritated eyes	Flush eyes with water, transport directly to emergency room, if necessary
Inhalation	Vertigo, tremor	Move person to fresh air, cover source of chemicals
Ingestion	Nausea, vomiting	Call Poison Control Center, arrange transport to emergency medical facility

D. Contingency Plan

The following procedures will be used in case of an unpredictable event:

Fire:	Use fire extinguisher if localized and call the fire department if uncontrolled
Chemical Exposure:	Follow first aid treatment specified previously
Physical Injury:	Provide first aid treatment and contact ambulance for evacuation, if appropriate

List of Attached Plates:

Plate 1	Site Plan
Plate 2	Hospital/Emergency Room Route Plan

Distribution:

1 copy: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

1 copy: Contractor

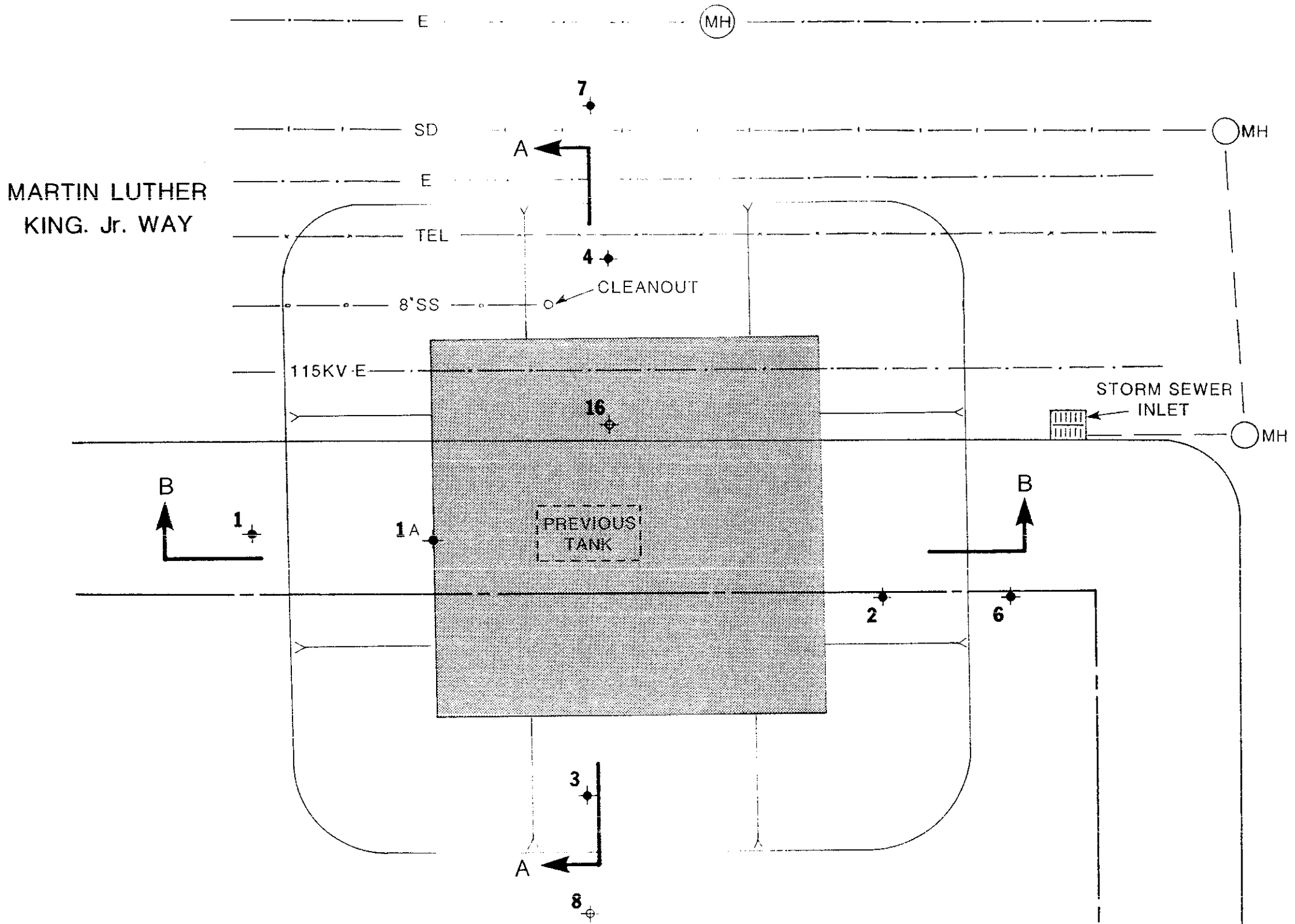
1 copy: Mrs. Katherine Chesick
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, #200
Oakland, California 94621

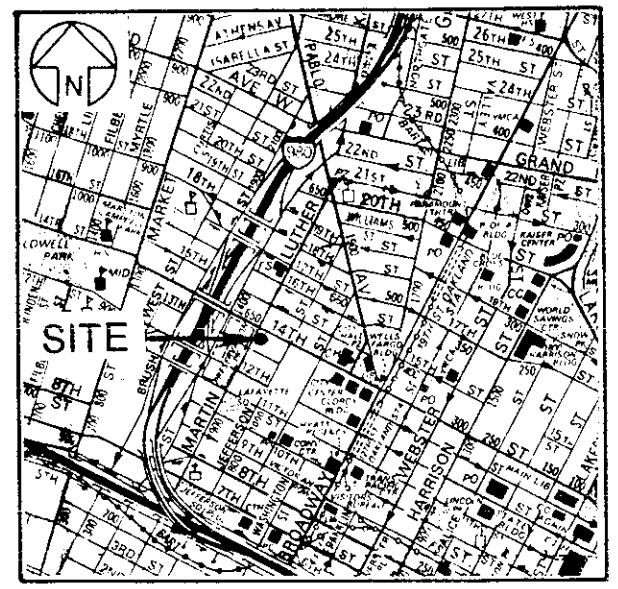
1 copy : Ms. Lois Parr
City of Oakland
1417 Clay Street
Oakland, California 94612

1 copy: Mr. Tim Brown
Crosby, Heafey, Roach & May
1999 Harrison Street
Oakland, California 94612

1 copy: Mr. Donnell Choy, Attorney
City of Oakland
One City Hall Plaza
Oakland, California 94612

JPB:RWR:WKW:ggm





VICINITY MAP

TEST BORING

MONITORING WELL

AREA OF EXCAVATION

APPROXIMATE SCALE (feet)

0 10 20

1. Remove and replace curb, gutter and sidewalk per City of Oakland Standard Details.
2. Remove and replace existing sanitary sewer, as necessary, per City of Oakland Standard Details; sewer is currently not in service.
3. 115 KV electrical line is a 6" steel pipeline pressurized (3-4 psi) with nitrogen; must remain operational; can be deactivated for as long as 1 day; to be temporarily supported during excavation.

SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING, Jr. WAY - OAK.

JOB NUMBER	DATE	APPROVED
430.002	9/8/88	

PLATE 1

SCALE 1:24000

N

HOSPITAL ROUTE

REFERENCE:

OAKLAND WEST, USGS TOPOGRAPHIC MAP 7.5' QUADRANGLE, 1959, PHOTO REVISED 1980.

HOSPITAL/EMERGENCY ROOM ROUTE PLAN

Subsurface Consultants

MLK JR. WAY & 14th STREET, OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.002	9-1-88	

PLATE 2

James P. Bowers, PE
R. William Rudolph, Jr., PE

September 9, 1988
SCI 430.002

Ms. Katherine Chesick
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, #200
Oakland, California 94621

Remediation Concepts
Underground Fuel Tank Leakage
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Ms. Chesick,

This letter serves to record our current conclusions regarding methods to remediate soil and groundwater contamination that has resulted from the gasoline tank referenced above. Subsurface Consultants, Inc. (SCI) has conducted an initial assessment of the problem and recorded the results in a report dated July 29, 1988. Additional investigation has been conducted and will be recorded in a subsequent report, which we anticipate will be published in the next week or so. In brief, our studies to date have indicated that:

1. Up to about 13 inches of free floating gasoline exists on the groundwater surface in a localized area below the tank,

2. Soil contamination in excess of 1,000 parts per million (ppm) exists below the tank and in areas northwest of the tank, beneath Martin Luther King, Jr. Way, and

3. Groundwater in the area contains elevated concentrations of gasoline and benzene, toluene, xylene (BTX).

Soil conditions in the area generally consist of sandy soils to a depth of approximately 40 feet. The upper 15 feet or so of these soils are clayey sands that contain significant quantities of

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

silt and clay. Below these materials are sandy soils that contain significantly less silt and clay. Groundwater exists at a depth of about 26.5 feet in the area.

Following preliminary discussions with you, we understand that remediation will be necessary and will likely include (1) the removal of free floating gasoline, (2) remediation of gasoline contaminated soil, and possibly, (3) groundwater treatment. Conceptually, we believe that the following methods of remediation will be appropriate, given the data developed to date:

1. **Free Product Removal**: Product recovery pumps will be installed in wells in areas of free floating product. The recovered product will be pumped into storage containers, and removed from the site by a petroleum product recycling contractor.

2. **Contaminated Soil Mitigation**: Because contaminated soil exists below major city streets, we propose to utilize vacuum extraction methods to mitigate soil contamination in the sandy soils containing low percentages of silt and clay, i.e., within those soils situated more than 15 feet below the groundsurface. Soil contamination in the clayey soils beneath the previous tank will be removed by excavation and treated on site by aeration. Aeration will be performed on the adjacent vacant lot.

3. **Groundwater Treatment**: If groundwater treatment is necessary, groundwater extraction wells will be installed to remove contaminated groundwater. The groundwater will be treated above grade to remove dissolved hydrocarbons and other organic compounds, such as BTX, using activated carbon filtering methods, and if necessary, air stripping. Treated groundwater will be discharged into the local storm drain system, providing the necessary permit can be obtained. / Sanitary sewer only; not storm drain

As additional information becomes available, it may be necessary to modify our approach to mitigation. At this time, we seek your general concurrence with the proposed remediation scheme. Specific details of remedial activities will be submitted to you for review in the near future, as soon as the necessary field, analytical and design studies are completed. Our tentative schedule is to excavate and aerate the contaminated clayey soils beneath the tank site within the next month, prior to the rainy season. Free product removal will be initiated within the next

one to two months, followed soon thereafter by the installation of the vacuum extraction system. We anticipate that some delays may be incurred in implementing the groundwater extraction and treatment system, because of the time required to obtain the necessary NPDES discharge permit. We will refine our implementation schedule as additional data is obtained and your input is received.

The City of Oakland is very interested in completing remediation in a timely manner. In this regard, we will be contacting you in a day or so to further discuss remediation activities and the scope of further studies.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

JPB:RWR:clh

2 copies submitted

cc: Ms. Lois Parr, City of Oakland
Mr. John Esposito, Bramalea Pacific
Mr. Tim Brown, Crosby, Heafey, Roach & May
Mr. Donnell Choy, City of Oakland

1330 MLK Jr. Way, Oakland 9/6/88

alternative technology section in Sacramento (The ATS likes to issue the variance to the property owner however anyone may apply on behalf of the owner) Tej Pahwa says its OK to put consultants in touch with him & others at ATS to discuss treatment plans and DHS requirements prior to applying for the variance. Tej says this speeds up the variance procedure especially if the consultants meet with ATS people face to face. (Tej says vacuum extraction is best remediation approach in his judgement). Tej says the DHS ATS variance is for treatment technology only. DHS does not get involved in determining clean up levels or clean up extent. DHS ATS looks at remediation from a performance point of view.

9/14/88

Called Jim Bowers. Told him its OK to aerate the soil provided that:

1) It's done according to BAAQMD rules
2) We have a plan outlining excavation/aeration/sampling/details for soil aeration
3) Non-aerating soil must be covered

Also told Jim that during soil excavation for aeration may want to install portion of extraction system while hole is open. Jim said they had considered that...

Jim will be submitting aeration plan shortly.

1330 MLK Jr. Way, Oakland

8/22/88

Product thickness in well 16 is 13 1/2" product.
No product in wells 8 & 11. Product thickness was measured by means of water & gas finding paste. (According to Jim Bowers of Subsurface Consultants)

[redacted] Installed 2 wells - one at 14th & MLK (near corner of intersection, #24); one [redacted] on 14th st. (#25)

Found PNA's in soils sampled for assessment of block.

Summary of conversation with Lisa McCann of RWQCB from August. Lisa said I could take the lead & agreed with me about the site requiring free product groundwater & soil remediation. She said the RWQCB has a non-degradation policy - no remediation numbers available at this time. All free product must be cleaned up. Free product must be measured with an optical probe or some other instrument of equal accuracy. 9/6/88

11:30 Called Tej Pahwa of DHS Alternative Technology. Confirmed that any on-site treatment of hazardous waste requires a variance from DHS. The variance may be applied for at either the Emeryville Regional Office (Permitting Section) or the DHS

James P. Bowers, P.E.
William Rudolph, P.E.

Project # U152457
Fee Paid $600
Date 8/22/88

August 19, 1988
SCI 430.002

RECEIVED
AUG 22 1988
HAZARDOUS MATERIALS/
WASTE PROGRAM

Ms. Katharine Chesick
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, #200
Oakland, California 94621

Dear Ms. Chesick,

As requested, enclosed is a check for $600, representing a deposit to cover County review costs related to the gasoline leakage problem at the corner of Martin Luther King Jr. Way and 14th Street in Oakland.

We appreciate your assistance and look forward to a prompt resolution of the problem. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
President

Enclosure

cc Mr. John Esposito, Bramalea Pacific
Ms. Lois Parr, City of Oakland

JPB:ggm

Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

1330 MLK Jr. Way Oakland 8/10/88

Notes from conversation with Tej Pahwa at DHS alternative technology section

Various demonstration projects for soil remediation

- Contaminated water & soil remediation work being conducted in Santa Barbara by Robert Elbert(?) Associates (REA). Work being done w/ stationary engine, vacuum pump & air compressor → sprays water into aeration chamber.

  Pumping free product → separate, store. No performance data - starting up in several weeks.

  (other consultants working on demonstration projects: Groundwater Inc. Terravac; → working w/ soil rem. w/ low temp. incinerator

Vacuum extraction as a technique seems to work & be cost effective.

Will need a variance. Contractor can apply for for work to be a demonstration project. Benefits consultant in that consultant can be in forefront of technology. Must submit materials according to requirements of DHS package (will include H+S plan, sampling plan). Must contact John Wesnowsky or Fred (Tornatore?) & will receive package of what documents are needed.

1330 MLK Jr. Way, Oakland August 10, 198

Called Alternative Technology Section of DHS. Spoke with Fred Tornatore about remediation technology (on-site) for gasoline contaminated soil. Fred said there are 2 options:

1) in-situ bioremediation - is not a proven technology DHS ATS has not seen it work. Controls are a problem so don't really know if the method works
2) vaccuum extraction - DHS ATS is happy with the results they're seeing to date

No published info yet

Fred said to contact John Wesnousky (916) 322-254 with vacuum extraction questions & contact Tej Pahwa (916) 324-1088 with water remediation/vadose pumping questions.

James P. Bowers, PE
R. William Rudolph, Jr., PE

LETTER OF TRANSMITTAL

TO: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

DATE: July 29, 1988
PROJECT Underground Fuel Tank Leak Assessment
SCI JOB NUMBER: 430.002

WE ARE SENDING YOU:

2 copies
X of our final report
__ a draft of our report
__ a Service Agreement
__ a proposed scope of services
__ specifications
__ grading/foundation plans
__ soil samples/groundwater samples
__ an executed contract
__ _____

X if you have any questions, please call
X for your review and comment
__ please return an executed copy
__ for geotechnical services
__ with our comments
__ with Chain of Custody documents
X for your use
__ _____

REMARKS:

COPIES TO: (2) Ms. Lois Parr, City of Oakland, Office of Economic Dev. & Employment, 1417 Clay Street, Oakland, CA 94612
(2) Ms. Katherine Chesick, Alameda County Health Care Services Agency, 890 Swan Way, Suite 200, Oakland, CA 94621
(1) Mr. Lester Feldman, Regional Water Quality Control Board, 1111 Jackson St Oakland, CA 94607

BY: James P. Bowers

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

Alameda County approval of these plans is for tank removal only. A proposal for additional site characterization and remediation must be submitted to this office within 60 days of tank removal. K.C.

ACCEPTED
DEPARTMENT OF ENVIRONMENTAL HEALTH
470 - 27th Street, Third Floor
Oakland, CA 94612
Telephone: (415) 874-7237

These plans have been reviewed and found to be acceptable and essentially meet the requirements of State and local health laws. Changes to your plans indicated by this Department are to assure compliance with State and local laws. The project proposed herein is now released for issuance of any required building permits for construction.

One copy of these accepted plans must be on the job site and available to all contractors and craftsmen involved in the removal.

Any change or alterations of these plans and specifications must be submitted to this Department and to the Building Inspection Department to determine if such changes meet the requirements of State and local laws.

Notify this Department at least 48 hours prior to the following required inspections:

6/17/88 Removal of Tank and Piping
6/17/88 Sampling
_____ Final Inspection

Issuance of a permit or approval is dependent upon compliance with accepted plans and all applicable laws and regulations.

THERE IS A FINANCIAL PENALTY FOR NOT OBTAINING THESE INSPECTIONS.

Ralph Chapman

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
470 - 27TH ST., RM. 322
OAKLAND, CA 94612
PHONE NO. 415/~~834-7237~~ 271-4320

Project # 4505299
Fee Paid $300.00
Date 6/14/88

UNDERGROUND TANK REMOVAL/~~CLOSURE~~/MODIFICATION PLANS

1. Business Name N/A
   Business Owner N/A
2. Site Address 1330 Martin Luther King, Jr. Way
   City Oakland Zip 94607 Phone —
3. Mailing Address 1417 Clay Street, 2nd Floor
   City Oakland Zip 94612 Phone (415) 273-3692
4. Land Owner Oakland Redevelopment Agency
   Address 1417 Clay St., 2nd Floor City, State Oakland, CA Zip 94612
5. EPA I.D. No. CAC 0000 92669
6. Contractor Cleveland Wrecking Company
   Address 2670 Third Street
   City San Francisco, California Phone (415) 824-1411
   License Type A, B, C 21 ID# 21064
7. Other (Specify) Subsurface Consultants, Inc.
   Address 171 12th Street, Suite 201
   City Oakland, California Phone (415) 268-0461

8. Contact Person for Investigation

Name James P. Bowers Title Project Manager
Subsurface Consultants, Inc.

Phone (415) 268-0461

9. Total No. of Tanks at facility 1

10. Have permit applications for all tanks been submitted to this office? Yes [X] No [ ]

11. State Registered Hazardous Waste Transporters/Facilities

a) Product/Waste Tranporter

Name H & H Ship Service Company EPA I.D. No. CAD 004771168

Address 220 China Basin

City San Francisco State CA Zip 94101

b) Rinsate Transporter

Name _____ EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

c) Tank Transporter

Name H & H Ship Service Company EPA I.D. No. CAD 004771168

Address 220 China Basin

City San Francisco State CA Zip 94101

d) Contaminated Soil Transporter

Name _____ EPA I.D. No. _____

Address _____

City _____ State _____ Zip _____

12. Sample Collector

Name James P. Bowers

Company Subsurface Consultants, Inc.

Address 171 12th Street, Suite 201

City Oakland, State CA Zip 94607 Phone (415) 268-0461

13. Sampling Information for each tank or area

Tank or Area		Material sampled	Location & Depth
Capacity	Historic Contents (past 5 years)		
550 gallons	Gasoline	N/A Tank Empty	N/A Tank Empty

14. Have tanks or pipes leaked in the past? Yes [X] No [ ]

If yes, describe. Analytical tests performed on soil samples obtained from a test boring drilled adjacent to tank indicate past tank/piping leakage.

15. NFPA methods used for rendering tank inert? Yes [X] No [ ]

If yes, describe. (1) Empty tank of all residual materials, (2) Addition of 3.0 pounds of dry ice per 100 gallons of tank volume. Therefore, approximately 20 pounds of ice will be added.

16. Laboratories

Name Curtis & Tompkins, Ltd.

Address 290 Division Street

City San Francisco State CA Zip 94103

State Certification No. 159

An explosion-proof combustible gas meter shall be used to verify tank ~~not~~ ingress to < 10% LEL

17. Chemical Methods to be used for Analyzing Samples

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Number
Total Volatile Hydrocarbons Benzene, Toluene, Xylene, Ethylbenzene ~~Lead, Total~~	EPA 5030 (purge and trap extraction) ~~EPA 3010/3020/3050~~	EPA 8015, modified (gas chromatography/flame ionization detector) EPA 8020 ~~EPA 7421~~

18. Site Safety Plan submitted? Yes [X] No [ ]

19. Workman's Compensation: Yes [X] No [ ]

Copy of Certificate enclosed? Yes [X] No [ ]

Name of Insurer Liberty Mutual Insurance

20. Plot Plan submitted? Yes [X] No [ ]

21. Deposit enclosed? Yes [X] No [ ]

22. Please forward to this office the following information within 60 days after receipt of sample results.

a) Chain of Custody Sheets

b) Original Signed Laboratory Reports

c) TSD to Generator copies of wastes shipped and received

d) Attachment A summarizing laboratory results

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true. I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I will notify the Department of Environmental Health at least two (2) working days (48 hours) in advance to schedule any required inspections. I understand that site and worker safety are soley the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Signature of Contractor

Name (please type) Mr. Judd Bosley

Signature J Bosley

Date 6/13/88

Signature of Site Owner or Operator

Name (please type) Ms. Lois Parr

Signature Lois Parr

Date 6/14/88

NOTES:

1. Any changes in this document must be approved by this Department.
2. Any leaks discovered must be submitted to this office on an underground storage tank unauthorized leak/contamination site report form within 5 days of its discovery.
3. Three (3) copies of this plan must be submitted to this Department. One copy must be at the construction site at all times.
4. A copy of your approved plan must be sent to the landowner.

5. Triple rinse means that:

   a) final rinse must contain less than 100 ppm of Gasoline (EPA method 8020 for soil, or EPA method 602 for water) or Diesel (EPA method 418.1) Other methods for halogenated volatile organics (EPA method 8010 for soil, EPA method 601 for water) may be required. The composition of the final rinse must demonstrated by an original or facsimile report from a laboratory certified for the above analyses.

   b) tank interior is shown to be free from deposits or residues upon a visual examination of tank interior.

   c) tank should be labelled as "tripled rinsed; laboratory certified analysis available upon request" with the name and address of the contractor.

   If all the above requirements cannot be met, the tank must be transported as a hazardous waste.

6. Any cutting into tanks requires local fire department approval.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

ATTACHMENT A

SAMPLING RESULTS

Tank or Area	Contaminant	Location & Depth	Results (specify units)

INSTRUCTIONS

2. SITE ADDRESS
Address at which closure or modification is taking place.

5. EPA I.D. NO.
This number may be obtained from the State Department of Health Services, 916/324-1781.

6. CONTRACTOR
Prime contractor for the project.

7. OTHER
List professional consultants here.

12. SAMPLE COLLECTOR
Persons who are collecting samples.

13. SAMPLING INFORMATION
Historic contents - the principal product(s) used in the last 5 years.

Material sampled - i.e., water, oil, sludge, soil, etc.

16. LABORATORIES
Laboratories used for chemical and geotechnical analyses.

17. CHEMICAL METHODS:
All sample collection methods and analyses should conform to EPA or DHS methods.

Contaminant - Specify the chemical to be analyzed.

Sample Preparation Method Number - The means used to prepare the sample prior to analyses - i.e., digestion techniques, solvent extraction, etc. Specify number of method and reference if not an EPA or DHS method.

Analysis Method Number - The means used to analyze the sample - i.e., GC, GC-MS, AA, etc. Specify number of method and reference if not a DHS or EPA method.

NOTE:
Method Numbers are available from certified laboratories.

18. SITE SAFETY PLAN
A plan outlining protective equipment and additional specialized personnel in the event that significant amount of hazardous materials are found. The plan should consider the availability of respirators, respirator cartridges, self-contained breathing apparatus (SCBA) and industrial hygienists.

19. ATTACH COPY OF WORKMAN'S COMPENSATION

20. PLOT PLAN

The plan should consists of a scaled view of the facility at which the tank(s) are located and should include the following information:

a) Scale

b) North Arrow

c) Property Line

d) Location of all Structures

e) Location of all relevant existing equipment including tanks and piping to be removed

f) Streets

g) Underground conduits, sewers, water lines, utilities

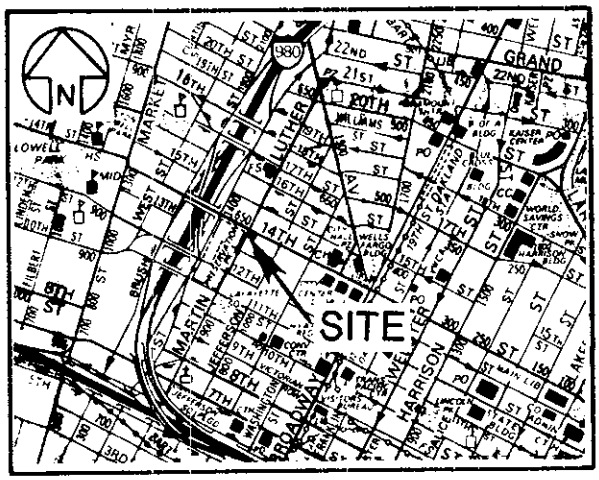
h) Existing wells (drinking, monitoring, etc.)

i) Depth to ground water

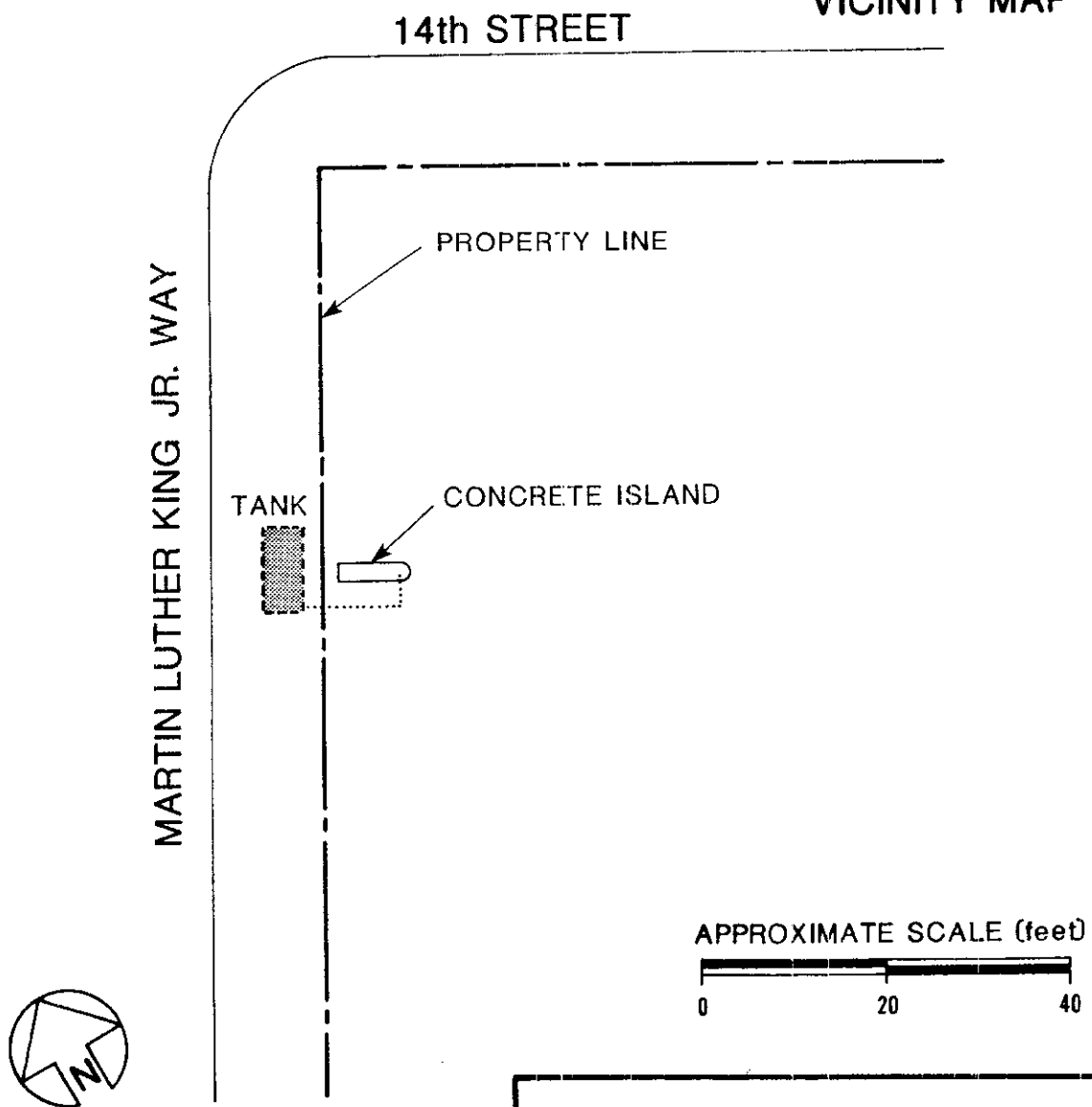
j) All existing tanks in addition to the ones being pulled

1/88

NOTE: Groundwater was encountered at a depth of 29.5 feet below the sidewalk during drilling. This does not represent a stabilized condition.



VICINITY MAP



SITE PLAN

Subsurface Consultants

MARTIN LUTHER KING JR. WAY - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.001	6/14/88	

PLATE 1

Certificate of Insurance

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON YOU THE CERTIFICATE HOLDER. THIS CERTIFICATE IS NOT AN INSURANCE POLICY AND DOES NOT AMEND, EXTEND, OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

This is to Certify that

CLEVELAND WRECKING COMPANY
2670 Third Street
P.O. Box 410450
San Francisco, CA 94141-0450

→ Name and address of Insured.

LIBERTY MUTUAL

is, at the issue date of this certificate, insured by the Company under the policy(ies) listed below. *The insurance afforded by the listed policy(ies) is subject to all their terms, exclusions and conditions and is not altered by any requirement, term or condition of any contract or other document with respect to which this certificate may be issued.

TYPE OF POLICY	CERT. EXP. DATE	POLICY NUMBER	LIMITS OF LIABILITY
WORKERS' COMPENSATION	8/1/88	WC2-181-012385-347 WC1-181-012385-367 WC2-181-012385-387	COVERAGE AFFORDED UNDER W.C. LAW OF THE FOLLOWING STATES: All states excluding monopolistic state fund states COV. B BODILY INJURY BY ACCIDENT $ 500,000 EA. ACCIDENT BODILY INJURY BY DISEASE $ 500,000 EA. PERSON BODILY INJURY BY DISEASE $ 500,000 POLICY LIMIT
GENERAL LIABILITY [X] COMPREHENSIVE FORM [ ] SCHEDULE FORM [X] PRODUCTS COMPLETED OPERATIONS [ ] [X] INDEPENDENT CONTRACTORS/CONTRACTORS PROTECTIVE [X] CONTRACTUAL LIABILITY [X] X,C,U Property Damage	8/1/88	LG1-181-012385-667	BODILY INJURY $ 2,000,000 EACH OCCURRENCE; $ 2,000,000 AGGREGATE PROPERTY DAMAGE $2,000,000 EACH OCCURRENCE; $2,000,000 AGGREGATE COMBINED SINGLE LIMIT BODILY INJURY AND PROPERTY DAMAGE $ EACH OCCURRENCE; $ AGGREGATE
AUTO LIABILITY [X] OWNED [X] NON-OWNED [X] HIRED	8/1/88	AS1-181-012385-677	$ 2,000,000 EACH ACCIDENT-SINGLE LIMIT-B.I. AND P.D. COMBINED $ EACH PERSON $ EACH ACCIDENT OR OCCURRENCE $ EACH ACCIDENT OR OCCURRENCE
OTHER Umbrella Excess Liability	8/1/88	LE1-181-012385-757	$3,000,000 Combined Single Aggregate Limit overriding all underlying liability limits.

SEE ADDITIONAL INSUREDS LIST ATTACHED

WAVIER OF SUBROGATION

LOCATION(S) OF OPERATIONS & JOB # (If Applicable)	DESCRIPTION OF OPERATIONS:
1330 Martin Luther King, Jr. Way Oakland, CA	Firehouse demolition

*NOTE: You will NOT be notified annually of the continuation of this coverage. You will be notified if this coverage is terminated or reduced.

NOTICE OF CANCELLATION: THE COMPANY WILL NOT TERMINATE OR REDUCE THE INSURANCE AFFORDED UNDER THE ABOVE POLICIES UNLESS 30 DAYS NOTICE OF SUCH TERMINATION OR REDUCTION HAS BEEN MAILED TO:

CERTIFICATE HOLDER→

BRAMALEA PACIFIC
1221 Broadway, Suite 1800
Oakland, CA 94612

Attn: Leah Segawa

Betty F. Williams
AUTHORIZED REPRESENTATIVE

3/28/88 aw — DATE ISSUED
Pittsburgh, PA — OFFICE

This certificate is executed by LIBERTY MUTUAL INSURANCE GROUP as respects such insurance as is afforded by Those Companies.

Liberty Mutual Insurance Grou

BS 745 5 F

ADDITIONAL INSURED:

1.) CITY OF OAKLAND
c/o Oakland Office of Economic
Development and Employment
1417 Clay Street
Oakland, CA 94612

Attn: Lois Parr

2.) OAKLAND REDEVELOPMENT AGENCY
1417 Clay Street
Oakland, CA 94612

Attn: Lois Parr

3.) BRAMALEA PACIFIC
1221 Broadway, Suite 1800
Oakland, CA 94612

Attn: Leah Segawa

3rd & Jefferson, Oakland 4/5/10
1330 MLK Jr. Way, Oakland

4:17 Spoke with Jim Bowers. He said they hit the limits of the "bad dirt" this bad dirt has been ↳ at 13th & Jefferson
excavated. The excavation is being backfilled with the clean dirt that was removed ~~[redacted]~~ ~~was excavated~~ to get to the bad dirt. The bad dirt was aerated on site and then hauled off to the dump (Class III Redwood landfill) - 8,500 9,000 cubic yards of soil was hauled off!

~~A~~ a second well was found on the property - originally was a 14" diameter well, was rebuilt with an 8" steel casing inside the 14" casing. The annular space had been filled. The well water had some benzene & oil & grease. (The well is about 50-50 feet deep) Oily tarry material ~~was~~ found in the well. About 37' down, the casing was broken - sands flowing into the well. This well will be abandoned by removing the 8" casing, drilling a casing into the ground around (outside of) the 14" casing. The inside of the well will be cleaned/drilled out & slurry filled. This will permit this through Zone 7.

The "200' well" (the first well) was abandoned already by pressure cement slurry into the well.

a pocket of PNA contaminated soil was found ~ 20 feet from the main PNA contaminated soil area. This soil has been excavated & is awaiting disposal.

Remaining to do:

1) Obtain permit from EBMUD for H_2O treatment (TTU). System is set up & ready to go to treat
   a) water from MLK (1330) → dissolved product. Skimmer system will be installed to remove free product only if regular pump to remove free product doesn't work.
   b) water from 13th & Jefferson

2) after free product problem at 1330 MLK dealt w/ then dissolved product H_2O treatment will be stepped up

3) Soil clean up.

Jim will be getting several reports to me documenting work to date.

James P. Bowers, PE
R. William Rudolph, Jr., PE

90 SEP 28 AM 10:46

LETTER OF TRANSMITTAL

TO: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, CA 94612

DATE: September 24, 1990
PROJECT Floor Drain Sump - Closure Report
SCI JOB NUMBER: 430.006

WE ARE SENDING YOU:

__1__ copies
[X] of our final report
[ ] a draft of our report
[ ] a Service Agreement
[ ] a proposed scope of services
[ ] specifications
[ ] grading/foundation plans
[ ] soil samples/groundwater samples
[ ] an executed contract
[ ] _____

[X] if you have any questions, please call
[ ] for your review and comment
[ ] please return an executed copy
[ ] for geotechnical services
[ ] with our comments
[ ] with Chain of Custody documents
[X] for your use
[ ] _____
[ ] _____

REMARKS:

COPIES TO: (1) Ms. Lois Parr, City of Oakland, OEDE, 1333 Broadway, #900, Oakland
(1) Ms. Katherine Chesick, ACHCSA, 80 Swan Way, #20, Oakland
(1) Mr. Lester Feldman, RWQCB, 1800 Harrison St., #700, Oakland
(1) Mr. Roy Ikeda, Crosby, Heafey, Roach & May, 1999 Harrison St., Oakland

BY: Sean O. Carson
Sean O. Carson

Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

James P. Bowers, PE
R. William Rudolph, Jr., PE

90 SEP 28 AM 10:46

LETTER OF TRANSMITTAL

TO: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, CA 94612

DATE: September 26, 1990
PROJECT Three Underground Fuel Tanks
SCI JOB NUMBER: 430.007

WE ARE SENDING YOU:

- 1 copies
- [X] of our final report
- [ ] a draft of our report
- [ ] a Service Agreement
- [ ] a proposed scope of services
- [ ] specifications
- [ ] grading/foundation plans
- [ ] soil samples/groundwater samples
- [ ] an executed contract
- [ ] _____

- [X] if you have any questions, please call
- [ ] for your review and comment
- [ ] please return an executed copy
- [ ] for geotechnical services
- [ ] with our comments
- [ ] with Chain of Custody documents
- [X] for your use
- [ ] _____
- [ ] _____

REMARKS:

COPIES TO:
(1) Ms. Lois Parr, City of Oakland, OEDE, 1333 Broadway, #900, Oakland
(1) Ms. Katherine Chesick, ACHCSA, 80 Swan Way, #200, Oakland
(1) Mr. Lester Feldman, RWQCB, 1800 Harrison St., #700, Oakland
(1) Mr. Roy Ikeda, Crosby, Heafey, Roach & May, 1999 Harrison St., Oakland

BY: Sean O. Carson
Sean O. Carson

Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

James P. Bowers, PE
R. William Rudolph, Jr., PE

LETTER OF TRANSMITTAL

TO: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, CA 94612

DATE: December 6, 1990
PROJECT 13th & Jefferson/Closure Report
SCI JOB NUMBER: 430.003

WE ARE SENDING YOU:

__1__ copies
__X__ of our final report
____ a draft of our report
____ a Service Agreement
____ a proposed scope of services
____ specifications
____ grading/foundation plans
____ soil samples/groundwater samples
____ an executed contract
____ _____

__X__ if you have any questions, please call
____ for your review and comment
____ please return an executed copy
____ for geotechnical services
____ with our comments
____ with Chain of Custody documents
__X__ for your use
____ _____
____ _____

REMARKS:

COPIES TO:
(1) Ms. Katherine Chesick, ACECSA, Div. of Hazardous Materials, Oakland, CA
(1) Mr. Lester Feldman, RWQCB, 1800 Harrison, Oakland, CA
(1) Mr. Roy Ikeda, Crosby, Heafey, Roach & May, Oakland, CA
(1) Mr. Donnell Choy, City of Attorney, Oakland, CA

BY: Sean O. Carson

Sean O. Carson

Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/19/90
DATE REPORTED: 07/26/90

LAB NUMBER: 101123

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 AIR SAMPLE & 1 GASOLINE SAMPLE

PROJECT #: 430.011
LOCATION: MLK

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101123
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.011
LOCATION: MLK

DATE RECEIVED: 07/19/90
DATE ANALYZED: 07/20/90
DATE REPORTED: 07/26/90

Total Volatile Hydrocarbons as Gasoline in Air Samples
Method: GC/FID Direct Injection

LAB ID	CLIENT ID	TVH AS GASOLINE <---(mg/cubic meter)--->	REPORTING LIMIT <---(mg/cubic meter)--->
101123-1	43A	53,000	40

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	111

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101123
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.011
JOB LOCATION: MLK

DATE RECEIVED: 07/19/90
DATE ANALYZED: 07/20/90
DATE REPORTED: 07/26/90

Benzene, Toluene, Ethyl Benzene, Xylenes in Air Samples
Method: GC/PID Direct Injection

LAB ID	CLIENT ID	BENZENE	TOLUENE	TOTAL XYLENES	ETHYL BENZENE	REPORTING LIMIT *
		<---------- mg/cubic meter ---------->				
101123-1	43A	360	600	960	73	0.5

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	111

Subsurface Consultants 101123

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK

SCI Job Number: 450.011

Project Contact at SCI: SEAN CARSON

Sampled By: MARK KAWAKAMI

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: 5 DAYS

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
43A	O-AIR	TEDLAR BAG	7/19/000		TVH/BTXE	
GAS	O-GAS	VOA(2)	7/19/000		~~8240~~ WITH LIBRARY SEARCH	

* * * * * *

Released by: [signature] Date: 07/19/90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 7.19.90 (7:

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Susan,
This report should go w/ 12th & MLK.
I found it in another file.
Jack

SOIL CONTAMINATION ASSESSMENT
12th STREET AND MARTIN LUTHER KING JR. WAY
OAKLAND, CALIFORNIA
SCI 272.021

Prepared for:

Ms. Henri Turney
City of Oakland - OEDE
1333 Broadway, Suite 900
Oakland, California 94612

DRAFT

By:

John V. Bosche
Geotechnical Engineer 156 (expires 3/31/92)

James P. Bowers
Civil Engineer 28962 (expires 3/31/95)

Subsurface Consultants, Inc.
171 - 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

June 17, 1991

I INTRODUCTION

This report presents the results of the soil contamination assessment conducted by Subsurface Consultants, Inc. (SCI) at the southwest corner of 12th Street and Martin Luther King Jr. Way in Oakland, California. The property is situated as shown on the Site Plan, Plate 1. SCI previously conducted a preliminary environmental assessment of the property, the results of which are summarized in our report dated April 24, 1991. We understand that in the near future, the property will be developed with a 3-story building having a basement extending 5 to 6 feet below the existing groundsurface.

As outlined in our letter dated April 5, 1991, our assessment was conducted to evaluate the lateral and vertical extent of (1) lead, and oil and grease contamination in surface soils and (2) gasoline contamination near the previous service station. The scope of our services included drilling test borings, performing analytical tests on selected soil samples, and preparing this report. This report presents our conclusions regarding:

1. Soil and groundwater conditions;
2. The lateral and vertical limits of hydrocarbon and lead contamination;
3. The significance of contaminant levels with respect to local and state criteria, and
4. Remediation recommendations.

II BACKGROUND

As discussed in our April 24, 1991 report, a gasoline service station previously occupied portions of the property at 1125 Grove Street (now named Martin Luther King Jr. Way). The service station had at least 5 underground fuel tanks (500-gallon capacity), two dispenser islands and an automobile lift hoist. The service station was demolished in 1971; the tanks were removed at that time.

Gasoline contamination exists at the site near the previous fuel tanks. We have concluded that these tanks are the most likely source of contamination. Lead and oil and grease contamination was also identified in the surface soils at various locations on site.

III FIELD INVESTIGATION

To evaluate the lateral and vertical limits of soil contamination, twelve additional test borings were drilled (Borings 6 through 17). Borings 1 through 5 were drilled during our previous investigation. Logs of all borings are presented in Appendix A. The boring locations are shown on the Site Plan, Plate 1.

Standardized protocols were followed during our field investigation. A detailed discussion of our field procedures is provided in Appendix A.

IV SITE CONDITIONS

A. Site Geology

The site is situated within the Northern California Coast Ranges Geomorphic Province. Locally, the site is mapped[1] as being underlain by the Merritt Sand formation. This Quaternary age deposit consists primarily of fine-grained silty and clayey sand deposited by wind and water as beach and near shore deposits. The Merritt Sand overlies the Alameda formation, also deposited in Quaternary time. The Alameda Formation consists of continental and marine sediments deposited in the valley occupied by San Francisco Bay.

B. Site Conditions

The site encompasses a rectangular lot with plan dimensions of about 150 by 200 feet. The property is occupied by construction debris, equipment, and a job trailer. Also present is a boarded up two-story wooden Victorian house (Merriam House) that has been moved to the property and is stored on steel beams and blocking. No permanent structures currently occupy the site. However, concrete basement slabs, foundations and basement walls previously planned for the Herrick and Merriam Houses occupy the northern portion of the lot. The basement for the Herrick House occupies the area of the former automobile service station.

---

[1] Radbruch, "Areal and Engineering Geology of the Oakland West Quadrangle, California," 1957, U.S. Geologic Survey Map I-239

C. Soil and Groundwater Conditions

The test borings indicate that the site is blanketed by a layer of fill about 5 feet thick. The fill consists predominantly of loose silty sands. The fill is not present in the borings drilled inside the existing basements. The fill is underlain by dense sands, and silty and clayey sands of the Merritt sand formation. These soils extended to the depths explored, 32 feet.

Groundwater levels were measured at depths of about 24 to 29 feet below the groundsurface immediately following drilling. These levels may not represent fully stabilized groundwater levels. Review of available data indicates that groundwater flow in the area is toward the northwest. It is estimated that groundwater exists about 27 feet below sidewalk grades.

V ANALYTICAL TESTING

Selected soil samples were analyzed by Curtis & Tompkins, Ltd. a laboratory certified by the DHS for hazardous waste and water testing, for the contaminants previously detected. The analyses included:

1. Total volatile hydrocarbons (TVH), EPA 8015/5030
2. Total extractable hydrocarbons (TEH), EPA 8015/3550
3. Hydrocarbon oil and grease (O&G), SMWW 5520 E&F
4. Purgeable halocarbons by EPA method 8010, and
5. Total and soluble lead.

Summaries of the analytical test results (including previous analyses) are presented in Tables 1, 2 and 3. Descriptions of the sample preparation and analytical test methods, analytical test reports and chain-of-custody records are presented in Appendix B.

Table 1
Petroleum Hydrocarbon Concentrations in Soil

Boring	Depth (feet)	TVH[1] (mg/kg)[4]	TEH[2] (mg/kg)	O&G[3] (mg/kg)
S-1	1	ND[5]	7.6	ND
S-4	0.5	--[6]	ND	ND
S-6	0.5	--	ND	ND
S-8	0.5	--	ND	52
S-10	0.5	--	ND	ND
S-13	0.5	--	ND	82
1	1.5	--	--	ND
2	7	ND	ND	ND
3[7]	3	2300	--	--
3[7]	6.5	51	--	--
3[7]	15.5	4000	--	--
3[7]	20.5	980	ND	ND
4	24	ND	--	--
6	26	ND	ND	--
6	27.5	ND	ND	--
7	21	190	240	--
7	26	ND	ND	--
8	2	--	ND	58
10	3	--	ND	ND
11[7]	16	54	620	--
11[7]	20.5	--	--	ND
11[7]	21	2000	1800	--
12[7]	20.5	--	--	ND
12[7]	21	650	1300	--
12[7]	22.5	ND	ND	--
12[7]	26	ND	ND	--
13	21	ND	ND	--
13	26	ND	ND	--
14	24	ND	ND	--
14	26	ND	ND	--
15[7]	19.5	--	--	ND
15[7]	20	ND	ND	--
16	21	ND	ND	--
16	26	ND	ND	--
17	25	ND	ND	--
17	30	ND	ND	--

1 TVH = Total Volatile Hydrocarbons reported as gasoline
2 TEH = Total Extractable Hydrocarbons reported as gasoline
3 O&G = Oil and Grease
4 mg/kg = milligrams per kilogram
5 ND = None detected, chemicals not present at concentrations above the detection limits
6 -- = Test not performed
7 Borings 3, 11, 12 and 15 were drilled within the existing basement; the surface is about 5 to 6 ft below sidewalk grades

Table 2
Concentrations of Total and Soluble Lead In Soils

Sample	Depth	Total Lead (mg/kg)[1]	Soluble Lead (ug/kg)[2]
S2	0.5	118	--
1	1.5	31.0	--
1	4	ND[4]	ND
1	5.5	ND	--
2	1	102	--
2	3	ND	--
2	5	ND	--
2	7	ND	--
5	1	63	--
5	3.5	ND	--
7	3	ND	--
7	5.5	ND	--
8	2	363	8350
8	4	ND	--
8	5.5	ND	--
9	1.5	ND	--
9	7	ND	--
10	1	598	--
10	3	ND	ND
10	5.5	ND	--

---

1 mg/kg = milligrams per kilogram
2 ug/kg = micrograms per kilogram
3 -- = Test not requested
4 ND = None detected, chemicals not present at concentrations above detection limits

Table 3
Concentrations of Volatile Organic Chemicals in Soils

Boring	Depth (feet)	Chloro-benzene (ug/kg)[1]	1,2-Dichloro-ethane (ug/kg)	Other EPA 8010 Chemicals
3[3]	20.5	ND[2]	330	ND
12[3]	21	280	ND	ND
15[3]	20	ND	52	ND

1 ug/kg = micrograms per kilogram
2 ND = None detected, chemicals not present at concentrations above detection limits
3 Borings 3, 11, 12 and 15 were drilled within the existing basement; the surface is about 5 to 6 ft below sidewalk grades

VI CONCLUSIONS

A. General

Our investigation indicates that gasoline, oil and grease, 1,2-dichloroethane (DCA), chlorobenzene and lead are present in soil at the site. The hydrocarbon and organic chemical contamination appears to be related to releases from the former gasoline station which occupied the northeast corner of the site. The lead contamination appears limited to the surface soils blanketing most of the property. The source of lead contamination is uncertain, but is likely unrelated to service station activities. Low levels of oil and grease were also detected in surface soils within a limited area of the property. In our

opinion, the source of oil and grease is likely surface spillage on the service station site. Our findings and conclusions are discussed in more detail below.

B. Gasoline Contamination

Gasoline is present in soil beneath the former fuel tanks. Gasoline is present at concentrations varying up to 4000 mg/kg. The contamination was detected to depths of approximately 27 feet below sidewalk levels, the depth at which groundwater likely exists. The approximate lateral extent of gasoline contamination in soil is presented on Plate 2.

C. Chlorinated Hydrocarbons

Two chlorinated hydrocarbons, chlorobenzene and 1,2-dichloroethane (DCA), were detected in soil samples below the former fuel tanks. As indicated in Table 3, chlorobenzene was detected in one soil sample at a concentration of 280 ug/kg. DCA was detected in two samples at concentrations of 52 and 330 ug/kg.

The source of the DCA and chlorobenzene is currently uncertain. DCA is a minor constituent of some gasolines and hence, may be associated with the gasoline contamination. However, DCA and chlorobenzene are also relatively common solvents and could be associated with leakage from a waste oil tank.

D. Oil and Grease Contamination

Oil and grease were detected at concentrations ranging from 52 to 82 mg/kg within surface soils near the central portion of the property, in the area indicated on Plate 3. The soils containing oil and grease represent fill that appears to be derived from the

adjacent basement excavation which is within the area of the former gasoline station. The contamination source is likely surface spills that occurred on the property as a result of auto repair activities.

At the concentrations detected, these soils do not appear to pose a significant health or environmental concern. However, oil and grease contaminated soils will likely require special consideration with regard to disposal of the materials off-site. They will likely have to be placed in an appropriate landfill.

E. Lead Contamination

Lead exists in the shallow surface soils over most of the property. The contamination appears limited to the upper 1 to 2 feet of soil. The lead concentrations varied up to 598 mg/kg, but averaged about 200 mg/kg. The results of the lead analyses are presented on Plate 4. Soluble lead was detected at a concentration of 8.35 mg/l from a sample from Boring 8 which contained comparatively high concentrations of total lead. This concentration of soluble lead exceeds the soluble threshold limit concentration (STLC) for lead (5 mg/l) which is one criteria used to classify materials as a hazardous waste. We suspect that the high soluble lead concentration encountered at Boring 8 represents a localized condition.

The source of lead contamination is uncertain at this time. However, given that the contaminated material appears widespread but limited to soils within about 2 feet or so of the groundsurface, there is a high likelihood that the source is

associated with air emissions from industrial activities and automobile use in the vicinity.

F. Groundwater Contamination

The gasoline and chlorinated hydrocarbon contamination appears to extend to groundwater. Consequently, we conclude that it is probable that groundwater quality has been impacted. The lateral extent and concentrations of groundwater contamination are currently unknown and should be investigated by installing groundwater monitoring wells. Groundwater impacts should be evaluated in the next phase of investigation.

G. Remediation

1. Gasoline Contamination

The gasoline concentrations that exist in the soil near the previous service station are sufficiently high that we judge the Alameda County Health Care Services Agency (ACHCSA) will require remediation. In our opinion, the most appropriate and economical remediation alternative will involve removal of the contaminated soil, soil aeration on-site, and placement of the aerated soil back into the excavation. The soils contaminated with low concentrations of chlorobenzene and DCA will also be excavated when the gasoline contaminated soils are removed. Remediation of gasoline contamination by aeration will also be effective in reducing the concentrations of these chlorinated hydrocarbons.

Cleanup criteria will have to be negotiated with the regulatory agencies. However, based on our experience, we judge that soil excavation should proceed until soils containing petroleum hydrocarbons in excess of 100 mg/kg are removed. Excavations extending to depths up to about 30 feet below sidewalk

grades may be required to remove contaminated soils. The approximate area of excavation, based upon the analytical data, is shown on Plate 2.

Upon completion of excavation, soil samples obtained from the bottom and side walls of the excavation should be analyzed to check the adequacy of clean-up activities. The number and location of these confirmation samples and analyses should be negotiated with the ACHCSA.

Analytical testing should be performed by a California Department of Health Services certified laboratory. The confirmation samples should be analyzed for total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), and benzene, toluene, ethylbenzene and toluene (EPA 8020).

Once remediation is complete, the excavation should be backfilled with clean and aerated soil. The fill should be compacted in thin lifts to at least 90 percent relative compaction (ASTM D1557).

2. **Oil and Grease Contamination**

We recommend that the oil and grease contaminated soils be excavated to a depth of 2.5 feet within the limits of the area illustrated on Plate 3. These soils should be stockpiled, analyzed and disposed of at an appropriate landfill. Samples of the stockpiled materials should be obtained and analyzed in accordance with criteria set by local landfills. The most appropriate disposal alternative/location should be identified when the analytical results are obtained.

3. Lead Contamination

Lead contaminated soils exist within approximately the upper 1 to 2 feet of the existing groundsurface. We recommend that these soils be excavated to a depth of about 2 feet below sidewalk grades in areas of proposed basement excavation. These soils should be stockpiled, analyzed and disposed of off-site at an appropriate landfill. The most appropriate disposal alternative/location should be identified once the analytical results are obtained.

VII LIMITATIONS

The conclusions drawn from this investigation are an expression of our professional opinion, and do not constitute a warranty or guaranty, either expressed or implied. It should be understood that additional investigative work on the property may modify the conclusions presented herein, as additional information becomes available.

List of Attached Plates:

Plate 1	Site Plan
Plate 2	Gasoline Concentrations in Soil
Plate 3	Oil and Grease Concentrations in Soil
Plate 4	Total Lead Concentrations in Soil

Appendix A: Investigation Protocol

Plates A-1 through A-16 - Logs of Borings 1 thru 17

Plate A-17 - Unified Soil Classification System

Appendix B: Analytical Testing

Analytical Laboratory Test Reports

Chain-of-Custody Documents

Distribution:

6 copies: Ms. Henri Turney
City of Oakland-OEDE
1330 Broadway, Suite 900
Oakland, California 94612

JVB:TEC:JPB:sld

P 062 128 052

Ms. Lois Parr

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

Certified Mailer #: P 062 128 052

August 16, 1989

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

[redacted]

**** NOTICE OF VIOLATION ****

Re: Remediation Requirements for the Eastern Half of the Block bounded by 13th Street, 14th Street, Jefferson Street, and Martin Luther King Jr. Way in Oakland

Dear Ms. Parr:

Per our letter to you dated June 29, 1989 you were to have submitted a work plan addressing the contamination, potential for underground tanks, and the 215 foot deep well on the eastern half of the block bounded by 13th Street, 14th Street, Jefferson Street, and Martin Luther King Jr. Way. This plan was due in our office by July 29, 1989. While we have discussed the site with your consultant, Subsurface Consultants, Inc., we have not received the required plan or written documentation of proposed activities. We therefore are issuing a notice of violation and require that this plan or a document which presents a schedule for plan submittal be submitted to our office for review within 25 days of the date of this letter.

A copy of our June 29, 1989 letter is attached for your convenience.

Should you have any questions, please contact Katherine Chesick, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

Edgar B. Howell

for Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:kac

attachment

cc: James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board
Howard Hatayama, State Department of Health Services
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Katherine Chesick, Alameda County Hazardous Materials Division
Files

KC

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☑ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Ms. Lois Parr
Oakland Redevelopment
1417 Clay St. 2nd Flr
Oakland, CA 94612

4. Article Number
P 062 128 052

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X LF Feldman

6. Signature — Agent
X

7. Date of Delivery 9/25/89

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

P 833 981 453

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Ms. Lois Parr	
Street and No.	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
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PS Form 3800, June 1985

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)271-4320

Certified Mailer #: P 833 981 453

June 16, 1989

Ms. Lois Parr
City of Oakland
Office of Economic Development & Employment
1417 Clay Street, 2nd Floor
Oakland, Ca. 94612

Subject: Review of Plan for Remediation of Lead and Polynuclear Aromatic Hydrocarbon (PNA) Contaminated Soil and for Sump Removal at 1330 Martin Luther King Jr. Way, Oakland

Dear Ms. Parr:

We have reviewed the Remediation Plan for Lead and PNA Contaminated Soil and Sump Removal at 13th and Jefferson Streets (1330 Martin Luther King Jr. Way) in Oakland, dated May 12, 1989 and prepared by Subsurface Consultants, Inc. This plan is acceptable to us and may be carried out provided the following items are incorporated:

1) We are notified two working days in advance of lead and PNA contaminated soil excavation and sump removal;

2) We are notified two working days in advance of the collection of soil samples from the bottom and sides of the excavations;

3) Sufficient soil samples are collected from the bottom and sides of the excavations to confirm the removal of hazardous wastes. A soil sampling proposal may be submitted to us for review before work is begun; and

4) Copies of the TSDF to Generator hazardous waste manifests for hazardous materials transported offsite are submitted to our office.

If you have any questions, please contact Katherine Chesick, Hazardous Materials Specialist, at 271-4320.

Sincerely,

R.A. Shahid

Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:kac

cc: James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board
Scott Hugenberger, Regional Water Quality Control Board
Howard Hatayama, State Department of Health Services
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Katherine Chesick, Alameda County Hazardous Materials Division
Files

KC

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3. Article Addressed to:
Ms. Lois Parr
City of Oakland
Office of Econ. Dev.
1417 Clay St., 2nd Floor
Oakland, CA 94612

4. Article Number
P 833 981 453

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☐ Express Mail ☐ Return Receipt for Merchandise

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5. Signature — Address
X L. Parr

6. Signature — Agent
X

7. Date of Delivery
6/23/89

8. Addressee's Address *(ONLY if requested and fee paid)*

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P 833 981 468

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PS Form 3800, June 1985

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

Certified Mailer #:P 833 981 468

June 29, 1989

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

Subject: Remediation Requirements for the Eastern Half of the Block bounded by 13th Street, 14th Street, Jefferson Street and Martin Luther King Jr. Way in Oakland

Dear Ms. Parr:

We have received and reviewed the following documents prepared by Subsurface Consultants, Inc. concerning the environmental assessment of the block bounded by 13th Street, 14th Street, Jefferson Street, and Martin Luther King Jr. Way in Oakland:

Preliminary Environmental Assessment, Block Bounded by 13th & 14th Streets, Martin Luther King Jr. Way, and Jefferson Street, Oakland, September 14, 1988

Acid Soil Conditions in Soils Near Basement Floor Drain Inlet, Block Bounded by Martin Luther King Jr. Way, Jefferson, 13th and 14th Streets, Oakland, November 30, 1988

Report, PNA and Lead Contaminated Soil and Sump Remediation, 13th and Jefferson Streets, Oakland, January 16, 1989

Remediation Plan, Lead and PNA Contaminated Soil and Sump Removal, 13th and Jefferson Streets, Oakland, May 12, 1989

These reports present a use history for the site, acknowledge the existence of contamination related to a former underground storage tank in the northwestern site corner, and document the existence of the following soil contaminants in the southeastern site corner:

* total lead up to 1,300 mg/kg (test pit 10, 2 feet below ground surface, January 16, 1989 report);

* phenanthrene, a polynuclear aromatic hydrocarbon (PNA), up to 1,200 mg/kg (boring 33, 2 feet below ground surface, January 16, 1989 report; 1,100 mg/kg pyrene and fluoranthene also detected in the same sample); and

* gasoline up to 2310 mg/kg (boring 24, 27.5 feet below ground surface, September 14, 1989 report).

KC

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Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
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Ms. Lois Parr
Oakland Redevelopment
1417 Clay St., 2nd Floor
Oakland, CA 94612

4. Article Number
P833 981 468

Type of Service:
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☑ Certified ☐ COD
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5. Signature — Address
X Laurence Hales 5/0

6. Signature — Agent
X

7. Date of Delivery 7/5/89

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

Underground tank pipelines (see September 14, 1988 document, page 4) and possibly as many as three underground storage tanks also exist in this same area. The reports also document the existence of a 215 foot deep well and a sump containing PCB-, heavy metal-, and organic chemical- contaminated black oily sludge in the southeastern site corner.

Based on this information, **we require preparation of a work plan which, at a minimum, addresses the items listed below. Please submit this plan within 30 days of the date of this letter.**

1) Remediation of the lead and PNA contaminated soil and removal of the sump and associated sludge found in the southeastern site corner. This may be performed per Subsurface Consultants, Inc. proposal of May 12, 1989 and our responding letter dated June 16, 1989. Please submit the report referenced by Subsurface Consultants, Inc. (see Subsurface Consultants, Inc. September 14, 1988 report, page 17) which contains the analytical results of the sump sludge.

2) A site survey done by geophysical, excavation or other means to locate any remaining underground storage tanks.

3) Removal of any remaining underground storage tanks and any tank piping found as a result of item 2). Any tank removals must follow proper underground tank closure procedures as set forth by this office and by the Oakland Fire Department.

4) Determination of the vertical and lateral extent of the gasoline contaminated soil located in the southeastern site corner. If no underground tanks are found as a result of item 2), the source for the gasoline contamination must be identified.

5) Abandonment of the 215 foot deep well according to Alameda County Flood Control and Water Conservation District, Zone 7 (ACFC Zone 7) and Regional Water Quality Control Board (RWQCB) requirements OR permitting of the well for continued use through ACFC Zone 7. Please note that if the well is to be preserved for continued use, it must be protected during site remediation and construction activities.

Note: requirements for remediation of the northwestern site corner have already been set forth in our letter to you dated June 27, 1989.

All proposals, reports and analytical results pertaining to this investigation and remediation must be sent to our office and to Scott Hugenberger and Lester Feldman. Documents for Mr. Hugenberger and Mr. Feldman may be sent to the following address:

Regional Water Quality Control Board
1111 Jackson Street
Oakland, California 94607
(415) 464-1255

To cover our costs for remediation review, please submit a check, payable to Alameda County, for $600.

Should you have any questions concerning this letter, please contact Katherine Chesick, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:kac

cc: James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board
Scott Hugenberger, Regional Water Quality Control Board
Howard Hatayama, State Department of Health Services
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Katherine Chesick, Alameda County Hazardous Materials Division
Files

P 062 128 078

RECEIPT FOR CERTIFIED MAIL

Sent to Ms. Lois Parr

PS Form 3800

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

Certified Mailer #: P 062 128 078

September 12, 1989

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

Re: Investigation and Remediation of the 13th and Jefferson Streets Site in Oakland, California

Dear Ms. Parr:

We have reviewed the Gasoline Contamination Assessment report prepared by Subsurface Consultants, Inc. for 13th and Jefferson Streets in Oakland and dated August 22, 1989. While this report documents the investigation of hydrocarbon contaminated soil, we await documentation of the following items:

a) the removal of the lead and PNA contaminated soil;

b) the removal of the contaminated soil beneath the sump;

c) the permitting or abandonment plans for the 215 foot deep well (see item 5 of our June 29, 1989 letter);

d) plans for handling of the well discovered during PNA and lead contaminated soil excavation;

e) the removal of the three underground tanks from beneath the Jefferson Street sidewalk on August 23, 1989; and

[f) the removal of hydrocarbon contaminated soil, as proposed in the Subsurface Consultants, Inc. document dated August 28, 1989 and approved in our letter dated September 11, 1989.]

The report(s) documenting this work must include figures and analytical results for all samples taken, chain of custody records, copies of manifests (for disposal of soil, sludge, tank, liquid, etc.) geological cross sections, and concentration profiles for the contaminant plumes. Slotted screen depths must be noted on well logs. Any soil odors must be noted on boring logs.

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

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3. Article Addressed to: Ms. Lois Parr, Oakland Redevelopment Agency, 1417 Clay St., 2nd Floor, Oakland, CA 94612	4. Article Number: P 062 128 078
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7. Date of Delivery: 9/14/89	

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268

DOMESTIC RETURN RECEIPT

Your consultant has proposed additional groundwater contamination assessment work for the 13th and Jefferson site area. A workplan for this ground water contamination must be submitted to our office within 60 days of the soil excavation noted in item f) above. The workplan must address the following items:

1. **Definition of the horizontal and vertical extent of the ground water pollution plume, both on and off site.**

   A. Additional monitoring wells are needed to determine the extent and magnitude of the dissolved product plume. One monitoring well must be installed within 10 feet of the former tank (or presumed former tank) locations in the down-gradient direction.

   B. Monitoring wells shall be designed and constructed to be consistent with the SFRWQCB guidelines and to permit entrance of any free product into the wells. Filter pack and slot sizes for all wells should be based on particle analysis (ASTM D-422) from each stratigraphic unit in at least one boring on the site and on the types of ground water contaminants present. The well screen must be situated to intercept any floating product from both the highest and lowest ground water levels. All wells shall be surveyed to mean sea level (MSL) to an established benchmark to 0.01 foot.

   C. Free product thicknesses and water levels must be measured and wells must be sampled.

      Measure free product thicknesses and water levels in all wells weekly for one month and then as part of every sampling event. Free product measurements must be made with an optical probe or other device which has been shown to be of equivalent accuracy. A ground water gradient map shall be developed for every water level data set. If the gradient fluctuates, water level measurements must continue to be made monthly until a gradient pattern is established. Fluctuations in ground water levels due to tidal action should also be documented.

      For three consecutive months, monitoring wells shall be sampled monthly for dissolved constituents; free product thickness and water level measurements must be made in all wells before any purging or sampling activities are begun.

After three consecutive months of sampling, sampling may be conducted as needed for remediation purposes but must be done at least quarterly for all monitoring wells.

D. Ground water samples are to be analyzed by a California State Certified Laboratory for the contaminants found in site soils (PCB, TPH, TOG, PNA, metals, methylene chloride, xylenes, and any other appropriate constituents per Attachment 1).

E. Groundwater levels and quality must be monitored for a minimum of one year, even if no remediation is needed.

2. Interpretation of hydrogeologic data.

A. Water level contour maps showing ground water gradient direction, and free and dissolved product plume definition maps of each contaminant constituent should be prepared routinely and submitted with other sampling results.

B. The hydrogeologic characteristics of the aquifer must be described. An estimate of vertical transmissivity, based on a laboratory permeability test or a pump test, is required for any unit identified as a clay. Identification of the clay should be verified by particle analysis (ASTM D-422).

C. Geologic cross-sections should be prepared as specified in Attachment 2 using appropriate boring logs.

D. The cross sections, ground water gradients (horizontal and vertical), and any tidal effects should be interpreted to explain pollution migration patterns.

3. Determination of the potential short- and long- term impact of the pollution plume on the beneficial uses of ground and surface water in the area.

A. Beneficial uses of ground and surface water in the area which might be impacted by this site must be identified. Evaluation of the actual or potential short and long term impacts of this site on these beneficial uses is also required. Examples of beneficial uses include irrigation water supply, ground water recharge, fresh water habitat, wildlife habitat, contact and non-contact recreation, and fish migration.

4. Reporting

A. Monthly reports must be submitted for the monthly ground water sampling events. These reports should include, at a minimum, results of water level and water quality sampling, gradient determination and gradient maps, and contamination plume maps.

B. Quarterly reports must be submitted following the beginning of quarterly ground water sampling. These reports should describe the status of the investigation and cleanup and should include the following:

* Details and results of all work performed during the quarter (e.g. records of field observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory-originated analytical results for all samples collected, tabulations of soil and ground water contaminant concentrations, tabulations of free product thicknesses, etc.)

* Status of ground water contamination characterization

* Interpretation of the results (e.g. water level contour maps showing ground water gradient direction, free and dissolved product plume definition maps, tidal effects, cross sections, etc.)

* Plans or recommendations for additional investigative work or remediation

* Copies of TSDF to Generator manifests for any hazardous wastes hauled off site

C. All reports and proposals must be signed by a California-Certified Engineering Geologist, California-Registered Geologist or a California-Registered Civil Engineer (see page 2, 2 June 1988 SFRWQCB document). A statement of qualifications for each lead professional should be included in all workplans and reports.

D. Each technical report should be submitted with a cover letter from the Oakland Redevelopment Agency. The letter must be signed by a principal executive officer or by an authorized representative of that person.

5. Site Safety Plan.

Our office will be the lead agency overseeing the investigation of this site. The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) is currently unable to oversee the large number of underground tank cases within Alameda County and has delegated the handling of this case to our Division. We will be in contact with the SFRWQCB in order to provide you with guidance concerning the SFRWQCB's investigation requirements.

All work must be performed according to the following SFRWQCB documents:

* Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, 2 June 1988, revised 18 May, 1989 (2 June 1988 SFRWQCB document);

* Appendix A for above, 1 July 1988, revised 3 April 1989; and

Copies of these documents can be obtained by calling the SFRWQCB data management group at 464-1269.

Enclosed is an "Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report" form which must be completed and returned within five working days. Please send the entire completed form to our office.

We appreciate the thorough and professional work your consultant has done to date on this site. We look forward to working with your consultant in the coming months as site assessment and remediation continues. If you have any questions concerning this site, please contact Katherine Chesick, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

Rafat A. Shahid

Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:kac

attachments

cc: James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board,
San Francisco Bay Region
Howard Hatayama, State Department of Health Services
Gil Jensen, Alameda County District Attorney, Consumer and
Environmental Protection Division
Katherine Chesick, Alameda County Hazardous Materials Division
Files

P 062 128 077

Ms. Lois Parr

Certified Mailer #: P 062 128 077

September 11, 1989 271-4320

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

Re: Review of Remediation Plan for Gasoline Contaminated Soils, 13th and Jefferson, Oakland

Dear Ms. Parr:

We have reviewed the Subsurface Consultants, Inc. Remediation Plan for Excavation and Aeration of Gasoline Contaminated Soils at 13th and Jefferson Streets in Oakland, dated August 28, 1989. This plan is acceptable to us provided the following items are incorporated:

1) An assessment is done of the effect the remaining contaminant concentrations will have on ground water quality. While we accept the proposed plan to excavate soil to a depth of 27 feet, generally removing soil having greater than 100 ppm total volatile hydrocarbons, we recommend excavation of as much of the contaminated soil as possible. Any remaining contaminant concentrations must not pose a threat to ground water quality.

2) Sufficient soil samples are collected to document the remaining soil contamination.

3) All contaminated soil is hauled off to a permitted landfill, even if the soil is aerated or bioremediated to reduce contaminant levels. Soil which is contaminated when excavated may not be put back into the ground under any conditions. This requirement is a recent new policy of the Regional Water Quality Control Board (RWQCB). Please note that remediation of contaminated soil may still be economically advisable since some Class III landfills have indicated they will accept soil contaminated with less than 100 ppm total petroleum hydrocarbons. A list of these landfills may be obtained from the RWQCB (464-1269). Please contact Tom Callahan, Lester Feldman or Dyan Whyte at the RWQCB should these landfills not accept such soil.

4) The revised Bay Area Air Quality Management District Rule 40 (February 1989) is followed during soil excavation and aeration. Please inform the BAAQMD of your soil aeration schedule.

KC

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

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3. Article Addressed to: Ms. Lois Parr Oakland Redevelopment Agency 1417 Clay St., 2nd Floor Oakland, CA 94612	4. Article Number P 062 128 077 Type of Service: ☐ Registered ☐ Insured ☑ Certified ☐ COD ☐ Express Mail Always obtain signature of addressee or agent and DATE DELIVERED.
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6. Signature — Agent X [signature]	
7. Date of Delivery 9/14/89	

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

5) A copy of the Remediation Plan is sent to the RWQCB. Please note that per our June 29, 1989 letter, all proposals, reports and analytical results pertaining to the investigation and remediation of the Jefferson Street contamination must be sent to both the RWQCB and our office.

Should you have any questions, please contact Katherine Chesick, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:kac

cc: James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board
Howard Hatayama, State Department of Health Services
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Katherine Chesick, Alameda County Hazardous Materials Division
Files

James P. Bowers, PE
R. William Rudolph, Jr., PE

89 DEC 27 PM 4:49

December 27, 1989
SCI 430.002

Ms. Katherine Chesick
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Remediation Plan
Free-Floating Product Extraction
1330 Martin Luther King, Jr. Way
Oakland, California

Dear Ms. Chesick:

This letter presents our remediation plan for the recovery of free-floating product at 1330 Martin Luther King, Jr. Way in Oakland, California. Free-floating gasoline exists in areas below Martin Luther King, Jr. Way, near its intersection with 14th Street. The remediation of free floating product in this area is the first step in the clean up of off-site contamination. The extent of the free product is discussed in our report dated November 20, 1989 and shown on the attached Plate 1.

We propose to remediate the free product by installing a 12-inch-diameter recovery well at the location shown on Plate 1. The well will consist of a 12-inch-diameter PVC casing installed in a 24-inch-diameter borehole. The well will be screened from approximately 2 feet above the free product surface to the bottom of the aquifer (approximately 43 feet below street level). The well will terminate in stiff clayey soils. The well screen slot size will be 0.020 inches and the annular space will be backfilled with Lone Star No. 3 sand filter pack. The upper portion of the well's annular space will be backfilled with a cement/bentonite grout. The wellhead will be secured by a 30-inch-diameter, traffic rated manhole cover. The company installing the well will be a licensed well drilling contractor.

■ Subsurface Consultants, Inc.
171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

Discharge pipelines and electrical wiring will be installed within conduits situated beneath the street and sidewalk. The conduits will terminate near the northwest corner of the block bounded by 13th and 14th Streets, Martin Luther King, Jr. Way and Jefferson Street.

A free product storage tank will be provided within a secure area at the approximate location shown on the attached plan.

Initially, free product will be pumped from the well using an free product bladder pump. The free product will be pumped into a 260-gallon double contained storage tank. The recovered free product will be removed from the site and recycled by Refinery Services, Inc. in Patterson, California.

When free product recovery slows, groundwater in the area will be depressed using a submersible pump situated in the extraction well. Contaminated groundwater will be removed from the well at a rate suitable for free product recovery and discharged into a 21,000 gallon influent holding tank. From the influent tank, the water will be pumped through a particulate filter system and then through two (2) granular, activated carbon filter columns plumbed in series. The treated groundwater will be discharged into a 21,000 gallon holding tank and then into the EBMUD sanitary sewer system. The water treatment system is owned by the City of Oakland and for the past year, has been in operation at 1111 Broadway in downtown Oakland treating groundwater contaminated by gasoline and its soluble organic constituents. The system performed well; we anticipate similar performance for the proposed project.

SCI is submitting a Wastewater Discharge Permit Application to EBMUD. The application describes the treatment facility, as well as the monitoring program to check performance of the system. EBMUD approval to discharge treated groundwater to the sanitary sewer system will be obtained prior to groundwater extraction.

We are prepared to proceed with the proposed free product remediation as soon as your approval is received.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers by RWR

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

SOC:JPB:RWR:clh

Enclosures: Plate 1
Wastewater Discharge Permit Application

cc: Ms. Lois Parr, City of Oakland
Mr. John Esposito, Bramalea Pacific
Mr. Donnell Choy, City of Oakland
Mr. Roy Ikeda, Crosby, Heafey, Roach & May
Mr. Lester Feldman, RWQCB

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

Oct. 20

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

Sept. 27 First Monthly report due

Certified Mailer #: P 833 981 463

June 27, 1989

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

Subject: Remediation Requirements for Underground Gasoline Storage Tank Related Contamination at 1330 Martin Luther King Jr. Way, Oakland

Then Oct. 27
Then Nov. 27

Dear Ms. Parr:

We have received and reviewed the following documents prepared by Subsurface Consultants, Inc. concerning contamination at 1330 Martin Luther King Jr. Way in Oakland:

Progress Report 1, Underground Fuel Tank Leak Assessment, 1330 Martin Luther King Jr. Way, Oakland, July 29, 1988

Remediation Concepts, Underground Fuel Tank Leakage, 1330 Martin Luther King Jr. Way, Oakland, September 9, 1988

Remediation Plan - Phase 1 , Soil Excavation and Aeration 1330 Martin Luther King Jr. Way, Oakland, September 23, 1988

These reports document the removal of a 550 gallon underground gasoline storage tank, the identification of soil contamination of up to 7,660 ppm total volatile hydrocarbons (gasoline), the identification of ground water contamination of up to 90 mg/l total petroleum hydrocarbons (gasoline), and the measurement of up to 13.5 inches of free product on the ground water (Well 16). The soil contamination extends off site across Martin Luther King Jr. Way where it appears to be concentrated in a sandy zone 20 to 28 feet below ground surface. The dissolved product plume has moved off site to the northwest. The extent of this contamination, not determined to date, must be assessed and remediated.

To complete contaminant assessment and begin remediation, **we require that you submit a work plan which, at a minimum, addresses the items listed below and presents a timetable for their completion. Please submit this work plan within 30 days of the date of this letter.**

Hazardous Materials
Dept. Environmental Health

of Alameda County

printed 02/15/89

LIST OF GENERATORS TO BE BILLED

SIC	Name of Generator / HazMatID# / SystemEntryDate	Site Address	Mailing Address	#Empl	Annual Fee
	Chrisp Company ID# 2344 ent: 02/07/89 Contact Person/Phone: Roger Weisbrod at 415-656-2840	43650 Osggod Rd. Fremont, CA 94539	43650 Osgood Rd. Fremont, CA 94539	25	$314.00
	A.M.G. Pipeline Inc. ID# 2343 ent: 02/07/89 Contact Person/Phone: Tony Goncalves at 415-490-4432	42536 Osgood Rd. Fremont, CA 94539	42536 Osgood Rd. Fremont, CA 94539	9	$105.00
	Royal Custom Of California ID# 2347 ent: 02/14/89 Contact Person/Phone: Jerry Zavada at 415-734-0366	7074 -B Commerce Circle Pleasanton, CA 94566	7074 -B Commerce Circle Pleasanton, CA	5	$105.00
	Buddy's Auto Repair ID# 2346 ent: 02/14/89 Contact Person/Phone: Buddy France at 415-463-5822	7034 -H Commerce Circle Pleasanton, CA 94566	7034 -H Commerce Circle Pleasanton, CA	1	$105.00
	Gelman Sciences ID# 2348 ent: 02/14/89 Contact Person/Phone: John Gulliford at 415-463-1270	7079 Commerce Circle Pleasanton, CA 94566	7079 Commerce Circle Pleasanton, CA	10	$209.00
	Hacienda Cleaners ID# 2349 ent: 02/14/89 Contact Person/Phone: Manu Shaghafi at 415-463-8900	5682 Stoneridge Dr. Pleasanton, CA 94566	5682 Stoneridge Dr. Pleasanton, CA	10	$209.00
	Norco Paint, Inc. ID# 2342 ent: 02/07/89 Contact Person/Phone: Karl A. Eikeberg at 415-562-1696	2300 Davis St. San Leandro, CA 94577	2300 Davis St. San Leandro, CA 94577	3	$105.00
	All Counties Express, Inc. ID# 2353 ent: 02/14/89 Contact Person/Phone: E. J. Medeiros at 415-489-7400	30664 Dyer St. Union City, CA 94587	30664 Dyer St. Union City, CA	5	$105.00
	Guthmiller Trucking, Inc. ID# 2352 ent: 02/14/89 Contact Person/Phone: Norm Gaio at 415-489-0411	30700 Dyer St. Union City, CA 94587	30700 Dyer St. Union City, CA	4	$105.00
	Rapid Mounting and Finishing ID# 2059 ent: 06/14/88 Contact Person/Phone: James A. De Hart at 415-487-0700	33195 Lewis Ave. Union City, CA 94587	33195 Lewis Ave. Union City, CA	2	$105.00
	Cleaners Hanger Co. ID# 2354 ent: 02/14/89 Contact Person/Phone: Darold Brewer at 415-471-8444	33100 Transit Ave. Union City, CA 94587	33100 Transit Ave. Union City, CA	50	$419.00
	AJM Building Materials ID# 2058 ent: 06/14/88 Contact Person/Phone: Dan Martinez at 415-489-0515	30100 Union City Blvd. Union City, CA 94587	30100 Union City Blvd. Union City, CA 94587	12	$209.00
	Randy's Meats ID# 2350 ent: 02/14/89 Contact Person/Phone: Dennis F. Welch at 415-782-4900	30593 Union City Blvd. Union City, CA 94587	30593 Union City Blvd. Union City, CA	3	$105.00
	Loyola's Hi-Tech Auto Center ID# 2351 ent: 02/14/89 Contact Person/Phone: Ambrose L. Loyola at 415-471-2205	30957 Union City Blvd. Union City, CA 94587	30957 Union City Blvd. Union City, CA	3	$105.00
	Hammond Service ID# 2345 ent: 02/08/89 Contact Person/Phone: Jack Osborne at 415-654-2266	3701 Martin L. King Way Oakland, CA 94609	3701 Martin L. King Way Oakland, CA	1	$105.00

Estimated Annual Total for Hazardous Material's Fee Collection: $2,410.00
Number of Generators reported: 15

site and to discuss the information needed in a variance application. The following people can be contacted at ATS with remediation and variance application questions: Mr. John Wesnousky, Mr. Tej Pahwa, and Mr. Ken Smarkel. They can be reached at (916) 324-1807. In the event on-site treatment is used, the DHS office issuing the on-site treatment variance will oversee only the treatment technology. The extent and degree of cleanup will still be overseen by our office and the RWQCB.

C. Implementation of remedial plans for free product, polluted soils, and dissolved constituents may be appropriate prior to full definition of the extent of pollution. If remedial action is to be postponed pending further investigation, a rationale for this proposal should be provided.

7. **Reporting**

A. Each technical report should be submitted with a cover letter from the Oakland Redevelopment Agency and received in this office by the established due date. The letter must be signed by an authorized representative of that agency.

B. Monthly reports must be submitted for the next three months with the first report due on September 27, 1989. These reports should include, at a minimum, results of water level and water quality sampling, gradient determination and gradient maps, and contamination plume maps.

C. Quarterly reports must be submitted beginning on February 27, 1990. These reports should describe the status of the investigation and cleanup and should include the following:

* Details and results of all work performed during the quarter (e.g. water level records, clear records of field observations, chain-of-custody forms, boring logs, well construction logs, laboratory-originated analytical results for all samples collected, tabulations of soil and groundwater contaminant concentrations, tabulations of free product thicknesses, tabulation of amount of free product removed,etc.)

* Status of soil contamination remediation

COUNTY OF ALAMEDA - DATA PROCESSING DEPARTMENT

QUARTERLY DEPARTMENTAL COMPUTER TRAINING SCHEDULE: JULY - SEPTEMBER, 1989

JULY:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
3 MENTOR *	4 [HOLIDAY]	5 Basic PowerBase	6 Beginning Wang WP	7
10 MENTOR *	11 Basic PC Mgmt **	12 Basic Lotus	13 Begin WordPerf WP	14
17 MENTOR *	18	19 Basic PC Mgmt **	20 Beginning Wang WP	21
24 MENTOR *	25 Begin WordPerf WP	26 Basic Lotus	27 Interm Wang WP	28
31 MENTOR *				

AUGUST:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	1 Beginning Wang WP	2 Basic PowerBase	3	4
7 MENTOR *	8 Begin WordPerf WP	9 Basic Lotus	10 Basic PC Mgmt **	11
14 MENTOR *	15 Basic PC Mgmt **	16 Begin WordPerf WP	17 Interm Wang WP	18
21 MENTOR *	22 Beginning Wang WP	23 Basic Lotus	24 EMail: Wang OFFICE	25
28 [Day 1] Wang VS Adm/Ops **	29 [Day 2] Wang VS Adm/Ops **	30 Basic PowerBase	31 Beginning Wang WP	

SEPTEMBER:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
4 [HOLIDAY]	5	6	7	8 [HOLIDAY]
11 MENTOR *	12 EMail: MEMO	13 Basic Lotus	14 Begin WordPerf WP	15
18 MENTOR *	19 Beginning Wang WP	20 Basic PC Mgmt **	21 Interm WordPerf WP	22
25 MENTOR *	26 Interm Wang WP	27 Basic PowerBase	28 Interm PC Mgmt **	29

* MENTOR, a self-paced, computer-based training program, is an alternative for learning or refreshing Wang word processing and Wang VS administration skills. Word processing sessions cover basic, intermediate and advanced Wang word processing techniques, as well as Glossary. VS administration topics include using the operator's console, the command processor, disk management and procedure language. MENTOR sessions are arranged through departmental computer coordinators.

** Special workshop; see reverse side for enrollment requirements.

SEE REVERSE SIDE FOR COURSE AND WORKSHOP DESCRIPTIONS AND ENROLLMENT INFORMATION

P 833 981 463

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to MS. LOIS PARR	
Street and No	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

Certified Mailer #: P 833 981 463

June 27, 1989

Ms. Lois Parr
Oakland Redevelopment Agency
1417 Clay Street, 2nd Floor
Oakland, CA 94612

Subject: Remediation Requirements for Underground Gasoline Storage Tank Related Contamination at 1330 Martin Luther King Jr. Way, Oakland

Dear Ms. Parr:

We have received and reviewed the following documents prepared by Subsurface Consultants, Inc. concerning contamination at 1330 Martin Luther King Jr. Way in Oakland:

Progress Report 1, Underground Fuel Tank Leak Assessment, 1330 Martin Luther King Jr. Way, Oakland, July 29, 1988

Remediation Concepts, Underground Fuel Tank Leakage, 1330 Martin Luther King Jr. Way, Oakland, September 9, 1988

Remediation Plan - Phase 1 , Soil Excavation and Aeration 1330 Martin Luther King Jr. Way, Oakland, September 23, 1988

These reports document the removal of a 550 gallon underground gasoline storage tank, the identification of soil contamination of up to 7,660 ppm total volatile hydrocarbons (gasoline), the identification of ground water contamination of up to 90 mg/l total petroleum hydrocarbons (gasoline), and the measurement of up to 13.5 inches of free product on the ground water (Well 16). The soil contamination extends off site across Martin Luther King Jr. Way where it appears to be concentrated in a sandy zone 20 to 28 feet below ground surface. The dissolved product plume has moved off site to the northwest. The extent of this contamination, not determined to date, must be assessed and remediated.

To complete contaminant assessment and begin remediation, **we require that you submit a work plan which, at a minimum, addresses the items listed below and presents a timetable for their completion. Please submit this work plan within 30 days of the date of this letter.**

KC

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☑ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Ms. Lois Parr
Oakland Redwelopment Agency
1417 Clay St., 2nd Floor
Oakland, CA 94612

4. Article Number
P 833 981 463

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X Curtis Blake

7. Date of Delivery
6/29/85

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

Items to Address:

1. **Immediate initiation of free product removal.**

2. **Determination of the vertical and lateral extent of soil contamination.**

   The investigative work done to date does not adequately define the horizontal or vertical extent of soil contamination. The extent of soil contamination - especially north of the former gasoline tank, south of the former tank at a depth of approximately 21 feet, and at depths greater than 28.5 feet - must be investigated.

   A. Additional soil samples must be collected. Consult the September 1985 RWQCB document and the LUFT manual for soil sampling protocols. During drilling of all boreholes and monitoring wells, undisturbed soil samples are to be collected at a minimum of every five feet in the unsaturated zone and at any changes in lithology for logging and analytical purposes. Borings and wells are to be permitted through Alameda County Flood Control and Water Conservation District, Zone 7. Borings and wells shall be logged from undisturbed soil samples. Logs shall include observed soil odors; blow counts shall be expressed in blows per 6 inches of drive.

   B. Soil samples are to be analyzed by a California State Certified Laboratory for the appropriate constituents (see Attachment 1).

3. **Definition of the horizontal and vertical extent of the ground water pollution plume, both on and off site.**

   The extent of the floating product plume and the dissolved constituent plume has not been defined.

   A. Additional monitoring wells are required to determine the extent and magnitude of the free product and dissolved product plumes.

   B. Monitoring and extraction wells should be designed and constructed to be consistent with the September 1985 RWQCB document and to permit entrance of free product into the wells. Filter pack and slot sizes for all wells should be based on particle analysis (ASTM D-422) from each stratigraphic unit in at least one boring on the site and on the type of groundwater contaminant present. Both new and existing wells shall be surveyed to mean sea level.

C. Measure free product weekly for the first month following well installation. For the first three months following well installation, monitoring wells shall be sampled monthly for free product and dissolved constituents. After three consecutive months of sampling, sampling may be conducted as needed for remediation purposes but must be done at least quarterly for all monitoring wells. Before each sampling event is begun, free product thicknesses and water levels shall be measured in all wells. A ground water gradient map shall be developed for every water level data set. If the gradient fluctuates, water level measurements must continue to be made monthly until a gradient pattern is established. Floating product measurements shall be performed using an optical probe or other device which has been shown to be of equivalent accuracy.

D. Ground water samples are to be analyzed by a California State Certified Laboratory for the appropriate constituents (see Attachment 1, Table 2, 2 June 1988 RWQCB document).

4. Interpretation of hydrogeologic data.

A. Water level records, water level contour maps, ground water gradient determinations, and free and dissolved product plume definition maps of each contaminant constituent should be prepared routinely and submitted with other sampling results. Fluctuations in groundwater levels due to tidal action should also be documented.

B. The hydrogeologic characteristics of the aquifer must be described. An estimate of vertical transmissivity, based on a laboratory permeability test or a pump test, is required for any unit identified as a clay. Identification of the clay should be verified by particle analysis (ASTM D-422).

C. Geologic cross-sections should be prepared as specified in Attachment 2 using appropriate boring logs.

D. The cross sections, ground water gradients (horizontal and vertical), and any tidal effects should be interpreted to explain pollution migration patterns.

5. Determination of the potential short- and long- term impact of the pollution plume on the beneficial uses of ground and surface water in the area.

A. Beneficial uses of ground and surface water in the area which might be impacted by this site must be identified. Evaluation of the actual or potential short and long term impacts of this site on these beneficial uses is also required. Examples of beneficial uses include irrigation water supply, ground water recharge, fresh water habitat, wildlife habitat, contact and non contact recreation, and fish migration.

6. Development of a remediation plan.

A. A remediation plan for the site shall be developed. This plan is to include a time schedule for remediation plan implementation and, at a minimum, must address the following issues:

i) Removal of all free product by an appropriate remediation system. Specific information on the system must be submitted. Manual bailing of fuel product is not acceptable as a recovery system. Actual amounts of free product removed must be monitored and tabulated.

ii) Remediation of any contaminated soils and dissolved constituents such that beneficial uses of the ground and surface waters are restored or protected as required by the State Water Resources Control Board's Resolution No. 68-16, "Policy With Respect to Maintaining High Quality of Waters in California".

iii) Design of a remedial action system which is based on appropriate review of hydrogeologic and water quality data and on evaluation of mitigation alternatives. Aquifer test data (pump- and/or slug-testing) should be used to determine aquifer characteristics and the probable capture zone(s) of extraction system(s). The overall effectiveness of the remediation system should be verified by an appropriate monitoring program.

B. Mitigation involving on-site treatment of hazardous wastes requires a variance from the State of California Department of Health Services (DHS). Such a variance may be applied for at either the DHS regional office in Emeryville (Permitting Section) or the DHS office in Sacramento (Alternative Technology Section, (ATS)). In the event on-site treatment is considered, we recommend that you and your consultant contact or meet with ATS to discuss the type of remediation most appropriate for the

site and to discuss the information needed in a variance application. The following people can be contacted at ATS with remediation and variance application questions: Mr. John Wesnousky, Mr. Tej Pahwa, and Mr. Ken Smarkel. They can be reached at (916) 324-1807. In the event on-site treatment is used, the DHS office issuing the on-site treatment variance will oversee only the treatment technology. The extent and degree of cleanup will still be overseen by our office and the RWQCB.

C. Implementation of remedial plans for free product, polluted soils, and dissolved constituents may be appropriate prior to full definition of the extent of pollution. If remedial action is to be postponed pending further investigation, a rationale for this proposal should be provided.

7. Reporting

A. Each technical report should be submitted with a cover letter from the Oakland Redevelopment Agency and received in this office by the established due date. The letter must be signed by an authorized representative of that agency.

B. Monthly reports must be submitted for the next three months with the first report due on September 27, 1989. These reports should include, at a minimum, results of water level and water quality sampling, gradient determination and gradient maps, and contamination plume maps.

C. Quarterly reports must be submitted beginning on February 27, 1990. These reports should describe the status of the investigation and cleanup and should include the following:

* Details and results of all work performed during the quarter (e.g. water level records, clear records of field observations, chain-of-custody forms, boring logs, well construction logs, laboratory-originated analytical results for all samples collected, tabulations of soil and groundwater contaminant concentrations, tabulations of free product thicknesses, tabulation of amount of free product removed,etc.)

* Status of soil contamination remediation

* Status of dissolved constituent remediation and free product removal (e.g. estimated starting date, daily flow records, and evaluation of remediation system performance)

* Interpretation of the results (e.g. water level contour maps; ground water gradient determinations; free and dissolved product plume definition maps of each constituent; tidal effects, cross sections, etc.)

* Plans for additional investigative work or remediation

* Copies of TSDF to Generator manifests for any hazardous wastes hauled off site

D. All reports and proposals must be signed by a California-Certified Engineering Geologist, California-Registered Geologist or a California-Registered Civil Engineer (see page 2, 2 June 1988 RWQCB document). A statement of qualifications for each lead professional should be included in all reports. Initial tank removal and soil sampling does not require such expertise; however, borehole and monitoring well installation and logging, and impact assessments do require such a professional.

8. Site Safety Plan.

In addition to the above plan, please submit the following:

1) Copies of all TSDF to Generator Hazardous Waste Manifest generated for the site to date (e.g. for the hauling and disposal of the underground tank, the tank contents, any soil, etc.)

2) Chain of custody records for all soil and ground water samples collected to date for the tank-related contamination.

All work must be performed according to the Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, 2 June 1988 (2 June 1988 RWQCB document) and the Guidelines for Addressing Fuel Leaks, September 1985 (September 1985 RWQCB document). Copies of these documents can be obtained by calling the RWQCB data management group at 464-1269. Please note the 2 June 1988 RWQCB document supercedes the September 1985 RWQCB document where the two documents differ.

All proposals, reports and analytical results pertaining to this investigation and remediation must be sent to our office and to:

Scott Hugenberger
Toxics Cleanup, Underground Tank Section
Regional Water Quality Control Board
1111 Jackson Street
Oakland, California 94607
(415) 464-1255

Our office will be the lead agency overseeing both the soil and groundwater remediation of this site. The Regional Water Quality Control Board (RWQCB) is currently unable to oversee the large number of fuel cases within Alameda County and has delegated the handling of this case to our Division. We will be in contact with the RWQCB and will assist you in meeting RWQCB's remediation requirements. However, please be aware that you are responsible for diligent actions to protect waters of the State.

To cover our costs for remediation review, please submit a check, payable to Alameda County, for $600.

Should you have any questions concerning this letter, please contact Katherine Chesick, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

R.A. Shahid

Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:kac

cc w/ attachments:

James P. Bowers, Subsurface Consultants, Inc.
Donnel Choy, City of Oakland
John Esposito, Bramalea Pacific
Tim Brown, Crosby, Heafey, Roach & May
Lester Feldman, Regional Water Quality Control Board
Scott Hugenberger, Regional Water Quality Control Board
Howard Hatayama, State Department of Health Services
Katherine Chesick, Alameda County Hazardous Materials Division
Files
Gil Jensen, AC DA, Consumer & Environmental Protection Division

ATTACHMENT 1

TABLE #2
REVISED 6 OCTOBER 1988

RECOMMENDED MINIMUM VERIFICATION ANALYSES FOR UNDERGROUND TANK LEAKS

HYDROCARBON LEAK	SOIL ANALYSIS		WATER ANALYSIS	
Unknown Fuel	TPH G TPH D BTX&E	GCFID(5030) GCFID(3550) 8020 or 8240	TPH G TPH D BTX&E	GCFID(5030) GCFID(3510) 602 or 624
Leaded Gas	TPH G BTX&E ---Optional--- TEL EDB	GCFID(5030) 8020 or 8240 DHS-LUFT DHS-AB1803	TPH G BTX&E TEL EDB	GCFID(5030) 602 or 624 DHS-LUFT DHS-AB1803
Unleaded Gas	TPH G BTX&E	GCFID(5030) 8020 or 8240	TPH G BTX&E	GCFID(5030) 602 or 624
Diesel	TPH D BTX&E	GCFID(3550) 8020 or 8240	TPH D BTX&E	GCFID(3510) 602 or 624
Jet Fuel	TPH D BTX&E	GCFID(3550) 8020 or 8240	TPH D BTX&E	GCFID(3510) 602 or 624
Kerosene	TPH D BTX&E	GCFID(3550) 8020 or 8240	TPH D BTX&E	GCFID(3510) 602 or 624
Fuel Oil	TPH D BTX&E	GCFID (3550) 8020 or 8240	TPH D BTX&E	GCFID(3510) 602 or 624
Chlorinated Solvents	CL HC BTX&E	8010 or 8240 8020 or 8240	CL HC BTX&E	601 or 624 602 or 624
Non Chlorinated Solvents	TPH D BTX&E	GCFID(3550) 8020 or 8240	TPH D BTX&E	GCFID(3510) 602 or 624
Waste Oil or Unknown	TPH G TPH D O & G BTX&E CL HC	GCFID(5030) GCFID(3550) 503D&E 8020 or 8240 8010 or 8240	TPH G TPH D O & G BTX&E CL HC	GCFID(5030) GCFID(3510) 503A&E 602 or 624 601 or 624

---If any of the above detected, include:---

ICAP or AA TO DETECT METALS: Cd, Cr, Pb, Zn

METHOD 8270 FOR SOIL OR WATER TO DETECT:	
PCB	PCB
PCP	PCP
PNA	PNA
CREOSOTE	CREOSOTE

Reference: Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, 2 June 1988, SF Bay RWQCB

EXPLANATION FOR TABLE #2: MINIMUM VERIFICATION ANALYSIS

TOTAL PETROLEUM HYDROCARBONS (TPH) as gasoline (G) and diesel (D) ranges (volatile and extractible, respectively) are to be analyzed and characterized by GC FID with a fused capillary column and prepared by EPA method 5030 for volatile hydrocarbons, or extracted by sonication using 3550 methodology for extractible hydrocarbons.

TETRAETHYLLEAD (TEL) may be analyzed as total lead. However, a confirming analysis must be completed using a soil sample at the same soil depth in another borehole, or for water, from an upgradient well that is not contaminated with hydrocarbons.

CHLORINATED HYDROCARBONS (CL HC) and BENZENE, TOLUENE, XYLENE AND ETHYLBENZENE (BTX&E) are analyzed in soil by EPA methods 8010 and 8020, respectively, (or 8240) and for water 601 and 602, respectively, (or 624).

OIL AND GREASE (O & G) may be used when heavy, straight chain hydrocarbons may be present. Infrared analysis by method 418.1 may also be acceptable for O & G if proper standards are used.

Notes:

- To avoid false positive detection of benzene, benzene-free solvents are to be used. Fused capillary columns are preferred to packed columns; a packed column may be used as a "first cut" with "dirty" samples or once the hydrocarbons have been characterized and proper QA/QC is followed.
- For DRINKING WATER SOURCES, EPA recommends that the 500 series for volatile organics be used in preference to the 600 series because the detection limits are lower and the QA/QC is better.
- For all analyses on Table #2, appropriate standards are to be used for the material stored in the tank. For instance, seasonally, there may be five different jet fuel mixtures to be considered.
- Other methodologies are continually being developed (such as cryogenic focusing), and as they are accepted by EPA or DHS, they also can be used.

ATTACHMENT 2

GEOLOGIC CROSS SECTIONS

CROSS SECTION CONSTRUCTION

The location of the cross section must be shown on a plan view map at the same scale as the cross section.

Cross section scale:
1. Horizontal scale should not exceed 1 in.= 200 ft.
2. Vertical exaggeration should not exceed 10X. The vertical scale should permit the depiction of a sandy zone 6 in. thick.

The ground surface should be represented accurately, after all the wells have surveyed elevations (top of casing and ground surface).

INFORMATION TO BE SHOWN ON CROSS SECTIONS

Stratigraphic and Structure Information:

1. Sediment types present, including fill, should be accurately represented on the cross sections. The sediment types should be readily recognized from the boring logs. The explanation should be detailed. Formation boundaries may be shown if they are present.

2. Position of impoundments, tank excavations, or other contaminant sources should be shown.

3. The cross section should also accurately depict:
   a) Position of wells and borings with identifying numbers.
   b) Position of well screens and filter pack.
   c) Position of encountered water, with dates if applicable.

Contaminant Information:

Using the first cross section, construct additional cross sections showing the areas of the following contaminants and the direction of contaminant movement:

1) Soil contamination
2) Free product (floating portion) - "floaters"; show each constituent separately
3) Dissolved contamination; show each constituent separately
4) Contaminants heavier than water (if present) - "sinkers"; show each constituent separately

James P. Bowers, PE
R. William Rudolph, Jr., PE

October 26, 1989
SCI 430.003

10/27/89
ALAMEDA COUNTY
DEPT. OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS

Ms. Katherine Chesick
Alameda County Health Care Agency
Division of Hazardous Material
80 Swan Way, #200
Oakland, California 94621

Mr. Lester Feldman
Regional Water Quality Control Board
1111 Jackson Street, Room 6040
Oakland, California 94607

Remediation Plan Modification
Gasoline Contaminated Soils
13th & Jefferson Streets
Oakland, California

Dear Ms. Chesick and Mr. Feldman:

This letter requests modification of the remediation plan for gasoline contaminated soils at the 13th and Jefferson Streets site in Oakland, California. The remediation plan was reviewed and approved by the Alameda County Health Care Services Agency (ACHCSA) in a letter dated September 11, 1989 to Ms. Lois Parr of the Oakland Redevelopment Agency. In this letter, it is stated that contaminated soil which has been aerated cannot be returned to the excavation as fill.

As you are aware, site remediation is currently underway. Approximately 5000 cubic yards of contaminated soil have been removed and stockpiled. We have estimated that the cost to remove these soils from the site and dispose of them at a local Class 3 landfill will increase project costs by more than $200,000. For this reason, we are proposing an alternative plan in which the contaminated soils will be thoroughly aerated and utilized to backfill the excavation. Following soil remediation, groundwater cleanup will be initiated. Groundwater remediation will include a monitoring program, the details of which will be submitted to you shortly.

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461

Subsurface Consultants, Inc. (SCI) will closely monitor aeration of the contaminated soils. To document the effectiveness of aeration, we propose to sample the post-aerated soils at a rate of 1 sample per 50 cubic yards of material. The samples will not be composited for analysis. Consequently, detection limits will remain as low as possible. Based upon our experience with previous on-site aeration activities, and given the soil conditions which make aeration particularly effective, we propose that the soils be aerated until they contain less than 5 micrograms per kilogram of benzene, toluene, xylenes and ethylbenzene (BTXE), and 1 milligram per kilogram of total volatile hydrocarbons (TVH). The sampling program will generate approximately 100 analyses, which we judge will provide adequate data to accurately characterize the post-aerated soils.

Analytical testing will be performed by Curtis & Tompkins, Ltd., a DHS certified analytical laboratory. Each sample will be analyzed for:

1. Total volatile hydrocarbons (TVH) as gasoline - sample preparation using EPA Method 5030 (purge and trap); analyses performed using EPA Method 8015 (gas chromatography coupled to a flame ionization detector);

2. Quantification of benzene, toluene, xylene and ethylbenzene (BTXE) - sample preparation using EPA Method 5030 (purge and trap); analyses performed using EPA Method 8020 (gas chromatography coupled to a photo-ionization detector).

Post-aeration sample locations will be randomly selected by SCI. If desired, we will coordinate sampling efforts with the ACHCSA so that Ms. Chesick or another designated representative can observe sampling operations.

To date, we have remediated approximately 1000 cubic yards of contaminated soil and have analyzed 35 samples of the "post aeration" materials for TVH and BTXE. The analyses have demonstrated that the proposed remediation levels can be achieved. The test reports for the first 22 post aeration analyses are attached.

In our opinion, we consider this alternative reasonable in that the aerated soils will no longer represent a potential threat to public health or groundwater quality. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

SOC:JPB:mbl

Attachment: Analytical Test Report

cc: Mr. John Esposito
Ms. Lois Parr
Mr. Donnell Choy
Mr. Roy Ikeda

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 10/05/89
DATE REPORTED: 10/09/89

LAB NUMBER: 18425

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 SOIL SAMPLES

JOB #: 430.003
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18425
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.003
JOB LOCATION: 13th AND JEFFERSON

DATE RECEIVED: 10/05/89
DATE ANALYZED: 10/09/89
DATE REPORTED: 10/09/89

Total Volatile Hydrocarbons (TVH) by EPA 8015
Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 602/8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
18425-1	PA-1	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
18425-2	PA-2	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
18425-3	PA-3	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	<1
%RECOVERY	87

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 10/11/89
DATE REPORTED: 10/16/89

LAB NUMBER: 18482

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 19 SOIL SAMPLES

JOB #: 430.003
LOCATION: 13TH & JEFFERSON GAS REMEDIATION

RESULTS: SEE ATTACHED

M. G. Printera
QA/QC Officer

for CSG
Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18482
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.003
JOB LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 10/11/89
DATE ANALYZED: 10/12/89
DATE REPORTED: 10/16/89

Total Volatile Hydrocarbons (TVH) by EPA 8015
Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 602/8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
18482-1	PA-4	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-2	PA-5	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-3	PA-6	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-4	PA-7	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-5	PA-8	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-6	PA-9	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-7	PA-10	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-8	PA-11	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-9	PA-12	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-10	PA-13	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-11	PA-14	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-12	PA-15	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-13	PA-16	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-14	PA-17	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-15	PA-18	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-16	PA-19	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-17	PA-20	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-18	PA-21	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)
18482-19	PA-22	ND(1)	ND(5)	ND(5)	ND(5)	ND(5)

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	16
%RECOVERY	82

James P. Bowers, PE
R. William Rudolph, Jr., PE

August 28, 1989
SCI 430.003

Not an LOP
will transfer

Ms. Katherine Chesick
Alameda County Health Care Agency
Division of Hazardous Materials
80 Swan Way, #200
Oakland, California 94621

Remediation Plan
Gasoline Contaminated Soils, Excavation and Aeration
13th & Jefferson Streets
Oakland, California

Dear Ms. Chesick:

The City of Oakland is planning to initiate their remediation of gasoline contaminated soils at the referenced site. The following remediation plan outlines work related to the excavation and aeration of the gasoline contaminated soil. A report summarizing our investigation of the problem has been prepared and submitted to you.

Excavation will remove soils within about 27 feet of the groundsurface. The area shown on Plate 2 represents the lateral extent of soil contamination at a depth of about 27 feet and is based on the analytical test results recorded in our report. At this time, we seek your authorization to proceed with the first phase of gasoline contaminated soil remediation, i.e., excavation and aeration of the contaminated soils. The extent of remediation is indicated on Plate 2. We will proceed with subsequent phases of remediation as soon as the engineering studies can be completed and the necessary agency approvals are obtained. Subsequent phases of remediation will likely consist of groundwater remediation.

The source of gasoline contamination is believe to be gasoline storage tanks which exist/previously existed, near the northwest corner of the 13th and Jefferson Street intersection. Tanks that are encountered during excavation will be removed in accordance with underground tank closure procedures. Your office and the Oakland Fire Department will be notified.

A. Property Owner

City of Oakland
Office of Economic Development and Employment
1470 Clay Street, Oakland, California 94612
Contact: Ms. Lois Parr (415) 273-3692

B. Company Overseeing Closure (Consultant)

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
Contact: Mr. James P. Bowers (415) 268-0461

C. Company Performing Work (Contractor)

HSR, Inc.
1540 Parkmoor Avenue
San Jose, California 95128
Contact: Keith Dorsa (408) 971-7288

D. Location of Excavation

13th and Jefferson Streets
Oakland, California

E. Sampling and Analyses

1. Analytical Testing

All analytical testing will be performed by a California Department of Health Services (DHS) certified analytical laboratory. The analytical tests will be performed as required by the San Francisco Bay Area Air Quality Management District (BAAQMD). The tests will include:

a. Total petroleum hydrocarbons (TPH) as gasoline-sample preparation using EPA method 5030 (purge and trap); analyses using EPA method 8015 (gas chromatography coupled to a flame ionization detector),

b. Quantification of benzene, toluene, xylene and ethylbenzene (BTXE) - sample preparation using EPA method 5030 (purge and trap); analyses performed using EPA method 8020 (gas chromatography coupled to a photo-ionization detector),

F. Soil Aeration

The methods of soil aeration and analytical testing during aeration, will be performed in a manner consistent with the requirements of the BAAQMD. In general, the soil aeration method will include: (1) utilizing an impermeable barrier on which to store and aerate the contaminated soils, (2) excavating the contaminated soils, storing them in a separate area and covering them with an impermeable membrane, (3) determining the TPH concentrations in the contaminated soils, (4) removing and aerating the contaminated soils, using the aeration rates required by the BAAQMD, (5) turning the aerating soils at least daily, (6) analytically testing the aerating soils to determine when the TPH concentration drops below 100 ppm, (7) storing the aerated soils in a separate area, and (8) using the aerated soil to backfill the excavation. Aeration will occur in the area shown on Plate 1. This area is currently covered by concrete slabs.

Prior to aeration, we will collect two soil samples for every 100 cubic yards (cy) of material to be aerated and have them analyzed for TPH by a DHS certified analytical laboratory. We understand from the BAAQMD, that BTXE tests of the soil to be aerated are not required. Based upon the test results and requirements of the BAAQMD, the allowable rate of aeration of contaminated soil will be determined. A copy of the BAAQMD requirements "Regulation 8, Organic Compounds, Rule 40" is attached. After aeration, we will collect one soil sample for every 100 cy of aerated soil for analytical testing. Analytical tests will be conducted on composited samples as specified in the BAAQMD guidelines. In addition, in order to obtain a quick and rough estimate of the progress of soil aeration, we will collect a minimum of 4 soil samples for every 100 cy of aerated soils during aeration; the samples will be field tested with an organic vapor meter. These field and laboratory tests will allow us to estimate the rate of aeration and to confirm that the goal of a soil TPH concentration less than 100 ppm has been achieved.

G. Subcontractors

1. **Analytical Laboratory**
   Curtis and Tompkins, Ltd.
   2323 5th Street
   Berkeley, California 94710

   Contact: Mr. Stephen L. Jensen
   (415) 486-0900
   Hazardous Waste Testing Laboratory
   Certificate Number: 159

H. **Miscellaneous**

1. If necessary, hazardous Waste Manifests will be completed and accompany transport of waste materials taken off-site to a disposal or reclamation facility. At the present time, no off-site disposal is planned.

2. Chain-of-Custody forms will be used to document all sample transfers from the site to the analytical laboratory.

3. A report will be submitted to you describing closure activities and presenting sample analysis results. Copies of laboratory reports and Chain-of-Custody records will be included in the report.

If you have questions regarding our closure plan, please call.

Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers by mbl

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

SOC:JPB:mbl:clh

List of Attachments:

Plate 1	Site Plan
Plate 2	Soil Aeration Area
Regulation 8, Organic Compounds, Rule 40	

Distribution:

1 copy:	Mr. John Esposito Bramalea Pacific 1221 Broadway, Suite 1800 Oakland, California 94612
1 copy:	Ms. Lois Parr City of Oakland Office of Economic Development and Employment 1417 Clay Street Oakland, California 94612
1 copy:	Mr. Tim Brown Crosby, Heafey, Roach & May 1999 Harrison Street Oakland, California 94612
1 copy:	Mr. Donnell Choy, Attorney City of Oakland One City Hall Plaza Oakland, California 94612

31W

14th STREET

11W

PG&E
MANHOLE
BM ELEV 100

MARTIN LUTHER KING, JR. WAY

SIDEWALK

BASEMENT
(BACKFILLED)

AERATION AREA

RAMP DOWN

DIRECTION OF
GROUNDWATER
FLOW

BASEMENT (E)

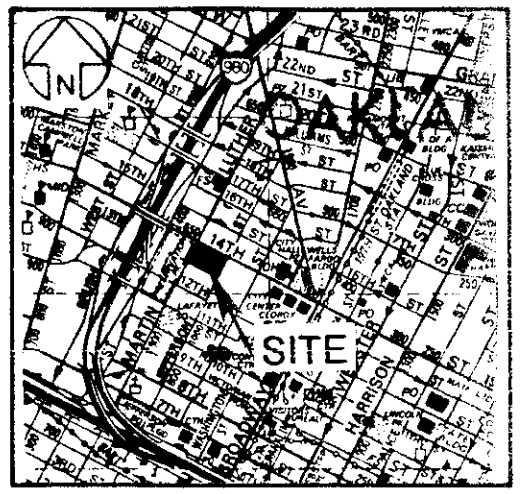
WELL

SUMP

44W

JEFFERSON STREET

13th STREET



VICINITY MAP

TEST BORING

AREA OF STUDY

W MONITORING WELL

TRUE NORTH

N

REFERENCE
NORTH

N

APPROXIMATE SCALE (feet)

0 50 100

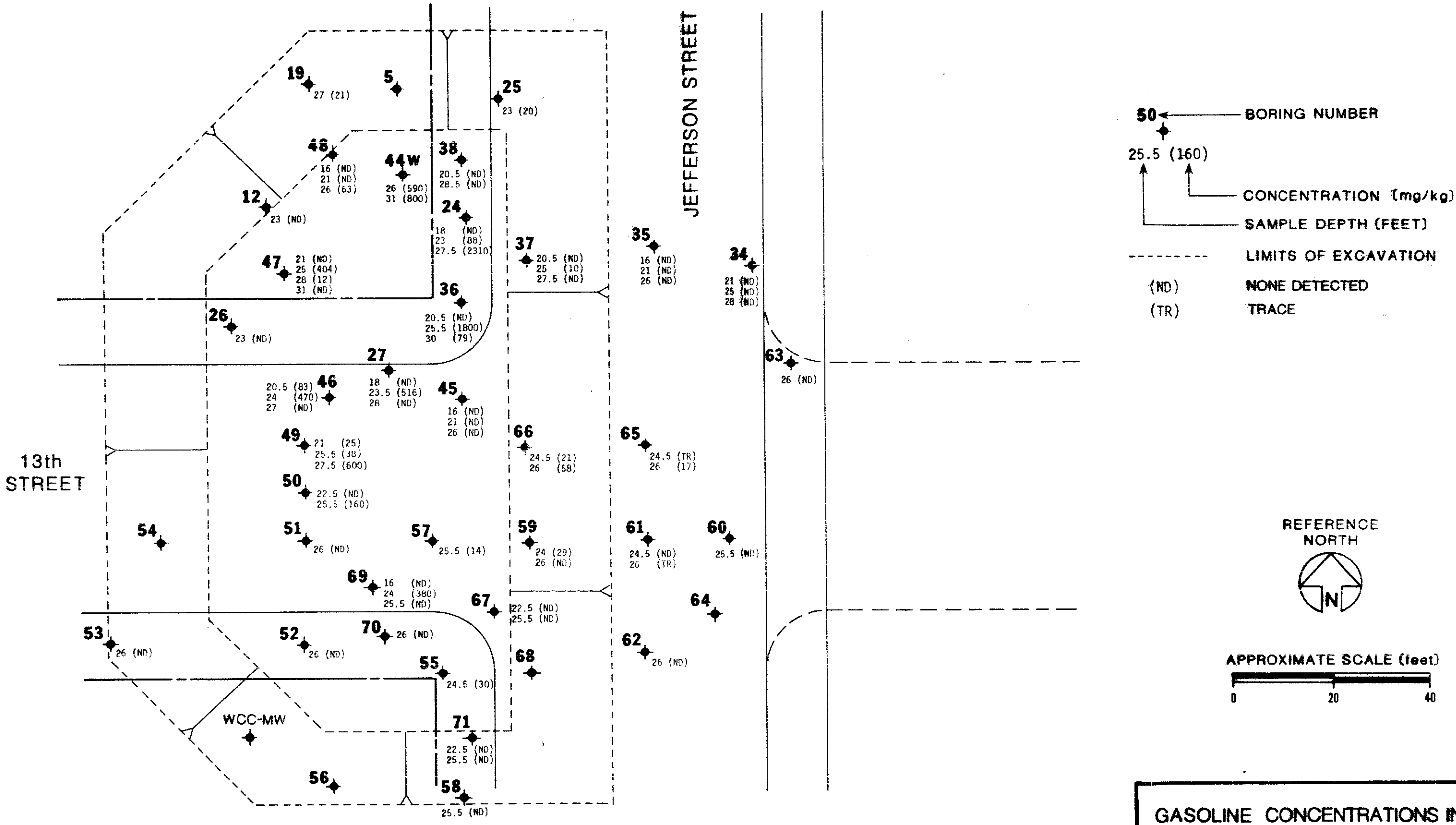
SITE PLAN

Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.003	10/4/88	

PLATE 1



GASOLINE CONCENTRATIONS IN SOIL

Subsurface Consultants

13th & JEFFERSON ST. - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.003	8/11/89	

PLATE 2

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
470 - 27TH ST., RM. 322
OAKLAND, CA 94612
PHONE NO. 415/874-7237

ACCEPTED
ENVIRONMENTAL HEALTH

Removal of Tank and Piping
Piping
Final Inspection

K. Chesick 8/28/87

Note: Consultant given a BAAQMD notification form when permits picked up.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

1. Business Name N/A

   Business Owner N/A

2. Site Address 13th & Jefferson Streets, NW Corner

   City Oakland, CA Zip 94612 Phone _____

3. Mailing Address N/A

   City _____ Zip _____ Phone _____

4. Land Owner City of Oakland

   Address 1417 Clay Street City, State Oakland, CA Zip 94612

5. EPA I.D. No. CAC 000092669

6. Contractor HSR, Incorporated

   Address 1540 Parkmoor Avenue

   City San Jose, CA 95128 Phone (408)971-7288

   License Type A. Haz ID# 550120

7. Consultant: ~~Subsurface Consultants, Inc.~~

   Address 171 12th Street, Suite 201

   City Oakland, CA 94607 Phone (415)268-0461

8. Contact Person for Investigation

Name James P. Bowers Title Project Manager Subsurface Consultants, Inc.

Phone (415) 268-0461

9. Total No. of Tanks at facility 3

10. Have permit applications for all tanks been submitted to this office? Yes [ ] No [x]

11. State Registered Hazardous Waste Transporters/Facilities

a) Product/Waste Tranporter

Name CKC EPA I.D. No. CAD 980584510

Address P O Box 2327

City Paso Robles State CA Zip 93446

b) Rinsate Transporter

not applicable; tanks not to be rinsed

Name CKC EPA I.D. No. CAD 980584510

Address P O Box 2327

City Paso Robles State CA Zip 93446

c) Tank Transporter

Name Stamco EPA I.D. No. CAD 063547996

Address P O Box 150 12475 Llagas Avenue

City San Martin State CA Zip 95046

d) Contaminated Soil Transporter

Name Stamco EPA I.D. No. CAD 063547996

Address P O Box 150 12475 Llagas Avenue

City San Martin State CA Zip 95046

e) Tank Disposal Site: Erikson, Inc., 255 Parr Blvd., Richmond, CA 94801
EPA I.D. No. CAD 009466392

12. Sample Collector

Name Sean Carson

Company Subsurface Consultants, Inc.

Address 171 12th Street, Suite 201

City Oakland State CA Zip 94607 Phone (415)268-0461

13. Sampling Information for each tank or area

Tank or Area		Material sampled	Location & Depth
Capacity	Historic Contents (past 5 years)		Collect the following soil samples per tank:
275 gallons	Gasoline	no	minimum of one
650 gallons	Unknown	no	minimum of one
1750 gallons	Waste Oil	no	minimum of two.
Collect 1 soil sample for every 20 feet of piping; no greater than 2 feet below piping.			Collect samples at a depth Samples shall be collected a maximum of two feet into the native soil beneath each tank. If groundwater is intercepted, a groundwater sample must be collected.

14. Have tanks or pipes leaked in the past? Yes [ ] No [ ]

If yes, describe. Unknown

All piping associated with the tanks must be removed. Piping must be emptied/flushed into tank before tank pumped out & inerted

15. NFPA methods used for rendering tank inert? Yes [X] No [ ]

If yes, describe. Dry ice - 25 lbs/1000 gallons

OK 16. Laboratories

Name Curtis & Tompkins, Ltd.

Address 2323 Fifth Street

City Berkeley, State CA Zip 94710

State Certification No. 159

17. Chemical Methods to be used for Analyzing Samples

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Number
TVH	EPA 5030	EPA 8015
TEH	EPA 3550	EPA 8015
Benzene, Toluene, Xylene, Ethyl Benzene	EPA 5030	EPA 8020
Total Lead		EPA 7420
Oil & Grease	EPA 3550-Freon Extraction	SMWM 503 D and E
Volatile Organics		EPA 8240

If any of the above analyses reveal contamination, then analyze for the following:

Metals: (Cd, Cr, Pb, Zn) ICAP or AA

Semi-volatile organic compounds EPA 8270

18. Site Safety Plan submitted? Yes [x] No [ ]

19. Workman's Compensation: Yes [x] No [ ]

Copy of Certificate enclosed? Yes [x] No [ ]

Name of Insurer Fairmont Insurance Company

20. Plot Plan submitted? Yes [x] No [ ]

21. Deposit enclosed? Yes [x] No [ ]

22. Please forward to this office the following information within 60 days after receipt of sample results.

a) Chain of Custody Sheets

* b) Original Signed Laboratory Reports

c) TSD to Generator copies of wastes shipped and received

d) Attachment A summarizing laboratory results

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true. I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

* I will notify the Department of Environmental Health at least two (2) working days (48 hours) in advance to schedule any required inspections. I understand that site and worker safety are soley the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Signature of Contractor

Name (please type) JAMES P. BOWERS for SUBSURFACE CONSULTANTS INC.

Signature James P. Bowers

Date 8/25/89

Signature of Site Owner or Operator

Name (please type) Lois R. Parr, Proj. Manager, City of Oakland

Signature Lois R. Parr

Date 8/28/89

NOTES:

1. Any changes in this document must be approved by this Department.
2. * Any leaks discovered must be submitted to this office on an underground storage tank unauthorized leak/contamination site report form within 5 days of its discovery.
3. Three (3) copies of this plan must be submitted to this Department. One copy must be at the construction site at all times.
4. A copy of your approved plan must be sent to the landowner.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

ATTACHMENT A

SAMPLING RESULTS

Tank or Area	Contaminant	Location & Depth	Results (specify units)

INSTRUCTIONS

2. SITE ADDRESS
Address at which closure or modification is taking place.

5. EPA I.D. NO.
This number may be obtained from the State Department of Health Services, 916/324-1781.

6. CONTRACTOR
Prime contractor for the project.

7. OTHER
List professional consultants here.

12. SAMPLE COLLECTOR
Persons who are collecting samples.

13. SAMPLING INFORMATION
Historic contents - the principal product(s) used in the last 5 years.

Material sampled - i.e., water, oil, sludge, soil, etc.

16. LABORATORIES
Laboratories used for chemical and geotechnical analyses.

17. CHEMICAL METHODS:
All sample collection methods and analyses should conform to EPA or DHS methods.

Contaminant - Specify the chemical to be analyzed.

Sample Preparation Method Number - The means used to prepare the sample prior to analyses - i.e., digestion techniques, solvent extraction, etc. Specify number of method and reference if not an EPA or DHS method.

Analysis Method Number - The means used to analyze the sample - i.e., GC, GC-MS, AA, etc. Specify number of method and reference if not a DHS or EPA method.

NOTE:
Method Numbers are available from certified laboratories.

18. SITE SAFETY PLAN
A plan outlining protective equipment and additional specialized personnel in the event that significant amount of hazardous materials are found. The plan should consider the availability of respirators, respirator cartridges, self-contained breathing apparatus (SCBA) and industrial hygienists.

19. ATTACH COPY OF WORKMAN'S COMPENSATION

20. PLOT PLAN
The plan should consists of a scaled view of the facility at which the tank(s) are located and should include the following information:

a) Scale

b) North Arrow

c) Property Line

d) Location of all Structures

e) Location of all relevant existing equipment including tanks and piping to be removed

f) Streets

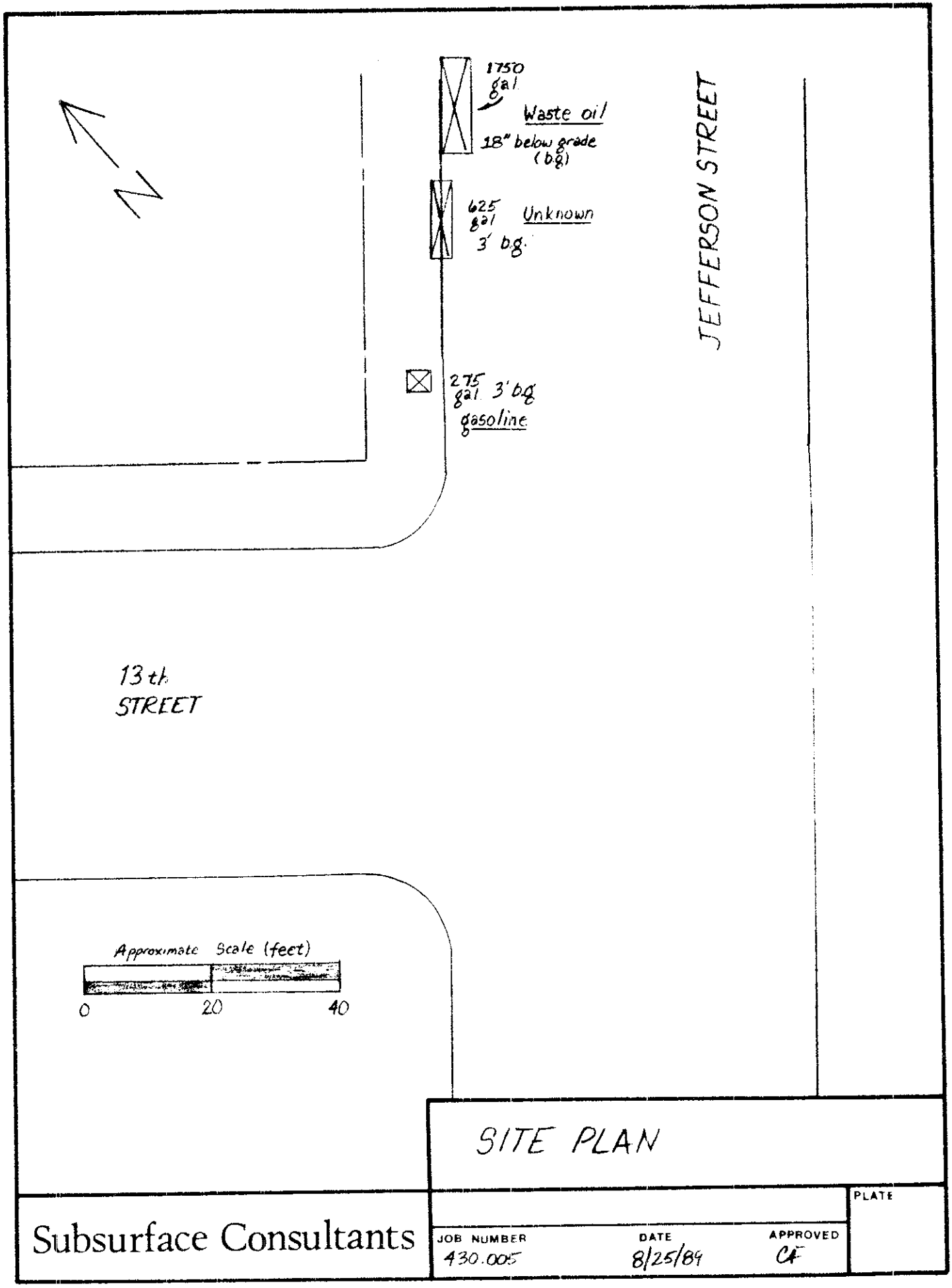
g) Underground conduits, sewers, water lines, utilities

h) Existing wells (drinking, monitoring, etc.)

i) Depth to ground water

j) All existing tanks in addition to the ones being pulled

1/88



SITE PLAN

Subsurface Consultants

JOB NUMBER	DATE	APPROVED	PLATE
430.005	8/25/84	CF	

RECEIVED AUG 1 1 1989

ACORD. CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY) 8/10/89

PRODUCER

ANDREINI AND COMPANY
220 WEST 20TH AVENUE
SAN MATEO, CA 94403

CODE SUB-CODE

INSURED

BSB INC.
1540 PARK MOOR, SUITE A
SAN JOSE, CA 95128

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A COMCO INSURANCE COMPANY

COMPANY LETTER B FAIRMONT INSURANCE COMPANY

COMPANY LETTER C

COMPANY LETTER D

COMPANY LETTER E

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	ALL LIMITS IN THOUSANDS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$2,000,000
A	X COMMERCIAL GENERAL LIABILITY				PRODUCTS-COMP/OPS AGGREGATE	$1,000,000
	CLAIMS MADE X OCCUR.	100808	7/21/89	7/21/90	PERSONAL & ADVERTISING INJURY	$1,000,000
	X OWNER'S & CONTRACTOR'S PROT.				EACH OCCURRENCE	$1,000,000
					FIRE DAMAGE (Any one fire)	$ 50,000
					MEDICAL EXPENSE (Any one person)	$ 5,000
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$
	ANY AUTO					
	ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	SCHEDULED AUTOS					
	HIRED AUTOS				BODILY INJURY (Per accident)	$
	NON-OWNED AUTOS					
	GARAGE LIABILITY				PROPERTY DAMAGE	$
A	EXCESS LIABILITY				EACH OCCURRENCE $	AGGREGATE $
X	OTHER THAN UMBRELLA FORM	900114	8/10/89	7/21/90	5,000,000	5,000,000
					STATUTORY	
B	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY	TBD	8/10/89	7/21/90	$ 100,000 (EACH ACCIDENT)	
					$ 500,000 (DISEASE—POLICY LIMIT)	
					$ 100,000 (DISEASE—EACH EMPLOYEE)	
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/RESTRICTIONS/SPECIAL ITEMS

LIMITS OF LIABILITY AT TIME OF INCEPTION
*EXCEPT WITH RESPECT TO NON-PAYMENT OF PREMIUM, WHICH SHALL BE 10 DAYS NOTICE.

CERTIFICATE HOLDER

REDEVELOPMENT AGENCY, OF THE CITY OF OAKLAND AND BRAMALEA PACIFIC
1221 BROADWAY #1800
OAKLAND, CA 94612

ATTN: JOHN ESPOSITO

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
ANDREINI AND COMPANY

SITE SAFETY PLAN
TANK REMOVAL
13TH & JEFFERSON STREETS
OAKLAND, CALIFORNIA
SCI 430.003

Prepared for:

Ms. Lois Parr
City of Oakland
Office of Economic Development
and Employment
1417 Clay Street, 2nd Floor
Oakland, California 94612

By:

James P. Bowers by mail
James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

R. William Rudolph
R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/92)

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, California 94607
(415) 268-0461

August 25, 1989

I INTRODUCTION

This Site Safety Plan has been prepared to outline minimum health and safety standards which will be applied to the site. This plan should be followed by the contractor and other on-site personnel during the project.

Three underground storage tanks are currently situated below the street and sidewalk adjacent to the west side of Jefferson Street, between 13th and 14th Streets, in Oakland, California. The tanks are 1750, 650 and 275 gallons in capacity . The tanks are situated from 1-1/2 to 3 feet below grade.

A gasoline contamination assessment was conducted by Subsurface Consultants, Inc. (SCI) and recorded in a report dated August 22, 1989. The investigation consisted of drilling and sampling numerous test borings near the tanks. Soil samples and a groundwater sample were analyzed for total petroleum hydrocarbons (TPH), and benzene, toluene, xylene and ethylbenzene (BTXE). The analyses indicated that soil and groundwater near the tanks contain significant concentrations of TPH and BTXE.

This plan outlines a personnel and work site safety program to minimize the risks of endangering personnel and/or property.

II HEALTH AND SAFETY CONSIDERATIONS

A. Key Personnel

Health and Safety Officer

SCI will designate a Health and Safety Officer who will be responsible for planning, implementing and auditing the health and safety program for the project.

B. Hazardous Substance Description

Light petroleum hydrocarbons (gasoline), including BTXE have been detected in the soil and groundwater at the site. The range of concentrations that have been measured at the site is presented in the following table.

Material	Concentration (ppm)
Soil:	
TPH (as gasoline)	up to 2310
Water:	
Benzene	0.84
Toluene	0.91
Ethylbenzene	0.48
Xylene	2.23
TPH (as gasoline)	0.025

C. **Chemical Distribution**

Gasoline was encountered by SCI in the soil above the groundwater level. The gasoline concentrations are likely to be greatest below the existing tanks, becoming less with distance from the tanks.

D. **Chemical Hazards**

Potential chemical hazards include skin and eye contact and inhalation or exposure to potentially toxic concentrations of chemical vapors. The identified toxic compounds that exist at the site are listed below with descriptions of specific effects of each. The list includes the main toxic constituents of gasoline (benzene, toluene, xylene and ethylbenzene).

1. **Benzene**

   a. **Characteristics:**

      Clear, colorless, highly flammable liquid with characteristic odor

   b. **High exposure levels may cause:**

      Acute restlessness, convulsions, depression, respiratory failure, suspected carcinogen

   c. **Permissible exposure level in air (PEL) for a time weighted average (TWA) over an eight hour period:**

      10 ppm 1.0 ppm

2. **Toluene**

   a. **Characteristics:**

      Refractive, flammable liquid with benzene-like odor

   b. **High exposure levels may cause:**

      Headache, nausea, eye irritation, mild macrocytic anemia, but not leukopenia (less toxic than benzene)

   c. **PEL for an 8-hour TWA:**

      200 ppm

3. **Xylene**

   a. **Characteristics:**

      Clear, mobile, flammable liquid

   b. **High exposure levels may cause:**

      Severe eye irritation, skin irritation, narcosis

   c. **PEL for an 8-hour TWA:**

      100 ppm

4. **Ethylbenzene**

   a. **Characteristics:**

      Colorless liquid, aromatic odor, highly flammable

   b. **High exposure levels may cause:**

      Skin, nose and eye irritation, dizziness, ataxia, loss of consciousness and respiratory failure

   c. **PEL for an 8-hour TWA:**

      100 ppm