

FILE OR

ENVELOPE

PER NO.

No. of

PLAN REVIEW

\$ 300.00

By Date

By Date

By Date

OWNER

Former Tank Site

Address 1330 Martin L. King

94607 94612 Phone

Contractor

Subsurface Consultants

Address 171-12th St., SW 201

94607 Phone

OTHER (Specify)

Address

Phone 268-0461

CONTACT FOR INVESTIGATION

James Bowers

No. Plans Rec'd.

Plans Approved

Layout Made

Rejected

Applicant Notified

Plans Returned

Permit Issued

CONSTRUCTION PROGRESS ACCEPTANCE

Pre-Plaster/drywall

Pre-Final

Final

POOL

Pre-Concrete/Gunite

Pre-Plaster

Final

EXCAVATION

Septic Tank

Absorption Field

Absorption Bed

FINAL

House Sewer

Septic Tank

Absorption Field

Absorption Bed

OTHER

U.G. TANKS

Pre-Covering

Final

LOP

3623

XR

REMARKS

LOCATION

Date By

REMARKS

Date By

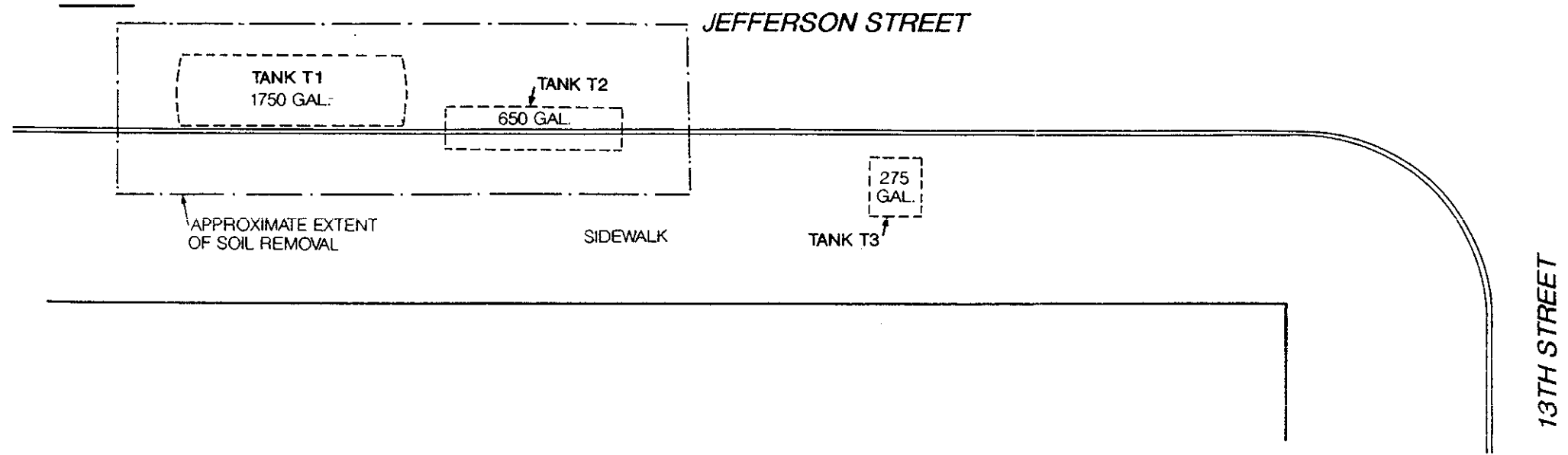
5/7 RC Completed plan review. Plans picked up by Terrian Alexander of Subsurface Consultants.

5/17 RC Tank pulled; two samples collected (to be run for TPH & BTEX). No soil excavated - to be done later. Strong gas smell emanated from excavation following tank removal.

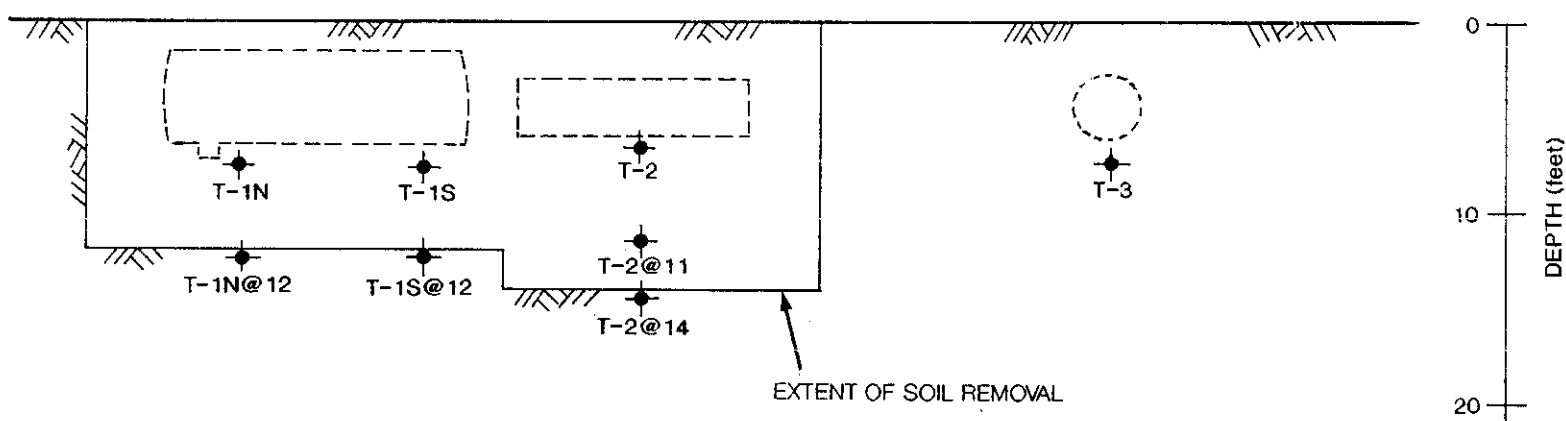
3623

Utility Map

**PLAN**



**CROSS SECTION**



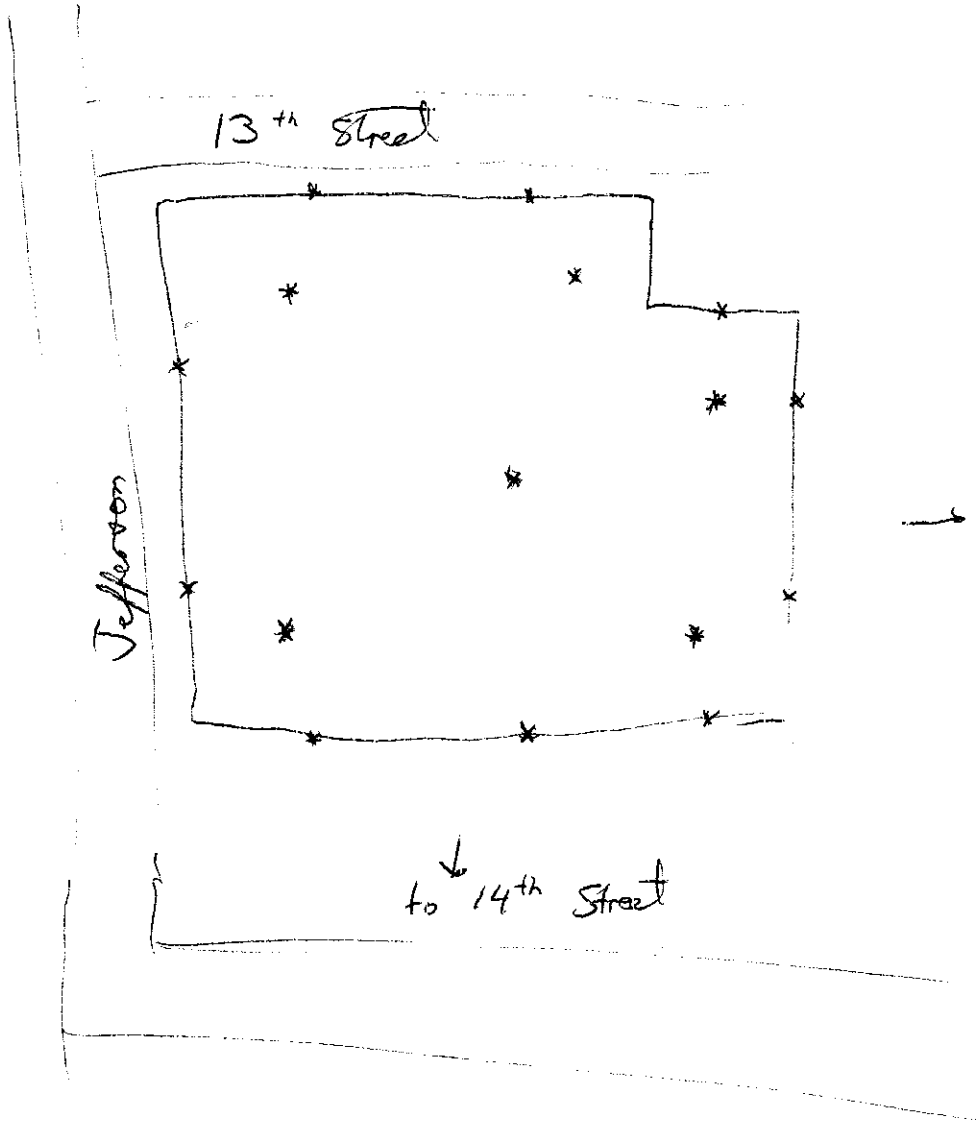
SAMPLE LOCATION  
 TANK  
 T-1N@12 SAMPLE DESIGNATION AND DEPTH (feet)

APPROXIMATE SCALE (feet)  
 0 10 20

<b>SITE PLAN</b> <b>UNDERGROUND STORAGE TANKS</b>			
13TH & JEFFERSON - OAKLAND, CA			
JOB NUMBER 430.007	DATE 7/18/90	APPROVED 	PLATE <b>8</b>

Subsurface Consultants

8/18/89  
Site Visit  
14<sup>th</sup> + Jefferson



→ to  
Martin  
Luther  
King Jr.  
way

\* approximate sampling locations  
(samples collected 8/17 + 8/18, 1989)

13<sup>th</sup> + Jefferson Corner, Oakland

8/23/89

4:30 Jim Bowers called. He found 3 tanks at the 13<sup>th</sup> + Jefferson corner on the sidewalk on Jefferson btw 13<sup>th</sup> + 14<sup>th</sup>.

200 gal - has about 6" of gasoline'

2,000 gal - wafer thin walls - contains  
gunky murky water

1,500 gal - appears to be a waste oil tank  
has about 6-8" waste oil

Gave verbal approval to have tank contents pumped out of all three tanks before tank closure plan has been approved.

Also - per the well discovered

Well "grout" btw inner + outer casings smells of oil  
Appears oil + other junk may have been dumped down it. Jim is investigating having the well drilled out.

analyze soil samples from borings 54, (56),  
64, (68) → Aug 22, 1989 report

What was sampled 5/25/88 as having  
0.4 ug/l PCB 1260

white - env.health  
 yellow - facility  
 pink - files

ALAMEDA COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH  
 HAZARDOUS MATERIALS DIVISION  
 80 SWAN WAY, ROOM 200  
 OAKLAND, CA 94621  
 (415) 271-4320

BUSINESS PLAN - PART I

1. Business Name \_\_\_\_\_  
 Site Address \_\_\_\_\_  
 City \_\_\_\_\_ Zip \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City \_\_\_\_\_ Zip \_\_\_\_\_
2. Contact Person \_\_\_\_\_ Phone No. \_\_\_\_\_
3. Total Area of Business in Square Feet \_\_\_\_\_
4. Hazardous Materials/Waste Storage and Handling Area in Square Feet:  
 \_\_\_\_\_
5. HAZARDOUS SUBSTANCES OR WASTES OVER 55 GALLONS\*, 500 LBS.\* OR  
 200 CUBIC FEET\*

	Gallons* (liquid)	Pounds* (solid)	Cubic Feet* (gaseous)	Number of Items
Hazardous Materials				
Hazardous Waste				
GRAND TOTAL				

OWNER OR OPERATOR'S SIGNATURE \_\_\_\_\_  
 PRINTED NAME \_\_\_\_\_  
 DATE \_\_\_\_\_

\* Metric Equivalents may be used

13<sup>th</sup> + Jefferson

Need to receive a report

- documenting removal of lead + PNA contaminated soil (Manifests); also sump remediation.
- documenting removal of 3 VSTs + related contaminated soil (Manifests)

• how the well discovered during PNA + lead contaminated soil excavation will be handled

once <sup>contaminated</sup> soil excavation is complete,  
send out letter which  
requires beginning of G/H<sub>2</sub>O studies

- use large form letter
  - slotted screen must be high enough to intercept floating product at highest water level
  - slotted screen depth must be noted on well logs
  - soil odors must be noted on well logs
  - submit a cross section and contaminant concentration profile for soil contam "plume"
  - address permitting or abandonment plans for the 215 ft deep well (see June 29 letter, #5)

white - env.health  
 yellow - facility  
 pink - files

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 HAZARDOUS MATERIALS DIVISION  
 80 SWAN WAY, ROOM 200  
 OAKLAND, CA 94621  
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	Gallons* (liquid)	Pounds* (solid)	Cubic Feet* (gaseous)	Number of Items
Hazardous Materials				
Hazardous Waste				
GRAND TOTAL				

OWNER OR OPERATOR'S SIGNATURE \_\_\_\_\_  
 PRINTED NAME \_\_\_\_\_  
 DATE \_\_\_\_\_

\* Metric Equivalents may be used



Sump must be pumped + removed + sampled under  
(PCBs, TPH, TOG, PNAs, metals - esp. lead, 8240 for  
methylene chloride + xylenes)

Confirmation sampling of complete PNA + lead soil removal  
analyze individual samples, sample sidewalls carefully  
for PNAs, STLC lead

Collect additional samples for background lead levels

Cleanup PNAs to ND

Cleanup lead to background levels

Installation of wells → test for PNAs, lead, gas  
→ sample for free product

Sample beneath filled in basement

California Department of Health Services  
Hazardous Materials Laboratory

HML # \_\_\_\_\_ to  
\_\_\_\_\_

LABORATORY REPORT  
Priority Pollutants--Base-Neutrals

Collector's Name \_\_\_\_\_

Date Received  
by Laboratory \_\_\_\_\_

Sampling Location \_\_\_\_\_

Collector's Sample # \_\_\_\_\_ to  
\_\_\_\_\_

Analytical Procedure: \_\_\_\_\_

Concentration Units: Solids:  $\mu\text{g/g}$  Liquids:  $\mu\text{g/L}$

HML #						Detection Limit
Collector's Sample #						
Phenol						
Bis (2-chloro-ethyl) ether						
1,3-Dichlorobenzene						
1,4-Dichlorobenzene						
1,2-Dichlorobenzene						
Bis (2-chloro-isopropyl) ether						
Hexachloroethane						
N-Nitrosodi-n-propylamine						
Nitrobenzene						
Isophrone						
Bis(2-chloroethoxy)methane						
1,2,4-Trichlorobenzene						
Naphthalene						
2-Chloronaphthalene						
Acenaphthylene						
Dimethyl phthalate						
2,6-Dinitrotoluene						
Acenaphthene						
2,4-Dinitrotoluene						
Fluorene						
Hexachloro butadiene						
4-Chlorophenyl phenyl ether						
4-Bromophenyl phenyl ether						
Hexachloro cyclopentadiene						
Hexachlorobenzene						

Note: (-) = Not detected  
(blank) = Not determined

1330 MLK Jr. Way

7/22/88

9:00 Called Jim Bowers of Subsurface Consultants  
He scheduled a meeting w/ me for 7/25/88 at  
10:00 to review current information. Soil contamination  
ranges from.... to 7,000 ppm TPH. Water  
contamination from 90 mg/l to 10 mg/l downgradient.  
Proposing in-situ stabilization system. (Injection  
wells - pump clean air in & extract "bad air"  
out, run air through carbon stripping unit)  
Cancelled meeting on Monday. Will be sending  
me ~~a~~ a report & money on Monday.

I need to contact: DHS & RWQCB concerning  
soil & water treatment. I told Jim I won't be contacting  
anyone until I receive hard copy information.  
Jim also told me he sent an VST Leak Release  
Form to our office by registered mail & that  
Mary Newman Carter signed for it.

8/9/88

11:30 Reviewed report. Called Jim Bowers of Subsurface Consultants  
Told him I was in contact with several agencies about  
the case & would let him know the final status &  
who is the lead agency once I find out.

1330 MLK Way Oakland.

6/30/88

Talked with James Bowers at Subsurface Consultants. They're installing wells & soil borings to define extent of contamination.

Total Volatile Hydrocarbons } samples analyzed  
Method 602 } for

Storm talked with them ~1/2 weeks ago & verbally OK'd this work. James Bowers will call me when the definition phase is complete & we'll discuss options from that point.

7/7/88

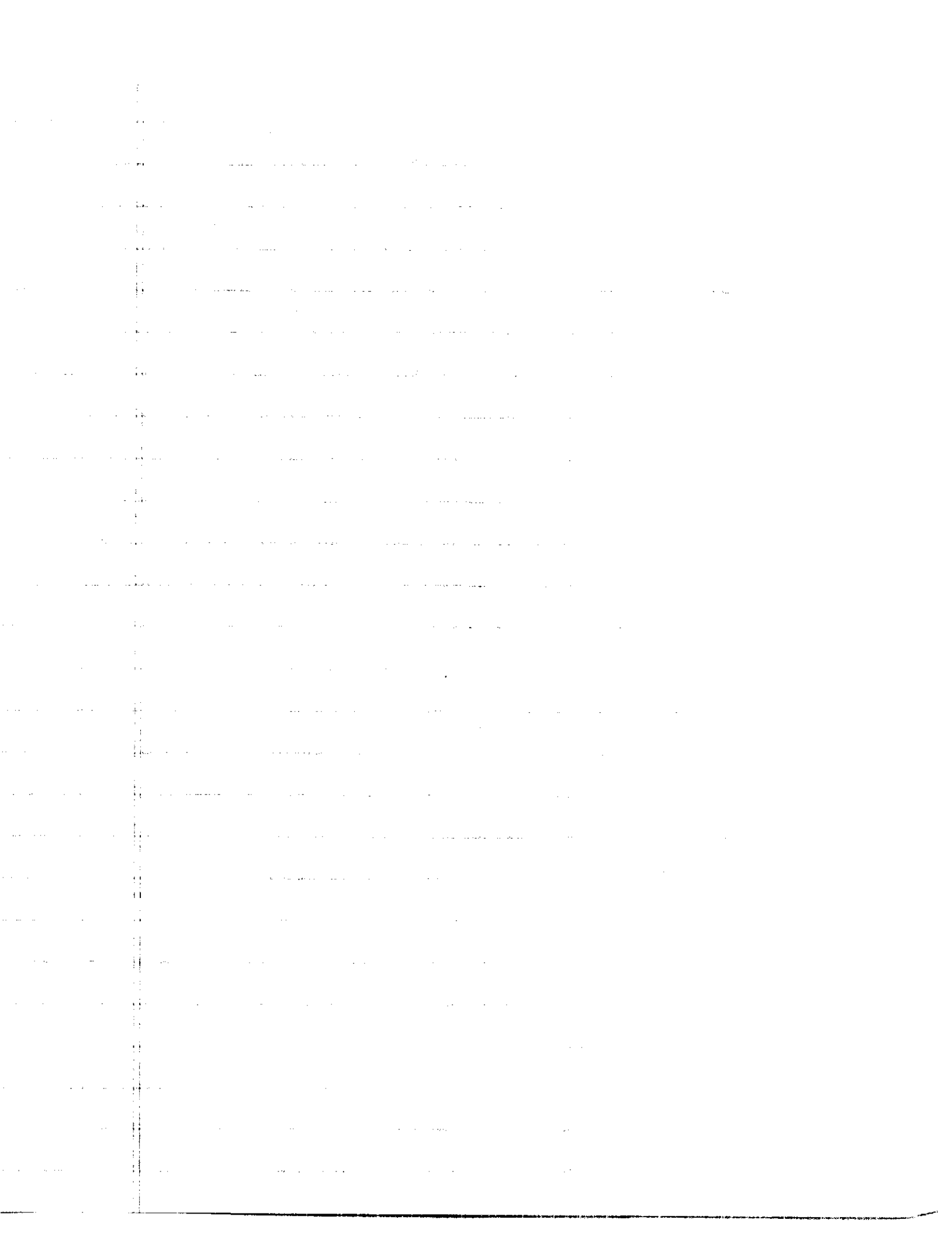
Spoke with Lois Parr of Oakland Redevelopment Agency & asked about handling of the water supply pipe leaking into the tank excavation on 6/12/88. Lois said the pipe was pulled up & capped. The ~~pipe~~ <sup>pipe</sup> was leaking because water was still being supplied to the site (contractors were using it for dust suppression). Thus the problem has been resolved (no more water leaking from the pipe & the pipe ~~was removed~~ was cut back (removed) from the immediate vicinity of the tank excavation).

1330 MLK Way, Oakland 94607

- 6/17/88
- Tank corroded - holes up to  $1\frac{1}{2}$ " long <sup>lengthwise</sup> along line on tank
  - 2 samples collected from trench sidewall (beneath where tank used to be). Samples could not be collected immediately beneath the ~~tank~~ <sup>tank</sup> due to  $\approx 8$ " of standing water in bottom of trench. Source of water was a pipe near trench surface which was steadily leaking water. I informed Lois Parr (acting owner) of the need to cut off the water flow (preferably removing the pipe & capping it some distance away from the trench) to prevent washing of any contamination into the groundwater.
  - The samples were collected by pounding a brass tube into the trench sidewall. (Note:  $\approx 1\frac{1}{2}$  of the second sample fell out of the tube before it was capped. This headspace may affect analytical results for TPH & 8070 analytes.
  - I told Jerriann ~~to~~ not to analyze for lead since I didn't know yet if the AA lead would also get organic lead.

K. Chasick

(Note: Strong gas smell emanated from trench after tank removal. No soil excavated at the time of UST removal)



James P. Bowers, P.E.  
R. William Rudolph, P.E.

**LETTER OF TRANSMITTAL**

TO: Ms. Katherine Chesick  
Alameda County Environmental Health Dept.  
Division of Hazardous Materials  
80 Swan Way, Suite 200  
Oakland, California 94621

DATE: June 14, 1988  
PROJECT: 1330 Martin Luther King Jr. Way  
SCI JOB NUMBER: 430.001

SUBJECT:

WE ARE SENDING YOU:

\_\_\_ copies

- of our final report
- a draft of our report
- a Service Agreement: *1330 Martin Luther King Jr.*
- a proposed scope of services *King Jr.*
- specifications
- grading/foundation plans
- soil samples/groundwater samples
- an executed contract
- \_\_\_\_\_

- 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.
- for your use.
- \_\_\_\_\_
- \_\_\_\_\_

REMARKS:

Attached, please find: - Underground Tank Closure/Modification Plans  
(1 original + 3 copies)  
- Fee Payment - Check  
- Site Safety Plan

COPIES TO: Tank will be removed at 1:00 P.M. on Friday.

BY:

*Jeri Alexander*  
Jeri Alexander

**Subsurface Consultants, Inc.**

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

James P. Bowers, PE  
President



■ **Subsurface Consultants, Inc.**  
Geotechnical and Geo-environmental Engineers

171 - 12th Street, Suite 201 • Oakland, CA 94607 • (415) 268-0461



1330 MLK Jr Way, Oakland

When receive soil excavation/aeration report check the following items: (fuel tank soil aeration)

- \* Done in accordance with BAAQMD? (i.e. the aeration + sampling of stockpiled soil)
- \* Depth of excavation
- \* Confirmation samples (location + analyses (TPH + BTEX))
  - in pit (side walls must be clean - except at depth of contaminated soil layer)
  - from aeration pile (correct number taken?)
- \* Excavation photos submitted?

Manifests for: \* tank

\* sludge from tank

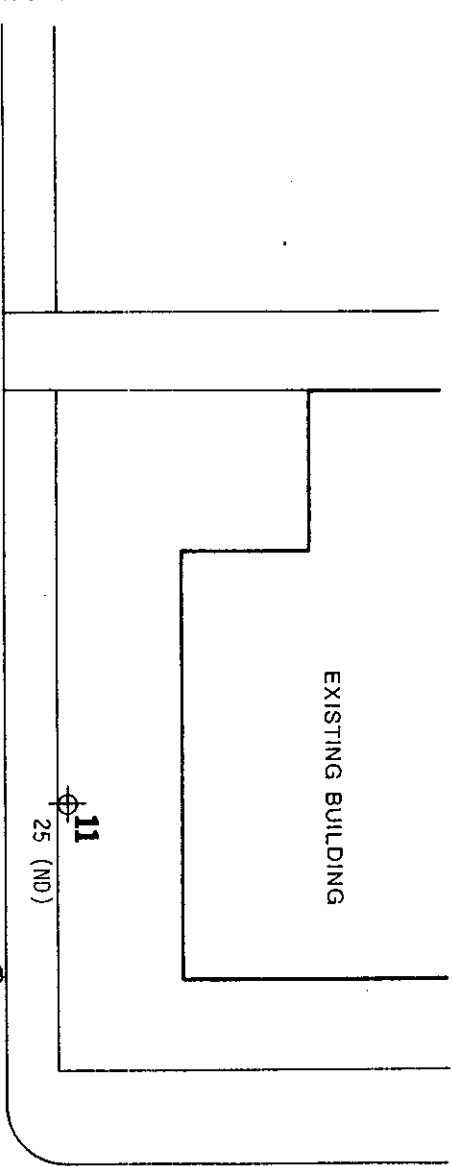
\* waste water from excavation

1330 Martin Luther King Jr. Way Oakland

## Remediation Questions

- \* Test for tetraethyl lead, ethylene dibromide?
- \* Check wells for appropriate slotting to intercept free product
- \* Permeability of soils, extent of high levels of soil contamination indicate *in-situ* treatment. Alternative Technology recommends vacuum extraction over bioremediation
- \* When remediating groundwater pay attention to whether cone of depression will be created which might drag free product through soil (remove free product without creating a cone of depression)
- \* Gas/water extraction & separator system
- \* Additional upgradient characterization (immediately south of tank)
- \* Contamination possibly originated elsewhere??

1330 Martin Luther King Jr. Way Oakland  
\* Why soil excavation stopped at 16 feet??



DIRECTION OF GROUNDWATER FLOW



ZONE OF SOIL CONTAMINATION

16 25 (7660)

7 19 (ND) 24 (987) 28.5 (2020)

4 16 (54) 21 (6770) 26 (ND)

16 (ND) 21 (ND) 25 (ND)

16 (ND) 21 (1810) 25 (7530)

17.5 (ND) 23 (ND) 27 (ND)

*want additional boring here*

*Damage SA-18 drilled in nearby areas; not part of this assessment*

*Boring 13 abandoned due to obstruction at 4'*

SAMPLE DEPTH (FT)

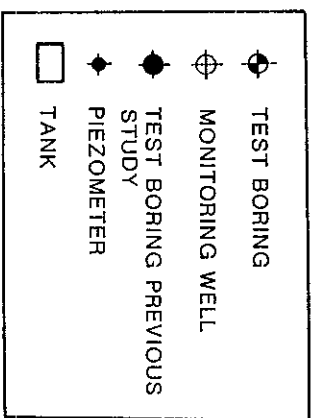
16 (ND) 21 (2370) 25 (ND)

8 16 (ND) 21 (ND) 26 (ND)

ND = NOT DETECTED  
( ) = TVH CONCENTRATION IN MG/KG OR PPM

MARTIN LUTHER KING JR. WAY

14th STREET



Subsurface Consultants

SITE PLAN

1330 MARTIN LUTHER KING JR. WAY, OAK  
JOB NUMBER 430,002  
DATE 7-25-88  
APPROVED

PLATE 1

Jefferson

1330 MLK Jr. Way

Note:

When reviewing product thickness measurements must evaluate 1) how measured (instrument)

2) in what type of "hole" (boothole, well etc)

3) construction of well, if measured in well (some wells on-site not installed w/ 5' slotted casing above the groundwater surface. May not intercept all free product)

14<sup>th</sup> + Jefferson, Oakland

8/17/89

9:20

Spoke with Sean Larson of Subsurface Consultants. Sean said soil samples collected at 14' beneath sump had 11,700 ppm Xylene, 48,000 ppm kerosene (?), 11,000 ppm TOG. Sean wants to aerate stockpiled soil to enable it to be disposed of at a Class II landfill. I told Sean to contact the BAAQMD & that their requirements would satisfy me. Sean said they also plan to continue excavating the soil beneath the sump - down to groundwater if necessary. Sean said there was a "green spot" they were chasing in the area beneath the sump - it went straight down beneath the sump - ~~no~~ little lateral spreading. Sean will let me know when they will again be sampling soil beneath the former sump.

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

March 8, 1993  
SCI 430.014

93 MAR 12 10 15

3623

*no lab data*

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
February 1993  
Floor Drain Sump  
13th and Jefferson Streets  
Oakland, California**

Dear Ms. Eberle:

This letter records the results of the February 1993 groundwater sampling and analytical testing event performed by Subsurface Consultants, Inc. (SCI) for DCA<sup>1</sup> contamination at the referenced site. Well locations are shown on the attached Site Plan, Plate 1.

**Background**

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soils in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents the monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for this condition are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated January 8, 1993.

<sup>1</sup> DCA = 1,2-Dichloroethane

**■ Subsurface Consultants, Inc.**

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
March 8, 1993  
Page 2

■ Subsurface Consultants, Inc.

### Quarterly Monitoring

Groundwater monitoring at the site has been performed quarterly over the past two years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, February 2, 1993, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent during recent monitoring events.

Prior to sampling, the wells were purged of at least 4 well volumes of water using a disposable bailer. The purged water was disposed of in the existing groundwater treatment plant on-site. During this event, Wells 48 and 54 were sampled.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by chain-of-custody records, copies of which are attached.

Analytical testing was performed by Eureka Laboratories, Inc., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for the following:

Volatile Organic Chemicals, sample preparation and analysis using EPA method 5030 (purge and trap) and 8010 (gas chromatograph coupled to an electrolytic conductivity detector).

Water samples from the wells have also been analyzed in the past for total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020), because these compounds were associated with the gasoline tank and sump releases. The analytical test results are summarized in Tables 2 and 3.

★ *Abandoned*  
Volatile organic chemicals (VOC) have not been detected in Wells 47, 49, 54, and 59 for at least the past 4 quarters. For this reason, a request to modify the groundwater monitoring program was submitted to the Alameda County Health Care Services Agency (ACHCSA) in a letter dated January 21, 1993. The ACHCSA subsequently granted our request to cease monitoring of Wells 47 and 59 for VOCs but, required that Wells 48 and 54 be monitored on a quarterly basis.

*not discussed  
SCI requested  
suggested to  
continue to  
monitor  
mw 48 only.*



Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
March 8, 1993  
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■ Subsurface Consultants, Inc.

Well 49 was abandoned on December 18, 1992, because of construction activities in the area. Well abandonment activities are summarized in a letter dated January 11, 1993. ✓

### Conclusions

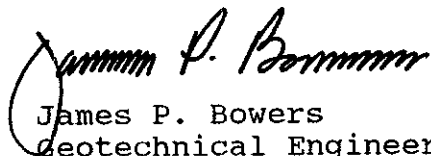
The groundwater level data indicates that the groundwater flow direction is toward the northwest at a gradient of approximately 0.7 percent. Groundwater flow direction and gradient remain consistent with previous measurements.

The results of the latest <sup>54</sup> sampling event indicate that chloroform was present in Well 48 at a concentration of 1.1 ug/l. No other volatile organic chemicals (EPA 8010) were present at concentrations in excess of analytical detection limits, in the wells being monitored. Monitoring for volatile organic chemicals will continue on a quarterly basis.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, inc.

  
James P. Bowers

Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Petroleum Hydrocarbon Concentrations in Groundwater  
Table 3 - Halogenated Volatile Organic Chemical Concentrations in Groundwater  
Plate 1 - Site Plan  
Chain-of-Custody Records  
Analytical Test Reports

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
March 8, 1993  
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■ Subsurface Consultants, Inc.

- 1 copy: Ms. Lois Parr  
Oakland Redevelopment Agency  
City of Oakland  
1333 Broadway, Suite 900  
Oakland, California 94612
- 1 copy: Ms. Julie Carver  
Environmental Affairs  
City of Oakland  
1333 Broadway, Suite 800  
Oakland, California 94612
- 1 copy: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612
- 1 copy: Mr. Donnell Choy  
Office of City Attorney  
City of Oakland  
505 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Groundwater Elevation Data

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>	
MW-47	09/24/90	100.50	27.28	73.22	
	10/04/90		27.32	73.18	
	12/03/90		27.38	73.12	
	01/21/91		27.17	73.33	
	03/13/91		26.85	73.65	
	04/03/91		26.38	74.12	
	06/13/91		28.39	72.11	
	09/10/91		27.08	73.42	
	12/12/91		27.95	72.55	
	04/17/92		26.18	74.32	
	07/28/92		26.48	74.02	
	11/03/92		26.86	73.64	
	02/02/93		24.96	75.54	
MW-48	07/18/90	102.40	29.08	73.32	
	10/04/90		29.29	73.11	
	12/03/90		29.28	73.12	
	01/21/91		29.03	73.37	
	03/13/91		28.72	73.68	
	04/03/91		28.24	74.16	
	06/13/91		29.47	72.93	
	09/10/91		28.94	73.46	
	12/12/91		30.39	72.01	
	04/17/92		28.07	74.33	
	07/28/92		28.32	74.08	
	11/03/92		28.74	73.66	
	02/02/93		26.65	75.75	
MW-49	12/03/90	101.73	28.44	73.29	
	01/21/91		28.20	73.53	
	03/13/91		27.79	73.94	
	04/03/91		27.28	74.45	
	06/13/91		27.66	74.07	
	09/10/91		28.04	73.69	
	12/12/91		30.45	71.28	
	04/17/92		27.26	74.64	
	11/03/92		27.84	73.89	
	12/18/92		Well Abandoned		
	MW-51		10/04/90	102.64	28.57
12/03/90		28.57	74.07		
01/21/91		28.44	74.20		
03/13/91		27.76	74.88		
04/03/91		27.32	75.32		
06/13/91		28.82	73.82		
09/10/91		28.00	74.64		
MW-52	10/04/90	102.44	28.41	74.03	
	12/03/90		28.38	74.06	
	01/21/91		28.24	74.20	
	03/13/91		27.57	74.87	
	04/03/91		27.16	75.28	
	06/13/91		29.41	73.03	
	09/10/91		27.85	74.59	

Table 1. Groundwater Elevation Data (continued)

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-53	09/24/90	101.28	27.44	73.84
	10/04/90		27.50	73.78
	12/03/90		27.46	73.82
	01/21/91		28.00	73.28
	03/13/91		27.00	74.28
	06/13/91		27.61	73.67
	08/12/91	Well Abandoned		
MW-54	09/24/90	100.78	27.01	73.77
	10/04/90		27.30	73.48
	12/03/90		27.01	73.77
	01/21/91		27.28	74.64
	03/13/91	101.92 <sup>3</sup>	27.40	74.52
	06/13/91		28.93	72.99
	09/10/91		27.66	74.26
	12/12/91		28.88	73.04
	04/17/92		26.82	75.10
	11/03/92		27.54	74.38
	02/02/93		25.54	76.38
MW-59	02/12/91	100.37	27.45	72.92
	03/13/91		27.60	72.77
	04/03/91		27.36	73.01
	06/13/91		28.01	72.36
	09/10/91		28.00	72.37
	12/12/91		28.53	71.84
	04/17/92		26.91	73.46
	07/28/92		27.27	73.10
	11/03/92		27.56	72.81
	02/02/93		24.74	75.63

<sup>1</sup> Top of Casing

<sup>2</sup> Depth measured below top of casing

<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

Table 2. Petroleum Hydrocarbon Concentrations in Groundwater

<u>Well</u>	<u>Date</u>	<u>O&amp;G<sup>1</sup></u> <u>(ug/L)</u>	<u>TVH<sup>2</sup></u> <u>(ug/L)</u>	<u>TEH<sup>3</sup></u> <u>(ug/L)</u>	<u>B<sup>4</sup></u> <u>(ug/L)</u>	<u>T<sup>5</sup></u> <u>(ug/L)</u>	<u>X<sup>6</sup></u> <u>(ug/L)</u>	<u>E<sup>7</sup></u> <u>(ug/L)</u>
MW-47	04/06/90	--	ND <sup>8</sup>	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	--	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	--	--	ND	ND	ND	ND
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
	12/18/92	Well Abandoned						
MW-51	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	MW-52	04/06/90	--	ND	--	ND	ND	ND
10/04/90		--	--	--	ND	ND	ND	ND
12/04/90		--	ND	--	ND	ND	ND	ND
03/13/91		--	ND	--	ND	ND	ND	ND
06/13/91		--	ND	--	ND	ND	ND	ND
09/11/91		--	ND	--	ND	ND	ND	ND
MW-53	09/21/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	ND	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/11/91	--	ND	--	ND	ND	ND	ND
	08/12/91	Well Abandoned						

Table 2. Petroleum Hydrocarbon Concentrations in Groundwater (continued)

MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

<sup>1</sup> Oil and Grease

<sup>2</sup> Total Volatile Hydrocarbons

<sup>3</sup> Total Extractable Hydrocarbons

<sup>4</sup> Benzene

<sup>5</sup> Toluene

<sup>6</sup> Xylene

<sup>7</sup> Ethylbenzene

<sup>8</sup> ND = Non-detectable, see analytical test reports for detection limits

<sup>9</sup> -- Not tested

Table 3.  
Halogenated Volatile Organic Chemical  
Concentrations in Groundwater

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
	02/03/93	ND	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
	12/18/92	Well Abandoned		ND	ND
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well abandoned			

*VOC  
data*

Table 3. Halogenated Volatile Organic Chemical Concentrations in Groundwater (continued)

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	11/03/92	ND	ND	ND	ND
	02/02/93	ND	ND	1.1	ND
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND

<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

<sup>4</sup> None detected, see test reports for detection limits

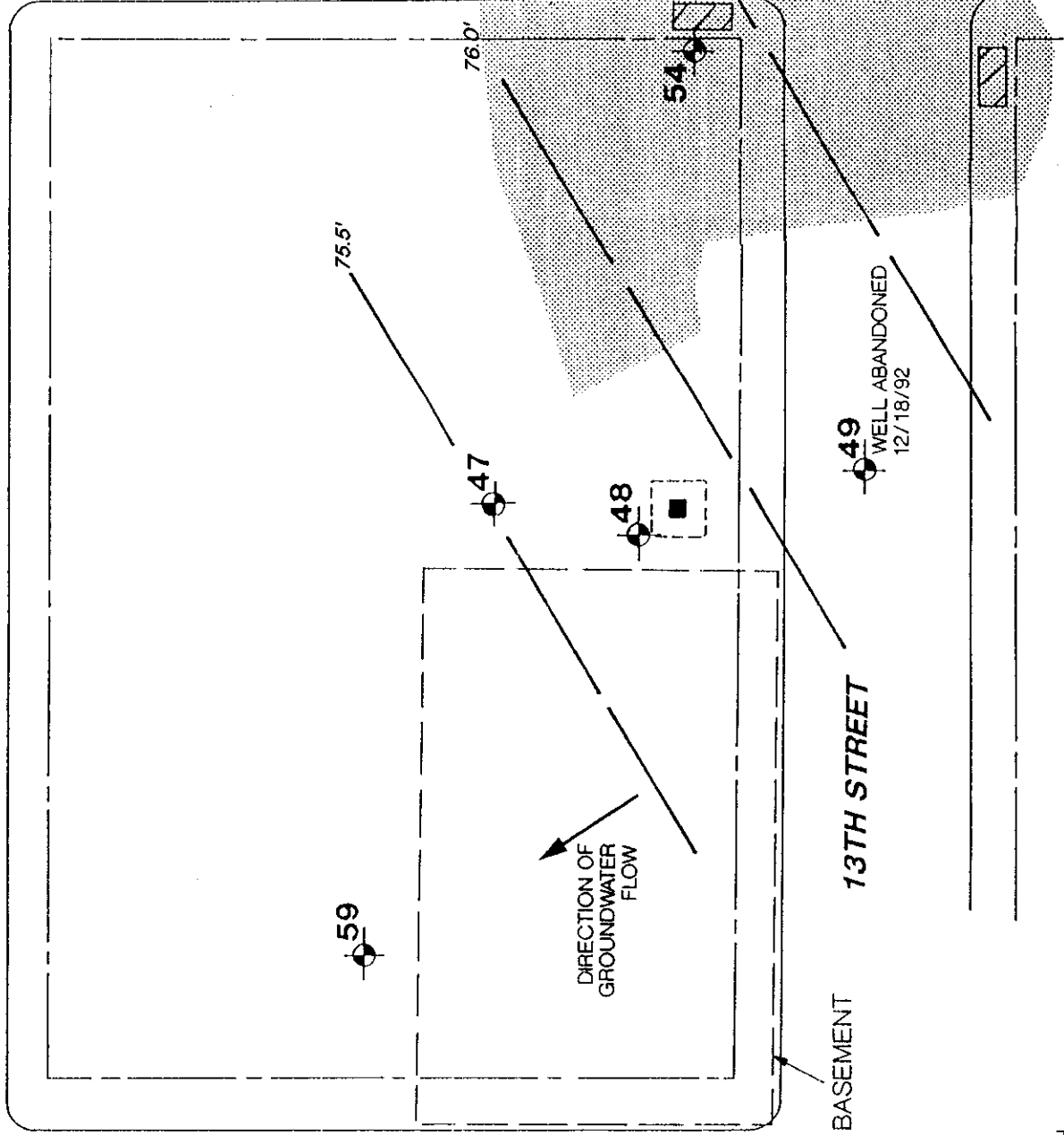


14TH STREET

JEFFERSON STREET

MARTIN LUTHER KING JR. WAY

PG&E



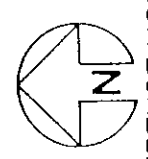
- TEST BORING/MONITORING WELL
- PROPERTY LINE
- APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
- PREVIOUS FLOOR DRAIN SUMP
- GROUNDWATER CONTOURS (feet) 2/2/93

EXTENT OF BASEMENT

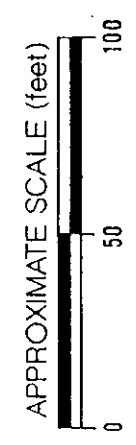
13TH STREET



TRUE NORTH



REFERENCE NORTH



SITE PLAN

13TH & JEFFERSON - OAKLAND, CA		PLATE
JOB NUMBER	DATE	APPROVED
430.014	1/13/93	<i>AK</i>

Subsurface Consultants

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY



DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

March 17, 1993  
STID 3623

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland CA 94612

RE: 13th and Jefferson Sts.  
1330 Martin Luther King Way  
Oakland CA 94612

Dear Ms. Parr,

We are in receipt of the "Quarterly Groundwater Monitoring for the Floor Drain Sump, 13th and Jefferson Streets" report prepared by Subsurface Consultants, Inc. (SCI), dated 3/8/93. This report documents the sampling on 2/3/93 of MW 48 and MW 54. Page 3 of the report states that "chloroform was present in Well 48 at a concentration of 1.1 ug/l." However, Table 3 indicates that 1.1 ug/l choloform was present in MW 54. The laboratory data for this sampling was omitted from the report. We would appreciate the timely submittal of this data, which should clear up the discrepancy regarding the chloroform. This is the first round of quarterly sampling where MW 47 and MW 59 were deleted from the matrix.

We are also in receipt of the "Quarterly Groundwater Monitoring for Gasoline Contamination, 1330 Martin Luther King Jr. Way" report prepared by SCI, dated 3/11/93. This report documents the sampling on 2/16/93 of MWs 11, 31, 39, 42, 43, 45, and 58. Contaminant concentrations have consistently been decreasing, with the exception of MW 42, which has seen a significant increase this quarter in TPH-g (6,730 ppb) and benzene (386 ppb), and MW 43, which has seen an increase in benzene (12.5 ppb).

It is my understanding that the quarterly sampling programs will continue at both of these locations. If you have any questions, please contact me at 510-271-4530.

Sincerely,

Jennifer Eberle  
Hazardous Materials Specialist

cc: James Bowers, Subsurface Consultants, Inc., 171-12th St.,  
Suite 201, Oakland CA 94607  
Rich Hiett, RWQCB  
Ed Howell/File

je

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

January 26, 1992/3

STID 3623

Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland CA 94612

RE: 13th and Jefferson Sts.  
Oakland CA 94612

Dear Ms. Parr,

Thank you for the "Request to Modify Groundwater Monitoring Program, Floor Drain Sump" letter report prepared by Subsurface Consultants, Inc. (SCI), dated 1/21/93. This request involves the cessation of VOC analysis for monitoring wells 47, 54, and 59. We agree with deleting wells 47 and 59 from the sampling matrix. However, well 54 should continue to be analyzed for VOCs both due to the lapse in sampling events between 6/13/91 and 11/3/92, and the fact that chloroform was detected during the 6/13/91 sampling event.

We also want to acknowledge receipt of the "Well Destruction Report, Monitoring Well 49," letter report prepared by SCI, dated 1/11/93. This letter documented the destruction of well 49 on 12/18/92 due to construction activities associated with the City Center Garage West project.

We have also received the "Quarterly Groundwater Monitoring, Gasoline Contamination" letter report by SCI, dated 1/8/93. This report documented the monitoring and sampling of wells 11, 31, 39, 42, 43, 45, and 58 on 11/16/92. Wells 11, 31, 42, and 43 had detectable levels of petroleum hydrocarbons. These results indicated a general decline in concentrations of contaminants.

We are also in receipt of the "Quarterly Groundwater Monitoring and Request for Reduction in Analytical Testing, Previous Gasoline Release" letter report by SCI, dated 6/24/92. This report documented the monitoring and sampling of wells on 4/17/92. We accept the request to delete TPH-gasoline and BTEX from the sampling matrix due to a consistent history of non-detectable concentrations in these wells.


Lois Parr  
STID 3623  
January 26, 1993  
page 2 of 2

If you have any questions, please contact me at 510-271-4530.

Sincerely,



Jennifer Eberle  
Hazardous Materials Specialist

cc: Julie Carver, City of Oakland Office of Public Works,  
Environmental Affairs Division, 1333 Broadway, Suite  
800, Oakland CA 94612  
Jim Bowers, Subsurface Consultants, Inc., 171-12th St.,  
Suite 201, Oakland CA 94607  
Rich Hiett, RWQCE  
Ed Howell/File 

je

I read it

**Subsurface Consultants, Inc.**  
Consulting Engineers

**FAX TRANSMISSION COVER SHEET**

To: Jennifer Eberle

Receiver's Fax: 569-4754

Company: ACHCSA

From: Jim Bowers

**RUSH!**  
Please Deliver Immediately

Date: 1/21/93 SCI Job No.: 430.014

Pages Transmitted: 10

Project: GW Monitoring Program

Subject: \_\_\_\_\_

For Your Review and Comment

As Requested

Original Will Be Mailed

Please Return an Executed Copy

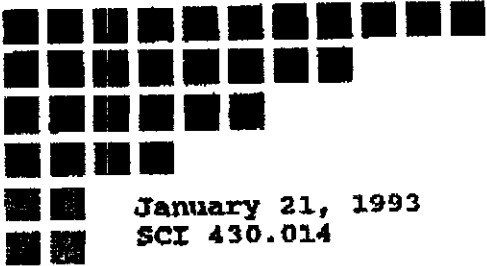
For Your Information

\_\_\_\_\_

Copies have also been sent to: \_\_\_\_\_  
\_\_\_\_\_

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Subsurface Consultants, Inc.**  
171 - 12th Street, Suite 201  
Oakland, California 94607  
510-268-0461 FAX 510-268-0137



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

3603

January 21, 1993  
SCI 430.014

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Request to Modify Groundwater  
Monitoring Program  
Floor Drain Sump  
13th and Jefferson Streets  
Oakland, California**

Dear Ms. Eberle:

On behalf of the City of Oakland Redevelopment Agency, Subsurface Consultants, Inc. (SCI) requests to modify the groundwater monitoring program for the referenced site. Specifically, we request that the monitoring of Wells 47, 54 and 59 be terminated. We request that only Well 48 be monitored in the future. The basis for our request is presented below. Well locations are shown on the attached Plate 1.

Background

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soil in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for the gasoline contamination are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated December 4, 1992.

new info

On December 18, 1992, Well 49 was destroyed by HEW Drilling Company in accordance with Alameda County, Zone 7 Water Agency requirements. The details of the well destruction are presented in a SCI letter dated January 11, 1993. It was necessary to abandon the well because of construction activities in the area, associated with the City Center Garage West project.

■ **Subsurface Consultants, Inc.**

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
January 21, 1993  
Page 2

■ Subsurface Consultants, Inc.

### Quarterly Monitoring

Groundwater monitoring for the sump release has been performed quarterly over the past two years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, November 3, 1992, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent during recent monitoring events. → not

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for volatile organic chemicals (EPA 5030/8010). Water samples from the wells have also been analyzed in the past for a variety of hydrocarbons, including total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020). In our June 24, 1992 letter, we requested that hydrocarbon testing be eliminated from the monitoring program because these compounds had not been detected for at least the previous six quarters. The results of the analyses are summarized in Tables 2 and 3.

### Request for Monitoring Plan Modification

Volatile organic chemicals have not been detected in the monitoring wells at the site during at least the past six (6) quarterly monitoring events at concentrations above reporting limits, except for 1,2 dichloroethane (DCA) in Well 48. Initially, the DCA concentration in Well 48 was 60 ug/L. Concentrations have steadily decreased with time. During the past two quarters, DCA was not detected in Well 48 at concentrations above reporting limits. Based on the analytical data, we conclude that soil remediation was successful and no significant sources of volatile organic chemical or hydrocarbon contamination appear to remain in the area.

As previously stated, we propose that we cease the monitoring of Wells 47, 54 and 59 at this time. Because DCA was detected in Well 48 within the previous four quarters, we will continue to monitor this well on a quarterly basis for volatile organic chemicals. ← not this one

Our next sampling event is scheduled for February 10, 1993. We would appreciate a response to our proposed monitoring program modification prior to this date.

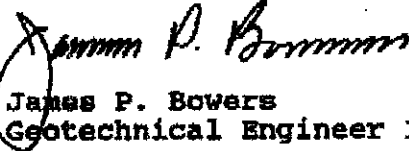
Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
January 21, 1993  
Page 3

■ Subsurface Consultants, Inc.

If you need additional information or have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/96)

MK:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Petroleum Hydrocarbon Concentrations in Groundwater  
Table 3 - Volatile Organic Chemical Concentrations in Groundwater  
Plate 1 - Site Plan

cc: Ms. Julie Carver  
Environmental Affairs

Ms. Lois Parr  
Oakland Redevelopment Agency



Table 1. Groundwater Elevation Data

Well	Date	TOC <sup>1</sup> Elevation (ft)	Groundwater Depth <sup>2</sup> (ft)	Groundwater Elevation (ft)
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
	06/13/91		28.39	72.11
	09/10/91		27.08	73.42
	12/12/91		27.95	72.55
	04/17/92		26.18	74.32
	07/28/92		26.48	74.02
	11/03/92		26.86	73.64
	MW-48		07/18/90	102.40
10/04/90		29.29	73.11	
12/03/90		29.28	73.12	
01/21/91		29.03	73.37	
03/13/91		28.72	73.68	
04/03/91		28.24	74.16	
06/13/91		29.47	72.93	
09/10/91		28.94	73.46	
12/12/91		30.39	72.01	
04/17/92		28.07	74.33	
07/28/92		28.32	74.08	
11/03/92		28.74	73.66	
MW-49		12/03/90	101.73	
	01/21/91	28.20		73.53
	03/13/91	27.79		73.94
	04/03/91	27.28		74.45
	06/13/91	27.66		74.07
	09/10/91	28.04		73.69
	12/12/91	30.45		71.28
	04/17/92	27.26		74.64
	11/03/92	27.84		73.89
MW-51	10/04/90	102.64	28.57	74.07
	12/03/90		28.57	74.07
	01/21/91		28.44	74.20
	03/13/91		27.76	74.88
	04/03/91		27.32	75.32
	06/13/91		28.82	73.82
	09/10/91		28.00	74.64
MW-52	10/04/90	102.44	28.41	74.03
	12/03/90		28.38	74.06
	01/21/91		28.24	74.20
	03/13/91		27.57	74.87
	04/03/91		27.16	75.28
	06/13/91		29.41	73.03
	09/10/91		27.85	74.59
MW-53	09/24/90	101.28	27.44	73.84
	10/04/90		27.50	73.78
	12/03/90		27.46	73.82
	01/21/91		28.00	73.28
	03/13/91		27.00	74.28
	06/13/91		27.61	73.67
	08/12/91		Well Abandoned	

Table 1. Groundwater Elevation Data (continued)

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>		
MW-54	09/24/90	100.78	27.01	73.77		
	10/04/90		27.30	73.48		
	12/03/90		27.01	73.77		
	01/21/91	101.92 <sup>3</sup>	27.28	74.64		
	03/13/91		27.40	74.52		
	06/13/91		28.93	72.99		
	09/10/91		27.66	74.26		
	12/12/91		28.88	73.04		
	04/17/92		26.82	75.10		
	11/03/92		27.54	74.38		
	MW-59		02/12/91	100.37	27.45	72.92
			03/13/91		27.60	72.77
04/03/91		27.35	73.01			
06/13/91		28.01	72.36			
09/10/91		28.00	72.37			
12/12/91		28.53	71.84			
04/17/92		26.91	73.46			
07/28/92		27.27	73.10			
11/03/92		27.56	72.81			

- <sup>1</sup> Top of Casing  
<sup>2</sup> Depth measured below top of casing  
<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the FG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

**Table 3.  
Halogenated Volatile Organic Chemical  
Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup> (ug/L)<sup>2</sup></u>	<u>1,2 DCE<sup>2</sup> (ug/L)</u>	<u>Chloroform (ug/L)</u>	<u>Other EPA 8010 (ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
MW-48	11/03/92	ND	ND	ND	ND
	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	07/28/92	ND	ND	ND	ND
MW-49	11/03/92	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
MW-51	11/03/92	ND	ND	ND	ND
	12/04/90	ND	ND	ND	ND
MW-52	06/13/91	ND	ND	1.0	ND
	12/04/90	ND	ND	1.3	ND
MW-53	06/13/91	ND	ND	2.0	ND
	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
MW-54	08/12/91	Well abandoned			
	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	11/03/92	ND	ND	ND	ND

lapse →

**Table 3. Halogenated Volatile Organic Chemical Concentrations in Groundwater (continued)**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND

<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

<sup>4</sup> None detected, see test reports for detection limits

Table 2. Petroleum Hydrocarbon Concentrations in Groundwater

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	X <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)
MW-47	04/06/90	--	ND <sup>8</sup>	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	--	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	--	--	ND	ND	ND	ND
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-51	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
MW-52	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
MW-53	09/21/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	ND	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/11/91	--	ND	--	ND	ND	ND	ND
	08/12/91	Well Abandoned						
MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

<sup>1</sup> Oil and Grease

<sup>2</sup> Total Volatile Hydrocarbons

<sup>3</sup> Total Extractable Hydrocarbons

<sup>4</sup> Benzene

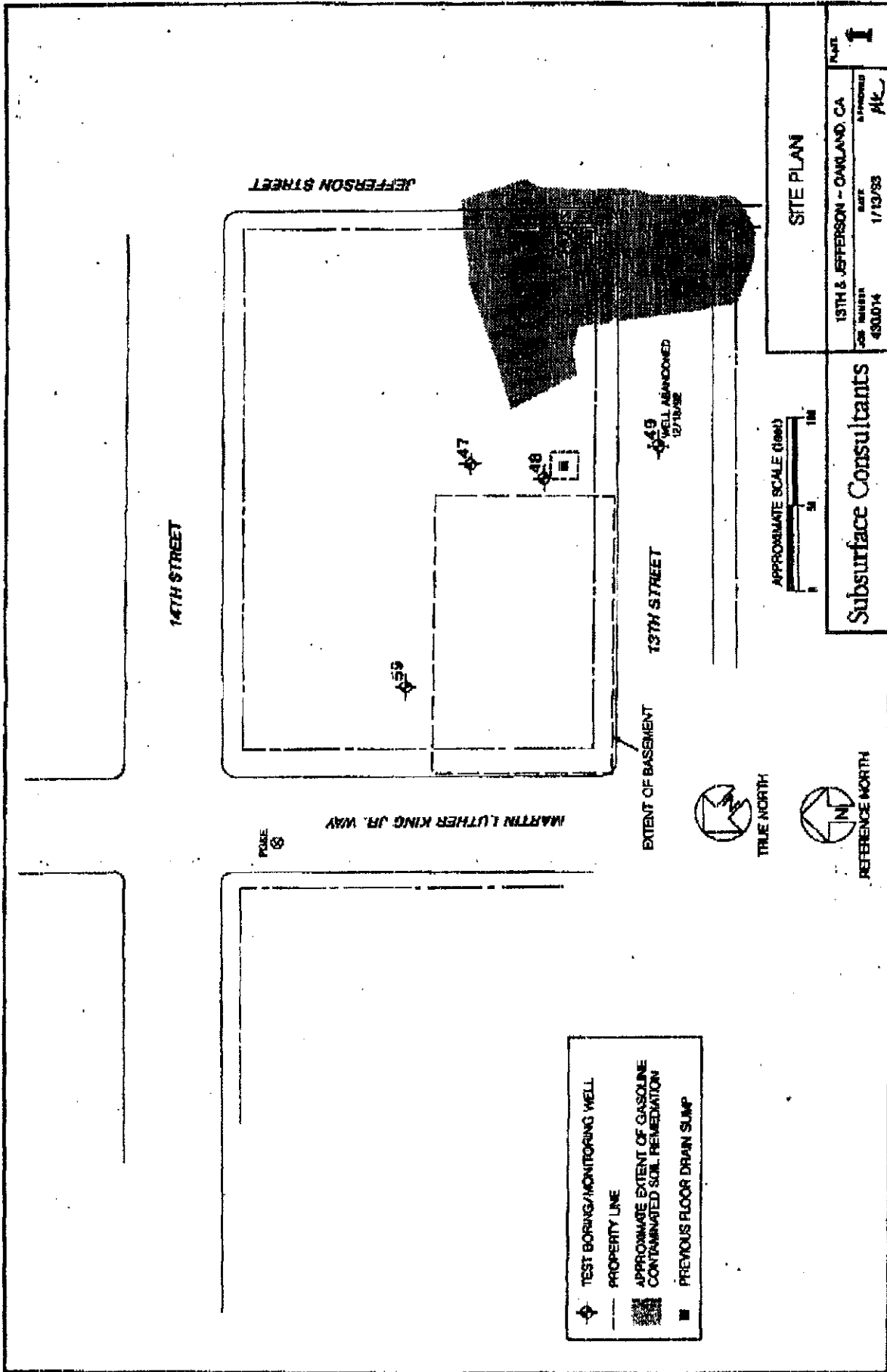
<sup>5</sup> Toluene

<sup>6</sup> Xylene

<sup>7</sup> Ethylbenzene

<sup>8</sup> ND = Non-detectable, see analytical test reports for detection limits

<sup>9</sup> -- Not tested



- ◆ TEST BORING/MONITORING WELL
- PROPERTY LINE
- APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
- PREVIOUS FLOOR DRAIN SLUMP

APPROXIMATE SCALE (1981)

0 50 100

FEET



TRUE NORTH



REFERENCE NORTH

SITE PLAN

15TH & JEFFERSON - OAKLAND, CA

JOB NUMBER 480074 DATE 1/13/93

APPROVED *[Signature]*

Sheet **1**

Subsurface Consultants

March 11, 1993  
SCI 430.010

93 MAR 12 8 11 14

3623

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
Gasoline Contamination  
1330 Martin Luther King Jr. Way  
Oakland, California**

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. Subsurface Consultants, Inc. (SCI) has been providing consulting services for this project since 1989. The location of the site is presented on Plate 1.

Contaminated soil and groundwater resulting from the gasoline release is presently being remediated. Site remediation consists of (1) vapor extraction, and (2) groundwater extraction and treatment. ~~The vapor extraction system has removed all measurable free product in the area.~~ The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume. Vapor extraction and groundwater treatment are ongoing.

During this event, Wells 11, 31, 39, 42, 43, 45, 58 and 59 were sampled. The groundwater monitoring events consist of (1) measuring groundwater levels and free product thicknesses, (2) purging water from each well until pH, conductivity and temperature have stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

■ **Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
March 11, 1993  
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■ Subsurface Consultants, Inc.

Analytical testing was performed by Eureka Laboratories, Inc. a State of California Department of Health Services certified laboratory for hazardous waste and water testing. The analytical tests included:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

### Conclusions

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements. However, locally groundwater is flowing toward the extraction well (EW1) shown on Plate 1.

In general, the analytical test results indicate that dissolved hydrocarbon concentrations in groundwater are continuing to decline. During this event, Monitoring Well 59 was analyzed for TVH and BTXE to evaluate upgradient water quality. TVH and BTXE were not detected at concentrations above the reporting limits in this well.



Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
March 11, 1993  
Page 3

■ Subsurface Consultants, Inc.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1. - Contaminate Concentrations in Groundwater  
Table 2. - Groundwater Elevation Data  
Plate 1. - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Ms. Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland, California 94612

Ms. Julie Carver  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Contaminant Concentrations In Groundwater

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic		1,2 DCA <sup>4</sup> (ug/L)
							Lead (ug/L)	EDB <sup>3</sup> (ug/L)	
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	---	---	---
	04/03/89	53,000	7,100	4,000	2,400	380	---	---	---
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	---
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	---
	07/18/90	26,000	950	19	98	ND	---	---	---
	10/23/90	4,200	1,600	8.5	170	28	---	0.2	---
	01/21/91	1,900	600	6.2	84	60	---	0.15	---
	04/24/91	4,800	1,100	3.5	46	120	---	---	---
	07/24/91	950	330	0.9	1.8	12	---	---	---
	10/24/91	970	350	1.6	1.6	14	---	ND	---
	01/23/92	ND	ND	ND	ND	ND	---	---	---
	05/01/92	340	77	0.6	0.6	ND	---	---	---
	08/06/92	220	54	ND	ND	ND	---	---	---
	11/16/92	159	ND	ND	ND	ND	---	---	---
	02/16/93	ND	ND	ND	ND	ND	---	---	---
28	09/02/88	890	431	75.4	84	ND	ND	9.2	---
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	---
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	---
	04/03/89	450	ND	2.0	6.7	2.0	---	---	---
	07/06/89	ND	ND	15	ND	ND	ND	ND	---
	11/08/89	780	ND	14	32	7.9	ND	ND	---
	10/23/90	1,800	1.2	6.5	4.8	2.7	---	---	---
	01/21/91	1,100	ND	3.7	4.9	1.3	---	ND	---
03/28/91	500	ND	1.6	0.8	ND	---	---	---	
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	---
	04/03/89	ND	ND	ND	ND	ND	---	---	---
	07/06/89	ND	ND	ND	ND	ND	ND	ND	---
	11/08/89	ND	ND	ND	ND	ND	ND	ND	---
	07/18/90	ND	ND	ND	ND	ND	---	---	---
	01/21/91	ND	ND	0.6	2.1	ND	---	ND	---
	04/24/91	ND	ND	ND	ND	ND	---	---	---
	07/24/91	ND	ND	ND	ND	ND	---	---	---
	10/24/91	ND	ND	ND	ND	ND	---	---	---
	01/23/92	ND	ND	ND	ND	ND	---	---	---
	05/01/92	ND	ND	ND	ND	ND	---	---	---
	08/07/92	ND	ND	ND	ND	ND	---	---	---
	11/16/92	43	ND	ND	ND	ND	---	---	---
	12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	---	---	---
02/16/93	ND	ND	ND	ND	ND	---	---	---	

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
02/16/93	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
02/16/93	6730	386	51	411	183	--	--	--	
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
	02/16/93	123	12.5	4.3	60.9	18.6	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic		1,2 DCA <sup>4</sup> (ug/L)
							Lead (ug/L)	EDB <sup>3</sup> (ug/L)	
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
	02/16/93	ND	ND	ND	ND	ND	--	--	--
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--
02/16/93	ND	ND	ND	ND	ND	--	--	--	
59	02/16/93	ND	ND	ND	ND	ND	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled

Table 2. Groundwater Elevation Data

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>	
11	99.66	01/19/89	26.82	72.84	--	
		04/03/89	26.35	73.31	--	
		07/05/89	26.95	72.71	--	
		11/09/89	27.28	72.83	--	
		01/24/90	27.40	72.26	--	
		04/30/90	27.56	72.10	--	
		07/03/90	28.89	70.77	--	
		10/23/90	28.93	70.73	--	
		01/21/91	27.75	71.97	--	
		04/24/91	28.14	71.52	--	
		07/24/91	28.78	70.88	--	
		10/24/91	29.09	70.57	--	
		01/23/92	29.85	69.81	--	
		05/01/92	27.44	72.22	--	
		08/07/92	27.86	71.80	--	
		11/16/92	27.84	71.82	--	
02/16/93	25.94	73.72	--			
28	98.99	01/19/89	26.16	72.83	--	
		04/03/89	25.70	73.29	--	
		07/05/89	26.26	72.73	--	
		11/08/89	26.59	72.40	--	
		01/24/90	26.81	72.18	--	
		97.79	05/10/90	31.83	65.96	1.22
			07/03/90	31.95	65.84	0.04
			10/23/90	31.25	66.54	1.38
			01/21/91	28.00	69.79	0.00
			10/24/91	27.26	70.53	0.00
	01/23/92		32.99	64.89	0.00	
	08/07/92	26.95	70.84	-- <sup>2</sup>		
	11/16/92	25.95	71.84	--		
	02/16/93	24.06	73.73	--		

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
29	97.95	01/19/89	26.14	71.81	--
		04/03/89	25.88	72.07	--
		07/05/89	26.19	71.76	--
		11/09/89	26.51	71.44	--
		01/24/90	26.66	71.29	--
		04/30/90	26.73	71.22	--
		07/03/90	27.22	70.73	--
		10/23/90	27.40	70.55	--
		01/21/91	26.89	71.06	--
		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--
		02/16/93	25.60	72.35	--
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
		02/16/93	25.42	73.88	--
		31	98.90	01/19/89	26.15
04/03/89	25.90			73.00	--
07/05/89	26.28			72.76	--
11/09/89	26.64			72.26	--
01/24/90	26.84			72.06	--
04/30/90	26.87			72.03	--
07/03/90	27.50			71.40	--
09/23/90	27.52			71.36	--
01/21/91	27.09			71.81	--
04/24/91	27.12			71.78	--
07/24/91	27.60			71.30	--
10/24/91	28.81			70.09	--
01/23/92	28.31			70.59	--
05/01/92	26.70			72.20	--
08/07/92	27.00			71.90	--
11/16/92	27.04			71.86	--
02/16/93	25.63			73.27	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--
39	99.00	04/03/89	25.87	73.13	--
		07/05/89	26.38	72.62	--
		11/09/89	26.70	72.30	--
		01/24/90	26.86	72.14	--
		04/30/90	26.97	72.03	--
		07/03/90	28.17	70.83	--
		10/23/90	28.17	70.83	--
		01/21/91	27.15	71.85	--
		03/28/91	27.76	71.24	--
		04/24/91	27.33	71.67	--
		07/24/91	27.91	71.09	--
		10/24/91	28.26	70.74	--
		01/23/92	29.00	70.00	--
		05/01/92	26.82	72.18	--
		08/07/92	27.18	71.82	--
11/16/92	27.19	71.81	--		
02/16/93	25.53	73.47	--		
42	99.12	04/03/89	25.77	73.35	--
		07/05/89	26.30	72.89	--
		11/09/89	26.66	72.46	--
		01/24/90	26.82	72.30	--
		04/18/90	26.94	72.18	--
		07/03/90	28.58	70.54	--
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	--
		01/23/92	29.33	69.79	--
		05/01/92	26.88	72.44	--
		08/07/92	27.10	72.02	--
		11/16/92	26.68	72.44	--
		02/16/93	25.41	73.71	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--
		02/16/93	24.35	74.52	--
		45	100.90	02/16/93	24.35
12/05/89	28.71			72.19	--
04/30/90	28.85			72.05	--
07/03/90	29.45			71.45	--
10/23/90	29.50			71.40	--
01/21/91	29.03			71.87	--
04/24/91	28.87			72.03	--
07/25/91	29.63			71.27	--
10/24/91	29.62			71.28	--
01/23/92	30.45			70.45	--
05/01/92	28.42			72.48	--
08/07/92	28.70			72.20	--
11/16/92	28.84			72.06	--
02/16/93	27.14	73.76	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
		02/16/93	26.44	71.67	--



Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--
		02/16/93	26.10	72.79	--

---

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet, TOC = Top of casing

<sup>2</sup> -- = No free product present



EXTRACTION WELL



MONITORING WELL

TOTAL VOLATILE HYDROCARBONS,  
AS GASOLINE

BENZENE, TOLUENE, XYLENES,  
ETHYLBENZENE

ND NONE DETECTED

CONCENTRATIONS IN ug/l

29

31  
TVH ND  
BTXE ND

58  
TVH ND  
BTXE ND

39  
TVH ND  
BTXE ND

46

TVH 123  
B 12.5  
T 4.3  
X 60.9  
E 18.6  
43

TVH 6730  
B 386  
T 51  
X 411  
E 183  
42

30

28

EW-1

11  
TVH ND  
BTXE ND



REFERENCE NORTH



TRUE NORTH



APPROXIMATE SCALE (feet)

DIRECTION OF  
GROUNDWATER  
FLOW

14TH STREET

MARTIN LUTHER KING JR. WAY

GW  
TREATMENT  
PLANT

59  
TVH ND  
BTXE ND

32  
PREVIOUS  
TANK

EXISTING BUILDING

PARKING

EXISTING  
BUILDING

SITE PLAN

1330 MARTIN LUTHER KING JR. WAY - OAK.  
JOB NUMBER 430.010  
DATE 3/10/93  
APPROVED MK

Subsurface Consultants

PLATE 1

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-01A  
SAMPLE ID: 11

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-02A  
SAMPLE ID: 31

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-03A  
SAMPLE ID: 39

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1 & \*20

ELI SAMPLE ID: 9302145-04A  
SAMPLE ID: 42

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	368 *	10
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	183 *	10
V7	Toluene	51 *	10
V8	Xylenes (dimethylbenzenes)	411 *	10

Note - All positively indentified compounds were second column or second detector confirmed.

\* A lower sample volume or higher dilution factor was used for the quantification of this compound due to high analyte concentration.

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-05A  
SAMPLE ID: 43

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	12.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	18.6	0.5
V7	Toluene	4.3	0.5
V8	Xylenes(dimethylbenzenes)	60.9	0.5

Note - All positively indentified compounds were second column or second detector confirmed.

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-06A  
SAMPLE ID: 45

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993

\_\_\_\_\_  
Date



**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-07A  
SAMPLE ID: 58

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-08A  
SAMPLE ID: 59

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993  
Date

**ORGANIC ANALYSIS REPORT**  
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EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-09A  
SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-11A  
SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	73%
V2	Chlorobenzene	86%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	76%
V7	Toluene	75%
V8	Xylenes(dimethylbenzenes)	86%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

Chemist

March 5, 1993

Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/19/1993  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-12A  
SAMPLE ID: MATRIX SPIKE RECOVERY DUPLICATE \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	77%
V2	Chlorobenzene	82%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	68%
V7	Toluene	72%
V8	Xylenes(dimethylbenzenes)	72%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

Chemist

March 5, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-01A  
SAMPLE ID: 11

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-02A  
SAMPLE ID: 31

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-03A  
SAMPLE ID: 39

	CONCENTRATION [ug/L (ppb)]	DETECTION LIMIT [ug/L (ppb)]
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993  
Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-04A  
SAMPLE ID: 42

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	6730	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-05A  
SAMPLE ID: 43

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	123	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-06A  
SAMPLE ID: 45

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-07A  
SAMPLE ID: 58

	CONCENTRATION [ug/L (ppb)]	DETECTION LIMIT [ug/L (ppb)]
<u>PETROLEUM HYDROCARBONS</u>		
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: 02/16/1993  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-08A  
SAMPLE ID: 59

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

Chemist

March 5, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 93-02-145  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: MLK GROUNDWATER  
 JOB #: 430.010

DATE SAMPLED: NA  
 DATE RECEIVED: 02/17/1993  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 02/22/1993  
 INSTRUMENT ID: SVG-7  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT.: NA  
 SAMPLE VOL./WT.: NA  
 DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-09A  
 SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
 Chemist

March 5, 1993  
 Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9302145-11A  
SAMPLE ID: 45 MATRIX SPIKE RECOVERY

PETROLEUM HYDROCARBONS                      % SPIKE RECOVERY

Gasoline Range    102%

CARBON NO. RANGE

Gasoline Range    -

PEAK CARBON NO.

Gasoline Range    -

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 93-02-145  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 02/17/1993  
DATE EXTRACTED: NA  
DATE ANALYZED: 02/22/1993  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml

ELI SAMPLE ID: 9302145-12A

SAMPLE ID: 45 MATRIX SPIKE RECOVERY DUP. DILUTION FACTOR: 1

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

98%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Susie Yang

\_\_\_\_\_  
Chemist

March 5, 1993

Date



*Hand Carry*

93-02-145 GCUI9/GCV8

CHAIN OF CUSTODY FORM

PROJECT NAME: Milk Groundwater LAB: ESSEX LABORATORIES

JOB NUMBER: 430.010 TURNAROUND: NORMAL

PROJECT CONTACT: MARK KAWAKAMI REQUESTED BY: MARK KAWAKAMI

SAMPLED BY: FERNANDO VELAZ

ANALYSIS REQUESTED	MONTH		DAY	YEAR	TIME
	02	16	7	3	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	
	X	X	X	X	

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS			METHOD PRESERVED				SAMPLING DATE				NOTES			
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR	TIME
1A	11	X				X			X			X			02	16	7	3	
2A	31	X				X			X			X							
3A	39	X				X			X			X							
4A	42	X				X			X			X							
5A	43	X				X			X			X							
6A	45	X				X			X			X							
7A	58	X				X			X			X							
8A	59	X				X			X			X							

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature) <i>[Signature]</i>	DATE / TIME	RELEASED BY: (Signature) <i>[Signature]</i>	DATE / TIME
RELEASED BY: (Signature) <i>[Signature]</i>	DATE / TIME	RELEASED BY: (Signature) <i>[Signature]</i>	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME

Rec'd by: *K. Franceschi 3/17/93 1215*

Subsurface Consultants, Inc.  
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
(510) 268-0461 • FAX: 510-268-0137

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

January 21, 1993  
SCI 430.014

93 JAN 22 PM 4:34

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Request to Modify Groundwater  
Monitoring Program  
Floor Drain Sump  
13th and Jefferson Streets  
Oakland, California**

Dear Ms. Eberle:

On behalf of the City of Oakland Redevelopment Agency, Subsurface Consultants, Inc. (SCI) requests to modify the groundwater monitoring program for the referenced site. Specifically, we request that the monitoring of Wells 47, 54 and 59 be terminated. We request that only Well 48 be monitored in the future. The basis for our request is presented below. Well locations are shown on the attached Plate 1.

#### **Background**

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soil in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for the gasoline contamination are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated December 4, 1992.

On December 18, 1992, Well 49 was destroyed by HEW Drilling Company in accordance with Alameda County, Zone 7 Water Agency requirements. The details of the well destruction are presented in a SCI letter dated January 11, 1993. It was necessary to abandon the well because of construction activities in the area, associated with the City Center Garage West project.

**Subsurface Consultants, Inc.**

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
January 21, 1993  
Page 2

■ Subsurface Consultants, Inc.

### Quarterly Monitoring

Groundwater monitoring for the sump release has been performed quarterly over the past two years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, November 3, 1992, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent during recent monitoring events.

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for volatile organic chemicals (EPA 5030/8010). Water samples from the wells have also been analyzed in the past for a variety of hydrocarbons, including total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020). In our June 24, 1992 letter, we requested that hydrocarbon testing be eliminated from the monitoring program because these compounds had not been detected for at least the previous six quarters. The results of the analyses are summarized in Tables 2 and 3.

### Request for Monitoring Plan Modification

Volatile organic chemicals have not been detected in the monitoring wells at the site during at least the past six (6) quarterly monitoring events at concentrations above reporting limits, except for 1,2 dichloroethane (DCA) in Well 48. Initially, the DCA concentration in Well 48 was 60 ug/L. Concentrations have steadily decreased with time. During the past two quarters, DCA was not detected in Well 48 at concentrations above reporting limits. Based on the analytical data, we conclude that soil remediation was successful and no significant sources of volatile organic chemical or hydrocarbon contamination appear to remain in the area.

As previously stated, we propose that we cease the monitoring of Wells 47, 54 and 59 at this time. Because DCA was detected in Well 48 within the previous four quarters, we will continue to monitor this well on a quarterly basis for volatile organic chemicals.

Our next sampling event is scheduled for February 10, 1993. We would appreciate a response to our proposed monitoring program modification prior to this date.


Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
January 21, 1993  
Page 3

■ Subsurface Consultants, Inc.

If you need additional information or have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/96)

MK:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data

Table 2 - Petroleum Hydrocarbon Concentrations in  
Groundwater

Table 3 - Volatile Organic Chemical Concentrations  
in Groundwater

Plate 1 - Site Plan

cc: Ms. Julie Carver  
Environmental Affairs

Ms. Lois Parr  
Oakland Redevelopment Agency

Table 1. Groundwater Elevation Data

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>	
MW-47	09/24/90	100.50	27.28	73.22	
	10/04/90		27.32	73.18	
	12/03/90		27.38	73.12	
	01/21/91		27.17	73.33	
	03/13/91		26.85	73.65	
	04/03/91		26.38	74.12	
	06/13/91		28.39	72.11	
	09/10/91		27.08	73.42	
	12/12/91		27.95	72.55	
	04/17/92		26.18	74.32	
	07/28/92		26.48	74.02	
	11/03/92		26.86	73.64	
MW-48	07/18/90	102.40	29.08	73.32	
	10/04/90		29.29	73.11	
	12/03/90		29.28	73.12	
	01/21/91		29.03	73.37	
	03/13/91		28.72	73.68	
	04/03/91		28.24	74.16	
	06/13/91		29.47	72.93	
	09/10/91		28.94	73.46	
	12/12/91		30.39	72.01	
	04/17/92		28.07	74.33	
	07/28/92		28.32	74.08	
	11/03/92		28.74	73.66	
MW-49	12/03/90	101.73	28.44	73.29	
	01/21/91		28.20	73.53	
	03/13/91		27.79	73.94	
	04/03/91		27.28	74.45	
	06/13/91		27.66	74.07	
	09/10/91		28.04	73.69	
	12/12/91		30.45	71.28	
	04/17/92		27.26	74.64	
	11/03/92		27.84	73.89	
MW-51	10/04/90	102.64	28.57	74.07	
	12/03/90		28.57	74.07	
	01/21/91		28.44	74.20	
	03/13/91		27.76	74.88	
	04/03/91		27.32	75.32	
	06/13/91		28.82	73.82	
	09/10/91		28.00	74.64	
MW-52	10/04/90	102.44	28.41	74.03	
	12/03/90		28.38	74.06	
	01/21/91		28.24	74.20	
	03/13/91		27.57	74.87	
	04/03/91		27.16	75.28	
	06/13/91		29.41	73.03	
	09/10/91		27.85	74.59	
MW-53	09/24/90	101.28	27.44	73.84	
	10/04/90		27.50	73.78	
	12/03/90		27.46	73.82	
	01/21/91		28.00	73.28	
	03/13/91		27.00	74.28	
	06/13/91		27.61	73.67	
	08/12/91		Well Abandoned		

Table 1. Groundwater Elevation Data (continued)

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-54	09/24/90	100.78	27.01	73.77
	10/04/90		27.30	73.48
	12/03/90		27.01	73.77
	01/21/91		27.28	74.64
	03/13/91	101.92 <sup>3</sup>	27.40	74.52
	06/13/91		28.93	72.99
	09/10/91		27.66	74.26
	12/12/91		28.88	73.04
	04/17/92		26.82	75.10
	11/03/92		27.54	74.38
MW-59	02/12/91	100.37	27.45	72.92
	03/13/91		27.60	72.77
	04/03/91		27.36	73.01
	06/13/91		28.01	72.36
	09/10/91		28.00	72.37
	12/12/91		28.53	71.84
	04/17/92		26.91	73.46
	07/28/92		27.27	73.10
	11/03/92		27.56	72.81

- 
- <sup>1</sup> Top of Casing  
<sup>2</sup> Depth measured below top of casing  
<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

Table 2. Petroleum Hydrocarbon Concentrations in Groundwater

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	T <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)
MW-47	04/06/90	--	ND <sup>8</sup>	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	--	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	--	--	ND	ND	ND	ND
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-51	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
MW-52	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
MW-53	09/21/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	ND	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/11/91	--	ND	--	ND	ND	ND	ND
	08/12/91	Well Abandoned						
MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

1 Oil and Grease  
2 Total Volatile Hydrocarbons  
3 Total Extractable Hydrocarbons  
4 Benzene  
5 Toluene  
6 Xylene  
7 Ethylbenzene  
8 ND = Non-detectable, see analytical test reports for detection limits  
9 -- Not tested

**Table 3.**  
**Halogenated Volatile Organic Chemical**  
**Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well abandoned			
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	11/03/92	ND	ND	ND	ND



**Table 3. Halogenated Volatile Organic Chemical Concentrations in Groundwater (continued)**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	11/03/92	ND	ND	ND	ND

---

<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

<sup>4</sup> None detected, see test reports for detection limits

14TH STREET

JEFFERSON STREET

MARTIN LUTHER KING JR. WAY

PG&E

59

47





48

54

EXTENT OF BASEMENT

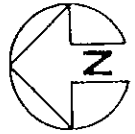
13TH STREET

49  
WELL ABANDONED  
12/18/92

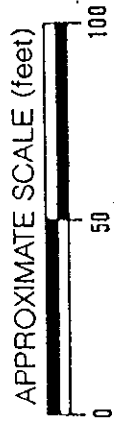
-  TEST BORING/MONITORING WELL
-  PROPERTY LINE
-  APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
-  PREVIOUS FLOOR DRAIN SUMP



TRUE NORTH



REFERENCE NORTH



SITE PLAN

PLATE

**1**

13TH & JEFFERSON - OAKLAND, CA

DATE

1/13/93

JOB NUMBER

430.014

APPROVED

*MK*

Subsurface Consultants

93 JAN 15 11:20

January 11, 1993  
SCI 430.014

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Well Destruction Report**  
**Monitoring Well 49**  
**13th and Jefferson Streets**  
**Oakland, California**

Dear Ms. Eberle:

This letter records the destruction of one groundwater monitoring well at the referenced site. Well 49 was installed in December 1990, as part of a groundwater contamination assessment for releases related to a concrete floor drain sump. Over the past two years, water samples from the well were obtained and analytically tested for petroleum hydrocarbons, i.e. oil & grease, total volatile and extractable hydrocarbons, benzene, toluene, xylene, and ethylbenzene (BTXE) and volatile organic chemicals (EPA 8010). To date, none of these compounds have been detected at concentrations in excess of detection limits. A site plan showing the location of the well is attached.

Because of construction activities in the area, associated with the City Center Garage West project, it was necessary to abandon the well. The well was destroyed on December 18, 1992 by HEW Drilling Company, in accordance with Alameda County, Zone 7 Water Agency requirements. The grout seal and sand pack were removed using hollow-stem auger drilling equipment. The casing was then removed and the borehole was filled with cement grout using tremie placement methods. Well materials and soil generated during well destruction were removed from the site.

■ **Subsurface Consultants, Inc.**

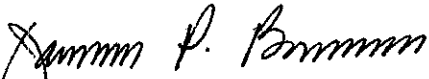
Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
January 11, 1993  
Page 2

■ Subsurface Consultants, Inc.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachment: Site Plan

1 copy: Ms. Lois Parr  
City of Oakland  
Office of Economic Development & Employment  
1333 Broadway, Suite 900  
Oakland, California 94612

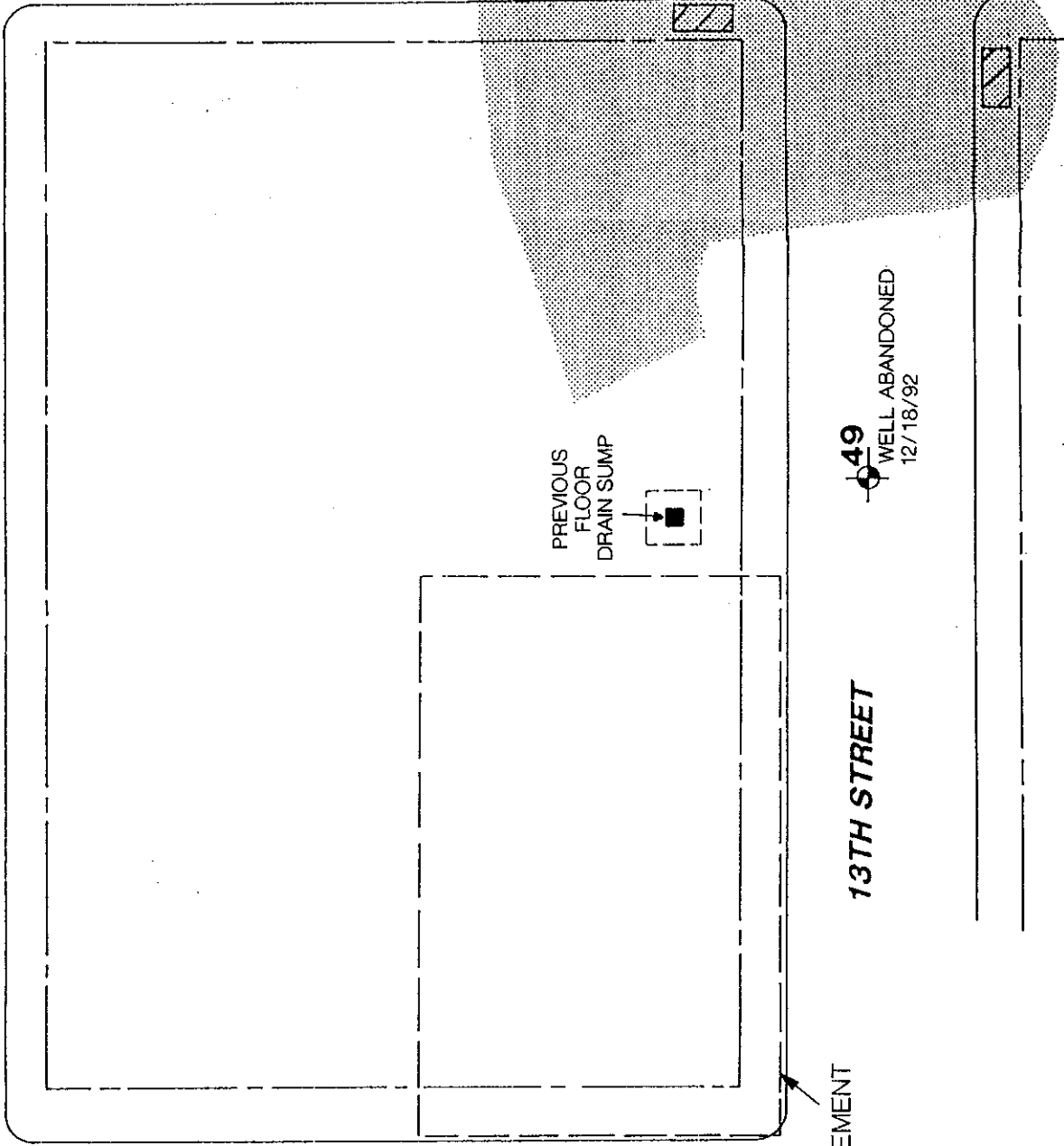
1 copy: Ms. Julie Carver  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

JEFFERSON STREET

14TH STREET

MARTIN LUTHER KING JR. WAY




13TH STREET

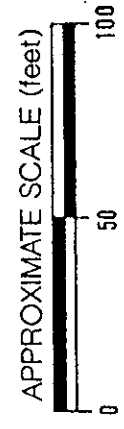
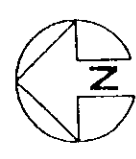


PREVIOUS FLOOR DRAIN SUMP

49 WELL ABANDONED 12/18/92

EXTENT OF BASEMENT

-  TEST BORING/MONITORING WELL
-  PROPERTY LINE
-  APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION



SITE PLAN

13TH & JEFFERSON - OAKLAND, CA		PLATE
JOB NUMBER	DATE	APPROVED
430.014	12/22/92	AK

Subsurface Consultants

1

January 13, 1993  
SCI 430.015

3683

Mr. William Meckel  
East Bay Municipal Utility District  
Mail Slot #702  
P.O. Box 24055  
Oakland, California 94623-1055

Quarterly Monitoring Report 11  
Wastewater Discharge Permit Account #502-29091  
1330 Martin Luther King Jr. Way  
Oakland, California

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the 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 account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the eleventh quarter of operation (October 9, 1992 through January 8, 1993) approximately 267,170 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 46 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTEX) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the eleventh quarter are presented in Table 1. During this quarter, Extraction Well #1 (EW-1) was not in operation. For this reason, there is no analytical data presented for EW-1-44, 45, 46. Analytical test reports and Chain-of-Custody documents are attached.

The analytical test results indicate that biologic activity within the primary holding tank is ongoing. During this quarter, hydrocarbon concentrations up to approximately 145 ug/l entered the primary holding tank and no detectable concentrations of hydrocarbons were recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of the carbon treatment system has been minimal.

Subsurface Consultants, Inc.

Mr. William Meckel  
East Bay Municipal Utility District  
SCI 430.015  
January 13, 1993  
Page 2

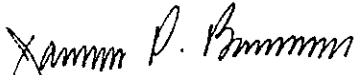
■ Subsurface Consultants, Inc.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

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

cc: Ms. Lois Parr  
Oakland Redevelopment Agency

Ms. Julie Carver  
Environmental Affairs

✓ Ms. Jennifer Eberle  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland

TABLE 1. CONTAMINANT CONCENTRATIONS IN WATER

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH (ug/L)</u>	<u>Benzene (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl-Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>
EW-2-44	10/29/92	100	3.5	ND	1.8	3.9
A-44		ND	ND	ND	ND	ND
B-44		ND	ND	ND	ND	ND
SS#1-44		ND	ND	ND	ND	ND
EW-2-45	11/25/92	145	0.8	ND	ND	3
A-45		ND	ND	ND	ND	ND
B-45		ND	ND	ND	ND	ND
SS#1-45		ND	ND	ND	ND	ND
EW-2-46	12/22/92	ND	0.6	ND	ND	ND
A-46		ND	ND	ND	ND	ND
B-46		ND	ND	ND	ND	ND
SS#1-46		ND	ND	ND	ND	ND

---

TVH = Total volatile hydrocarbons, EPA 8015/5030

BTEX, Analyses by EPA 8020/5030

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

ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits

EW-2 = indicates sample from Extraction Well #2

A = influent at primary carbon vessel

B = Between carbon vessels

SS#1 = side sewer #1, (effluent sample)





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

DATE RECEIVED: 10/29/92  
DATE REPORTED: 11/05/92

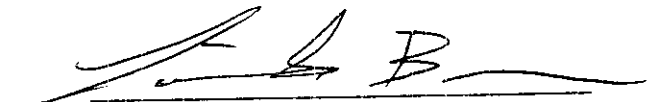
LABORATORY NUMBER: 109124

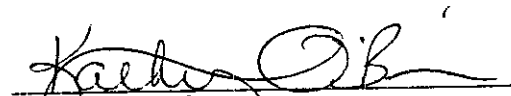
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW TREATMENT PLANT

RESULTS: SEE ATTACHED

  
Reviewed by

  
Reviewed by

This report may be reproduced only in its entirety.



LABORATORY NUMBER: 109124  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.015  
LOCATION: MLK GW TREATMENT PLANT

DATE SAMPLED: 10/29/92  
DATE RECEIVED: 10/29/92  
DATE ANALYZED: 11/04/92  
DATE REPORTED: 11/05/92

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)
109124-1	EW-2-44	100	3.5	ND(0.5)	1.8	3.9
109124-2	A-44	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
109124-3	B-44	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
109124-4	SS#1-44	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, %	97



# EUREKA LABORATORIES, INC.

*Corporate Office:*  
6790 FLORIN PERKINS ROAD  
SACRAMENTO, CA 95828  
TEL: (916) 381-7953  
FAX: (916) 381-4013

*Branch Office:*  
17403 N.E. 28th STREET  
REDMOND, WA 98052  
TEL: (206) 885-0284  
FAX: (206) 885-0284

Air Pollution  
Chemical Analysis,  
Research & Testing  
Environmental Studies  
Robotics  
Toxicology

December 14, 1992

Mr. Mark Kawakami  
SUBSURFACE CONSULTANTS  
171 12th St.  
Oakland, CA 94607

Reference - ELI Order #: 92-12-002  
Project: MLK GW Treatment Plant  
Job #: 430.015

Dear Mr. Kawakami:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for four (4) aqueous samples for the following analyses:

<u>ANALYSIS</u>	<u>METHOD</u>	<u>SAMPLE ID.</u>
Purgeable Aromatics	EPA 8020	EW-2-45, A-45, B-45 & SS#1-45
Total Petroleum Hydrocarbons (Gasoline)	EPA 5030	same as above

Sincerely,  
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo  
Shao-Pin Yo, Ph.D.  
Laboratory Director

SPY/pv

Attachment

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.15

DATE SAMPLED: 11/25/1992  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212002-01A  
CLIENT SAMPLE ID: EW-2-45

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	0.8	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	3.0	0.5

Note - All positively indentified compounds were second column or second detector confirmed.

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 14, 1992

\_\_\_\_\_  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.15

DATE SAMPLED: 11/25/1992  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212002-02A  
CLIENT SAMPLE ID: A-45

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 14, 1992  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.15

DATE SAMPLED: 11/25/1992  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212002-03A  
CLIENT SAMPLE ID: B-45

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 14, 1992  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.15

DATE SAMPLED: 11/25/1992  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212002-04A  
CLIENT SAMPLE ID: SS#1-45

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 14, 1992  
Date

ORGANIC ANALYSIS REPORT  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GM TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-05A  
CLIENT SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 14, 1992  
Date



**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.15

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212002-07A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	101%
V2	Chlorobenzene	98%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	91%
V7	Toluene	107%
V8	Xylenes(dimethylbenzenes)	101%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

Chemist

December 14, 1992  
Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.15

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/02/1992  
INSTRUMENT ID: VG-2  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212002-08A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY  
DUPLICATE \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	117%
V2	Chlorobenzene	118%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	119%
V7	Toluene	98%
V8	Xylenes(dimethylbenzenes)	109%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 14, 1992  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 92-12-002  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: MLK GW TREATMENT PLANT  
 JOB #: 430.015

DATE SAMPLED: 11/25/1992  
 DATE RECEIVED: 12/01/1992  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 12/08/1992  
 INSTRUMENT ID: SVG-7  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT.: NA  
 SAMPLE VOL./WT.: NA  
 DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-01A  
 SAMPLE ID: EW-2-45

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	145	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	
<u>PEAK CARBON NO.</u>		
Gasoline Range	C7	

Susie Yang

Chemist

December 14, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 92-12-002  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: MLX GW TREATMENT PLANT  
 JOB #: 430.015

DATE SAMPLED: 11/25/1992  
 DATE RECEIVED: 12/01/1992  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 12/08/1992  
 INSTRUMENT ID: SVG-7  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT.: NA  
 SAMPLE VOL./WT.: NA  
 DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-02A  
 SAMPLE ID: A-45

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
 Chemist

December 14, 1992

\_\_\_\_\_  
 Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 11/25/1992  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-03A  
SAMPLE ID: B-45

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

December 14, 1992  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 11/25/1992  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-04A  
SAMPLE ID: SS#1-45

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

December 14, 1992

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-05A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

Chemist

December 14, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-07A  
SAMPLE ID: B-45 MATRIX SPIKE RECOVERY

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

78%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Susie Yang

\_\_\_\_\_  
Chemist

December 14, 1992

Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-08A  
SAMPLE ID: B-45 MATRIX SPIKE RECOVERY  
DUPLICATE

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	64%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang

\_\_\_\_\_  
Chemist

December 14, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	69%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang

\_\_\_\_\_  
Chemist

December 14, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-002  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/01/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/08/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: NA

ELI SAMPLE ID: 9212002-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	63%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang

\_\_\_\_\_  
Chemist

December 14, 1992

Date



# EUREKA LABORATORIES, INC.

Air Pollution  
Chemical Analysis,  
Research & Testing  
Environmental Studies  
Robotics  
Toxicology

*Corporate Office:*  
6790 FLORIN PERKINS ROAD  
SACRAMENTO, CA 95828  
TEL: (916) 381-7953  
FAX: (916) 381-4013

*Branch Office:*  
17403 N.E. 28th STREET  
REDMOND, WA 98052  
TEL: (206) 885-0284  
FAX: (206) 885-0284

January 7, 1993

Mr. Mark Kawakami  
SUBSURFACE CONSULTANTS  
171 12th St.  
Oakland, CA 94607

Reference - ELI Order #: 92-12-200  
Project: MLK GW Treatment Plant  
Job #: 430.015

Dear Mr. Kawakami:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for four (4) aqueous samples for the following analyses:

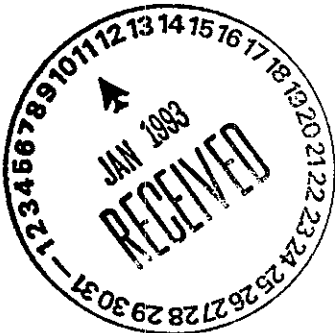
<u>ANALYSIS</u>	<u>METHOD</u>	<u>SAMPLE ID.</u>
Purgeable Aromatics	EPA 8020	EW-2-46, A-46, B-46 & SS#1-46
Total Petroleum Hydrocarbons (Gasoline)	EPA 8015 (Modified)	same as above

Sincerely,  
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo  
Shao-Pin Yo, Ph.D.  
Laboratory Director

SPY/pv

Attachment



**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

REKA LABORATORIES, INC.  
 90 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 92-12-200  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: MLK GW TREATMENT PLANT  
 JOB #: 430.015

DATE SAMPLED: 12/22/1992  
 DATE RECEIVED: 12/23/1992  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 12/29/1992  
 INSTRUMENT ID: VG-1  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT.: NA  
 SAMPLE VOL./WT.: 5ml  
 DILUTION FACTOR: 1

CLIENT SAMPLE ID: 9212200-01A  
 CLIENT SAMPLE ID: EW-2-46

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
		0.6	0.5
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Note - All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow  
 \_\_\_\_\_  
 Chemist

January 7, 1993  
 Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 12/22/1992  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-03A  
CLIENT SAMPLE ID: B-46

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

January 7, 1993

Date

**ORGANIC ANALYSIS REPORT**  
Purgeable Aromatics, EPA Method 8020

EUREKA LABORATORIES, INC.  
 6790 Florin-Perkins Road  
 Sacramento, CA 95828  
 (916) 381-7953

Order No.: 92-12-200  
 Hazardous Waste Testing  
 Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT: MLK GW TREATMENT PLANT  
 JOB #: 430.015

DATE SAMPLED: 12/22/1992  
 DATE RECEIVED: 12/23/1992  
 DATE EXTRACTED: NA  
 DATE ANALYZED: 12/29/1992  
 INSTRUMENT ID: VG-1  
 MATRIX: AQUEOUS  
 % MOISTURE: NA  
 REPORT WT.: NA  
 SAMPLE VOL./WT.: 5ml  
 DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-04A  
 CLIENT SAMPLE ID: SS#1-46

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
 Chemist

January 7, 1993  
 Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-05A  
CLIENT SAMPLE ID: METHOD BLANK

COMP. No.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes(dimethylbenzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

January 7, 1993  
Date



**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-07A  
CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	66%
V2	Chlorobenzene	71%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	69%
V7	Toluene	66%
V8	Xylenes(dimethylbezenes)	77%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow

\_\_\_\_\_  
Chemist

January 7, 1993

Date

**ORGANIC ANALYSIS REPORT**  
**Purgeable Aromatics, EPA Method 8020**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-08A

CLIENT SAMPLE ID: MATRIX SPIKE RECOVERY DUP. \*

COMP. No.	COMPOUND	% SPIKE RECOVERY
V1	Benzene	69%
V2	Chlorobenzene	73%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	72%
V7	Toluene	65%
V8	Xylenes(dimethylbezenes)	81%

\* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Huey-Chen Chow  
\_\_\_\_\_  
Chemist

January 7, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 12/22/1992  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-01A  
SAMPLE ID: EW-2-46

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 12/22/1992  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-02A  
SAMPLE ID: A-46

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 12/22/1992  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-03A  
SAMPLE ID: B-46

	CONCENTRATION	DETECTION LIMIT
<u>PETROLEUM HYDROCARBONS</u>	<u>[ug/L (ppb)]</u>	<u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993  
Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: 12/22/1992  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-04A  
SAMPLE ID: SS#1-46

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-05A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> [ug/L (ppb)]	<u>DETECTION LIMIT</u> [ug/L (ppb)]
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	
<u>PEAK CARBON NO.</u>		
Gasoline Range	-	

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml

ELI SAMPLE ID: 9212200-07A

SAMPLE ID: EW-2-46 MATRIX SPIKE RECOVERY DILUTION FACTOR: 1

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

107%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Susie Yang

Chemist

January 7, 1993

Date



**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-08A

SAMPLE ID: EW-2-46 MATRIX SPIKE RECOVERY  
DUPLICATE

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

104%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-09A  
SAMPLE ID: REAGENT SPIKE RECOVERY

PETROLEUM HYDROCARBONS

% SPIKE RECOVERY

Gasoline Range

86%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO.

Gasoline Range

-

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993

Date

**TOTAL PETROLEUM HYDROCARBONS (GASOLINE)**  
**EPA METHOD 5030/8015 (Modified)**

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No.: 92-12-200  
Hazardous Waste Testing  
Certification: 1165

---

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW TREATMENT PLANT  
JOB #: 430.015

DATE SAMPLED: NA  
DATE RECEIVED: 12/23/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/29/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT.: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212200-10A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

---

<u>PETROLEUM HYDROCARBONS</u>	<u>% SPIKE RECOVERY</u>
Gasoline Range	85%
<u>CARBON NO. RANGE</u>	
Gasoline Range	-
<u>PEAK CARBON NO.</u>	
Gasoline Range	-

Susie Yang

\_\_\_\_\_  
Chemist

January 7, 1993

Date

# CHAIN OF CUSTODY FORM

PROJECT NAME: MLK GW Treatment Plant  
 JOB NUMBER: 430.015  
 LAB: Curtis + Tompkins Ltd  
 PROJECT CONTACT: Sean Carson  
 TURNAROUND: Normal  
 SAMPLED BY: Fernando Velaz  
 REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES	ANALYSIS REQUESTED		
		WATER	SOIL	WASTE	AIR	VOL	PIN	TUBE	Glass	FCI	H2O2	H2S	ICR	NONE	MONTH	DAY			YEAR	TIME
	<del>EW-1-44</del>	X								X	X	X	X	X	10	29	02		X X X	
	EW-2-44	X								X	X	X	X	X					X X X	
	A-44	X								X	X	X	X	X					X X X	
	B-44	X								X	X	X	X	X					X X X	
	SS#1-44	X								X	X	X	X	X					X X X	

CHAIN OF CUSTODY RECORD			
RECEIVED BY: (Signature) <i>M... V...</i>	DATE/TIME 10/29/02 4:45	RECEIVED BY: (Signature)	DATE/TIME 10/29/02 4:45
RECEIVED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RECEIVED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

COMMENTS & NOTES:

All samples are "grab samples"  
 Containers not sealed tamper proof  
 EW-1-44 has been deleted

92-12-002  
D83

UPS-0167-9055.H18  
PAGE 1 OF 1 b0c

**CHAIN OF CUSTODY FORM**

PROJECT NAME: MUK GW TREATMENT PLANT  
 JOB NUMBER: 430.015 LAB: EUREKA  
 PROJECT CONTACT: MARK KAWAKAMI TURNAROUND: NORMAL  
 SAMPLED BY: MARK KAWAKAMI REQUESTED BY: MARK KAWAKAMI

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED			SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR
	EW-1-45	X				3				X	X	X			11	25	92	
1A	EW-2-45	X				3				X	X	X			11	25	92	
2A	A-45	X				3				X	X	X			11	25	92	
3A	B-45	X				3				X	X	X			11	25	92	
4A	SS#1-45	X				3				X	X	X			11	25	92	

ANALYSIS REQUESTED										
TUH/BTXE	EPA 8015/8020	5030								

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
<i>Mark Kawakami</i>	11/25/92	<i>[Signature]</i>	12/22
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
		<i>Simon P. Young</i>	12/01/92
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
			10:30 am

ALL SAMPLES ARE "GRAB SAMPLES" CONTAINERS  
 NOT SEALED "TAMPER PROOF"  
 EW-1-45 DELETED

Subsurface Consultants, Inc.  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (415) 269-0451 FAX: 510-269-0137

UPS Next Day Air 2<sup>ic</sup>

PAGE 1 OF 1

**CHAIN OF CUSTODY FORM**

92-12-200 617

PROJECT NAME: MUK GW TREATMENT PLANT

JOB NUMBER: 430.015

LAB: EUREKA LABORATORIES

PROJECT CONTACT: MARK KAWAKAMI

TURNAROUND: NORMAL

SAMPLED BY: FERNANDO VEVEZ

REQUESTED BY: MARK KAWAKAMI

ANALYSIS REQUESTED	
TW/BTXE EPA 8015/8020	
5030	

LABORATORY ID. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED			SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H <sub>2</sub> O <sub>2</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH		DAY	YEAR
1A	<del>EW-1</del> EW-2-46	X				3				X	X	X	X		1	22	92	
2A	A-46	X				3				X	X	X	X					
3A	B-46	X				3				X	X	X	X					
4A	SS#1-46	X				3				X	X	X	X					

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
<i>[Signature]</i>	12/22/92	A. K. Hub	12/23/92
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
		X. Yamasechi	12/23/92 10:30am

COMMENTS & NOTES:

ALL SAMPLES ARE "GRAB SAMPLES" CONTAINERS NOT SEALED "TAMPER PROOF"

RETURN COOLES TO SCI

Subsurface Consultants, Inc.  
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
FAX: 510-268-0137

January 8, 1993  
SCI 430.010

98 JAN 11 PM 2:57

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

3623

**Quarterly Groundwater Monitoring  
Gasoline Contamination  
1330 Martin Luther King Jr. Way  
Oakland, California**

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. Subsurface Consultants, Inc. (SCI) has been providing consulting services for this project since 1989. The location of the site is presented on Plate 1.

Contaminated soil and groundwater resulting from the gasoline release is presently being remediated. Site remediation consists of (1) vapor extraction, and (2) groundwater extraction and treatment. The vapor extraction system has removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume. Vapor extraction and groundwater treatment are ongoing.

During this event, Wells 11, 31, 39, 42, 43, 45 and 58 were sampled. The groundwater monitoring events consist of (1) measuring groundwater levels and free product thicknesses, (2) purging water from each well until pH, conductivity and temperature have stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

Analytical testing was performed by Eureka Laboratories, Inc. a State of California Department of Health Services certified

**Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
January 8, 1993  
Page 2

■ Subsurface Consultants, Inc.

laboratory for hazardous waste and water testing. The analytical tests included:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

### Conclusions

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements. However, locally groundwater is flowing toward the extraction wells shown on Plate 1.

In general, the analytical test results indicate that dissolved hydrocarbon concentrations in groundwater are continuing to decline. However, gasoline was detected in Well 31 at a concentration of 43 ug/l, for the first time since monitoring began in September 1988. Well 31 was resampled on December 17, 1992. Analytical test results confirmed the presence of gasoline. At the present time, we are uncertain of the source of the gasoline contamination. Groundwater monitoring will continue on a quarterly basis. Conditions in Well 31 will be carefully reviewed.



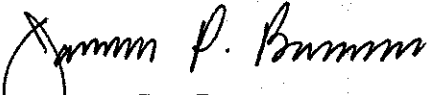
Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
January 8, 1993  
Page 3

■ Subsurface Consultants, Inc.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

  
James P. Bowers

Geotechnical Engineer 157 (expires 3/31/95)

MK:JPB:egh

Attachments: Table 1. - Contaminate Concentrations in Groundwater  
Table 2. - Groundwater Elevation Data  
Plate 1. - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Ms. Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland, California 94612

Ms. Julie Carver  
City of Oakland  
Environmental Affairs  
1333 Broadway, Suite 800  
Oakland, California 94612

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Contaminant Concentrations In Groundwater

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
11	07/05/88	10,000	1,800	ND <sup>6</sup>	1,200	ND	-- <sup>7</sup>	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
	04/24/91	4,800	1,100	3.5	46	120	--	--	--
	07/24/91	950	330	0.9	1.8	12	--	--	--
	10/24/91	970	350	1.6	1.6	14	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	340	77	0.6	0.6	ND	--	--	--
	08/06/92	220	54	ND	ND	ND	--	--	--
	11/16/92	159	ND	ND	ND	ND	--	--	--
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
	03/28/91	500	ND	1.6	0.8	ND	--	--	--
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	43	ND	ND	ND	ND	--	--	--
12/17/92 <sup>8</sup>	35.3	ND	ND	ND	ND	--	--	--	
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup> (ug/L)<sup>5</sup></u>	<u>B<sup>2</sup> (ug/L)</u>	<u>T<sup>2</sup> (ug/L)</u>	<u>X<sup>2</sup> (ug/L)</u>	<u>E<sup>2</sup> (ug/L)</u>	<u>Total Organic Lead (ug/L)</u>	<u>EDB<sup>3</sup> (ug/L)</u>	<u>1,2 DCA<sup>4</sup> (ug/L)</u>
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/07/92	ND	ND	ND	ND	ND	--	--	--
11/16/92	ND	ND	ND	ND	ND	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000	890	510	1,000	340	--	--	--
	11/16/92	587	1.2	4.3	43	ND	--	--	--
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450	ND	2.4	3.5	1.5	--	--	--
	11/16/92	614	ND	2.0	34.4	1.6	--	--	--
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
	11/16/92	ND	ND	ND	ND	ND	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND	ND	ND	ND	ND	--	--	--
11/16/92	ND	ND	ND	ND	ND	--	--	--	

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2-dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested

<sup>8</sup> Well resampled

**Table 2. Groundwater Elevation Data**

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
11	99.66	01/19/89	26.82	72.84	--
		04/03/89	26.35	73.31	--
		07/05/89	26.95	72.71	--
		11/09/89	27.28	72.83	--
		01/24/89	27.40	72.26	--
		04/30/90	27.56	72.10	--
		07/03/90	28.89	70.77	--
		10/23/90	28.93	70.73	--
		01/21/91	27.75	71.97	--
		04/24/91	28.14	71.52	--
		07/24/91	28.78	70.88	--
		10/24/91	29.09	70.57	--
		01/23/92	29.85	69.81	--
		05/01/92	27.44	72.22	--
		08/07/92	27.86	71.80	--
11/16/92	27.84	71.82	--		
28	98.99	01/19/89	26.16	72.83	--
		04/03/89	25.70	73.29	--
		07/05/89	26.26	72.73	--
		11/08/89	26.59	72.40	--
		01/24/90	26.81	72.18	--
		05/10/90	31.83	65.96	1.22
	97.79	07/03/90	31.95	65.84	0.04
		10/23/90	31.25	66.54	1.38
		01/21/91	28.00	69.79	0.00
		10/24/91	27.26	70.53	0.00
		01/23/92	32.99	64.89	0.00
		08/07/92	26.95	70.84	-- <sup>2</sup>
		11/16/92	25.95	71.84	--
29	97.95	01/19/89	26.14	71.81	--
		04/03/89	25.88	72.07	--
		07/05/89	26.19	71.76	--
		11/09/89	26.51	71.44	--
		01/24/90	26.66	71.29	--
		04/30/90	26.73	71.22	--
		07/03/90	27.22	70.73	--
		10/23/90	27.40	70.55	--
		01/21/91	26.89	71.06	--
		03/28/91	27.04	70.91	--
		10/24/91	27.47	70.48	--
		01/23/92	27.89	70.06	--
		11/16/92	26.78	71.17	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		11/16/92	27.29	72.01	--
31	98.90	01/19/89	26.15	72.75	--
		04/03/89	25.90	73.00	--
		07/05/89	26.28	72.76	--
		11/09/89	26.64	72.26	--
		01/24/90	26.84	72.06	--
		04/30/90	26.87	72.03	--
		07/03/90	27.50	71.40	--
		09/23/90	27.52	71.36	--
		01/21/91	27.09	71.81	--
		04/24/91	27.12	71.78	--
		07/24/91	27.60	71.30	--
		10/24/91	28.81	70.09	--
		01/23/92	28.31	70.59	--
		05/01/92	26.70	72.20	--
		08/07/92	27.00	71.90	--
11/16/92	27.04	71.86	--		
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
39	99.00	04/03/89	25.87	73.13	--
		07/05/89	26.38	72.62	--
		11/09/89	26.70	72.30	--
		01/24/90	26.86	72.14	--
		04/30/90	26.97	72.03	--
		07/03/90	28.17	70.83	--
		10/23/90	28.17	70.83	--
		01/21/91	27.15	71.85	--
		03/28/91	27.76	71.24	--
		04/24/91	27.33	71.67	--
		07/24/91	27.91	71.09	--
		10/24/91	28.26	70.74	--
		01/23/92	29.00	70.00	--
		05/01/92	26.82	72.18	--
		08/07/92	27.18	71.82	--
11/16/92	27.19	71.81	--		
42	99.12	04/03/89	25.77	73.35	--
		07/05/89	26.30	72.89	--
		11/09/89	26.66	72.46	--
		01/24/90	26.82	72.30	--
		04/18/90	26.94	72.18	--
		07/03/90	28.58	70.54	--
		10/23/90	28.58	70.54	0.08
		07/24/91	28.10	71.02	0.00
		10/24/91	28.24	70.88	--
		01/23/92	29.33	69.79	--
		05/01/92	26.88	72.44	--
		08/07/92	27.10	72.02	--
		11/16/92	26.68	72.44	--
43	98.87	04/03/89	25.32	73.55	0.08
		07/05/89	26.80	72.07	1.34
		11/09/89	28.44	70.43	2.89
		04/30/90	27.05	71.82	0.79
		07/03/90	28.36	70.51	0.70
		10/23/90	28.19	70.68	0.83
		10/24/91	26.30	72.57	0.00
		01/24/92	28.25	70.62	0.02
		05/01/92	25.44	73.43	0.00
		08/07/92	25.11	73.76	--
		11/16/92	26.42	72.45	--

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
45	100.90	12/05/89	28.71	72.19	--
		04/30/90	28.85	72.05	--
		07/03/90	29.45	71.45	--
		10/23/90	29.50	71.40	--
		01/21/91	29.03	71.87	--
		04/24/91	28.87	72.03	--
		07/25/91	29.63	71.27	--
		10/24/91	29.62	71.28	--
		01/23/92	30.45	70.45	--
		05/01/92	28.42	72.48	--
		08/07/92	28.70	72.20	--
11/16/92	28.84	72.06	--		
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
		08/07/92	27.28	70.83	--
		11/16/92	27.42	70.69	--
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
		08/07/92	27.40	71.49	--
		11/16/92	27.44	71.45	--

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet,

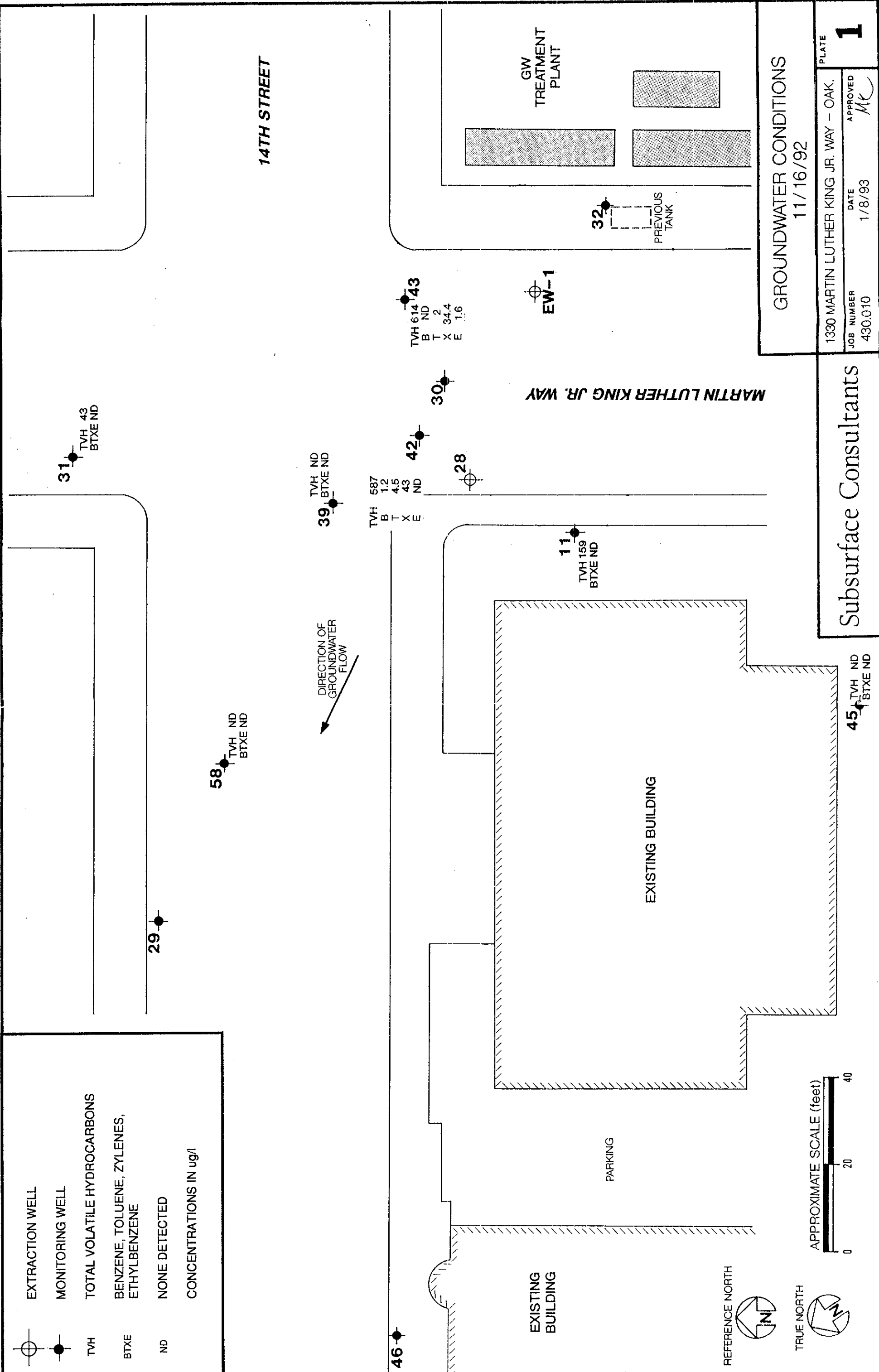
TOC = Top of casing

<sup>2</sup> -- = No free product present





EXTRACTION WELL  
 MONITORING WELL  
 TVH TOTAL VOLATILE HYDROCARBONS  
 BTXE BENZENE, TOLUENE, ZYLENES,  
 ETHYLBENZENE  
 ND NONE DETECTED  
 CONCENTRATIONS IN ug/l



DIRECTION OF  
 GROUNDWATER  
 FLOW

14TH STREET

MARTIN LUTHER KING JR. WAY

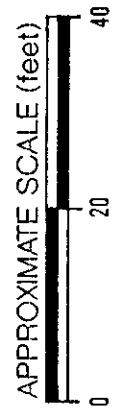
GW  
 TREATMENT  
 PLANT

PREVIOUS  
 TANK

GROUNDWATER CONDITIONS  
 11/16/92

1330 MARTIN LUTHER KING JR. WAY - OAK.	PLATE	<b>1</b>
JOB NUMBER 430.010	DATE 1/8/93	APPROVED <i>Mk</i>

Subsurface Consultants



46

EXISTING  
 BUILDING

PARKING

EXISTING BUILDING

45 TVH ND  
 BTXE ND

11 TVH 159  
 BTXE ND

TVH 587  
 B 1.2  
 T 4.5  
 X 43  
 E ND

28

42

30

TVH 614  
 B ND  
 T 2  
 X 34.4  
 E 1.6

EW-1

32

31

TVH 43  
 BTXE ND

29

58 TVH ND  
 BTXE ND

39 TVH ND  
 BTXE ND

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-01A  
SAMPLE ID: MW-11

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

December 3, 1992  
Date

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-02A  
SAMPLE ID: MW-31

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

December 3, 1992  
Date

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-03A  
SAMPLE ID: MW-39

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

December 3, 1992

Date

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 8020

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-04A  
SAMPLE ID: MW-42

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	1.2	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	4.5	0.5
V8	Xylenes (Dimethyl benzenes)	43.0	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow

Chemist

December 3, 1992

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PURGEABLE AROMATICS, EPA Method 8020

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(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-05A  
SAMPLE ID: MW-43

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	1.6	0.5
V7	Toluene	2.0	0.5
V8	Xylenes (Dimethyl benzenes)	34.4	0.5

Note: All positively identified compounds were second column or second detector confirmed.

Huey-Chen Chow

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December 3, 1992

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Order No: 92-11-137  
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Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-06A  
SAMPLE ID: MW-45

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

December 3, 1992  
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Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-07A  
SAMPLE ID: MW-58

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 3, 1992

\_\_\_\_\_  
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PURGEABLE AROMATICS, EPA Method 8020

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Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-08A  
SAMPLE ID: METHOD BLANK

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

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Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-10A  
SAMPLE ID: MW-45 MATRIX SPIKE RECOVERY

<u>COMP.</u> <u>NO.</u>	<u>COMPOUND</u>	<u>SPIKE RECOVERY</u>
----------------------------	-----------------	-----------------------

V1	Benzene	71%
V2	Chlorobenzene	75%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	87%
V7	Toluene	71%
V8	Xylenes (Dimethyl benzenes)	79%

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Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 11/23/1992  
INSTRUMENT ID: VG-1  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-11A  
SAMPLE ID: MW-45 MATRIX SPIKE RECOVERY  
DUPLICATE

<u>COMP.</u> <u>NO.</u>	<u>COMPOUND</u>	<u>SPIKE RECOVERY</u>
----------------------------	-----------------	-----------------------

V1	Benzene	91%
V2	Chlorobenzene	82%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	79%
V7	Toluene	80%
V8	Xylenes (Dimethyl benzenes)	85%

Huey-Chen Chow

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Chemist

December 3, 1992

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Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-01A  
SAMPLE ID: MW-11

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	159	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	-
<u>PEAK CARBON NO</u>		
Gasoline Range	C7	-

Samir Samaan

Chemist

December 3, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-02A  
SAMPLE ID: MW-31

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	43	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	-
<u>PEAK CARBON NO</u>		
Gasoline Range	C7	-

Samir Samaan

Chemist

December 3, 1992

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TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-03A  
SAMPLE ID: MW-39

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	-
<u>PEAK CARBON NO</u>		
Gasoline Range	-	-

Samir Samaan

\_\_\_\_\_  
Chemist

December 3, 1992  
\_\_\_\_\_  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-04A  
SAMPLE ID: MW-42

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	587	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	-
<u>PEAK CARBON NO</u>		
Gasoline Range	C7	-

Samir Samaan

Chemist

December 3, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
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CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-05A  
SAMPLE ID: MW-43

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	614 *	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C14	-
<u>PEAK CARBON NO</u>		
Gasoline Range	C8	-

\* Hydrocarbons in the gasoline range have been detected. However, their patterns are different from our standard.

Samir Samaan  
\_\_\_\_\_  
Chemist

December 3, 1992  
\_\_\_\_\_  
Date



TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-06A  
SAMPLE ID: MW-45

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	-
<u>PEAK CARBON NO</u>		
Gasoline Range	-	-

Samir Samaan

\_\_\_\_\_  
Chemist

December 3, 1992  
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Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
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Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: 11/16/1992  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-07A  
SAMPLE ID: MW-58

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	-
<u>PEAK CARBON NO</u>		
Gasoline Range	-	-

Samir Samaan

Chemist

December 3, 1992

Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-08A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	-
<u>PEAK CARBON NO</u>		
Gasoline Range	-	-

Samir Samaan

\_\_\_\_\_  
Chemist

December 3, 1992  
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Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-10A  
SAMPLE ID: MW-45 MATRIX SPIKE RECOVERY

PETROLEUM HYDROCARBONS

SPIKE RECOVERY

Gasoline Range

100%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO

Gasoline Range

-

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\_\_\_\_\_  
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\_\_\_\_\_  
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TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010  
  
ELI SAMPLE ID: 9211137-11A  
SAMPLE ID: MW-45 MATRIX SPIKE RECOVERY  
DUPLICATE

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

PETROLEUM HYDROCARBONS

SPIKE RECOVERY

Gasoline Range

110%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO

Gasoline Range

-

Samir Samaan

\_\_\_\_\_  
Chemist

December 3, 1992

\_\_\_\_\_  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010  
  
ELI SAMPLE ID: 9211137-12A  
SAMPLE ID: REAGENT SPIKE RECOVERY

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

PETROLEUM HYDROCARBONS

SPIKE RECOVERY

Gasoline Range

71%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO

Gasoline Range

-

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TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

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(916) 381-7953

Order No: 92-11-137  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GW  
JOB #: 430-010

DATE SAMPLED: NA  
DATE RECEIVED: 11/17/1992  
DATE EXTRACTED: 11/24/1992  
DATE ANALYZED: 11/24/1992  
INSTRUMENT ID: SVG7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9211137-13A  
SAMPLE ID: REAGENT SPIKE RECOVERY DUP.

PETROLEUM HYDROCARBONS

SPIKE RECOVERY

Gasoline Range

73%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO

Gasoline Range

-

Samir Samaan

\_\_\_\_\_  
Chemist

December 3, 1992

\_\_\_\_\_  
Date

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-02A  
SAMPLE ID: METHOD BLANK

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

December 28, 1992

Date



ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: 12/17/1992  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-01A  
SAMPLE ID: 31

COMP. NO.	COMPOUND	ug/L (ppb)	DETECTION LIMIT ug/L (ppb)
V1	Benzene	<0.5	0.5
V2	Chlorobenzene	<0.5	0.5
V3	1,2-Dichlorobenzene	<0.5	0.5
V4	1,3-Dichlorobenzene	<0.5	0.5
V5	1,4-Dichlorobenzene	<0.5	0.5
V6	Ethyl benzene	<0.5	0.5
V7	Toluene	<0.5	0.5
V8	Xylenes (Dimethyl benzenes)	<0.5	0.5

Huey-Chen Chow

Chemist

December 28, 1992  
Date

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-04A  
SAMPLE ID: 31 MATRIX SPIKE RECOVERY

<u>COMP.</u> <u>NO.</u>	<u>COMPOUND</u>	<u>SPIKE RECOVERY</u>
----------------------------	-----------------	-----------------------

V1	Benzene	70%
V2	Chlorobenzene	85%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	82%
V7	Toluene	98%
V8	Xylenes (Dimethyl benzenes)	78%

Huey-Chen Chow

Chemist

December 28, 1992

Date

ORGANIC ANALYSIS REPORT  
PURGEABLE AROMATICS, EPA Method 602

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: VG-4  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-05A  
SAMPLE ID: 31 MATRIX SPIKE RECOVERY  
DUPLICATE

<u>COMP.</u> <u>NO.</u>	<u>COMPOUND</u>	<u>SPIKE RECOVERY</u>
----------------------------	-----------------	-----------------------

V1	Benzene	84%
V2	Chlorobenzene	86%
V3	1,2-Dichlorobenzene	-
V4	1,3-Dichlorobenzene	-
V5	1,4-Dichlorobenzene	-
V6	Ethyl benzene	88%
V7	Toluene	101%
V8	Xylenes (Dimethyl benzenes)	88%

Huey-Chen Chow

\_\_\_\_\_  
Chemist

December 28, 1992  
\_\_\_\_\_  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-02A  
SAMPLE ID: METHOD BLANK

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	<20	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	-	-
<u>PEAK CARBON NO</u>		
Gasoline Range	-	-

Samir Samaan  
\_\_\_\_\_  
Chemist

December 28, 1992  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: 12/17/1992  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: 5ml  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-01A  
SAMPLE ID: 31

<u>PETROLEUM HYDROCARBONS</u>	<u>CONCENTRATION</u> <u>[ug/L (ppb)]</u>	<u>DETECTION LIMIT</u> <u>[ug/L (ppb)]</u>
Gasoline Range	35.3	20
<u>CARBON NO. RANGE</u>		
Gasoline Range	C6-C13	-
<u>PEAK CARBON NO</u>		
Gasoline Range	C7	-

Samir Samaan  
\_\_\_\_\_  
Chemist

December 28, 1992  
\_\_\_\_\_  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-06A  
SAMPLE ID: REAGENT SPIKE RECOVERY \*

PETROLEUM HYDROCARBONS

SPIKE RECOVERY

Gasoline Range

104%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO

Gasoline Range

-

\* Reagent spike set is used due to matrix interference.

Samir Samaan

\_\_\_\_\_  
Chemist

December 28, 1992

\_\_\_\_\_  
Date

TOTAL PETROLEUM HYDROCARBONS (GASOLINE)  
EPA METHOD 5030/8015 (Modified)

EUREKA LABORATORIES, INC.  
6790 Florin-Perkins Road  
Sacramento, CA 95828  
(916) 381-7953

Order No: 92-12-171  
Hazardous Waste Testing  
Certification: 1165

CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: MLK GROUNDWATER MONITORING WELLS  
JOB #: 430.010

DATE SAMPLED: NA  
DATE RECEIVED: 12/18/1992  
DATE EXTRACTED: NA  
DATE ANALYZED: 12/21/1992  
INSTRUMENT ID: SVG-7  
MATRIX: AQUEOUS  
% MOISTURE: NA  
REPORT WT: NA  
SAMPLE VOL./WT.: NA  
DILUTION FACTOR: 1

ELI SAMPLE ID: 9212171-07A  
SAMPLE ID: REAGENT SPIKE RECOVERY \*  
DUPLICATE

PETROLEUM HYDROCARBONS

SPIKE RECOVERY

Gasoline Range

100%

CARBON NO. RANGE

Gasoline Range

-

PEAK CARBON NO

Gasoline Range

-

\* Reagent spike set is used due to matrix interference.

Samir Samaan

\_\_\_\_\_  
Chemist

December 28, 1992

\_\_\_\_\_  
Date

UPS 2<sup>c</sup>

### CHAIN OF CUSTODY FORM

92-12-171 F57

PROJECT NAME: MUX GROUNDWATER MONITORING NEWS

JOB NUMBER: 430.010 LAB: EUREKA LABORATORIES

PROJECT CONTACT: MARK KAWAKAMI

TURNAROUND: 5 DAY

SAMPLED BY: JOSE BERNARDEZ REQUESTED BY: MARK KAWAKAMI

ANALYSIS REQUESTED														SAMPLING DATE		METHOD PRESERVED		CONTAINERS	MATRIX				SC1 SAMPLE NUMBER	LABORATORY I.D. NUMBER	
														MONTH	DAY	YEAR	TIME		VOA	LITER	PINT	TUBE			WATER

EXPEDITE

NOTES  
X TVH/BIXE

COMMENTS & NOTES:

PLEASE RETURN COOLER AND BLUE ICE TO SC1.

#### CHAIN OF CUSTODY RECORD

RECEIVED BY: (Signature) <u>D. Regan</u>	DATE/TIME <u>12/17/92</u>	RECEIVED BY: (Signature) <u>P. Regan</u>	DATE/TIME <u>12/17/92</u>
RECEIVED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RECEIVED BY: (Signature) <u>Kyancechi</u>	DATE/TIME <u>12/18/92</u>	RECEIVED BY: (Signature)	DATE/TIME

Subsurface Consultants, Inc.  
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
(510) 268-0461 • FAX: 510-268-0137



**CHAIN OF CUSTODY FORM**

PROJECT NAME: MLK: GW Q/2-11-127

LAB: EUREKA LAB

JOB NUMBER: 430-010

PROJECT CONTACT: MARK KAWAKAMI

TURNAROUND: NORMAL

ANALYSIS REQUESTED:

CONTAINERS:

MATRIX:

SC1 SAMPLE NUMBER:

LABORATORY I.D. NUMBER:

SAMPLED BY: FV

REQUESTED BY: MARK KAWAKAMI

METHOD PRESERVED:

METHOD PRESERVED:

METHOD PRESERVED:

LABORATORY I.D. NUMBER	SC1 SAMPLE NUMBER	MATRIX			CONTAINERS			METHOD PRESERVED			SAMPLING DATE			NOTES				
		WATER	SOL	WASTE	VOA	LITER	PINT	TUBE	HCL	FSO <sub>4</sub>	HNO <sub>3</sub>	ICE	NONE		MONTH	DAY	YEAR	TIME
1A	MW-11	X						X	X	X				11	16	92		XX XX XX XX
2A	MW-31	X						X	X	X								XX XX XX XX
3A	MW-39	X						X	X	X								XX XX XX XX
4A	MW-42	X						X	X	X								XX XX XX XX
5A	MW-43	X						X	X	X								XX XX XX XX
6A	MW-45	X						X	X	X								XX XX XX XX
7A	MW-58	X						X	X	X								XX XX XX XX

RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_  
 RECEIVED BY (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

Subsurface Consultants, Inc.  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 TEL: (510) 268-0161 FAX: (510) 268-0137

DI

PAGE 1 OF 2

-1°C Hand

CHAIN OF CUSTODY RECORD

RECEIVED BY (Signature) *R. Morgan* DATE/TIME 11/17/92 1230

RECEIVED BY (Signature) *R. Morgan* DATE/TIME 11/17/92 1730

RECEIVED BY (Signature) *R. Morgan* DATE/TIME 11/17/92 530

---

**O**RRICK, HERRINGTON  
& SUTCLIFFE

Direct Dial

(415) 773-5652

February 7, 1992

Thomas Peacock  
Alameda Health Care Services Agency  
Department of Environmental Health  
Hazardous Materials Program  
80 Swan Way, Room 200  
Oakland, CA 94621

Re: 1330 Martin Luther King Jr. Way;  
STID No. 3618 [SIC 13623]

Dear Mr. Peacock:

This will confirm our telephone conversation on February 6, 1992 concerning your January 3, 1992 Notice of Requirement to Reimburse that you sent to the Redevelopment Agency of the City of Oakland c/o Carol Fenelon.

As I explained to you, Carol Fenelon was a former associate at this firm. This office is not presently representing the Redevelopment Agency of the City of Oakland with respect to any present or former underground storage tanks at 1330 Martin Luther King Jr. Way, Oakland, California.

You indicated that you would redirect a notice to the Redevelopment Agency directly.

Very truly yours,

  
Timothy P. Walker

TPW/vcs.

cc: Redevelopment Agency of the City  
of Oakland

5656W

P 367 604 681

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

U.S.G.P.O. 1989-234-555

PS Form 3800, June 1985

Sent to City of Oakland	
Street and No. 1417 Clay St	
P.O. Box 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	2.29
Postmark or Date 4:30 - 4:53 2-13-92	

3623

ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY  
DAVID J. KEARS, Agency Director



State Water Resources Control Board  
Division of Clean Water Programs  
USF Local Oversight Program  
RAFAEL A. SANCHEZ, Assistant Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH  
Hazardous Materials Division  
80 Swan Way, Rm. 200  
Oakland, CA 94621  
(510) 271-4320

certified mailer #P 367 604 681

February 6, 1992  
STID# 3623

XXX(510) 271-4320

**Notice of Requirement to Reimburse**

Redevelopment Agency of the City of  
Oakland  
ATTN: Lois Parr  
1417 Clay St., 2nd Floor  
Oakland, CA 94612

Responsible Party  
Property Owner

Former Tank Site  
1330 M.L.King Jr. Way  
Oakland, CA 94612

SITE

Date First Reported 07/07/88  
Substance: gasoline  
Petroleum (X) Yes

The federal Petroleum Leaking Underground Storage Tank Trust Fund (Federal Trust Fund) provides funding to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks. The legislature has authorized funds to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks. The direct and indirect costs of overseeing removal or remedial action at the above site are funded, in whole or in part, from the Federal Trust Fund. The above individual(s) or entity(ies) have been identified as the party or parties responsible for investigation and cleanup of the above site. **YOU ARE HEREBY NOTIFIED** that pursuant to Title 42 of the United States Code, Section 6991b(h)(6) and Sections 25297.1 and 25360 of the California Health and Safety Code, the above Responsible Party or Parties must reimburse the State Water Resources Control Board not more than 150 percent of the total amount of site specific oversight costs actually incurred while overseeing the cleanup of the above underground storage tank site, and the above Responsible Party or Parties must make full payment of such costs within 30 days of receipt of a detailed invoice from the State Water Resources Control Board.

If you have any questions concerning this matter please contact Thomas Peacock, Supervising Hazardous Material Specialist, at this office.

Edgar B. Howell, III, Chief  
Contract Project Director  
cc: Sandra Malos, SWRCB

SWRCB Use : change:X Reason: new contact

ATTN

WATER RESOURCES CONTROL BOARD  
DIVISION OF WATER QUALITY - UST CLEANUP PROGRAM  
SITE SPECIFIC QUARTERLY REPORT  
01/01/92 THROUGH 03/31/92

AGENCY # : 10000      SOURCE OF FUNDS: F      SUBSTANCE: 8006619  
StID : 3623  
SITE NAME: Former Tank Site      DATE REPORTED : 07/07/88  
ADDRESS : 1330 Martin L King Way      DATE CONFIRMED: 07/07/88  
CITY/ZIP : Oakland      94612      MULTIPLE RPs : N

SITE STATUS  
-----

CASE TYPE: G	CONTRACT STATUS:	EMERGENCY RESP:
RP SEARCH: S		DATE COMPLETED: 02/06/92
PRELIMINARY ASMNT: C	DATE UNDERWAY: 07/29/88	DATE COMPLETED: 11/20/89
REM INVESTIGATION: C	DATE UNDERWAY: 01/16/90	DATE COMPLETED: 06/27/90
REMEDIAL ACTION: U	DATE UNDERWAY: 07/09/90	DATE COMPLETED:
POST REMED ACT MON:	DATE UNDERWAY:	DATE COMPLETED:

ENFORCEMENT ACTION TYPE: 1      DATE ENFORCEMENT ACTION TAKEN: 02/06/92  
LUFT FIELD MANUAL CONSID: 3,HSCAWG  
CASE CLOSED:      DATE CASE CLOSED:  
DATE EXCAVATION STARTED : 06/17/88      REMEDIAL ACTIONS TAKEN: ET

RESPONSIBLE PARTY INFORMATION  
-----

RP#1-CONTACT NAME:  
COMPANY NAME:  
ADDRESS:  
CITY/STATE:

---

---

ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program

RAFAT A. SHAHID, Assistant Agency Director

January 8, 1992  
STID# 3623

DEPARTMENT OF ENVIRONMENTAL HEALTH  
80 Swan Way, Rm. 210  
Oakland, CA 94621  
(415) 274-1500 (274-4320)

Redevelopment Agency of the City of  
Oakland c/o Carol Fenelon Exq.  
600 Montgomery St.  
San Francisco, CA 94111

Responsible Party  
Contact Person  
Property Owner

Former Tank Site  
1330 M.L.King Jr. Way  
Oakland, CA 94612

SITE

Date First Reported: 07/07/88  
Substance: gasoline  
Petroleum (X) Yes

The above STID# 3623 is a correction. This STID# should replace the STID# which was on the original Notice dated January 3, 1992.

If you have any questions concerning this matter please contact Thomas Peacock, Supervising Hazardous Material Specialist, at this office.

Sincerely,

Edgar B. Howell, III, Chief  
Contract Project Director

cc: Sandra Malos, SWRCB

SWRCB Use : change: X Reason: Corrected STID#

*Tim Walker  
at  
Don't represent  
Orrich, Heronston of  
City of Oakland*

P 367 604 649

TP

**RECEIPT FOR CERTIFIED MAIL**

NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

U.S.G.P.O. 1989-234-555

PS Form 3800, June 1985

Sent to	
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	

3678 3623

ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program

DEPARTMENT OF ENVIRONMENTAL HEALTH  
Hazardous Materials Program  
80 Swan Way, Rm. 200  
Oakland, CA 94621  
(415) (510) 271-4320

certified mailer #P 367 604 649

January 3, 1992  
STID# 3618

**Notice of Requirement to Reimburse**

Redevelopment Agency of the City of  
Oakland c/o Carol Fenelon Esq.  
600 Montgomery St.  
San Francisco, CA 94111

Responsible Party  
Contact Person  
Property Owner

Former Tank Site  
1330 M. L. King Jr. Way  
Oakland, CA 94612

SITE

Date First Reported 07/07/88  
Substance: gasoline  
Petroleum (X) Yes

The federal Petroleum Leaking Underground Storage Tank Trust Fund (Federal Trust Fund) provides funding to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks. The legislature has authorized funds to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks. The direct and indirect costs of overseeing removal or remedial action at the above site are funded, in whole or in part, from the Federal Trust Fund. The above individual(s) or entity(ies) have been identified as the party or parties responsible for investigation and cleanup of the above site. **YOU ARE HEREBY NOTIFIED** that pursuant to Title 42 of the United States Code, Section 6991b(h)(6) and Sections 25297.1 and 25360 of the California Health and Safety Code, the above Responsible Party or Parties must reimburse the State Water Resources Control Board not more than 150 percent of the total amount of site specific oversight costs actually incurred while overseeing the cleanup of the above underground storage tank site, and the above Responsible Party or Parties must make full payment of such costs within 30 days of receipt of a detailed invoice from the State Water Resources Control Board.

If you have any questions concerning this matter please contact Thomas Peacock, Supervising Hazardous Material Specialist, at this office.

Edgar B. Howell, III, Chief  
Contract Project Director

cc: Sandra Malos, SWRCB

SWRCB Use : add: X Reason: New case



**IMPORTANT MESSAGE**

FOR T.P  
DATE \_\_\_\_\_ TIME \_\_\_\_\_ A.M.  
P.M.  
M Tim Walker, Attorney  
OF \_\_\_\_\_  
PHONE 415-773-5652  
AREA CODE NUMBER EXTENSION

TELEPHONED		PLEASE CALL	
CAME TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL		SPECIAL ATTENTION	

MESSAGE important  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNED \_\_\_\_\_  
LITHO IN U.S.A.

TOPS  FORM 3002S

12/31/91  
Tom,  
If you need someone  
to work this case please  
see me.  
Thanks  
Paul

DATE: 12/31/91  
 TO: Local Oversight Program  
 FROM: Paul Smith  
 SUBJ: Transfer of Eligible Oversight Case

Site name: \_\_\_\_\_  
 Address: 1330 North Luther Ave, City, CA 94612  
 zip 94612

Closure plan attached?  N  
 Depref remaining \$ 3618  
 Depref Project # USS2829, US24516  
 V505699 STID # (if any)

Number of Tanks: 1 removed? Y N  
 Date of removal 6/17/88  
 Contamination: 6/17/88

Samples received? Y N  
 Types: Avgas Jet leaded unleaded Diesel  
 fuel oil waste oil kerosene solvents  
 Monitoring wells on site 12  
 Monitoring scheduled?  N Quarterly

7-7-88  
 d's cover

Briefly describe the following:

Preliminary Assessment  
 Remedial Action  
 Post Remedial Action Monitoring  
 Enforcement Action

There is currently a pump from a vapor extraction system operating quite effectively at this site. In July, Jim Bowers of Subsurface wrote a letter requesting to treat a DCA problem with the existing system. Eddy So had faxed me some comments which were to be incorporated in correspondence regarding the addition of halocarbons to the existing system. Unfortunately I never got the chance to respond to J. Bowers in a letter. In a phone conversation w/ Jim Bowers this was some question because levels of DCA had changed significantly whether the plan was to still treat for halocarbons or not. These needs to be a follow up phone call to Jim Bowers / letter.

No 14567

# STATE OF CALIFORNIA WATER RESOURCES CONTROL BOARD

## UNDERGROUND STORAGE TANK PROGRAM TANK PERMIT APPLICATION INFORMATION

COMPLETE A SEPARATE FORM WITH THE FOLLOWING INFORMATION FOR EACH TANK.



<input type="checkbox"/> 1 NEW PERMIT <input type="checkbox"/> 2 INTERIM PERMIT <input type="checkbox"/> 3 RENEWAL PERMIT <input checked="" type="checkbox"/> 4 AMENDED PERMIT <input type="checkbox"/> 5 CHANGE OF INFORMATION <input type="checkbox"/> 6 TEMPORARY TANK CLOSURE <input type="checkbox"/> 7 PERMANENTLY CLOSED TANK <input type="checkbox"/> 8 TANK REMOVED		FACILITY/SITE NAME WHERE TANK IS INSTALLED: <i>Exxon R/S 7-0793</i> FARM TANK - YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
---	--	--	--

A. OWNERS TANK ID # <i>2</i> B. MANUFACTURED BY: <i>Owens Corning</i> C. YEAR INSTALLED <i>1988</i> D. TANK CAPACITY IN GALLONS: <i>10,000</i>
---

II. TANK CONTENTS IF (A.1), IS MARKED, COMPLETE ITEM C. IF (A.1), IS NOT MARKED, COMPLETE ITEM D.	
A. <input checked="" type="checkbox"/> MOTOR VEHICLE FUEL <input type="checkbox"/> 2 PETROLEUM <input type="checkbox"/> 3 CHEMICAL PRODUCT <input type="checkbox"/> 4 OIL <input type="checkbox"/> 80 EMPTY <input type="checkbox"/> 95 UNKNOWN	B. <input checked="" type="checkbox"/> 1 PRODUCT <input type="checkbox"/> 2 WASTE
C. <input checked="" type="checkbox"/> 1 UNLEADED <input type="checkbox"/> 2 LEADED <input type="checkbox"/> 3 DIESEL <input type="checkbox"/> 4 GASAHOL <input type="checkbox"/> 5 JET FUEL <input type="checkbox"/> 6 AVIATION GAS <input type="checkbox"/> 7 METHANOL <input type="checkbox"/> 99 OTHER (DESCRIBE IN ITEM D, BELOW)	D. IF NOT MOTOR VEHICLE FUEL, ENTER NAME OF HAZARDOUS SUBSTANCE STORED & C.A.S. #

III. TANK CONSTRUCTION MARK ONE ITEM ONLY IN BOX A, B, C, & D	
A. TYPE OF SYSTEM <input checked="" type="checkbox"/> 1 DOUBLE WALLED <input type="checkbox"/> 2 SINGLE WALLED <input type="checkbox"/> 3 SINGLE WALLED WITH EXTERIOR LINER <input type="checkbox"/> 4 SECONDARY CONTAINMENT <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER	B. TANK MATERIAL <input type="checkbox"/> 1 STEEL/IRON <input type="checkbox"/> 2 STAINLESS STEEL <input checked="" type="checkbox"/> 3 FIBERGLASS <input type="checkbox"/> 4 STEEL CLAD W/FIBERGLASS REINFORCED PLASTIC <input type="checkbox"/> 5 CONCRETE <input type="checkbox"/> 6 POLYVINYL CHLORIDE <input type="checkbox"/> 7 ALUMINUM <input type="checkbox"/> 8 100% METHANOL COMPATIBLE FRP <input type="checkbox"/> 9 BRONZE <input type="checkbox"/> 10 GALVANIZED STEEL <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER
C. INTERIOR LINING <input type="checkbox"/> 1 RUBBER LINING <input type="checkbox"/> 2 ALKYD LINING <input type="checkbox"/> 3 EPOXY LINING <input type="checkbox"/> 4 PHENOLIC LINING <input type="checkbox"/> 5 GLASS LINING <input checked="" type="checkbox"/> 6 UNLINED <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER	D. CORROSION PROTECTION <input type="checkbox"/> 1 POLYETHYLENE WRAP <input type="checkbox"/> 2 TAR OR ASPHALT <input type="checkbox"/> 3 VINYL WRAP <input checked="" type="checkbox"/> 4 FIBERGLASS REINFORCED PLASTIC <input type="checkbox"/> 5 CATHODIC PROTECTION <input type="checkbox"/> 91 NONE <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER

IV. PIPING INFORMATION CIRCLE A IF ABOVE GROUND, U IF UNDERGROUND, BOTH IF APPLICABLE	
A. SYSTEM TYPE <input type="checkbox"/> 1 SUCTION <input checked="" type="checkbox"/> 2 DOUBLE WALLED <input type="checkbox"/> 3 GRAVITY <input type="checkbox"/> 99 OTHER	B. CONSTRUCTION <input type="checkbox"/> 1 SINGLE WALLED <input checked="" type="checkbox"/> 2 DOUBLE WALLED <input type="checkbox"/> 3 LINED TRENCH <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER
C. MATERIAL <input type="checkbox"/> 1 STEEL/IRON <input type="checkbox"/> 2 STAINLESS STEEL <input type="checkbox"/> 3 POLYVINYL CHLORIDE (PVC) <input checked="" type="checkbox"/> 4 FIBERGLASS PIPE <input type="checkbox"/> 5 ALUMINUM <input type="checkbox"/> 6 CONCRETE <input type="checkbox"/> 7 STEEL CLAD W/FRP <input type="checkbox"/> 8 100% METHANOL COMPATIBLE FRP <input type="checkbox"/> 9 GALVANIZED STEEL <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER	A. LEAK DETECTION SYSTEM CIRCLE P FOR PRIMARY, OR S FOR SECONDARY, A PRIMARY LEAK DETECTION SYSTEM MUST BE CIRCLED. <input type="checkbox"/> 1 VISUAL CHECK <input checked="" type="checkbox"/> 2 INVENTORY RECONCILIATION <input type="checkbox"/> 3 VAPOSE WELLS <input checked="" type="checkbox"/> 4 ELECTRONIC MONITOR <input type="checkbox"/> 5 GROUND WATER MONITORING WELLS <input type="checkbox"/> 6 PRECISION TESTING <input type="checkbox"/> 7 PRESSURE TESTING <input type="checkbox"/> 8 91 NONE <input type="checkbox"/> 95 UNKNOWN <input type="checkbox"/> 99 OTHER

V. INFORMATION ON TANK PERMANENTLY CLOSED IN PLACE 1. ESTIMATED DATE LAST USED (MO/YR) 2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING IN GALLONS 3. WAS TANK FILLED WITH INERT MATERIAL? YES <input type="checkbox"/> NO <input type="checkbox"/>	
--	--

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY AND TO THE BEST OF MY KNOWLEDGE IS TRUE AND CORRECT.

APPLICANT'S NAME (PRINTED & SIGNATURE) *G.J. MEYER - U.G.T. ANALYST*  
 DATE *6/27/89*

COUNTY #	JURISDICTION #	AGENCY #	FACILITY ID #	TANK ID #
CURRENT LOCAL AGENCY FACILITY ID #	APPROVED BY NAME	PHONE # WITH AREA CODE	PERMIT APPROVAL DATE	PERMIT EXPIRATION DATE
PERMIT NUMBER	SURCHARGE AMT.	FEE CODE	RECEIPT #	BY:
CHECK #	PERMIT AMOUNT			

12-25-92 SF Examiner  
Jeff Shapiro was there

# Oakland accident sickens 8 people

Noxious fumes at  
construction site hit  
workers, rescuers

By Charles C. Hardy  
OF THE EXAMINER STAFF

OAKLAND — Fire investigators are still trying to sort out the details of an industrial accident at a downtown construction site that sent three workers and five firefighters to local hospitals.

The eight, all apparently felled by the fumes of a product being used as a sealant at the bottom of a shaft, were listed in stable condition Thursday at Highland, Alta Bates and Summit hospitals.

The incident resulted in a flurry of activity, with more than a dozen ambulances and fire rescue vehicles responding to otherwise serene downtown Oakland on Christmas Eve. Police cordoned off a three-block area around the construction site at 12th and Martin Luther King Avenue.

Firefighters responding to the site of the new City Center parking garage found two workers for Campbell Construction Co. of Sacramento unconscious at the bottom of a shaft in the nearly completed structure.

Capt. Don Parker said one of the men was applying a contact cement called Poly Guard 1139, the chemical name of which is trichlo-



EXAMINER/KIM KOMENICH

Unidentified firefighter is treated on the site of new Federal Building in Oakland after he was overcome by fumes from a chemical sealant.

roethane.

Firefighters put on breathing apparatus, Parker said, and went down the 20-foot shaft to rescue the two men. However, the firefighters, four men and one woman, still ingested some of the chemical fumes and later complained about difficulty breathing and chest pains.

Parker said a third construction worker also complained of breathing problems and chest pains and was hospitalized with the firefighters.

Scott Hellige, one of the first firefighters on the scene, said he helped rig a rope to lift the two workers out of the shaft.

"The main thing I was checking

for was to make sure it (the chemical) hadn't penetrated through their skin," he said.

Emergency medical personnel treated the firemen and construction workers at the scene for more than an hour before dispatching them to hospitals.

Parker said once the shaft was ventilated the fumes dispersed and there was no threat to the community. The situation, he said, was under control shortly before noon.

The City Center garage is part of the huge downtown development project under contract from the city to the Bramalea Corp. The garage is adjacent to the towering twin federal buildings which are also near completion.

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December 3, 1992  
SCI 430.014

92 DEC -7 PM 2:22

3623

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring**  
**November 1992**  
**Floor Drain Sump**  
**13th and Jefferson Streets**  
**Oakland, California**

Dear Ms. Eberle:

This letter records the results of the November 1992 groundwater sampling and analytical testing event performed by Subsurface Consultants, Inc. (SCI) for DCA<sup>1</sup> contamination at the referenced site. Well locations are shown on the attached Site Plan, Plate 1.

#### Background

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soils in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents the monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for this condition are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated September 4, 1992.

#### Quarterly Monitoring

Groundwater monitoring at the site has been performed quarterly over the past two years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest

<sup>1</sup> DCA = 1,2-Dichloroethane

**Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
December 3, 1992  
Page 2

event, November 3, 1992, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent during recent monitoring events.

Prior to sampling, the wells were purged of at least 4 well volumes of water using a disposable bailer. The purged water was disposed of in the existing groundwater treatment plant on-site. During this event, wells 47, 48, 49, 54 and 59 were sampled.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by chain-of-custody records, copies of which are attached.

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for the following:

    Volatile Organic Chemicals, sample preparation and analysis using EPA method 5030 (purge and trap) and 8010 (gas chromatograph coupled to an electrolytic conductivity detector).

Water samples from the wells have also been analyzed in the past for total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3550), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020), because these compounds were associated with the gasoline tank and sump releases. In our June 24, 1992 letter, we requested a reduction in analytical testing because these compounds had not been detected for at least the previous 6 quarters. Our latest sampling event reflects that reduction in testing. The results of the analyses are summarized in Tables 2 and 3. Copies of the analytical test reports are attached.

### Conclusions

The groundwater level data indicates that the groundwater flow direction is toward the west-northwest at a gradient of approximately 0.5 percent. Groundwater flow direction and gradient remain consistent with previous measurements.

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
December 3, 1992  
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■ Subsurface Consultants, Inc.

The results of the latest sampling event indicate that none of the wells being monitored contain Volatile Organic Chemicals (EPA 8010) at concentrations in excess of analytical detection limits. Monitoring for volatile organic chemicals (EPA 8010) will continue on a quarterly basis.

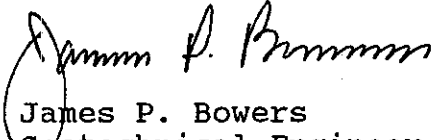
If you have any questions, please call.

Yours very truly,

Subsurface Consultants, inc.



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



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

SOC:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Petroleum Hydrocarbon Concentrations in Groundwater  
Table 3 - Halogenated Volatile Organic Chemical Concentrations in Groundwater  
Plate 1 - Site Plan  
Chain-of-Custody Records  
Analytical Test Reports

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
December 3, 1992  
Page 4

- 1 copy: Ms. Lois Parr  
Oakland Redevelopment Agency  
City of Oakland  
1333 Broadway, Suite 900  
Oakland, California 94612
- 1 copy: Ms. Julie Carver  
Oakland Redevelopment Agency  
City of Oakland  
1333 Broadway, Suite 800  
Oakland, California 94612
- 1 copy: Mr. John Esposito  
Bramalea Pacific  
1111 Broadway, Suite 1400  
Oakland, California 94607
- 1 copy: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612
- 1 copy: Mr. Donnell Choy  
Office of City Attorney  
City of Oakland  
505 14th Street, 12th Floor  
Oakland, California 94612



Table 1. Groundwater Elevation Data

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
	06/13/91		28.39	72.11
	09/10/91		27.08	73.42
	12/12/91		27.95	72.55
	04/17/92		26.18	74.32
	07/28/92		26.48	74.02
	11/03/92		26.86	73.64
MW-48	07/18/90	102.40	29.08	73.32
	10/04/90		29.29	73.11
	12/03/90		29.28	73.12
	01/21/91		29.03	73.37
	03/13/91		28.72	73.68
	04/03/91		28.24	74.16
	06/13/91		29.47	72.93
	09/10/91		28.94	73.46
	12/12/91		30.39	72.01
	04/17/92		28.07	74.33
	07/28/92		28.32	74.08
	11/03/92		28.74	73.66
MW-49	12/03/90	101.73	28.44	73.29
	01/21/91		28.20	73.53
	03/13/91		27.79	73.94
	04/03/91		27.28	74.45
	06/13/91		27.66	74.07
	09/10/91		28.04	73.69
	12/12/91		30.45	71.28
	04/17/92		27.26	74.64
11/03/92	27.84	73.89		
MW-51	10/04/90	102.64	28.57	74.07
	12/03/90		28.57	74.07
	01/21/91		28.44	74.20
	03/13/91		27.76	74.88
	04/03/91		27.32	75.32
	06/13/91		28.82	73.82
09/10/91	28.00	74.64		
MW-52	10/04/90	102.44	28.41	74.03
	12/03/90		28.38	74.06
	01/21/91		28.24	74.20
	03/13/91		27.57	74.87
	04/03/91		27.16	75.28
	06/13/91		29.41	73.03
09/10/91	27.85	74.59		
MW-53	09/24/90	101.28	27.44	73.84
	10/04/90		27.50	73.78
	12/03/90		27.46	73.82
	01/21/91		28.00	73.28
	03/13/91		27.00	74.28
	06/13/91		27.61	73.67
	08/12/91		Well Abandoned	

Table 1. Groundwater Elevation Data (continued)

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-54	09/24/90	100.78	27.01	73.77
	10/04/90		27.30	73.48
	12/03/90		27.01	73.77
	01/21/91		27.28	74.64
	03/13/91	101.92 <sup>3</sup>	27.40	74.52
	06/13/91		28.93	72.99
	09/10/91		27.66	74.26
	12/12/91		28.88	73.04
	04/17/92		26.82	75.10
	11/03/92		27.54	74.38
MW-59	02/12/91	100.37	27.45	72.92
	03/13/91		27.60	72.77
	04/03/91		27.36	73.01
	06/13/91		28.01	72.36
	09/10/91		28.00	72.37
	12/12/91		28.53	71.84
	04/17/92		26.91	73.46
	07/28/92		27.27	73.10
	11/03/92		27.56	72.81

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<sup>1</sup> Top of Casing

<sup>2</sup> Depth measured below top of casing

<sup>3</sup> Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

Table 2. Petroleum Hydrocarbon Concentrations in Groundwater

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	T <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)
MW-47	04/06/90	--	ND <sup>8</sup>	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	--	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	--	--	ND	ND	ND	ND
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
	MW-51	04/06/90	--	ND	--	ND	ND	ND
10/04/90		--	--	--	ND	ND	ND	ND
12/04/90		--	ND	--	ND	ND	ND	ND
03/13/91		--	ND	--	ND	ND	ND	ND
06/13/91		--	ND	--	ND	ND	ND	ND
09/11/91		--	ND	--	ND	ND	ND	ND
MW-52		04/06/90	--	ND	--	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	MW-53	09/21/90	--	ND	--	ND	ND	ND
10/04/90		--	ND	--	ND	ND	ND	ND
12/04/90		--	ND	--	ND	ND	ND	ND
03/13/91		--	ND	--	ND	ND	ND	ND
06/11/91		--	ND	--	ND	ND	ND	ND
08/12/91		Well Abandoned						
MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

1 Oil and Grease  
2 Total Volatile Hydrocarbons  
3 Total Extractable Hydrocarbons  
4 Benzene  
5 Toluene  
6 Xylene  
7 Ethylbenzene  
8 ND = Non-detectable, see analytical test reports for detection limits  
9 -- Not tested

**Table 3.  
Halogenated Volatile Organic Chemical  
Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup> (ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup> (ug/L)</u>	<u>Chloroform (ug/L)</u>	<u>Other EPA 8010 (ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	√11/03/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
	√11/03/92	ND	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	√11/03/92	ND	ND	ND	ND
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well abandoned			
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
	√11/03/92	ND	ND	ND	ND

Table 3. Halogenated Volatile Organic Chemical Concentrations in Groundwater (continued)

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND	ND	ND	ND
	√11/03/92	ND	ND	ND	ND

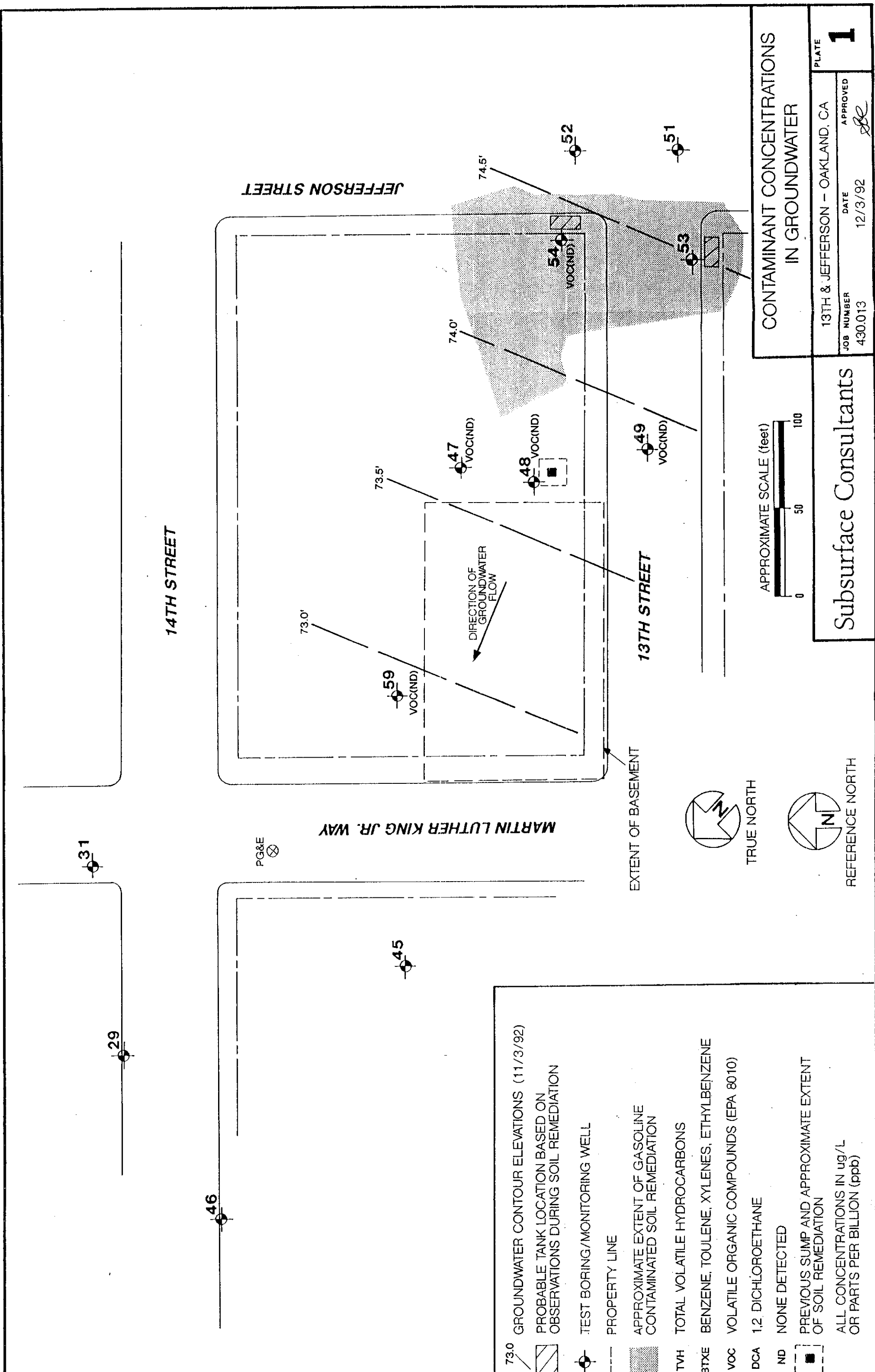
---

<sup>1</sup> 1,2 Dichloroethane

<sup>2</sup> 1,2 Dichloroethene

<sup>3</sup> Micrograms/liter = parts per billion

<sup>4</sup> None detected, see test reports for detection limits



73.0

GROUNDWATER CONTOUR ELEVATIONS (11/3/92)

PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION

TEST BORING/MONITORING WELL

PROPERTY LINE

APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION

TVH TOTAL VOLATILE HYDROCARBONS

BTXE BENZENE, TOULENE, XYLENES, ETHYLBENZENE

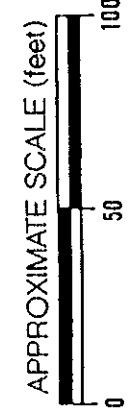
VOC VOLATILE ORGANIC COMPOUNDS (EPA 8010)

DCA 1,2 DICHLOROETHANE

ND NONE DETECTED

PREVIOUS SUMP AND APPROXIMATE EXTENT OF SOIL REMEDIATION

ALL CONCENTRATIONS IN ug/L OR PARTS PER BILLION (ppb)



Subsurface Consultants

CONTAMINANT CONCENTRATIONS  
IN GROUNDWATER

13TH & JEFFERSON - OAKLAND, CA

JOB NUMBER 430.013

DATE 12/3/92

APPROVED [Signature]

PLATE 1



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 11/03/92

DATE REPORTED: 11/10/92

LABORATORY NUMBER: 109161

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.014

LOCATION: 13th & JEFFERSON SUMP

RESULTS: SEE ATTACHED

Reviewed by

Reviewed by

This report may be reproduced only in its entirety.

Berkeley

Los Angeles

LABORATORY NUMBER: 109161-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.014  
 LOCATION: 13th & JEFFERSON  
 SAMPLE ID: MW-47

DATE SAMPLED: 11/03/92  
 DATE RECEIVED: 11/03/92  
 DATE ANALYZED: 11/08/92  
 DATE REPORTED: 11/10/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	109
-----------------------	-----



LABORATORY NUMBER: 109161-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.014  
 LOCATION: 13th & JEFFERSON  
 SAMPLE ID: MW-48

DATE SAMPLED: 11/03/92  
 DATE RECEIVED: 11/03/92  
 DATE ANALYZED: 11/08/92  
 DATE REPORTED: 11/10/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	104
-----------------------	-----

LABORATORY NUMBER: 109161-3  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.014  
 LOCATION: 13th & JEFFERSON  
 SAMPLE ID: MW-49

DATE SAMPLED: 11/03/92  
 DATE RECEIVED: 11/03/92  
 DATE ANALYZED: 11/08/92  
 DATE REPORTED: 11/10/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	99
-----------------------	----

LABORATORY NUMBER: 109161-4  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.014  
 LOCATION: 13th & JEFFERSON  
 SAMPLE ID: MW-54

DATE SAMPLED: 11/03/92  
 DATE RECEIVED: 11/03/92  
 DATE ANALYZED: 11/08/92  
 DATE REPORTED: 11/10/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	104
-----------------------	-----

LABORATORY NUMBER: 109161-5  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.014  
 LOCATION: 13th & JEFFERSON  
 SAMPLE ID: MW- 59

DATE SAMPLED: 11/03/92  
 DATE RECEIVED: 11/03/92  
 DATE ANALYZED: 11/08/92  
 DATE REPORTED: 11/10/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	99
-----------------------	----

LABORATORY NUMBER: 109161-METHOD BLANK  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.014  
 LOCATION: 13th & JEFFERSON

DATE ANALYZED: 11/08/92  
 DATE REPORTED: 11/10/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	95
-----------------------	----

## MS/MSD SUMMARY SHEET FOR EPA 8010

Laboratory Number: 109161  
 Client: Subsurface Consultants  
 Analysis date: 11/08/92  
 Sample type: Water

Spike file: 313w007  
 Spike dup file: 313w008

## 8010 MS/MSD DATA (spiked at 20 ppb)

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	22.31	112 %	OK	61 - 145
Trichloroethene	23.01	115 %	OK	71 - 120
Chlorobenzene	20.75	103 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	21.58	108 %	OK	61 - 145
Trichloroethene	21.51	108 %	OK	71 - 120
Chlorobenzene	20.33	101 %	OK	75 - 130
SURROGATES				
Bromobenzene (MS)	103.80	104 %	OK	75 - 125
Bromobenzene (MSD)	98.31	98 %	OK	75 - 125
MATRIX RESULTS				
1,1-Dichloroethene	0			
Trichloroethene	0			
Chlorobenzene	0.126			

## RPD DATA

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethe	22.31	21.58	3 %	OK	<= 14
Trichloroethene	23.01	21.51	7 %	OK	<= 14
Chlorobenzene	2.00	20.33	2 %	OK	<= 13

# CHAIN OF CUSTODY FORM

PROJECT NAME: 3<sup>rd</sup> + Jefferson Sump  
 LAB: Curtis + Tompkins  
 JOB NUMBER: 430,014  
 TURNAROUND: Normal  
 PROJECT CONTACT: Sean Carson  
 REQUESTED BY: Sean Carson  
 SAMPLED BY: Fernando Velez

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS			METHOD PRESERVED			SAMPLING DATE			NOTES			
		WATER	SOIL	WASTE	AIR	LITERS	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONI	MONTH		DAY	YEAR	TIME
109161-1	MW-47	X						W				X	X	11	08	92		X X X X X EPA 810
2	MW-48	X						W				X	X	11	03	92		
3	MW-49	X						W				X	X	11	03	92		
4	MW-54	X						W				X	X	11	03	92		
5	MW-59	X						W				X	X	11	03	92		

COMMENTS & NOTES:

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature) <u>Dennis Deland</u>	DATE/TIME <u>11/30/92</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>11/30/92</u>
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

October 9, 1992  
SCI 430.015

920710 11 2:26

3623

Mr. William Meckel  
East Bay Municipal Utility District  
Mail Slot #702  
P.O. Box 24055  
Oakland, California 94623-1055

Quarterly Monitoring Report 10  
Wastewater Discharge Permit Account #502-29091  
1330 Martin Luther King Jr. Way  
Oakland, California

94612

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the 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 account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the tenth quarter of operation (July 10, 1992 through October 8, 1992) approximately 403,720 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 43 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTEX) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the tenth quarter are presented in Table 1. Analytical test reports and Chain-of-Custody documents are also attached.

The analytical test results indicate that biologic activity within the primary holding tank is ongoing. During this quarter, hydrocarbon concentrations up to approximately 130 ug/l entered the primary holding tank and no detectable concentrations of hydrocarbons were recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of the carbon treatment system has been minimal.

## ■ Subsurface Consultants, Inc.



Mr. William Meckel  
East Bay Municipal Utility District  
SCI 430.015  
October 9, 1992  
Page 2

■ Subsurface Consultants, Inc.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



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



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

SOC:JPB:egh

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

cc: Ms. Lois Parr  
Oakland Redevelopment Agency

Ms. Julie Carver  
Oakland Redevelopment Agency

Ms. Jennifer Eberle  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland

TABLE 1. CONTAMINANT CONCENTRATIONS IN WATER

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH (ug/L)</u>	<u>Benzene (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl-Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>
EW-1-41	07/28/92	130	3.3	3.1	2.3	12
EW-2-41		78	4.5	ND	0.9	2.3
A-41		ND	ND	ND	ND	ND
B-41		ND	ND	ND	ND	ND
SS#1-41 ✓		ND	ND	ND	ND	ND
EW-1-42	09/04/92	90	0.5	0.5	2.3	4.9
EW-2-42		70	2.6	ND	1.1	1.4
A-42		ND	ND	ND	ND	ND
B-42		ND	ND	ND	ND	ND
SS#1-42 ✓		ND	ND	ND	ND	ND
EW-1-43	09/28/92	ND	1.6	ND	ND	ND
EW-2-43		80	4.2	ND	1.5	1.8
A-43		ND	ND	ND	ND	ND
B-43		ND	ND	ND	ND	ND
SS#1-43 ✓		ND	ND	ND	ND	ND

TVH = Total volatile hydrocarbons, EPA 8015/5030

BTEX, Analyses by EPA 8020/5030

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

ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits

EW-1 = indicates sample from Extraction Well #1

A = influent at primary carbon vessel

B = Between carbon vessels

SS#1 = side sewer #1, (effluent sample)



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 7/28/92

DATE REPORTED: 7/31/92

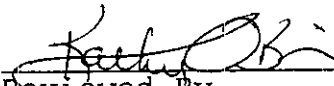
LABORATORY NUMBER: 108082

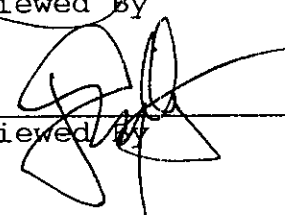
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

  
Reviewed By

  
Reviewed

Berkeley

Wilmington

Los Angeles

LABORATORY NUMBER: 108082  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK GW EXTRACTION

DATE SAMPLED: 7/28/92  
 DATE RECEIVED: 7/28/92  
 DATE ANALYZED: 7/29/92  
 DATE REPORTED: 7/31/92

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)
108082-001	EW-1-41	130	3.3	3.1	2.3	12
108082-002	EW-2-41	78	4.5	ND(0.5)	0.9	2.3
108082-003	A-41	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108082-004	B-41	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108082-005	SS#1-41	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, % 8  
 RECOVERY, % 109  
 =====



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 09/08/92

DATE REPORTED: 09/16/92

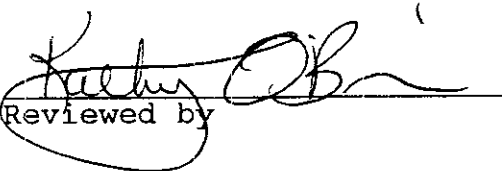
LABORATORY NUMBER: 108571

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

  
Reviewed by

LABORATORY NUMBER: 108571  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK GW EXTRACTION

DATE SAMPLED: 09/04/92  
 DATE RECEIVED: 09/08/92  
 DATE ANALYZED: 09/10/92  
 DATE REPORTED: 09/16/92

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)
108571-1	EW-1-42	90	0.5	0.5	2.3	4.9
108571-2	EW-2-42	70	2.6	ND(0.5)	1.1	1.4
108571-3	A-42	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108571-4	B-42	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108571-5	SS1-42	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, % 10  
 RECOVERY, % 112  
 =====



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 09/28/92

DATE REPORTED: 10/07/92

LABORATORY NUMBER: 108777

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

Reviewed by

Reviewed by

LABORATORY NUMBER: 108777  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK GW EXTRACTION

DATE SAMPLED: 09/28/92  
 DATE RECEIVED: 09/28/92  
 DATE ANALYZED: 09/30/92  
 DATE REPORTED: 10/07/92

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)
108777-1	EW-1-43	ND(50)	1.6	ND(0.5)	ND(0.5)	ND(0.5)
108777-2	EW-2-43	80	4.2	ND(0.5)	1.5	1.8
108777-3	A-43	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108777-4	B-43	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108777-5	SS#1-43	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, % 110  
 =====



**CHAIN OF CUSTODY FORM**

PROJECT NAME: MLK GW Treatment Plant

JOB NUMBER: 430.015

LAB: Curtis + Tompkins Ltd

PROJECT CONTACT: Sean Carson

TURNAROUND: Normal

SAMPLED BY: FUGLER, J. BEEHUNTER

REQUESTED BY: Sean Carson

LABORATORY ID. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS			METHOD PRESERVED			SAMPLING DATE			NOTES	ANALYSIS REQUESTED				
		WATER	SOIL	WASTE	AIR	LITER	PINT	TUBE	Glass	HCL	FSO <sub>4</sub>	HNO <sub>3</sub>	ICE	NONE			MONTH	DAY	YEAR	TIME
	EW-1-41	X								X			X		07	28	97	1100	X	TVH/BTXE BA 8&15/808
	EW-2-41	X								X			X		07	28	97	1100	X	5030
	A-41	X								X			X		07	28	97	1100	X	
	B-41	X								X			X		07	28	97	1100	X	
	SS#1-41	X								X			X		07	28	97	1100	X	

COMMENTS & NOTES:  
 All samples are "grab samples"  
 Containers not sealed/tamper proof

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[Signature]	7/28/97 1400	[Signature]	
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[Signature]		[Signature]	7/28/97
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[Signature]		[Signature]	7/28/97

**CHAIN OF CUSTODY FORM**

PAGE 1 OF 1

PROJECT NAME: MLK GW Treatment Plant  
 JOB NUMBER: 430.015 LAB: Curtis + Tompkins Ltd  
 PROJECT CONTACT: Sean Carson TURNAROUND: Normal  
 SAMPLED BY: Sean Carson REQUESTED BY: Sean Carson

ANALYSIS REQUESTED	
TVH	<input checked="" type="checkbox"/>
STX	<input checked="" type="checkbox"/>
PA	<input checked="" type="checkbox"/>
SCIS	<input checked="" type="checkbox"/>
SCB	<input checked="" type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>
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	<input type="checkbox"/>
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	<input type="checkbox"/>
	<input type="checkbox"/>

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE				NOTES		
		WATER	SOIL	WASTE	AIR	VOA 40-1	LITER	PINT	TUBE	Glass	HCL	H2SO4	HNO3	ICR	NONE	MONTH	DAY		YEAR	TIME
	EW-1-42	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	09	04	92		<input checked="" type="checkbox"/>
	EW-2-42	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
	A-42	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
	B-42	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
	SS#1-42	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>

**CHAIN OF CUSTODY RECORD**

RELEASED BY: <i>(Signature)</i>	DATE/TIME: <u>25/1/92</u>	RECEIVED BY: <i>(Signature)</i>	DATE/TIME: <u>25/1/92</u>
RELEASED BY: <i>(Signature)</i>	DATE/TIME: <u>25/1/92</u>	RECEIVED BY: <i>(Signature)</i>	DATE/TIME: <u>25/1/92</u>
RELEASED BY: <i>(Signature)</i>	DATE/TIME: <u>25/1/92</u>	RECEIVED BY: <i>(Signature)</i>	DATE/TIME: <u>25/1/92</u>

**COMMENTS & NOTES:**  
 All samples are "grab samples"  
 Containers not sealed tamper proof"

# CHAIN OF CUSTODY FORM

PROJECT NAME: MLK GW Treatment Plant LAB: Curtis + Tompkins Ltd  
 JOB NUMBER: 430.015 TURNAROUND: Normal  
 PROJECT CONTACT: Sean Carson REQUESTED BY: Sean Carson  
 SAMPLED BY: C. Pearson D. DeLuca

ANALYSIS REQUESTED	
<input checked="" type="checkbox"/>	TVH/GXE PA 8/15/82
<input checked="" type="checkbox"/>	NO30

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA 40-1	LITER	PINT	TUBE	Glass	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR
	EW-1-43	X				3				X	X	X	X	X	09	28	92		X
	EW-2-43	X				3				X	X	X	X	X					X
	A-43	X				3				X	X	X	X	X					X
	B-43	X				3				X	X	X	X	X					X
	SS#1-43	X				3				X	X	X	X	X					X

CHAIN OF CUSTODY RECORD

RECEIVED BY: (Signature) Sean Carson DATE/TIME 9/28 12:53 RECEIVED BY: (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

RECEIVED BY: (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_ RECEIVED BY: (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

RECEIVED BY: (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_ RECEIVED BY: (Signature) \_\_\_\_\_ DATE/TIME \_\_\_\_\_

Signature: *Sean Carson* Date: 9/28

COMMENTS & NOTES:

All samples are "grab samples"  
 Containers not sealed "tamper proof"

July 10, 1992  
SCI 430.015

Mr. William Meckel  
EBMUD - Mail Slot #702  
Source Control Division  
P.O. Box 24055  
Oakland, California 94623-1055

Quarterly Monitoring Report #9  
Wastewater Discharge Permit Account #502-29091  
1330 Martin Luther King Jr. Way  
Oakland, California

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the 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 account #502-29091, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the ninth quarter of operation (April 9, 1992 through July 9, 1992) approximately 358,101 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 40 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTXE) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the ninth quarter are presented in Table 1. As requested, we have renamed our sampling locations. Analytical test reports and Chain-of-Custody documents are also attached. A Schematic Flow Diagram of the treatment plant including sampling locations is presented on Plate 1.

The analytical test results indicate that biologic activity within the primary holding tank is on-going. During this quarter, hydrocarbon concentrations up to approximately 820 ug/l entered the primary holding tank and no detectable concentrations of hydrocarbons were recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of

■ Subsurface Consultants, Inc.

Mr. William Meckel  
July 10, 1992  
SCI 430.015  
Page 2

the carbon treatment system has been minimal.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



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



James P. Bowers  
Civil Engineer 28962 (expires 3/31/95)

SOC:JPB:sld

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

cc: Ms. Lois Parr  
Oakland Redevelopment Agency

Mr. John Esposito  
Bramalea Pacific

Mr. Paul Smith  
ACHCSA

Mr. Eddy So  
RWQCB

Mr. Donnell Choy  
City of Oakland

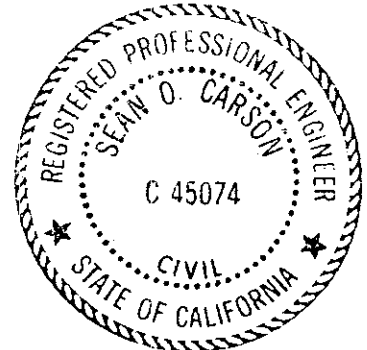


Table 1. Contaminant Concentrations In Water

Sample	Sampling Date	TVH <sup>1</sup> (ug/L) <sup>3</sup>	Benzene <sup>2</sup> (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
WI <sup>4</sup> -38-1 <sup>5</sup>	04/24/92	ND <sup>7</sup>	ND	ND	ND	ND
WI-38-2		51	2.2	ND	0.6	1.2
I <sup>6</sup> -38		ND	ND	ND	ND	ND
B <sup>8</sup> -38		ND	ND	ND	ND	ND
E <sup>9</sup> -38		ND	ND	ND	ND	ND
EW <sup>10</sup> -1-39	05/28/92	100	1.3	0.5	0.6	ND
EW-2-39		ND	1.7	ND	ND	ND
A <sup>11</sup> -39		ND	ND	ND	ND	ND
B-39		ND	ND	ND	ND	ND
SS#1 <sup>12</sup> -39		ND	ND	ND	ND	ND
EW-1-40	06/25/92	820	140	23	14	48
EW-2-40		68	3.2	ND	0.7	1.0
A-40		ND	ND	ND	ND	ND
B-40		ND	ND	ND	ND	ND
SS#1-40		ND	ND	ND	ND	ND

<sup>1</sup> TVH = Total volatile hydrocarbons, EPA 8015/5030

<sup>2</sup> BTEX, Analyses by EPA 8020/5030

<sup>3</sup> ug/L = micrograms per liter or parts per billion (ppb)

<sup>4</sup> WI = Well Influent, i.e. wastewater from well prior to discharge into the primary holding tank

<sup>5</sup> -1 indicates sample from Extraction Well #1

<sup>6</sup> I = Influent at primary carbon vessel

<sup>7</sup> ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits

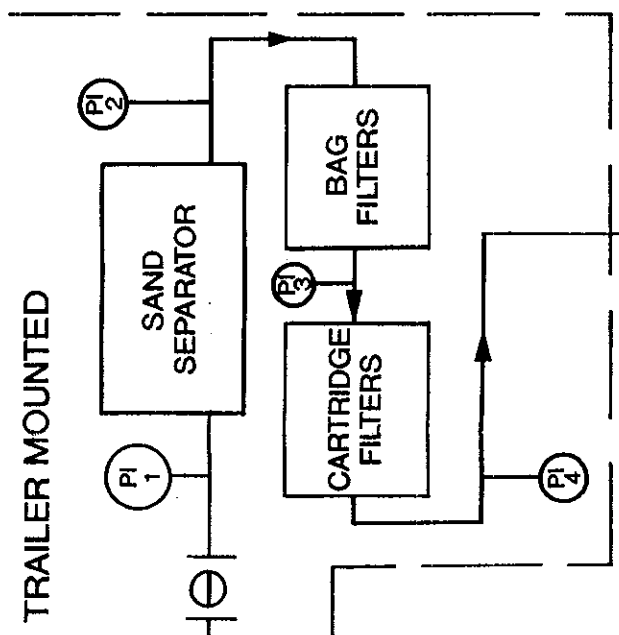
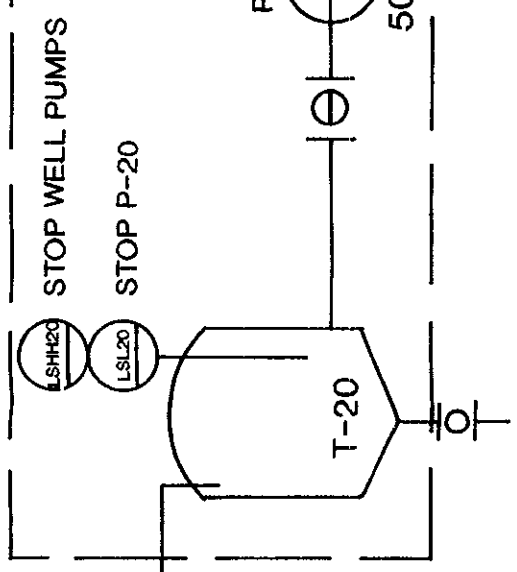
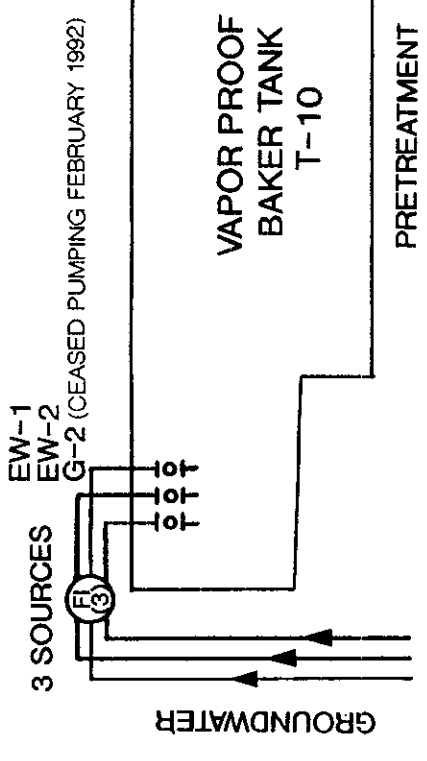
<sup>8</sup> B = Between carbon vessels

<sup>9</sup> E = Effluent

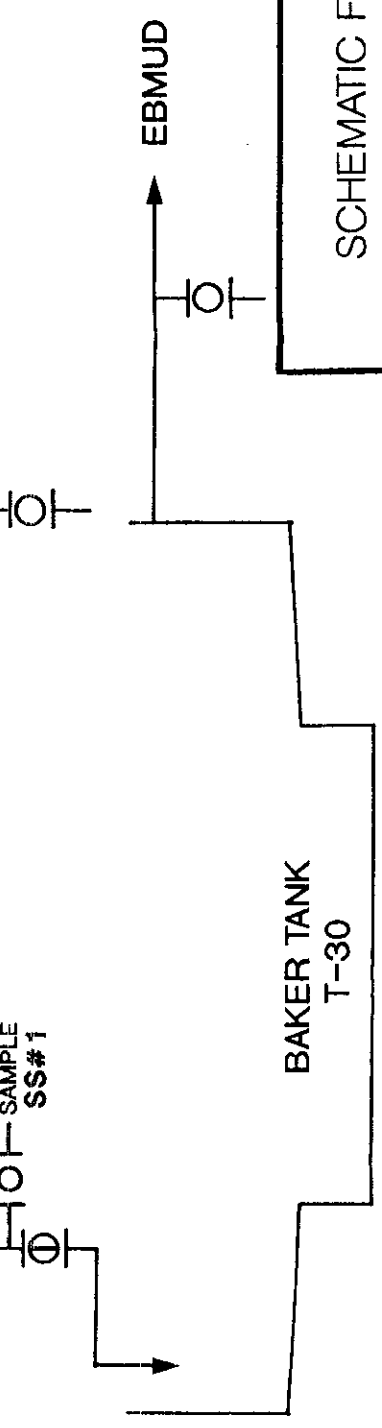
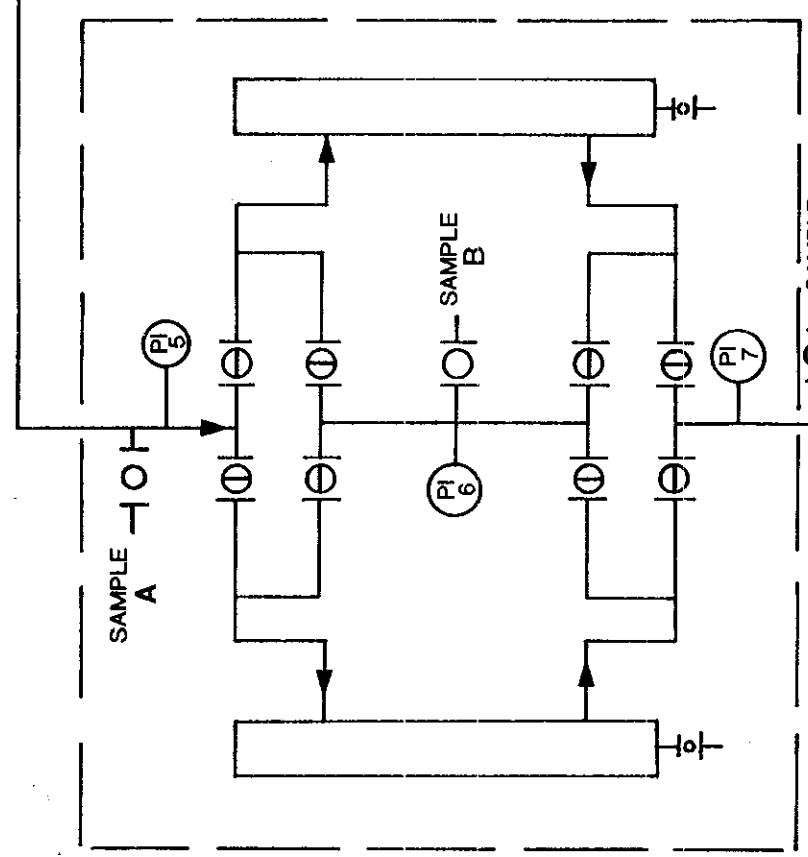
<sup>10</sup> EW = extraction well, previously WI, well influent

<sup>11</sup> A = previous sample point I, influent at primary carbon vessel

<sup>12</sup> SS#1 = side sewer #1, previous sample point E, effluent sample



SYMBOL KEY	
	PUMP
	CHECK VALVE
	SAMPLE PORT
	HIGH LEVEL CONTROL
	LOW LEVEL CONTROL
	FLOW TOTALIZER
	FLOW INDICATOR
	PRESSURE INDICATOR
	BALL VALVE (CLOSED)



SCHEMATIC FLOW DIAGRAM

Subsurface Consultants

JOB NUMBER 430.015	DATE 1/28/92	APPROVED <i>MLK</i>	PLATE <b>1</b>
MARTIN LUTHER KING JR. WAY			



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 04/24/92  
DATE REPORTED: 04/29/92


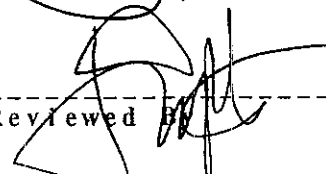
LABORATORY NUMBER: 107226

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

  
Reviewed By \_\_\_\_\_  
  
Reviewed By \_\_\_\_\_



LABORATORY NUMBER: 107226  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK GW EXTRACTION

DATE SAMPLED: 04/24/92  
 DATE RECEIVED: 04/24/92  
 DATE ANALYZED: 04/28/92  
 DATE REPORTED: 04/29/92

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)
107226-001	WI-38-1	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107226-002	WI-38-2	51(50)	2.2(0.5)	ND(0.5)	0.6(0.5)	1.2(0.5)
107226-003	I-38	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107226-004	B-38	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107226-005	E-38	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, %	96



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 05/28/92  
DATE REPORTED: 06/04/92

LABORATORY NUMBER: 107495

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

*Kathleen Bri*  
Reviewed By \_\_\_\_\_  
*[Signature]*  
Reviewed By \_\_\_\_\_

LABORATORY NUMBER: 107495  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK EXTRACTION

DATE SAMPLED: 05/28/92  
 DATE RECEIVED: 05/28/92  
 DATE ANALYZED: 06/02/92  
 DATE REPORTED: 06/04/92

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)
107495-001	EW-1-39	100(50)	1.3(0.5)	0.5(0.5)	6(0.5)	ND(0.5)
107495-002	EW-2-39	ND(50)	1.7(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107495-003	A-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107495-004	B-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107495-005	SS#1-39	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, %	4
RECOVERY, %	99



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 06/25/92  
DATE REPORTED: 07/02/92

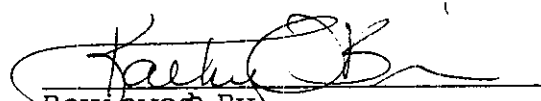
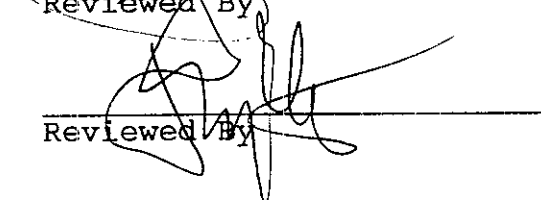
LABORATORY NUMBER: 107785

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

  
Reviewed By  
  
Reviewed By

LABORATORY NUMBER: 107785  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK GW EXTRACTION

DATE SAMPLED: 06/25/92  
 DATE RECEIVED: 06/25/92  
 DATE ANALYZED: 06/29/92  
 DATE REPORTED: 07/02/92

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)
107785-001	EW-1-40	820(50)	140(0.5)	23(0.5)	14(0.5)	48(0.5)
107785-003	A-40	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107785-004	B-40	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107785-005	SS#1-40	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, % 99

LABORATORY NUMBER: 107785  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.015  
 LOCATION: MLK GW TREATMENT PLANT

DATE SAMPLED: 06/25/92  
 DATE RECEIVED: 06/25/92  
 DATE ANALYZED: 07/01/92  
 DATE REPORTED: 07/02/92

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)
107785-2	EW-2-40	68	3.2	ND(0.5)	0.7	1.0

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

QA/QC SUMMARY

RPD, % <1  
 RECOVERY, % 97

**CHAIN OF CUSTODY FORM**

PAGE 1 OF 1

PROJECT NAME: MLK GW Treatment Plant  
 JOB NUMBER: 430.015  
 LAB: Curtis + Tompkins  
 PROJECT CONTACT: Sean Carson TURNAROUND: Norms!  
 SAMPLED BY: Charles Pearson REQUESTED BY: Sean Carson

ANALYSIS REQUESTED
TVH/BXPT
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX
XXXXXXXXXX

LABORATORY ID. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED			SAMPLING DATE			NOTES				
		WATER	SOIL	WASTE	AIR	VOA (M)	LITER	PINT	TUBE	HCL	HSQ	HNO3	CR	NONE		MONTH	DAY	YEAR	TIME
	WI-38-1	X				X				X					04	24	92		
	WI-38-2	X				X				X									
	I-38	X				X				X									
	B-38	X				X				X									
	E-38	X				X				X									

COMMENTS & NOTES:

---

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
<i>Charles Pearson</i>	4-24-92 3:30pm		
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
			4/24/92 1:33

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

# CHAIN OF CUSTODY FORM

PROJECT NAME: MLK GW Treatment Plant LAB: Curtis + Tompkins Ltd  
 JOB NUMBER: 430,015 TURNAROUND: Normal  
 PROJECT CONTACT: Sean Carson REQUESTED BY: Sean Carson  
 SAMPLED BY: \_\_\_\_\_

ANALYSIS REQUESTED	
TVH/BTXE BPA 8/15/802	X
5030	

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES			
		WATER	SOIL	WASTE	AIR	VOA 40ml	LITER	PINT	TUBE	Glass	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR	TIME
	EW-1-39	X				3				X	X	X	X	X	05	28	9	2	1035	X
	EW-2-39	X				3				X	X	X	X	X	05	28	9	2	1039	X
	A-39	X				3				X	X	X	X	X	05	28	9	2	1044	X
	B-39	X				3				X	X	X	X	X	05	28	9	2	1049	X
	SS#1-39	X				3				X	X	X	X	X	05	28	9	2	1053	X

**CHAIN OF CUSTODY RECORD**

RELEASED BY: (Signature) <u>Charles Savage</u>	DATE/TIME <u>5/20/92 11:27 a.m.</u>	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature) <u>Monique...</u>	DATE/TIME

**COMMENTS & NOTES:**

All samples are "grab samples"  
Containers not sealed/tamper proof

**Subsurface Consultants, Inc.**  
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
(510) 268-0461 • FAX: 510-268-0137



**CHAIN OF CUSTODY FORM**

PAGE 1 OF 1

PROJECT NAME: MLK GW Treatment Plant

JOB NUMBER: 430.015 LAB: Curtis + Tompkins Ltd

PROJECT CONTACT: Sean Carson TURNAROUND: Normal

SAMPLED BY: Fernando Velez REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SOI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	LITER	PINT	TUBS	GLASS	PCR	FRSQ	TRQ	ICE	NONE	MONTH	DAY		YEAR	TIME
	EW-1-40	X						X	X			X	X	06	25	92	16	00	X
	EW-2-40	X						X	X			X	X	06	25	92	16	00	X
	A-40	X						X	X			X	X	06	25	92	16	00	X
	B-40	X						X	X			X	X	06	25	92	16	00	X
	SS#1-40	X						X	X			X	X	06	25	92	16	00	X

CHAIN OF CUSTODY RECORD															
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME	RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME	RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME	RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
<u>[Signature]</u>	<u>Jan-25/92 1640</u>	<u>[Signature]</u>	<u>1/26/92</u>	<u>[Signature]</u>	<u>1/26/92</u>	<u>[Signature]</u>	<u>1/26/92</u>	<u>[Signature]</u>	<u>1/26/92</u>	<u>[Signature]</u>	<u>1/26/92</u>	<u>[Signature]</u>	<u>1/26/92</u>	<u>[Signature]</u>	<u>1/26/92</u>

COMMENTS & NOTES:  
 "All samples are 'grab samples'"  
 "Containers not sealed tamper proof"

September 4, 1992  
SCI 430.014

92 SEP 10 PM 1:19

3623

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

**Quarterly Groundwater Monitoring  
Floor Drain Sump  
13th and Jefferson Streets  
Oakland, California**

Dear Ms. Eberle:

This letter records the results of the July 1992 groundwater sampling and analytical testing event performed by Subsurface Consultants, Inc. (SCI) for DCA contamination at the referenced site. Well locations are shown on the attached Site Plan, Plate 1.

**Background**

SCI previously documented the removal of a concrete floor drain sump and associated contaminated soils in a report dated September 24, 1990. A groundwater contamination assessment report by SCI dated July 8, 1991, presents the monitoring well installation details.

Soil contamination resulting from underground gasoline storage tanks near the intersection of 13th and Jefferson Streets also occurred in the area. Remediation activities for this condition are detailed in our report dated December 6, 1990. Analytical test results from previous quarterly groundwater sampling events for the gasoline contamination were most recently presented in a letter dated June 24, 1992.

**Quarterly Monitoring**

Groundwater monitoring at the site has been performed quarterly over the past two years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, July 28, 1992, are shown on Plate 1. Groundwater flow

<sup>1</sup> DCA = 1,2-Dichloroethane

**Subsurface Consultants, Inc.**

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.014  
September 4, 1992  
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■ Subsurface Consultants, Inc.

patterns have remained relatively consistent except during a several month period during the latter part of 1991, when construction dewatering on the adjacent block to the south temporarily changed flow patterns. During the latest sampling event, Monitoring Wells 49 and 54 were inaccessible due to the storage of heavy construction equipment. Wells 51 and 52, located in Jefferson Street between two large construction projects, have not been sampled since September 1991 because of construction related traffic constraints.

Prior to sampling, the wells were purged of at least 4 well volumes of water using a disposable bailer. The purged water was disposed of in the existing groundwater treatment plant on-site.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by chain-of-custody records, copies of which are attached.

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analytically tested for the following:

Volatile organic chemicals (EPA 8010), sample preparation and analysis using EPA method 5030 (purge and trap) and 8010 (gas chromatograph coupled to an electrolytic conductivity detector).

Water samples from the wells have also been analyzed in the past for total volatile hydrocarbons (EPA 8015/5030), total extractable hydrocarbons (EPA 8015/3990), hydrocarbon oil and grease (SMWW 17:5520 E&F) and benzene, toluene, xylene and ethylbenzene (EPA 8020), because these compounds were associated with the gasoline tank and sump releases. In our June 24, 1992 letter, we requested a reduction in analytical testing because the above listed compounds had not been detected for at least the previous 6 quarters. Our latest sampling event reflects that reduction in testing. The results of the analyses are summarized in Tables 2 and 3. Copies of the analytical test reports are attached.

### Conclusions

The groundwater level data indicates that the regional groundwater flow direction is toward the west-northwest at a gradient of

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
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Page 3

■ Subsurface Consultants, Inc.

approximately 1 percent. Groundwater flow direction and gradient remain consistent with previous measurements.

The results of the latest sampling event indicate that none of the wells being monitored contain volatile organic chemicals (EPA 8010) at concentrations in excess of analytical detection limits. Monitoring for volatile organic chemicals (EPA 8010) will continue on a quarterly basis.

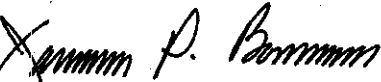
If you have any questions, please call.

Yours very truly,

Subsurface Consultants, inc.



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



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

SOC:JPB:egh

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Halogenated Volatile Organic Chemical Concentrations in Groundwater  
Table 3 - Petroleum Hydrocarbon Concentrations in Groundwater  
  
Plate 1 - Site Plan  
Chain-of-Custody Records  
Analytical Test Reports

Ms. Jennifer Eberle

■ Subsurface Consultants, Inc.

Alameda County Health Care Services Agency

SCI 430.014

September 4, 1992

Page 4

- 1 copy: Ms. Lois Parr  
Oakland Redevelopment Agency  
City of Oakland  
1333 Broadway, Suite 900  
Oakland, California 94612
- 1 copy: Ms. Julie Carver  
Oakland Redevelopment Agency  
City of Oakland  
1333 Broadway, Suite 800  
Oakland, California 94612
- 1 copy: Mr. John Esposito  
Bramalea Pacific  
1111 Broadway, Suite 1400  
Oakland, California 94607
- 1 copy: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612
- 1 copy: Mr. Donnell Choy  
Office of City Attorney  
City of Oakland  
505 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Groundwater Elevation Data

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>	
MW-47	09/24/90	100.50	27.28	73.22	
	10/04/90		27.32	73.18	
	12/03/90		27.38	73.12	
	01/21/91		27.17	73.33	
	03/13/91		26.85	73.65	
	04/03/91		26.38	74.12	
	06/13/91		28.39	72.11	
	09/10/91		27.08	73.42	
	12/12/91		27.95	72.55	
	04/17/92		26.18	74.32	
07/28/92	26.48	74.02			
MW-48	07/18/90	102.40	29.08	73.32	
	10/04/90		29.29	73.11	
	12/03/90		29.28	73.12	
	01/21/91		29.03	73.37	
	03/13/91		28.72	73.68	
	04/03/91		28.24	74.16	
	06/13/91		29.47	72.93	
	09/10/91		28.94	73.46	
	12/12/91		30.39	72.01	
	04/17/92		28.07	74.33	
07/28/92	28.32	74.08			
MW-49	12/03/90	101.73	28.44	73.29	
	01/21/91		28.20	73.53	
	03/13/91		27.79	73.94	
	04/03/91		27.28	74.45	
	06/13/91		27.66	74.07	
	09/10/91		28.04	73.69	
	12/12/91		30.45	71.28	
	04/17/92		27.26	74.64	
MW-51	10/04/90	102.64	28.57	74.07	
	12/03/90		28.57	74.07	
	01/21/91		28.44	74.20	
	03/13/91		27.76	74.88	
	04/03/91		27.32	75.32	
	06/13/91		28.82	73.82	
	09/10/91		28.00	74.64	
MW-52	10/04/90	102.44	28.41	74.03	
	12/03/90		28.38	74.06	
	01/21/91		28.24	74.20	
	03/13/91		27.57	74.87	
	04/03/91		27.16	75.28	
	06/13/91		29.41	73.03	
	09/10/91		27.85	74.59	
MW-53	09/24/90	101.28	27.44	73.84	
	10/04/90		27.50	73.78	
	12/03/90		27.46	73.82	
	01/21/91		28.00	73.28	
	03/13/91		27.00	74.28	
	06/13/91		27.61	73.67	
	08/12/91		Well Abandoned		
MW-54	09/24/90	100.78	27.01	73.77	
	10/04/90		27.30	73.48	
	12/03/90		27.01	73.77	
	01/21/91		27.28	74.64	
	03/13/91		101.92 <sup>3</sup>	27.40	74.52
	06/13/91		28.93	72.99	

	09/10/91		27.66	74.26
	12/12/91		28.88	73.04
	04/17/92		26.82	75.10
MW-59	02/12/91	100.37	27.45	72.92
	03/13/91		27.60	72.77
	04/03/91		27.36	73.01
	06/13/91		28.01	72.36
	09/10/91		28.00	72.37
	12/12/91		28.53	71.84
	04/17/92		26.91	73.46
	07/28/92		27.27	73.10

- 
- 1 Top of Casing
  - 2 Depth measured below top of casing
  - 3 Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

**Table 2. Petroleum Hydrocarbon Concentrations in Groundwater**

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	T <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)
MW-47	04/06/90	--	ND <sup>8</sup>	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	--	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND	ND	ND	ND
	04/17/92	ND	--	--	ND	ND	ND	ND
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-51	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
MW-52	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
MW-53	09/21/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	ND	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/11/91	--	ND	--	ND	ND	ND	ND
	08/12/91	Well Abandoned						
MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND	--	ND	ND	ND	ND
	04/17/92	--	--	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

<sup>1</sup> Oil and Grease  
<sup>2</sup> Total Volatile Hydrocarbons  
<sup>3</sup> Total Extractable Hydrocarbons  
<sup>4</sup> Benzene  
<sup>5</sup> Toluene  
<sup>6</sup> Xylene  
<sup>7</sup> Ethylbenzene  
<sup>8</sup> ND = Non-detectable, see analytical test reports for detection limits  
<sup>9</sup> -- Not tested



**Table 3.**  
**Halogenated Volatile Organic Chemical**  
**Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92 ✓	ND ✓	ND ✓	ND ✓	ND ✓
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
	04/17/92	1	ND	ND	ND
07/28/92	ND ✓	ND ✓	ND ✓	ND ✓	
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
04/17/92	ND	ND	ND	ND	
MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	<u>Well abandoned due to garage tunnel construction</u>			
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
	07/28/92	ND ✓	ND ✓	ND ✓	ND ✓

<sup>1</sup> 1,2 Dichloroethane  
<sup>2</sup> 1,2 Dichloroethene  
<sup>3</sup> Micrograms/liter = parts per billion  
<sup>4</sup> None detected, see test reports for detection limits

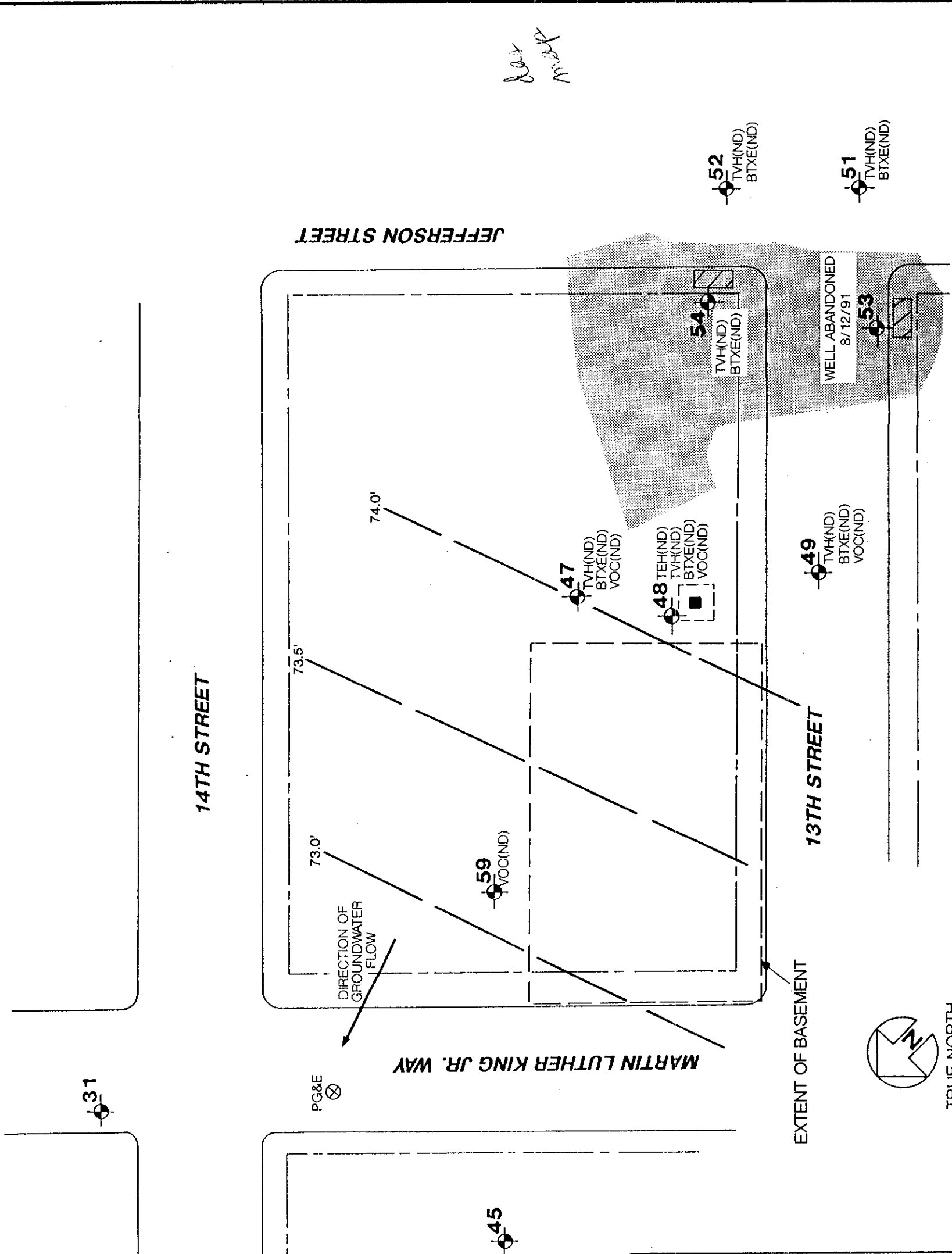
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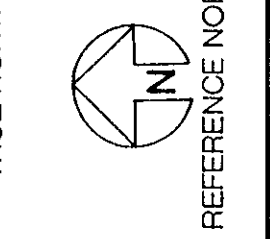
*inaccessible*

*Mark*



<b>CONTAMINANT CONCENTRATIONS IN GROUNDWATER 7/28/92</b>	
JOB NUMBER 430.013	DATE 7/28/92
13TH & JEFFERSON - OAKLAND, CA	
APPROVED	PLATE <b>1</b>

**Subsurface Consultants**



- 73.0 GROUNDWATER CONTOUR ELEVATIONS (7/28/92)
- PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION
- TEST BORING/MONITORING WELL
- PROPERTY LINE
- APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
- TVH TOTAL VOLATILE HYDROCARBONS
- BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE
- DCA 1,2, DICHLOROETHANE
- VOC VOLATILE ORGANIC COMPOUND (EPA 8010)
- ND NONE DETECTED
- PREVIOUS SUMP LOCATION
- EXTENT OF SUMP REMEDIATION

JEFFERSON STREET

14TH STREET

13TH STREET

MARTIN LUTHER KING JR. WAY

DIRECTION OF GROUNDWATER FLOW

EXTENT OF BASEMENT

TRUE NORTH

REFERENCE NORTH

PG&E

WELL ABANDONED  
8/12/91

31

29

46

45

47

48

49

52

51

54

53

59

73.0'

74.0'

73.5'

73.0'

# CHAIN OF CUSTODY FORM

PROJECT NAME: 13<sup>th</sup> + Jefferson GW LAB: Curtis + Tompkins  
 JOB NUMBER: 430,013  
 PROJECT CONTACT: Sean Carson TURNAROUND: Normal  
 SAMPLED BY: F VEELEP, S. PERMURSE REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES	
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	HSO <sub>4</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH	DAY		YEAR
	MW-47	X				2				X					07	28	2000	
	MW-48	X				2				X					07	28	2000	
	MW-49	X				2				X					07	28	2000	see
	MW-54	X				2				X					07	28	2000	see
	MW-59	X				2				X					07	28	2000	

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES			
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	HSO <sub>4</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH	DAY		YEAR	TIME	
																				VOC's MW 8010

COMMENTS & NOTES:

### CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>7/28/00 1400</u>	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature) <u>[Signature]</u>	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>7/28/00 1400</u>

Subsurface Consultants, Inc.  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 07/28/92  
DATE REPORTED: 08/04/92

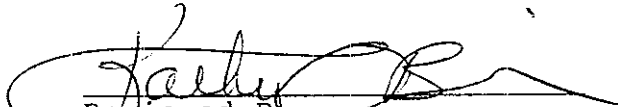
LABORATORY NUMBER: 108081

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.013

LOCATION: 13TH & JEFFERSON GW

RESULTS: SEE ATTACHED

  
Reviewed By

  
Reviewed By

LABORATORY NUMBER: 108081-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-47

DATE SAMPLED: 07/28/92  
 DATE RECEIVED: 07/28/92  
 DATE ANALYZED: 08/01/92  
 DATE REPORTED: 08/04/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene ✓	ND	1
trans-1,2-Dichloroethene ✓	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	106
-----------------------	-----

LABORATORY NUMBER: 108081-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-48

DATE SAMPLED: 07/28/92  
 DATE RECEIVED: 07/28/92  
 DATE ANALYZED: 08/01/92  
 DATE REPORTED: 08/04/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====

Surrogate Recovery, %

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108

LABORATORY NUMBER: 108081-3  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-59

DATE SAMPLED: 07/28/92  
 DATE RECEIVED: 07/28/92  
 DATE ANALYZED: 08/01/92  
 DATE REPORTED: 08/04/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	106
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LABORATORY NUMBER: 108081  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: METHOD BLANK

DATE ANALYZED: 08/01/92  
 DATE REPORTED: 08/04/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
Trichloroethene	ND	1
1,1,2-Trichloroethane	ND	1
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	2
Tetrachloroethene	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	106
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LABORATORY CONTROL SAMPLE SUMMARY SHEET FOR EPA 8010/8020

Operator: MBP Spike file: 213W/X002  
 Analysis date: 7/31/92 Instrument: GC12 (QUANT COLUMN)  
 Sample type: WATER Sequence name: JUL31

LCS SPIKE DATA (spiked at 20 ppb)

	READING	RECOVERY	STATUS	LIMITS
8010 COMPOUNDS				
1,1-Dichloroethene	19.68	98 %	OK	78 - 132
Trichloroethene	21.53	108 %	OK	85 - 124
Chlorobenzene	19.21	96 %	OK	70 - 128
SURROGATES				
Bromobenzene	108.87	109 %	OK	93 - 121
8020 COMPOUNDS				
Benzene	18.48	92 %	OK	86 - 119
Toluene	19.01	95 %	OK	85 - 120
Chlorobenzene	18.90	95 %	OK	87 - 128
SURROGATES				
Bromobenzene	100.01	100 %	OK	93 - 109

SPIKE AND SURROGATE RECOVERY LIMITS  
 FROM LCS WATER CONTROL CHARTS (APR. 92).

MS/MSD SUMMARY SHEET FOR EPA 8010/8020  
 INSTRUMENT: HP-5890 COLUMN: RESTEK 502.2 DETECTORS: HALL/PID

Operator: MBP Spike file: 216W/X007  
 Analysis date: 7/31/92 Spike dup file: 216W/X008  
 Sample type: WATER Instrument: GC12  
 Sample ID: 108077-005 Sequence name: JUL31

8010 MS/MSD DATA (spiked at 20 ppb) Ave Rec= 104 %

	READING	RECOVERY	STATUS	LIMITS
<b>SPIKE COMPOUNDS</b>				
1,1-Dichloroethene	19.98	100 %	OK	61 - 145
Trichloroethene	22.60	113 %	OK	71 - 120
Chlorobenzene	20.43	102 %	OK	75 - 130
<b>SPIKE DUP COMPOUNDS</b>				
1,1-Dichloroethene	19.51	98 %	OK	61 - 145
Trichloroethene	22.46	112 %	OK	71 - 120
Chlorobenzene	20.40	102 %	OK	75 - 130
<b>SURROGATES</b>				
BROMOBENZENE (MS)	104.59	105 %	OK	75 - 115
BROMOBENZENE (MSD)	103.67	104 %	OK	75 - 115

8020 MS/MSD DATA (spiked at 20 ppb) Ave Rec= 97 %

	READING	RECOVERY	STATUS	LIMITS
<b>SPIKE COMPOUNDS</b>				
Benzene	19.03	95 %	OK	76 - 127
Toluene	19.54	98 %	OK	76 - 125
Chlorobenzene	19.53	98 %	OK	75 - 130
<b>SPIKE DUP COMPOUNDS</b>				
Benzene	19.20	96 %	OK	76 - 127
Toluene	19.78	99 %	OK	76 - 125
Chlorobenzene	19.64	98 %	OK	75 - 130
<b>SURROGATES</b>				
BROMOBENZENE (MS)	99.92	100 %	OK	75 - 120
BROMOBENZENE (MSD)	100.07	100 %	OK	75 - 120

RPD DATA 8010 RPD= 1.0 % 8020 RPD= 0.9 %

	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
<b>8010 COMPOUNDS</b>					
1,1-Dichloroethene	19.98	19.51	2 %	OK	< 14
Trichloroethene	22.60	22.46	1 %	OK	< 14
Chlorobenzene	20.43	20.40	0 %	OK	< 13
<b>8020 COMPOUNDS</b>					
Benzene	19.03	19.20	1 %	OK	< 11
Toluene	19.54	19.78	1 %	OK	< 13
Chlorobenzene	19.53	19.64	1 %	OK	< 13

SPIKE RECOVERY LIMITS FROM SW-846 METHODS 8010/8020 TABLE 3;  
 SURROGATE RECOVERY LIMITS FROM LCS CONTROL CHARTS (NOV. 91);  
 RPD LIMITS FROM CLP SOW 2/88 VOLATILES.

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

September 8, 1992  
SCI 430.010

92 SEP 10 PM 1:09

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

3623

**Quarterly Groundwater Monitoring  
Gasoline Contamination  
1330 Martin Luther King Jr. Way  
Oakland, California**

Dear Ms. Eberle:

This letter presents quarterly groundwater monitoring results for the referenced site. Groundwater monitoring has been performed as a result of an underground gasoline tank release. Subsurface Consultants, Inc. (SCI) has been providing consulting services for this project since 1989. The location of the site is presented on Plate 1.

Contaminated soil and groundwater resulting from the gasoline release is presently being remediated. Site remediation consists of (1) vapor extraction, and (2) groundwater extraction and treatment. The vapor extraction system has removed all measurable free product in the area. The groundwater extraction system has significantly lowered dissolved product concentrations and reduced the extent of the dissolved product plume. Vapor extraction and groundwater treatment are ongoing.

The groundwater monitoring events consist of (1) measuring groundwater levels and free product thicknesses, (2) purging water from each well until pH, conductivity and temperature have stabilized, and (3) sampling the wells with pre-cleaned disposable samplers. The samples were retained in glass containers and preserved with hydrochloric acid. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples to the laboratory.

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified

**Subsurface Consultants, Inc.**

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
September 8, 1992  
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■ Subsurface Consultants, Inc.

laboratory for hazardous waste and water testing. The analytical tests included:

1. *TPH-g* Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Methods 5030 (purge and trap) and 8015 modified (gas chromatograph coupled to a flame ionization detector), and
2. *BTEX* Benzene, toluene, xylenes and ethylbenzene (BTXE), sample preparation and analysis using EPA Methods 5030 and 8020 (gas chromatograph coupled to a flame ionization detector).

A summary of the current and previous analytical test results and groundwater elevation data are presented in the attached Tables 1 and 2. Analytical test reports and chain-of-custody documents are also attached.

### Conclusions

The groundwater level data indicate that the regional groundwater flow direction is toward the west-northwest at a gradient of approximately 1 percent. This groundwater flow direction and gradient remain consistent with previous measurements. However, locally groundwater is flowing toward the extraction wells shown on Plate 1.

In general, the analytical test results indicate that dissolved hydrocarbon concentrations in groundwater are continuing to decline. Groundwater monitoring will continue on a quarterly basis.

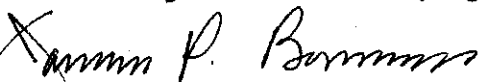
If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



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



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

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Ms. Jennifer Eberle  
Alameda County Health Care Services Agency  
SCI 430.010  
September 8, 1992  
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SOC:JPB:egh

Attachments: Table 1. - Contaminant Concentrations in Groundwater  
Table 2. - Groundwater Elevation Data  
Plate 1. - Site Plan  
Analytical Test Reports  
Chain-of-Custody Documents

cc: Mr. Eddy So  
Regional Water Quality Control Board  
2101 Webster Street, Room 500  
Oakland, California 94612

Ms. Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland, California 94612

Ms. Julie Carver  
City of Oakland  
Environmental Affairs Division  
1333 Broadway, Suite 800  
Oakland, California 94612

Mr. John Esposito  
Bramalea Pacific  
1111 Broadway, Suite 1400  
Oakland, California 94607

Mr. Donnell Choy  
City of Oakland  
905 14th Street, 12th Floor  
Oakland, California 94612

Table 1. Contaminant Concentrations In Groundwater

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
11	07/05/88	10,000	1,800	ND <sup>5</sup>	1,200	ND	-- <sup>6</sup>	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
	04/24/91	4,800	1,100	3.5	46	120	--	--	--
	07/24/91	950	330	0.9	1.8	12	--	--	--
	10/24/91	970	350	1.6	1.6	14	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	340	77	0.6	0.6	ND	--	--	--
	08/06/92	220 ✓	54 ✓	ND ✓	ND ✓	ND ✓	--	--	--
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
03/28/91	500	ND	1.6	0.8	ND	--	--	--	
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
08/07/92	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	--	--	--	
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
	04/24/91	170	ND	ND	ND	ND	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	1.4	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	ND	--
	01/23/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
08/07/92	ND✓	ND✓	ND✓	ND✓	ND✓	--	--	--	
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
	07/24/91	21,000	2,200	300	650	180	--	--	--
	10/24/91	18,000	2,300	1,100	1,000	260	--	16	--
	01/23/92	10,000	1,100	280	430	300	--	--	--
	05/01/92	16,000	1,200	330	580	220	--	--	--
	08/07/92	12,000✓	890✓	510✓	1,000✓	340✓	--	--	--
43	10/24/91	6,300	ND	ND	130	9.1	--	--	--
	05/01/92	930	ND	ND	3.8	ND	--	--	--
	08/07/92	450✓	ND✓	2.4✓	3.5✓	1.5✓	--	--	--
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND✓	ND✓	ND✓	ND✓	ND✓	--	--	--
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--

Table 1. Contaminant Concentrations In Groundwater (continued)

Test Boring	Sample Date	TVH <sup>1</sup> (ug/L) <sup>5</sup>	B <sup>2</sup> (ug/L)	T <sup>2</sup> (ug/L)	X <sup>2</sup> (ug/L)	E <sup>2</sup> (ug/L)	Total Organic Lead (ug/L)	EDB <sup>3</sup> (ug/L)	1,2 DCA <sup>4</sup> (ug/L)
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
	04/24/91	ND	ND	ND	ND	ND	--	--	--
	07/24/91	ND	ND	ND	ND	ND	--	--	--
	10/24/91	ND	ND	ND	ND	ND	--	--	--
	01/24/92	ND	ND	ND	ND	ND	--	--	--
	05/01/92	ND	ND	ND	ND	ND	--	--	--
	08/06/92	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	--	--	--

<sup>1</sup> TVH = Total Volatile Hydrocarbons

<sup>2</sup> BTXE = Benzene, Toluene, Xylene, and Ethylbenzene

<sup>3</sup> EPA 8011, ethylene dibromide

<sup>4</sup> EPA 8010, 1, 2 dichloroethane

<sup>5</sup> ug/L = micrograms per liter

<sup>6</sup> ND = None detected, chemicals not present at concentrations above the detection limits

<sup>7</sup> -- = Test not requested



Table 2. Groundwater Elevation Data

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
11	99.66	01/19/89	26.82	72.84	--
		04/03/89	26.35	73.31	--
		07/05/89	26.95	72.71	--
		11/09/89	27.28	72.83	--
		01/24/89	27.40	72.26	--
		04/30/90	27.56	72.10	--
		07/03/90	28.89	70.77	--
		10/23/90	28.93	70.73	--
		01/21/91	27.75	71.97	--
		04/24/91	28.14	71.52	--
		07/24/91	28.78	70.88	--
		10/24/91	29.09	70.57	--
		01/23/92	29.85	69.81	--
		05/01/92	27.44	72.22	--
		08/07/92	27.86	71.80	--
28	98.99	01/19/89	26.16	72.83	--
		04/03/89	25.70	73.29	--
		07/05/89	26.26	72.73	--
		11/08/89	26.59	72.40	--
		01/24/90	26.81	72.18	--
	97.79	05/10/90	31.83	65.96	1.22
		07/03/90	31.95	65.84	0.04
		10/23/90	31.25	66.54	1.38
		01/21/91	28.00	69.79	0.00
		10/24/91	27.26	70.53	0.00
		01/23/92	32.99	64.89	0.00
		08/07/92	26.95	70.84	-- <sup>2</sup>
		29	97.95	01/19/89	26.14
04/03/89	25.88			72.07	--
07/05/89	26.19			71.76	--
11/09/89	26.51			71.44	--
01/24/90	26.66			71.29	--
04/30/90	26.73			71.22	--
07/03/90	27.22			70.73	--
10/23/90	27.40			70.55	--
01/21/91	26.89			71.06	--
03/28/91	27.04			70.91	--
10/24/91	27.47	70.48	--		
01/23/92	27.89	70.06	--		

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
30	99.30	01/19/89	27.50	71.80	1.56
		04/03/89	28.44	70.86	2.56
		07/05/89	28.90	70.40	3.38
		11/09/89	29.52	69.78	3.67
		04/30/90	27.23	72.07	0.29
		07/03/90	29.07	70.23	0.57
		10/23/90	29.07	70.23	1.27
		01/21/91	29.09	70.23	2.27
		04/24/91	27.80	71.50	0.19
		05/31/91	28.08	71.23	0.49
		10/24/91	28.94	70.36	0.00
		31	98.90	01/19/89	26.15
04/03/89	25.90			73.00	--
07/05/89	26.28			72.76	--
11/09/89	26.64			72.26	--
01/24/90	26.84			72.06	--
04/30/90	26.87			72.03	--
07/03/90	27.50			71.40	--
09/23/90	27.52			71.36	--
01/21/91	27.09			71.81	--
04/24/91	27.12			71.78	--
07/24/91	27.60			71.30	--
10/24/91	28.81			70.09	--
01/23/92	28.31			70.59	--
05/01/92	26.70			72.20	--
08/07/92	27.00	71.90	--		
32	98.53	01/24/90	25.64	72.89	--
		04/30/90	25.82	72.71	--
		06/01/90	26.30	72.23	--
		10/23/90	26.70	71.83	--
		01/21/91	26.06	72.47	--
		04/24/91	26.40	72.13	--
		10/24/91	27.05	71.48	--

Table 2. Groundwater Elevation Data (continued)

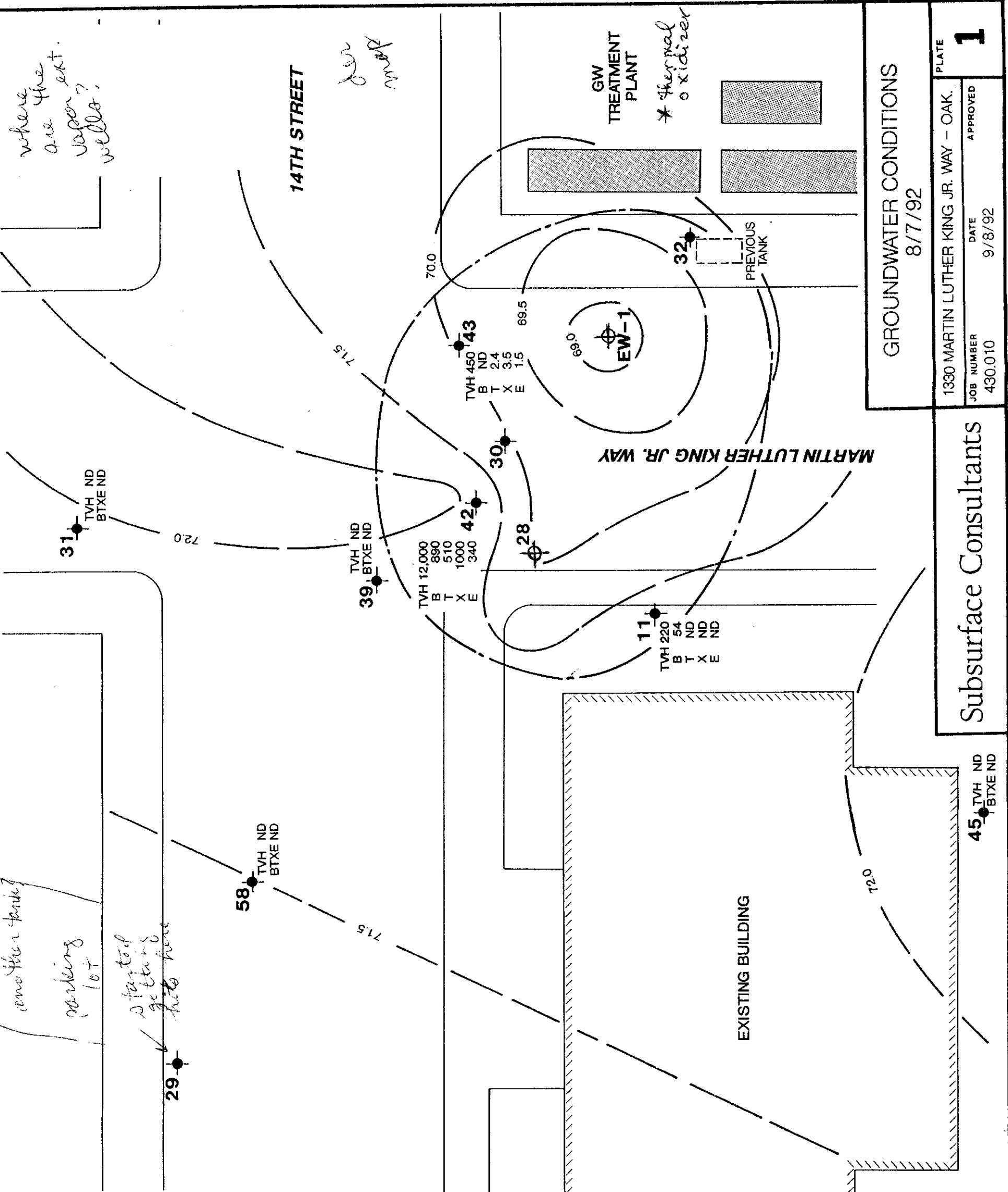
<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>		
39	99.00	04/03/89	25.87	73.13	--		
		07/05/89	26.38	72.62	--		
		11/09/89	26.70	72.30	--		
		01/24/90	26.86	72.14	--		
		04/30/90	26.97	72.03	--		
		07/03/90	28.17	70.83	--		
		10/23/90	28.17	70.83	--		
		01/21/91	27.15	71.85	--		
		03/28/91	27.76	71.24	--		
		04/24/91	27.33	71.67	--		
		07/24/91	27.91	71.09	--		
		10/24/91	28.26	70.74	--		
		01/23/92	29.00	70.00	--		
		05/01/92	26.82	72.18	--		
08/07/92	27.18	71.82	--				
42	99.12	04/03/89	25.77	73.35	--		
		07/05/89	26.30	72.89	--		
		11/09/89	26.66	72.46	--		
		01/24/90	26.82	72.30	--		
		04/18/90	26.94	72.18	--		
		07/03/90	28.58	70.54	--		
		10/23/90	28.58	70.54	0.08		
		07/24/91	28.10	71.02	0.00		
		10/24/91	28.24	70.88	--		
		01/23/92	29.33	69.79	--		
		05/01/92	26.88	72.44	--		
		08/07/92	27.10	72.02	--		
		43	98.87	04/03/89	25.32	73.55	0.08
				07/05/89	26.80	72.07	1.34
11/09/89	28.44			70.43	2.89		
04/30/90	27.05			71.82	0.79		
07/03/90	28.36			70.51	0.70		
10/23/90	28.19			70.68	0.83		
10/24/91	26.30			72.57	0.00		
01/24/92	28.25			70.62	0.02		
05/01/92	25.44			73.43	0.00		
08/07/92	25.11			73.76	--		

Table 2. Groundwater Elevation Data (continued)

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
45	100.90	12/05/89	28.71	72.19	--
		04/30/90	28.85	72.05	--
		07/03/90	29.45	71.45	--
		10/23/90	29.50	71.40	--
		01/21/91	29.03	71.87	--
		04/24/91	28.87	72.03	--
		07/25/91	29.63	71.27	--
		10/24/91	29.62	71.28	--
		01/23/92	30.45	70.45	--
		05/01/92	28.42	72.48	--
		08/07/92	28.70	72.20	--
46	98.11	12/19/89	27.40	70.71	--
		04/30/90	27.46	70.63	--
		07/03/90	27.75	70.36	--
		10/23/90	27.86	70.25	--
		01/21/91	27.60	70.51	--
		04/24/91	27.40	70.71	--
		07/24/91	28.73	69.38	--
		10/24/91	27.88	70.23	--
		01/23/92	28.31	69.80	--
				08/07/92	27.28
58	98.89	01/30/91	28.25	70.64	--
		03/28/91	27.81	71.08	--
		04/24/91	27.55	71.34	--
		07/24/91	33.42	65.47	--
		10/24/91	28.29	70.60	--
		01/23/92	28.75	70.14	--
		05/01/92	27.10	71.79	--
				08/07/92	27.40

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th Street on Martin Luther King Jr. Way, assumed to be 100.00 feet, TOC = Top of casing  
<sup>2</sup> -- = No free product present

- ⊕ EXTRACTION WELL - 2
- MONITORING WELL
- - - GROUNDWATER SURFACE ELEVATION CONTOURS (feet)
- · - · - APPROXIMATE EXTENT OF DISSOLVED PRODUCT PLUME
- TVH TOTAL VOLATILE HYDROCARBONS
- BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE
- ND NONE DETECTED
- CONCENTRATIONS IN ug/l



GROUNDWATER CONDITIONS  
8/7/92

1330 MARTIN LUTHER KING JR. WAY - OAK.  
JOB NUMBER 430.010  
DATE 9/8/92  
APPROVED

PLATE **1**

Subsurface Consultants



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 04/24/91  
DATE REPORTED: 04/29/91

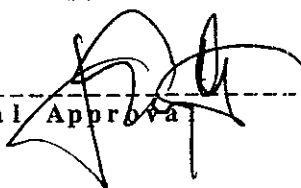
LAB NUMBER: 103625

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010  
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

LABORATORY NUMBER: 103625  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE RECEIVED: 04/24/91  
 DATE ANALYZED: 04/27/91  
 DATE REPORTED: 04/29/91

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)
103625-1	MW-11	4,800	1,100	3.5	120	46
103625-2	MW-31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103625-3	MW-32	170	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103625-4	MW-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103625-5	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103625-6	MW-46	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103625-7	MW-58	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, %	101



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 07/25/91

DATE REPORTED: 07/31/91

LAB NUMBER: 104608

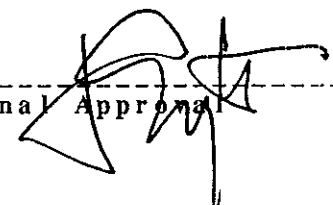
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK GW

RESULTS: SEE ATTACHED

  
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QA/QC Approval

  
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Final Approval



LABORATORY NUMBER: 104608  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK GW

DATE RECEIVED: 07/25/91  
 DATE ANALYZED: 07/27,30/91  
 DATE REPORTED: 07/31/91

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)
104608-1	MW-11	950	330	0.9	12	1.8
104608-2	MW-31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104608-3	MW-39	ND(50)	1.4	ND(0.5)	ND(0.5)	ND(0.5)
104608-4	MW-42	21,000	2,200	300	180	650
104608-5	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104608-6	MW-46	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104608-7	MW-58	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, %	100



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 10/24/91  
DATE REPORTED: 11/12/91


LABORATORY NUMBER: 105596

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK GW MONITORING WELLS

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

LABORATORY NUMBER: 105596  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK GW MONITORING WELLS

DATE RECEIVED: 10/24/91  
 DATE ANALYZED: 11/06,07/91  
 DATE REPORTED: 11/12/91

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)
105596-1	MW-11	970	350	1.6	14	1.6
105596-2	MW-31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105596-3	MW-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105596-4	MW-42	18,000	2,300	1,100	260	1,000
105596-5	MW-43	6,300	ND(2.5)	ND(2.5)	9.1	130
105596-6	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105596-7	MW-46	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105596-8	MW-58	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, % 6  
 RECOVERY, % 97

LABORATORY NUMBER: 105596  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK GW MONITORING WELLS

DATE RECEIVED: 10/24/91  
 DATE ANALYZED: 11/08/91  
 DATE REPORTED: 11/12/91

=====  
 ANALYSIS: ETHYLENE DIBROMIDE  
 ANALYSIS METHOD: EPA 504  
 =====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
105596-1	MW-11	ND	ug/L	0.02
105596-3	MW-39	ND	ug/L	0.02
105596-4	MW-42	16	ug/L	2.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
 RPD, % 5  
 RECOVERY, % 95  
 =====



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 01/24/92  
DATE REPORTED: 01/30/92

LABORATORY NUMBER: 106378

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

-----  
*Kathy O'Brien*  
Reviewed By  
-----  
*[Signature]*  
Reviewed By  
-----

LABORATORY NUMBER: 106378  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE RECEIVED: 01/24/92  
 DATE ANALYZED: 01/28-30/92  
 DATE REPORTED: 01/30/92

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)
106378-1	MW-11	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106378-2	MW-31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106378-3	MW-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106378-4	MW-42	10,000	1,100	280	300	430
106378-5	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106378-6	MW-58	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, %	94



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 05/01/92

DATE REPORTED: 05/08/92

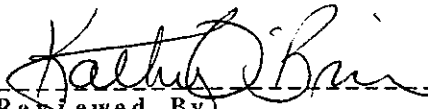
LABORATORY NUMBER: 107270

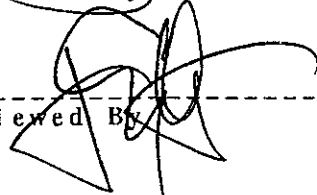
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

  
Reviewed By

  
Reviewed By

LABORATORY NUMBER: 107270  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 05/01/92  
 DATE ANALYZED: 05/03-05/92  
 DATE REPORTED: 05/08/92

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)
107270-1	MW-11	340	77	0.6	ND(0.5)	0.6
107270-2	MW-31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107270-3	MW-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107270-4	MW-42	16,000	1,200	330	220	580
107270-5	MW-43	930	ND(0.5)	ND(0.5)	ND(0.5)	3.8
107270-6	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
107270-7	MW-58	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





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 08/07/92  
DATE REPORTED: 08/26/92

LABORATORY NUMBER: 108202

*current  
analytical  
data*

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

Reviewed by

Reviewed By

LABORATORY NUMBER: 108202  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE SAMPLED: 08/06-07/92  
 DATE RECEIVED: 08/07/92  
 DATE ANALYZED: 08/12/92  
 DATE REPORTED: 08/26/92

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)
108202-1	MW-11	220	54	ND(0.5)	ND(0.5)	ND(0.5)
108202-2	MW-31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108202-3	MW-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108202-6	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
108202-7	MW-58	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, %	8
RECOVERY, %	108

LABORATORY NUMBER: 108202  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE SAMPLED: 08/06-07/92  
 DATE RECEIVED: 08/07/92  
 DATE ANALYZED: 08/19/92  
 DATE REPORTED: 08/26/92

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)
108202-4	MW-42	12,000	890	510	340	1,000

QA/QC SUMMARY

=====  
 RPD, % 4  
 RECOVERY, % 108  
 =====

LABORATORY NUMBER: 108202  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE SAMPLED: 08/06-07/92  
 DATE RECEIVED: 08/07/92  
 DATE ANALYZED: 08/19/92  
 DATE REPORTED: 08/26/92

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)
108202-5	MW-43	450	ND(0.5)	2.4	1.5	3.5

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

QA/QC SUMMARY

RPD, % 1  
 RECOVERY, % 94

# 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, Jairo Lopez  
 Analytical Laboratory: C+T  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
MW-11	W	Vx3	4/24/91		TVH/BTXE	
MW-31						
MW-32						
MW-39						
MW-45						
MW-46						
MW-58						

\* \* \* \* \*

Released by: [Signature] Received by: \_\_\_\_\_ Date: 04/24/91  
 Released by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: [Signature] Date: 4/24/91  
 Released by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Released by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = Water, S = Soil, O = Other (specify)  
<sup>2</sup> 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: Charles Pearson  
 Analytical Laboratory: Curtis & Tompkins  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
MW-11	W	Vx3	7/24/91		TVH/BTXE	8015 mod/8020/5030
MW-31	W	Vx3	7/24/91		"	"
MW-39	W	Vx3	7/24/91		"	"
MW-42	W	Vx3	7/24/91		"	"
MW-45	W	Vx3	7/25/91		"	"
MW-46	W	Vx3	7/24/91		"	"
MW-58	W	Vx3	7/24/91		"	"

\* \* \* \* \*

Released by: Charles Pearson Received by: \_\_\_\_\_ Date: 7/25/91  
 Released by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: Nancy Wilson Date: 7/25/91  
 Released by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Released by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = Water, S = Soil, O = Other (specify)  
<sup>2</sup> 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

PAGE 1 OF 1

PROJECT NAME: MLK GW Monitoring Wells  
 JOB NUMBER: 430,010 LAB: Curtis+Tompkins  
 PROJECT CONTACT: Sean Carson TURNAROUND: Normal  
 SAMPLED BY: Charlie Pearson/Marianne Waters REQUESTED BY: Sean Carson

ANALYSIS REQUESTED	
(EPA 8015/8020/8030)	TVH/BIXE
(EPA 8011)	EDM
(EPA 504)	

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX			CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH		DAY	YEAR
	MW-11	X				4				X	X	X	X	10	24	91	0930	
	MW-31	X				3				X	X	X	X	10	30	91	1000	
	MW-39	X				1				X	X	X	X	10	30	91	1000	
	MW-42	X				1				X	X	X	X	11	00	91	1000	
	MW-43	X				3				X	X	X	X	11	00	91	1000	
	MW-45	X				3				X	X	X	X	11	30	91	1000	
	MW-46	X				3				X	X	X	X	11	30	91	1000	
	MW-58	X				3				X	X	X	X	11	30	91	1000	

### CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature) <u>Charlie Pearson</u>	DATE/TIME <u>10/24/91 12:30</u>	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>10/24/91 1430</u>

COMMENTS & NOTES:

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0161 • FAX: 510-268-0137

# CHAIN OF CUSTODY FORM

PROJECT NAME: MLK GW Monitoring Wells LAB: 430.010 ANALYSIS REQUESTED: (FRA 8015/8020/5030) TVH/BTKM

JOB NUMBER: 430.010 LAB: Normal

PROJECT CONTACT: Sean Carson TURNAROUND: Normal

SAMPLED BY: Fernando Velez/Jojo Bermudez REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES	
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR
.	MW-11	X				3				X	X	X			01	23	92	
.	MW-31	X				3				X	X	X			↓	↓	↓	
.	MW-39	X				3				X	X	X			↓	↓	↓	
.	MW-42	X				3				X	X	X			↓	↓	↓	
&c	MW-43	X				3				X	X	X			↓	↓	↓	
.	MW-45	X				3				X	X	X			↓	↓	↓	
.	MW-58	X				3				X	X	X			↓	↓	↓	

COMMENTS & NOTES:

### CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

1/24/92 3:50  
 [Signature]  
 1/24/92 3:50

## Subsurface Consultants, Inc.

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# CHAIN OF CUSTODY FORM

PAGE      OF     

PROJECT NAME: MLK GW Extraction LAB: Curtis + Tompkins  
 JOB NUMBER: 430,010 TURNAROUND: Normal  
 PROJECT CONTACT: Sean Carson REQUESTED BY: Sean Carson  
 SAMPLED BY:     

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATERIAL	CONTAINERS	METHOD PRESERVED	SAMPLING DATE			NOTES
					MONTH	DAY	YEAR	
					05	01	92	XXXXXX TVH / BTX

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
<u>    </u>		<u>    </u>	<u>5/12/92 3:00 PM</u>
<u>    </u>		<u>    </u>	
<u>    </u>		<u>    </u>	

**COMMENTS & NOTES:**

**Subsurface Consultants, Inc.**  
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# CHAIN OF CUSTODY FORM

PAGE 1 OF     

PROJECT NAME: MLK GW LAB: Curtis + Tompkins  
 JOB NUMBER: 430,010 TURNAROUND: Normal  
 PROJECT CONTACT: Sean Carson REQUESTED BY: Sean Carson  
 SAMPLED BY: Jose Barmudez

LABORATORY ID. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR	TIME
	MW-11	X				W				X	X	X	X	08	06	92	13	00	TCH/BTXII
	MW-31	X				W				X	X	X	X	08	07	92	11	00	
	MW-39	X				W				X	X	X	X	08	07	92	11	00	
	MW-42	X				W				X	X	X	X	08	07	92	11	00	
	MW-43	X				W				X	X	X	X	08	07	92	11	00	
	MW-45	X				W				X	X	X	X	08	06	92	14	00	
	MW-58	X				W				X	X	X	X	08	06	92	14	00	

ANALYSIS REQUESTED	

CHAIN OF CUSTODY RECORD			
RECEIVED BY: (Signature) <i>Jose Barmudez</i>	DATE/TIME <i>8/7/92</i>	RECEIVED BY: (Signature)	DATE/TIME
RECEIVED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RECEIVED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

**Subsurface Consultants, Inc.**

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
(510) 268-0461 • FAX: 510-268-0137

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

June 24, 1992  
SCI 430.013

ST10 3623

Mr. Paul Smith  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

aka Firehouse  
site

Quarterly Groundwater Monitoring and  
Request for Reduction in Analytical Testing  
Previous Gasoline Release  
13th and Jefferson Streets  
Oakland, California

Dear Mr. Smith:

This letter records the results of groundwater sampling and analytical testing events performed by Subsurface Consultants, Inc. (SCI) for gasoline contamination at the referenced site. In addition, we are requesting a reduction in analytical testing because no detectable concentrations of gasoline or its constituents have been detected in groundwater at the site for more than a year.

#### Background

SCI previously documented soil remediation activities for gasoline contamination in a closure report dated December 6, 1990. As described in the report, gasoline contaminated soils were excavated, removed from the site and replaced with clean imported fill. The gasoline contamination resulted from underground storage tanks suspected to have existed near the intersection of 13th and Jefferson Streets, as shown on the Site Plan, Plate 1.

Soil contamination resulting from a floor drain sump was also remediated by excavation and off-site disposal. The results of the sump closure are summarized in a report dated September 24, 1990. The sump contaminates consisted primarily of kerosene, oil and grease, and diesel. The location of the sump and soil remediation area are shown on the Site Plan.

■ Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 510-268-0461 • FAX 510-268-0137

Mr. Paul Smith  
Alameda County Health Care Services Agency  
June 24, 1992  
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■ Subsurface Consultants, Inc.

Following completion of soil remediation for both the sump and gasoline release area, a groundwater contamination assessment was conducted by SCI. Our report dated July 8, 1991, presents the groundwater investigation details and the results of previous sampling events. The location of monitoring wells are shown on the Site Plan.

The groundwater assessment indicated that initially, low concentrations of petroleum hydrocarbons, reported as gasoline and its constituents, benzene, toluene, xylenes and ethylbenzene (BTXE) were present in groundwater as a result of the gasoline release near 13th and Jefferson Streets. Low concentrations of 1,2-dichloroethane (DCA) were present in groundwater as a result of the sump release.

#### Quarterly Groundwater Monitoring

Groundwater monitoring has been performed quarterly over the past 2 years. Groundwater level measurements are summarized in Table 1. Groundwater surface contours for the latest event, April 17, 1992, are shown on Plate 1. Groundwater flow patterns have remained relatively consistent except during a several month period during the latter part of 1991 when construction dewatering on the adjacent block to the south temporarily changed flow patterns.

Prior to sampling, the wells were purged of at least 4 well volumes of water using a Teflon bailer. The purged water was disposed of in the existing groundwater treatment plant on-site.

The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. The samples were accompanied by chain-of-custody records, copies of which are attached.

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory for the tests performed. Water samples were analyzed for the following:

1. Total volatile hydrocarbons (TVH), sample preparation and analysis using EPA Method 5030 (purge and trap extraction) and 8015 (gas chromatograph coupled to a flame ionization detector); and  
TPH-g
2. Benzene, toluene, xylene and ethylbenzene (BTXE), sample preparation and analysis using EPA Method 5030 and 8020 (gas chromatograph coupled to a photo-ionization detector).  
BTXE

contents of USTs?

Mr. Paul Smith  
Alameda County Health Care Services Agency  
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Water samples from the wells have also been analyzed for halogenated volatile organics (EPA 8010) because these compounds were associated with the release from the nearby floor drain sump. Additionally, groundwater from Well 48 has been analyzed for oil and grease (SMWW 5520E&F) and extractable hydrocarbons (EPA 8015/3550) because these compounds were also involved in the sump release, and the well is situated adjacent to and downgradient from the previous sump. The most recent floor drain sump groundwater monitoring results are recorded in a letter dated January 29, 1992. For completeness, the results of the analyses have been included herein and are summarized in Tables 2 and 3. Copies of the analytical test reports and chain-of-custody documents are attached.

*contents of sump?*

*TPH-d*

*-check*

*excluding MWS  
45, 46, 29, 31.  
these were  
not tested?*

### Conclusions

Detectible concentrations of petroleum hydrocarbons and BTXE have not been present in the monitoring wells at the site during at least the past six (6) quarterly monitoring events at concentrations in excess of analytical detection limits. We conclude that soil remediation was successful and no significant source of gasoline contamination remains in the area. The analytical data indicates that there has not been any detectable adverse impacts to groundwater quality due to the previous gasoline release.

1,2-Dichloroethane (DCA) has been detected in several wells in the monitoring program. Recently, however, only Well 48 has contained detectable concentrations of DCA. All of the wells that have contained DCA are situated down-gradient of the gasoline contamination area. DCA has never been present in any of the monitoring wells in the area of the gasoline contamination. For these reasons, it is our opinion that the DCA present in groundwater is from a separate source, unrelated to the gasoline contamination problem. Previous studies by SCI have identified the floor drain sump, which was located adjacent to Well 48, as the most probable source of DCA. The sump and underlying soil have been remediated. Groundwater monitoring relative to the sump release is ongoing.

### Request for Reduction in Analytical Testing

On behalf of the City of Oakland Redevelopment Agency, we are requesting that the Alameda County Health Care Services Agency present these groundwater monitoring results to the Regional Water Quality Control Board with a recommendation for a reduction in analytical testing. We request that testing for gasoline and BTXE no longer be required at the site. The wells will continue to be

Mr. Paul Smith  
Alameda County Health Care Services Agency  
June 24, 1992  
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Page 4

■ Subsurface Consultants, Inc.

monitored on a quarterly basis for halogenated volatile organics (EPA 8010). No groundwater monitoring wells at the site will be abandoned at this time, since many of them are part of the sump monitoring program.

Our next sampling event is scheduled for July 17, 1992. We would appreciate a response to our proposed modification to the testing program prior to this date.

Please call, if you need additional information or have any questions.

Yours very truly,

Subsurface Consultants, Inc.



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



James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)

SOC:MK:JPB:sld

Attachments: Table 1 - Groundwater Elevation Data  
Table 2 - Petroleum Hydrocarbon Concentrations in Groundwater  
Table 3. Halogenated Volatile Organic Chemical Concentrations in Groundwater

Plate 1 - Site Plan  
Chain-of-Custody Records  
Analytical Test Reports

★ 1 copy: Ms. Lois Parr  
Oakland Redevelopment Agency  
1333 Broadway, Suite 900  
Oakland, California 94612

★ 1 copy: Mr. John Esposito  
Bramalea Pacific  
1111 Broadway, Suite 1400  
Oakland, California 94607

Mr. Paul Smith  
Alameda County Health Care Services Agency  
June 24, 1992  
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■ Subsurface Consultants, Inc.

1 copy:           Mr. Eddy So  
                    Regional Water Quality Control Board  
                    2101 Webster Street, Room 500  
                    Oakland, California 94612

1 copy:           Mr. Donnell Choy  
                    City of Oakland  
                    505 14th Street, 12th Floor  
                    Oakland, California 94612

Table 1. Groundwater Elevation Data

Well	Date	TOC <sup>1</sup> Elevation (ft)	Groundwater Depth <sup>2</sup> (ft)	Groundwater Elevation (ft)
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
	06/13/91		28.39	72.11
	09/10/91		27.08	73.42
	12/12/91		27.95	72.55
	04/17/92		26.18	74.32
MW-48	07/18/90	102.40	29.08	73.32
	10/04/90		29.29	73.11
	12/03/90		29.28	73.12
	01/21/91		29.03	73.37
	03/13/91		28.72	73.68
	04/03/91		28.24	74.16
	06/13/91		29.47	72.93
	09/10/91		28.94	73.46
	12/12/91		30.39	72.01
	04/17/92		28.07	74.33
MW-49	12/03/90	101.73	28.44	73.29
	01/21/91		28.20	73.53
	03/13/91		27.79	73.94
	04/03/91		27.28	74.45
	06/13/91		27.66	74.07
	09/10/91		28.04	73.69
	12/12/91		30.45	71.28
	04/17/92		27.26	74.47
	MW-51		10/04/90	102.64
12/03/90		28.57	74.07	
01/21/91		28.44	74.20	
03/13/91		27.76	74.88	
04/03/91		27.32	75.32	
06/13/91		28.82	73.82	
09/10/91		28.00	74.64	
MW-52		10/04/90	102.44	
	12/03/90	28.38		74.06
	01/21/91	28.24		74.20
	03/13/91	27.57		74.87
	04/03/91	27.16		75.28
	06/13/91	29.41		73.03
	09/10/91	27.85		74.59
	MW-53	09/24/90		101.28
10/04/90		27.50	73.78	
12/03/90		27.46	73.82	
01/21/91		28.00	73.28	
03/13/91		27.00	74.28	
06/13/91		27.61	73.67	
08/12/91		Well Abandoned		
MW-54		09/24/90	100.78	
	10/04/90	27.30		73.48
	12/03/90	27.01		73.77
	01/21/91	27.28		74.64
	03/13/91	27.40		74.52
	06/13/91	28.93		72.99
	09/10/91	27.66		74.26
	12/12/91	28.88		73.04
	04/17/92	26.82		75.10
	MW-59	02/12/91		100.37
03/13/91		27.60	72.77	
04/03/91		27.36	73.01	
06/13/91		28.01	72.36	
09/10/91		28.00	72.37	
12/12/91		28.53	71.84	
04/17/92		26.91	73.46	

- 1 Top of Casing
- 2 Depth measured below top of casing
- 3 Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)



Table 2. Petroleum Hydrocarbon Concentrations in Groundwater

Well	Date	O&G <sup>1</sup> (ug/L)	TVH <sup>2</sup> (ug/L)	TEH <sup>3</sup> (ug/L)	B <sup>4</sup> (ug/L)	T <sup>5</sup> (ug/L)	X <sup>6</sup> (ug/L)	E <sup>7</sup> (ug/L)	
MW-47	04/06/90	--	ND	--	ND	ND	ND	ND	
	10/04/90	--	--	--	ND	ND	ND	ND	
	12/03/90	--	ND	--	ND	ND	ND	ND	
	03/13/91	--	ND	--	ND	ND	ND	ND	
	06/13/91	--	ND	--	ND	ND	ND	ND	
	09/11/91	--	ND	--	ND	ND	ND	ND	
	12/12/91	--	ND	--	ND	ND	ND	ND	
	04/17/92	--	--	--	ND	ND	ND	ND	
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND	
	07/18/90	ND	ND	ND	ND	ND	ND	ND	
	10/04/90	--	--	110	ND	ND	ND	ND	
	12/03/90	ND	ND	ND	ND	ND	ND	ND	
	03/13/91	ND	ND	ND	ND	ND	ND	ND	
	09/11/91	ND	ND	ND	ND	ND	ND	ND	
	12/12/91	ND	ND	ND	ND	ND	ND	ND	
	04/17/92	ND	--	--	ND	ND	ND	ND	
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND	
	12/03/90	--	ND	--	ND	ND	ND	ND	
	03/13/91	--	ND	--	ND	ND	ND	ND	
	06/13/91	--	ND	--	ND	ND	ND	ND	
	09/11/91	--	ND	--	ND	ND	ND	ND	
	12/12/91	--	ND	--	ND	ND	ND	ND	
	04/17/92	--	--	--	ND	ND	ND	ND	
	MW-51	04/06/90	--	ND	--	ND	ND	ND	ND
10/04/90		--	--	--	ND	ND	ND	ND	
12/04/90		--	ND	--	ND	ND	ND	ND	
03/13/91		--	ND	--	ND	ND	ND	ND	
06/13/91		--	ND	--	ND	ND	ND	ND	
09/11/91		--	ND	--	ND	ND	ND	ND	
09/21/90		--	ND	--	ND	ND	ND	ND	
MW-52	10/04/90	--	--	--	ND	ND	ND	ND	
	12/04/90	--	ND	--	ND	ND	ND	ND	
	03/13/91	--	ND	--	ND	ND	ND	ND	
	06/13/91	--	ND	--	ND	ND	ND	ND	
	09/11/91	--	ND	--	ND	ND	ND	ND	
	MW-53	10/04/90	--	ND	--	ND	ND	ND	ND
		12/04/90	--	ND	--	ND	ND	ND	ND
03/13/91		--	ND	--	ND	ND	ND	ND	
06/11/91		--	ND	--	ND	ND	ND	ND	
08/12/91		Well Abandoned		--	ND	ND	ND	ND	
MW-54		09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28	
	12/04/90	--	ND	--	ND	ND	ND	ND	
	03/13/91	--	ND	--	ND	ND	ND	ND	
	06/13/91	--	ND	--	ND	ND	ND	ND	
	09/11/91	--	ND	--	ND	ND	ND	ND	
	12/12/91	--	ND	--	ND	ND	ND	ND	
	04/17/92	--	--	--	ND	ND	ND	ND	
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND	

what happened to 6-91?

6 mo.

only 1 Q ND

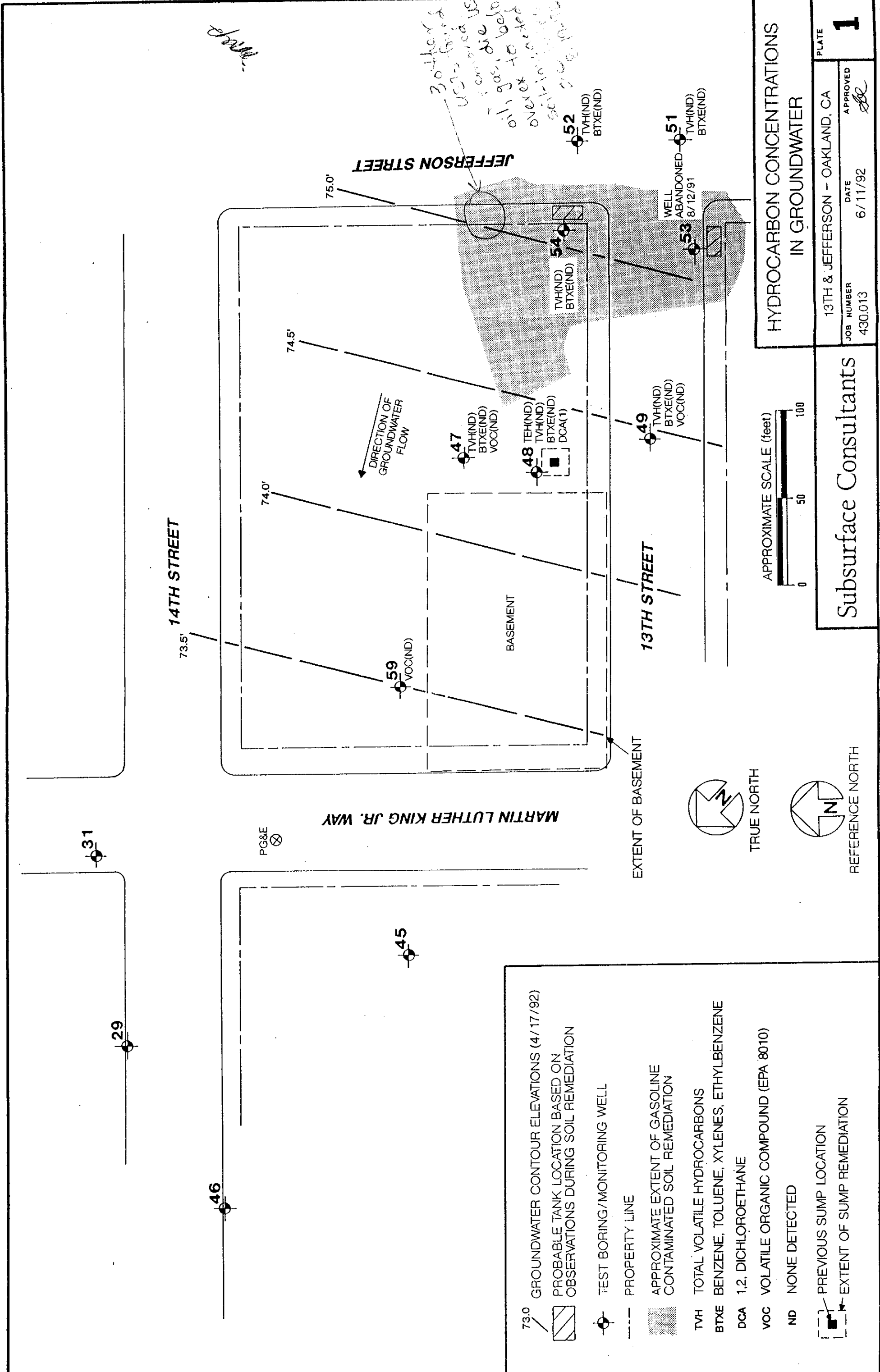
- 1 Oil and Grease
- 2 Total Volatile Hydrocarbons
- 3 Total Extractable Hydrocarbons
- 4 Benzene
- 5 Toluene
- 6 Xylene
- 7 Ethylbenzene

**Table 3.**  
**Halogenated Volatile Organic Chemical**  
**Concentrations in Groundwater**

<u>Well</u>	<u>Date</u>	<u>1,2 DCE<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
	06/13/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
	06/19/91	6.1	ND	ND	ND
	09/11/91	5.3	ND	ND	ND
	12/12/91	16	ND	ND	ND
04/17/92	1	ND	ND	ND	
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
	06/13/91	5.0	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND
2Q5 MW-51	12/04/90	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
2Q5 MW-52	12/04/90	ND	ND	1.3	ND
	06/13/91	ND	ND	2.0	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
	06/13/91	ND	ND	8.0	ND
	08/12/91	Well Abandoned - why? →	ND	ND	
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
	06/13/91	ND	ND	1.0	ND
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND
	09/11/91	ND	ND	ND	ND
	12/12/91	ND	ND	ND	ND
	04/17/92	ND	ND	ND	ND

1 1,2 Dichloroethane  
2 1,2 Dichloroethene  
3 Micrograms/liter = parts per billion  
4 None detected

*Handwritten note:* 30' box  
USG-Grid  
oil/gas to be tested from  
Dlex to be tested from  
cell to be tested from



<b>HYDROCARBON CONCENTRATIONS IN GROUNDWATER</b>	
JOB NUMBER 430.013	DATE 6/11/92
APPROVED <i>[Signature]</i>	
13TH & JEFFERSON - OAKLAND, CA	
PLATE <b>1</b>	

**Subsurface Consultants**

- 73.0 GROUNDWATER CONTOUR ELEVATIONS (4/17/92)
- PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION
- TEST BORING/MONITORING WELL
- PROPERTY LINE
- APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
- TVH TOTAL VOLATILE HYDROCARBONS
- BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE
- DCA 1,2, DICHLOROETHANE
- VOC VOLATILE ORGANIC COMPOUND (EPA 8010)
- ND NONE DETECTED
- PREVIOUS SUMP LOCATION
- EXTENT OF SUMP REMEDIATION

# Subsurface Consultants

## CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13<sup>th</sup> + Jefferson GW  
 SCI Job Number: 430.013  
 Project Contact at SCI: Sean Carson  
 Sampled By: Fernando Velez  
 Analytical Laboratory: Curtis + Tompkins  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method	EPA
<u>47</u>	<u>W</u>	<u>Vx5</u>	<u>6/13/91</u>		<u>TVH/BTEXE VOC's</u>	<u>8015/8020/5030 8010</u>	
<del>48</del>	<del>W</del>	<del>Vx5</del>	<del>6/13/91</del>		<del>TVH/BTEXE VOC's</del>	<del>8015/8020/5030 8010</del>	
		<del>Gx2</del>			<del>D+G TEH</del>	<del>SMWW 520E 8015/3550</del>	
<u>49</u>	<u>W</u>	<u>Vx5</u>	<u>6/13/91</u>		<u>TVH/BTEXE VOC's</u>	<u>8015/8020/5030 8010</u>	
<u>51</u>	<u>W</u>	<u>Vx5</u>	<u>6/13/91</u>		<u>TVH/BTEXE VOC's</u>	<u>8015/8020/5030 8010</u>	
<u>52</u>	<u>W</u>	<u>Vx5</u>	<u>6/13/91</u>		<u>TVH/BTEXE VOC's</u>	<u>8015/8020/5030 8010</u>	
<u>53</u>	<u>W</u>	<u>Vx5</u>	<u>6/13/91</u>		<u>TVH/BTEXE VOC's</u>	<u>8015/8020/5030 8010</u>	
<u>54</u>	<u>W</u>	<u>Vx5</u>	<u>6/13/91</u>		<u>TVH/BTEXE VOC's</u>	<u>8015/8020/5030 8010</u>	
<u>59</u>	<u>W</u>	<u>Vx3</u>	<u>6/13/91</u>		<u>VOC's</u>	<u>8010</u>	

\* \* \* \* \*

Released by: [Signature] Received by: \_\_\_\_\_ Date: 6/13/91

Released by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Received by Laboratory: [Signature] Date: 6/13/91 14:50

Released by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_

Released by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = Water, S = Soil, O = Other (specify)  
<sup>2</sup> 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: 13<sup>th</sup> + Jefferson GW  
 SCI Job Number: 430,013  
 Project Contact at SCI: Sean Carson  
 Sampled By: Chris O'Dea  
 Analytical Laboratory: Curtis + Tompkins  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
48	W	Vx5	6/14/91		TVH/BTEX VOCs	8015/8020/5030 8010
		GLx2	6/14/91		O+G TEH	SMWW 5020 E 8015/3550

\* \* \* \* \*

Released by: Clalca Received by: \_\_\_\_\_ Date: 6/19/91  
 Released by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: Nancy Weber Date: 6/19/91  
 Released by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Released by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = Water, S = Soil, O = Other (specify)  
<sup>2</sup> 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

PAGE 1 OF 1

PROJECT NAME: 13<sup>th</sup> + Jefferson LAB: Curtis + Tompkins Ltd  
 JOB NUMBER: 430.013 TURNAROUND: 5 day  
 PROJECT CONTACT: Sean Carson REQUESTED BY: Sean Carson  
 SAMPLED BY: Craig Fletcher / Maryson Watada

ANALYSIS REQUESTED	
TVH/BTXE	8015/3530
VOC's	EA 8010/
TEH	8015/3550
DtG	SMWH #5520 FF

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR	TIME
	MW-47	X				5				X					09	10	91		
	MW-48	X				5				X									
	MW-49	X				5				X									
	MW-51	X				5				X									
	MW-52	X				5				X									
	MW-54	X				5				X									
	MW-59	X				5				X									

COMMENTS & NOTES:

### CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>9/19/10:5</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE/TIME <u>9/19/10</u>
RELEASED BY: (Signature) <u>[Signature]</u>	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137

# CHAIN OF CUSTODY FORM

PAGE \_\_\_\_\_ OF \_\_\_\_\_

PROJECT NAME: 13<sup>th</sup> + Jefferson  
 JOB NUMBER: 430.013 LAB: Curtis + Tompkins Ltd  
 PROJECT CONTACT: Sean Carson TURNAROUND: 5 day  
 SAMPLED BY: Macisianne Watada REQUESTED BY: Sean Carson

ANALYSIS REQUESTED	
PA 8020/800	TEH 8015/3550
TVH/BTXE	VOCs EPA 810
PA 8015/800	O + G SMMW (7:5524)

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES	
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY		YEAR
	MW-47	X				5									12	1	2011	
	MW-48	X				5												
	MW-49	X				5												
	MW-54	X				3												
	MW-59	X				3												

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	<u>Maxianne Watada 12/14/11 4:40</u>		
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
		<u>Sean Carson 12/14/11 4:35</u>	

COMMENTS & NOTES:

**Subsurface Consultants, Inc.**  
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# CHAIN OF CUSTODY FORM

PAGE \_\_\_\_\_ OF \_\_\_\_\_

PROJECT NAME: 13<sup>th</sup> + Jefferson G.W.

JOB NUMBER: 430.013

LAB: Curtis Tompkins Ltd

PROJECT CONTACT: Sean Carson

TURNAROUND: Normal

SAMPLED BY: \_\_\_\_\_

REQUESTED BY: Sean Carson

ANALYSIS REQUESTED	
8020/8030	<input checked="" type="checkbox"/>
MTX E	<input checked="" type="checkbox"/>
TEH 8015/3550	<input checked="" type="checkbox"/>
O+G 5MW17/5526EH	<input checked="" type="checkbox"/>
HVO's EA 8010	<input checked="" type="checkbox"/>

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED				SAMPLING DATE			NOTES
		WATER	SOIL	WASTE	AIR	LITER	PNT	TUBE	HCL	TSO <sub>2</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH	DAY	YEAR	
	MW-47	X				4			X	X	X		0	4	19	2	
	MW-48	X				4			X	X	X		6	4	19	2	
	MW-49	X				4			X	X	X		0	4	19	2	
	MW-54	X				2			X	X	X		0	4	17	2	
	MW-59	X				2			X	X	X		0	4	17	2	

### CHAIN OF CUSTODY RECORD

RECEIVED BY: (Signature) <u>[Signature]</u>	DATE/TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE/TIME
RELEASED BY: (Signature) <u>[Signature]</u>	DATE/TIME	RELEASED BY: (Signature) <u>[Signature]</u>	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RELEASED BY: (Signature)	DATE/TIME

COMMENTS & NOTES:

2:50

**Subsurface Consultants, Inc.**  
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607  
 (510) 268-0461 • FAX: 510-268-0137





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 06/13/91  
DATE REPORTED: 06/27/91


LAB NUMBER: 104126


CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.013

LOCATION: 13th & JEFFERSON GW

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

Berkeley

Wilmington

Los Angeles

LABORATORY NUMBER: 104126  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/22/91  
 DATE REPORTED: 06/27/91

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)
104126-1	47	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104126-2	49	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104126-3	51	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104126-4	52	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104126-5	53	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104126-6	54	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, % 111

LABORATORY NUMBER: 104126-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 47

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	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	2.0
bromoform	ND	1.0
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, %	103

LABORATORY NUMBER: 104126-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 49

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	5.0	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	2.0
bromoform	ND	1.0
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, % 103  
 =====

LABORATORY NUMBER: 104126-3  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 51

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	1.0	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	2.0
bromoform	ND	1.0
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, % 103  
 =====

LABORATORY NUMBER: 104126-4  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 52

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	2.0	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	2.0
bromoform	ND	1.0
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, %	103

LABORATORY NUMBER: 104126-5  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 53

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	8.0	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	2.0
bromoform	ND	1.0
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, %	103

LABORATORY NUMBER: 104126-6  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 54

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	ND	1.0
freon 113	1.0	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	2.0
bromoform	ND	1.0
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, %	103



LABORATORY NUMBER: 104126-6  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 54

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91  
 DATE REVISED: 09/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	1.0	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	2.0
bromoform	ND	1.0
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, %	103

LABORATORY NUMBER: 104126-7  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13th & JEFFERSON GW  
 SAMPLE ID: 59

DATE RECEIVED: 06/13/91  
 DATE ANALYZED: 06/19/91  
 DATE REPORTED: 06/27/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	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	2.0
bromoform	ND	1.0
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, %	103

Client: Subsurface Consultants

Laboratory Login Number: 104199

 Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Report Date: 03 July 91

ANALYSIS: Hydrocarbon Oil &amp; Grease (Gravimetric)      METHOD: SMWW 17:5520BF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
104199-001	48	Water	19-JUN-91	19-JUN-91	01-JUL-91	ND	mg/L	5	TR	1904

ND = Not Detected at or above Reporting Limit (RL).

## Q C B a t c h R e p o r t

Client: Subsurface Consultants  
 Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Laboratory Login Number: 104199  
 Report Date: 03 July 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 1904

## Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	01-JUL-91

## Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	89%	SMWW 17:5520BF	01-JUL-91
BSD	81%	SMWW 17:5520BF	01-JUL-91

		Control Limits
Average Spike Recovery	85%	80% - 120%
Relative Percent Difference	10.1%	< 20%

LABORATORY NUMBER: 104199  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 06/19/91  
 DATE ANALYZED: 06/29/91  
 DATE REPORTED: 07/03/91

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)
104199-1	48	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

LABORATORY NUMBER: 104199  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 06/19/91  
 DATE EXTRACTED: 06/25/91  
 DATE ANALYZED: 06/28/91  
 DATE REPORTED: 07/02/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
 California DOHS Method  
 LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
104199-1	48	ND	ND	50

ND = Not detected at or above reporting limit.

\*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	92



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

DATE RECEIVED: 09/11/91

DATE REPORTED: 09/17/91


LABORATORY NUMBER: 105131

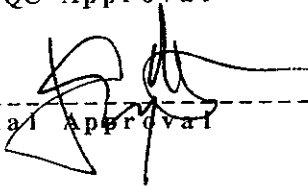
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.013

LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

  
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QA/QC Approval

  
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Final Approval

Berkeley

Wilmington

Los Angeles



LABORATORY NUMBER: 105131  
CLIENT: SUBSURFACE CONSULTANTS, INC.  
PROJECT ID: 430.013  
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/11/91  
DATE ANALYZED: 09/14/91  
DATE REPORTED: 09/17/91

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)
105131-1	MW-47	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105131-2	MW-48	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105131-3	MW-49	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105131-4	MW-51	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105131-5	MW-52	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
105131-6	MW-54	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, %	95



Client: **Subsurface Consultants**

Laboratory Login Number: 105131

Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Report Date: 17 September 91

**ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)      METHOD: SMWW 17:5520BF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
105131-002	MW-48	Water	10-SEP-91	11-SEP-91	16-SEP-91	ND	mg/L	5	TR	2641

ND = Not Detected at or above Reporting Limit (RL).

Q C B a t c h R e p o r t

Client: Subsurface Consultants  
 Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Laboratory Login Number: 105131  
 Report Date: 17 September 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 2641

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	16-SEP-91

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	89%	SMWW 17:5520BF	16-SEP-91
BSD	91%	SMWW 17:5520BF	16-SEP-91

		Control Limits
Average Spike Recovery	90%	80% - 120%
Relative Percent Difference	2.1%	< 20%



LABORATORY NUMBER: 105131  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.013  
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/11/91  
DATE EXTRACTED: 09/12/91  
DATE ANALYZED: 09/15/91  
DATE REPORTED: 09/17/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
California DOHS Method  
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
105131-2	MW-48	ND	ND	50

ND = Not Detected at or above reporting limit.

\*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	10
RECOVERY, %	85

LABORATORY NUMBER: 105131-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON  
 SAMPLE ID: MW-47

DATE RECEIVED: 09/11/91  
 DATE ANALYZED: 09/13/91  
 DATE REPORTED: 09/17/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	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	2.0
bromoform	ND	1.0
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

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RPD, %                                     23
RECOVERY, %                               92
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LABORATORY NUMBER: 105131-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON  
 SAMPLE ID: MW-48

DATE RECEIVED: 09/11/91  
 DATE ANALYZED: 09/13/91  
 DATE REPORTED: 09/17/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	ND	1.0
chloroform	ND	1.0
freon 113	ND	1.0
1,2-dichloroethane	5.3	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	2.0
bromoform	ND	1.0
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, %	23
RECOVERY, %	92



LABORATORY NUMBER: 105131-3  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.013  
LOCATION: 13TH & JEFFERSON  
SAMPLE ID: MW-49

DATE RECEIVED: 09/11/91  
DATE ANALYZED: 09/13/91  
DATE REPORTED: 09/17/91

EPA 8010  
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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	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	2.0
bromoform	ND	1.0
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, %	23
RECOVERY, %	92

LABORATORY NUMBER: 105131-7  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON  
 SAMPLE ID: MW-59

DATE RECEIVED: 09/11/91  
 DATE ANALYZED: 09/13/91  
 DATE REPORTED: 09/17/91

EPA 8010  
 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	2.0
trichlorofluoromethane	ND	1.0
1,1-dichloroethene	ND	1.0
1,1-dichloroethane	ND	1.0
cis-1,2-dichloroethene	ND	1.0
trans-1,2-dichloroethene	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	2.0
bromoform	ND	1.0
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, %	23
RECOVERY, %	92



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

DATE RECEIVED: 12/12/91  
DATE REPORTED: 12/23/91

LABORATORY NUMBER: 106030


CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.013

LOCATION: 13TH & JEFFERSON GW

RESULTS: SEE ATTACHED

  
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QA/QC Approval

  
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Final Approval

Berkeley

Wilmington

Los Angeles





Client: Subsurface Consultants

Laboratory Login Number: 106030

Project Name: 13th & Jefferson GW  
Project Number: 430.013

Report Date: 23 December 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)      METHOD: SMWW 17:5520BF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
106030-002	MW-48	Water	12-DEC-91	12-DEC-91	18-DEC-91	ND	mg/L	5	TR	3711

ND = Not Detected at or above Reporting Limit (RL).

## Q C B a t c h R e p o r t

Client: Subsurface Consultants  
 Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Laboratory Login Number: 106030  
 Report Date: 23 December 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 3711

## Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	18-DEC-91

## Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	89%	SMWW 17:5520BF	18-DEC-91
BSD	85%	SMWW 17:5520BF	18-DEC-91

		Control Limits
Average Spike Recovery	87%	80% - 120%
Relative Percent Difference	4.5%	< 20%



LABORATORY NUMBER: 106030  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.012  
LOCATION: 13TH & JEFFERSON GW

DATE RECEIVED: 12/12/91  
DATE EXTRACTED: 12/18/91  
DATE ANALYZED: 12/20/91  
DATE REPORTED: 12/23/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
California DOHS Method  
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
106030-2	MW-48	ND	ND	50

ND = Not detected at or above reporting limit.

\*Reporting limit applies to all analytes.

QA/QC SUMMARY

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=====
RPD, %                                     5
RECOVERY, %                               119
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LABORATORY NUMBER: 106030  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW

DATE RECEIVED: 12/12/91  
 DATE ANALYZED: 12/18/91  
 DATE REPORTED: 12/23/91

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)
106030-1	MW-47	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106030-2	MW-48	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106030-3	MW-49	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
106030-4	MW-54	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, %	83

LABORATORY NUMBER: 106030-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-47

DATE RECEIVED: 12/12/91  
 DATE ANALYZED: 12/18/91  
 DATE REPORTED: 12/23/91

EPA 8010  
 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
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	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-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
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

Surrogate Recovery, %	112
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LABORATORY NUMBER: 106030-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-48

DATE RECEIVED: 12/12/91  
 DATE ANALYZED: 12/18/91  
 DATE REPORTED: 12/23/91

EPA 8010  
 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
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	16	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-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
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

Surrogate Recovery, %	110
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LABORATORY NUMBER: 106030-3  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.013  
LOCATION: 13TH & JEFFERSON GW  
SAMPLE ID: MW-49

DATE RECEIVED: 12/12/91  
DATE ANALYZED: 12/18/91  
DATE REPORTED: 12/23/91

EPA 8010  
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
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	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-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
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

Surrogate Recovery, %	113
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LABORATORY NUMBER: 106030-5  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-59

DATE RECEIVED: 12/12/91  
 DATE ANALYZED: 12/18/91  
 DATE REPORTED: 12/23/91

EPA 8010  
 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
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	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-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
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

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Surrogate Recovery, %

=====

112



LABORATORY NUMBER: 106030  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: METHOD BLANK

DATE ANALYZED: 12/18/91  
 DATE REPORTED: 12/23/91

EPA 8010  
 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
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	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-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
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

Surrogate Recovery, %	111
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## MS/MSD SUMMARY SHEET FOR EPA 8010\8020

Operator: AV  
 Analysis date: 12/18/91  
 Sample type: WATER  
 Sample ID: 105943-2

Spike file: 351W/X015  
 Spike dup file: 351W/X016  
 Instrument: GC12  
 Sequence Name: dec 17

## 8010 MS/MSD DATA (spiked at 20 ppb)

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	23.49	117 %	OK	60 - 133
Trichloroethene	23.26	116 %	OK	88 - 125
Chlorobenzene	21.17	106 %	OK	90 - 127
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	22.36	112 %	OK	60 - 133
Trichloroethene	22.78	114 %	OK	88 - 125
Chlorobenzene	21.74	109 %	OK	90 - 127
SURROGATES				
BROMOBENZENE (MS)	108.00	108 %	OK	98 - 115
BROMOBENZENE (MSD)	109.00	109 %	OK	98 - 115

## 8020 MS/MSD DATA (spiked at 20 ppb)

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	23.42	117 %	OK	62 - 120
Toluene	23.19	116 %	OK	61 - 121
Chlorobenzene	17.85	89 %	OK	84 - 115
SPIKE DUP COMPOUNDS				
Benzene	22.88	114 %	OK	62 - 120
Toluene	22.60	113 %	OK	61 - 121
Chlorobenzene	19.42	97 %	OK	84 - 115
SURROGATES				
BROMOBENZENE (MS)	101.00	101 %	OK	91 - 107
BROMOBENZENE (MSD)	101.00	101 %	OK	91 - 107

## RPD DATA

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	23.49	22.36	5 %	OK	<= 14
Trichloroethene	23.26	22.78	2 %	OK	<= 14
Chlorobenzene	21.17	21.74	3 %	OK	<= 13
8020 COMPOUNDS					
Benzene	23.42	22.88	2 %	OK	<= 11
Toluene	23.19	22.60	3 %	OK	<= 13
Chlorobenzene	17.85	19.42	8 %	OK	<= 13



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 04/17/92

DATE REPORTED: 04/30/92

LABORATORY NUMBER: 107170

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.013

LOCATION: 13TH & JEFFERSON GW

RESULTS: SEE ATTACHED

Reviewed By

Reviewed By

Berkeley

Wilmington

Los Angeles

Client: Subsurface Consultants

Laboratory Login Number: 107170

Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Report Date: 30 April 92

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)      METHOD: SMWW 17:5520BF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
107170-002	MW-48	Water	17-APR-92	17-APR-92	20-APR-92	ND	mg/L	5	TR	5002

ND = Not Detected at or above Reporting Limit (RL).

## Q C B a t c h R e p o r t

Client: Subsurface Consultants  
 Project Name: 13th & Jefferson GW  
 Project Number: 430.013

Laboratory Login Number: 107170  
 Report Date: 30 April 92

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 5002

## Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	20-APR-92

## Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	82%	SMWW 17:5520BF	20-APR-92
BSD	85%	SMWW 17:5520BF	20-APR-92

		Control Limits
Average Spike Recovery	84%	80% - 120%
Relative Percent Difference	3.3%	< 20%



LABORATORY NUMBER: 107170-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-47

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/23/92  
 DATE REPORTED: 04/30/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

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SURROGATE RECOVERY, %

=====

114

LABORATORY NUMBER: 107170-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-47

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/23/92  
 DATE REPORTED: 04/30/92

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

SURROGATE RECOVERY, %	101
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LABORATORY NUMBER: 107170-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-48

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/23/92  
 DATE REPORTED: 04/30/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Chloroform	ND	1
Freon 113	ND	1
1,2-Dichloroethane	1	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
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

SURROGATE RECOVERY, %	114
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LABORATORY NUMBER: 107170-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-48

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/23/92  
 DATE REPORTED: 04/30/92

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

SURROGATE RECOVERY, %	101
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LABORATORY NUMBER: 107170-3  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-49

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/23/92  
 DATE REPORTED: 04/30/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	REPORTING LIMIT ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

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SURROGATE RECOVERY, %

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115

LABORATORY NUMBER: 107170-3  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-49

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/23/92  
 DATE REPORTED: 04/30/92

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

SURROGATE RECOVERY, %	101
-----------------------	-----

LABORATORY NUMBER: 107170-5  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-59

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/24/92  
 DATE REPORTED: 04/30/92

EPA 8010  
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2
Bromomethane	ND	2
Vinyl chloride	ND	2
Chloroethane	ND	2
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	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
trans-1,3-Dichloropropene	ND	1
Dibromochloromethane	ND	1
2-Chloroethylvinyl ether	ND	2
Bromoform	ND	1
Tetrachloroethene	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 = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	116
-----------------------	-----

LABORATORY NUMBER: 107170  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW  
 SAMPLE ID: MW-54

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE ANALYZED: 04/24/92  
 DATE REPORTED: 04/30/92

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
 Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT * (ug/L)
107170-4	MW-54	ND	ND	ND	ND	1

ND = Not detected at or above reporting limit.

\* Reporting Limit applies to all analytes.

QA/QC SUMMARY: SURROGATE RECOVERY

RECOVERY, %

101

LABORATORY NUMBER: 107170  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW

DATE SAMPLED: 04/17/92  
 DATE RECEIVED: 04/17/92  
 DATE EXTRACTED: 04/22/92  
 DATE ANALYZED: 04/22/92  
 DATE REPORTED: 04/30/92

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
 California DOHS Method  
 LUFT Manual October 1989

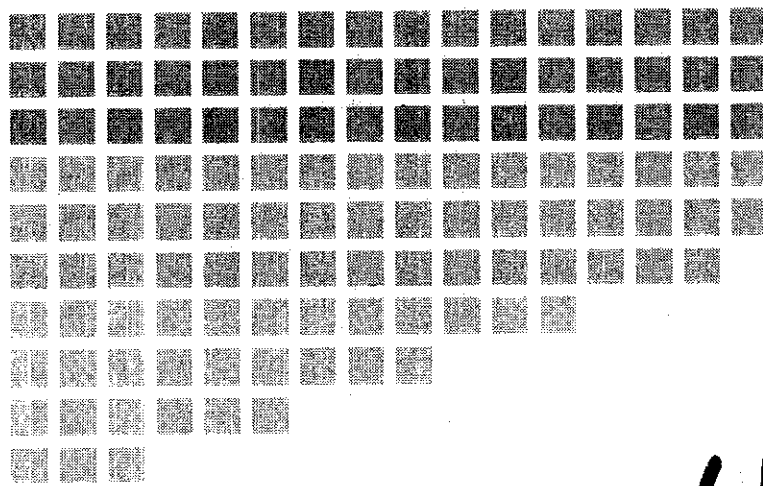
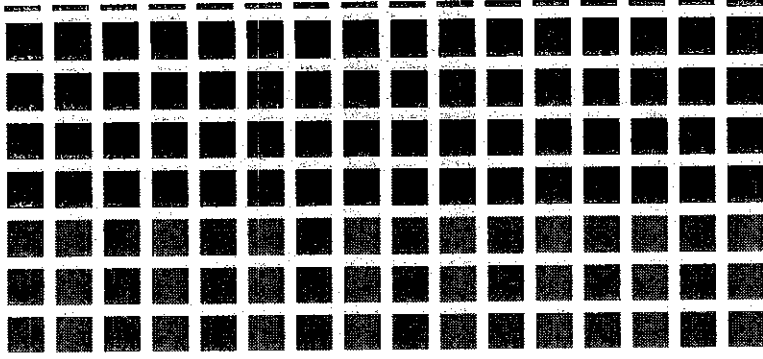
LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
107170-2	MW-48	ND	ND	50

ND = Not detected at or above reporting limit.

\*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	8
RECOVERY, %	110



4-25-91

■ Subsurface Consultants, Inc.


PROGRESS REPORT 3  
GROUNDWATER MONITORING  
AND REMEDIATION  
1330 MARTIN LUTHER KING, JR. WAY  
SCI 430.010

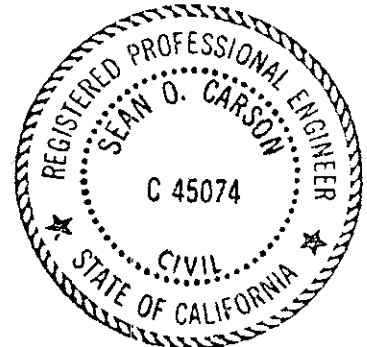
April 25, 1991

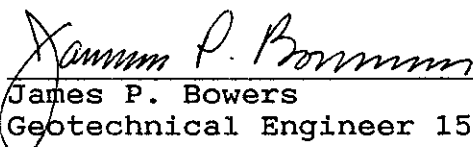
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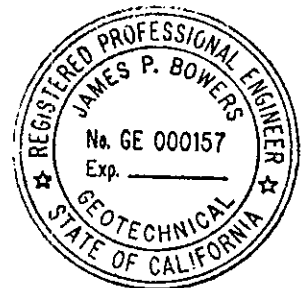
Mr. John Esposito  
Bramalea Pacific  
1221 Broadway, Suite 1800  
Oakland, California 94621

By:

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



  
James P. Bowers  
Geotechnical Engineer 157 (expires 3/31/95)



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

April 25, 1991



91 APR 26 PM 3:29

LETTER OF TRANSMITTAL

TO: Mr. John Esposito  
Bramalea Pacific  
1221 Broadway, Suite 1800  
Oakland, CA 94612

DATE: April 26, 1991  
PROJECT: 1330 Martin Luther King, Jr. Way/Progress Report 3  
SICI JOB NUMBER: 430.010

WE ARE SENDING YOU:

- |   |  |
|---|--|
| <input type="checkbox"/> 1 copies                         | <input checked="" type="checkbox"/> if you have any questions, please call |
| <input checked="" type="checkbox"/> of our final report   | <input type="checkbox"/> for your review and comment                       |
| <input type="checkbox"/> a draft of our report            | <input type="checkbox"/> please return an executed copy                    |
| <input type="checkbox"/> a Service Agreement              | <input type="checkbox"/> for geotechnical services                         |
| <input type="checkbox"/> a proposed scope of services     | <input type="checkbox"/> with our comments                                 |
| <input type="checkbox"/> specifications                   | <input type="checkbox"/> with Chain of Custody documents                   |
| <input type="checkbox"/> grading foundation plans         | <input checked="" type="checkbox"/> for your use                           |
| <input type="checkbox"/> soil samples/groundwater samples |  |
| <input type="checkbox"/> an executed contract             |  |

REMARKS:

- COPIES TO: (1) Ms. Lois Parr, City of Oakland - OEDE, 1333 Broadway, #900, Oakland, CA  
(1) Ms. Katherine Chesick, ACHCSA, 80 Swan Way, #200, Oakland, CA 94612  
(1) Mr. Lester Feldman, RWQCB, 1800 Harrison Street, #700, Oakland, CA  
(1) Mr. Donnell Choy, Office of City Attorney, 505 14th Street, 12th Floor, Oakland, CA  
(1) Mr. Roy Ikeda, Crosby, Heafey, Roach & May, 1999 Harrison Street, Oakland, CA

BY: Jim Bowers  
James P. Bowers (cul)

Subsurface Consultants, Inc.

## I INTRODUCTION

This report presents groundwater monitoring data and summarizes groundwater remediation through January 21, 1991 at 1330 Martin Luther King, Jr. Way in Oakland, California. Groundwater contamination resulted from a leaking underground gasoline storage tank. Free product from the tank has migrated beneath the intersection at 14th Street and Martin Luther King, Jr. Way. The extent of the free product and dissolved product plumes was characterized during previous investigations and recorded in a report dated November 20, 1989 by Subsurface Consultants, Inc (SCI).

Groundwater remediation commenced on April 30, 1990. Remediation consists of pumping groundwater from one well and treating it with a granular activated carbon (GAC) filtering system. Details of the groundwater treatment system, the hydrogeologic assessment, as well as tank removal and soil remediation activities are recorded in reports previously published by SCI.

## II SUPPLEMENTAL INVESTIGATION

Several additional monitoring wells have been constructed to further define the lateral extent of the dissolved product plume. Wells 45, 46 and 58 have been installed at the locations shown on the Site Plan, Plate 1. The wells were constructed using methods described in our previous reports. Detailed well logs are

presented on Plates 4 through 6. These wells were permitted through the Alameda County Flood Control and Water Conservation District, Zone 7.

### III GROUNDWATER LEVEL MEASUREMENTS

Groundwater levels were obtained by measuring the depth to groundwater from the top of casing (TOC) using an electronic well sounder. A level survey, using an assumed elevation reference, was performed to determine the TOC elevation of the monitoring wells. Water levels in wells that contained free product were measured using a steel tape with water and gasoline sensitive pastes. The water level data are presented in the Appendix.

The groundwater level data indicates that the natural groundwater flow direction is toward the northwest at a gradient of approximately 0.8 percent, as shown on Plate 1. The groundwater surface elevations shown on Plate 1 represent conditions prior to remediation pumping. Groundwater level data presented on Plate 2 represents typical conditions during groundwater extraction pumping. The data presented on Plate 3 represents recent conditions when groundwater pumping had temporarily been halted.

#### IV FREE PRODUCT

Free product measurements were conducted in wells known to contain free gasoline product and those wells close to the perimeter of the free product plume. As discussed in our previous report, free product thicknesses in several of the wells appears to be significantly greater than that which actually exists in the formation. Actual gasoline thicknesses were estimated by bailing the free product from the wells until stabilized free product levels were noted. Free product thicknesses measured after bailing ranged from 3 to 6 inches. The most recent estimated extent of the free product plume is shown on Plate 3. The extent of the free product is based on data from the groundwater wells and vapor extraction wells installed for soil remediation.

#### V GROUNDWATER REMEDIATION

Groundwater remediation began on April 30, 1990 and consists of pumping approximately 3 gallons per minute (gpm) from Well 28. The drawdown in the pumping well is approximately 5 feet. The water is treated with granular activated carbon (GAC) and then discharged into the EBMUD sanitary sewer system. The treatment system has been closely monitored by sampling and analyzing the water at points within the treatment system biweekly. The results of the monitoring program are submitted quarterly to EBMUD. Pumping rates were maintained except during intermittent intervals

when pumping was ceased for maintenance of the pumping and/or treatment systems. Typical stabilized groundwater elevation contours during pumping are shown on Plate 2. On December 12, 1990, pumping temporarily ceased because contaminant concentrations in Well 29 were increasing. This condition is discussed in more detail in subsequent sections of the report.

## V GROUNDWATER QUALITY MONITORING

Groundwater samples were obtained from selected wells that did not contain free product. Before sampling, each well was purged using a bailer. Groundwater samples were obtained using dedicated Teflon bailers. Groundwater samples were retained in precleaned containers, placed in an iced cooler, and refrigerated until delivery to the analytical laboratory. Chain-of-custody documents accompanied the samples; copies are presented in the Appendix.

Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services certified analytical laboratory. The analytical testing program for the groundwater samples included:

1. Total volatile hydrocarbons - sample preparation and analysis using EPA methods 5030 (purge and trap extraction) and 8015 (gas chromatograph coupled to a flame ionization detector).
2. Purgeable aromatics - sample preparation and analysis using EPA methods 5030 and 8020 (gas chromatograph and photo ionization detector).
3. Organic lead - sample preparation and analysis using DHS method 1988 Luft Manual.

4. Ethylene Dibromide - sample preparation and analysis using EPA method 5046.
5. Purgeable Halocarbons - sample preparation and analysis using EPA methods 5030 and 8010 (gas chromatograph and electrolytic conductivity detector).

The results of the analytical testing are presented in Table 2. Copies of the analytical test reports are presented in the Appendix.

Groundwater quality data for representative conditions before, during and after pumping are presented on Plates 1 thru 3, respectively. Based upon recent groundwater quality data, we estimate that the extent of the dissolved product contamination plume is approximately that shown on Plate 3. The downgradient edge of the plume appears to extend not more than 150 feet downgradient of the previous fuel tank. This distance is significantly less than that figure recorded in our previous report. The revised estimate reflects new water quality data generated from Well 58.

Table 2. Contaminant Concentrations In Groundwater

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH<sup>1</sup></u> <u>(ppb)<sup>5</sup></u>	<u>B<sup>2</sup></u> <u>(ppb)</u>	<u>T<sup>2</sup></u> <u>(ppb)</u>	<u>X<sup>2</sup></u> <u>(ppb)</u>	<u>E<sup>2</sup></u> <u>(ppb)</u>	<u>Total Organic Lead</u> <u>(ppb)</u>	<u>EDB<sup>3</sup></u> <u>(ppb)</u>	<u>1,2 DCA<sup>4</sup></u> <u>(ppb)</u>
11	07/05/88	10,000	1,800	ND <sup>5</sup>	1,200	ND	-- <sup>6</sup>	--	--
	04/03/89	53,000	7,100	4,000	2,400	380	--	--	--
	07/06/89	22,000	5,300	3,200	2,300	390	ND	26	--
	11/08/89	120,000	18,000	8,000	21,000	4,500	ND	37	--
	07/18/90	26,000	950	19	98	ND	--	--	--
	10/23/90	4,200	1,600	8.5	170	28	--	0.2	--
	01/21/91	1,900	600	6.2	84	60	--	0.15	--
28	09/02/88	890	431	75.4	84	ND	ND	9.2	--
	07/06/89	13,000	4,900	1,500	1,300	100	ND	27	--
29	09/02/88	ND	ND	8.1	ND	ND	ND	ND	--
	04/03/89	450	ND	2.0	6.7	2.0	--	--	--
	07/06/89	ND	ND	15	ND	ND	ND	ND	--
	11/08/89	780	ND	14	32	7.9	ND	ND	--
	10/23/90	1,800	1.2	6.5	4.8	2.7	--	--	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--	ND	--
	03/28/91	500	ND	1.6	0.8	ND	--	--	--
31	09/02/88	ND	ND	ND	ND	ND	ND	ND	--
	04/03/89	ND	ND	ND	ND	ND	--	--	--
	07/06/89	ND	ND	ND	ND	ND	ND	ND	--
	11/08/89	ND	ND	ND	ND	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	01/21/91	ND	ND	0.6	2.1	ND	--	ND	--
32	10/23/90	48,000	7,600	8,200	5,600	150	--	3.8	--
	01/21/91	96,000	9,600	15,000	16,000	2,000	--	ND	--
39	04/03/89	2,000	250	11	210	ND	--	--	--
	07/06/89	7,900	2,700	1,300	860	97	ND	3.0	--
	11/08/89	9,300	4,500	760	310	150	ND	4.0	36
	07/18/90	ND	4.1	ND	ND	ND	--	--	--
	10/23/90	160	12	6.4	5.0	ND	--	ND	ND
	01/21/90	200	23	0.9	2.0	1.2	--	ND	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--
42	07/06/89	13,000	4,500	100	1,000	ND	ND	8.0	--
	10/23/90	8,800	420	580	910	91	--	0.7	--
45	12/05/89	ND	ND	ND	ND	ND	ND	ND	--
	10/23/90	ND	0.9	1.4	1.8	ND	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--

Sample	Sample Date	TVH <sup>1</sup> (ppb) <sup>5</sup>	B <sup>2</sup> (ppb)	T <sup>2</sup> (ppb)	X <sup>2</sup> (ppb)	E <sup>2</sup> (ppb)	Total Organic Lead (ppb)	EDB <sup>3</sup> (ppb)	1,2 DCA <sup>4</sup> (ppb)
46	11/30/89	ND	2.1	1.9	2.0	ND	ND	ND	--
	07/18/90	ND	ND	ND	ND	ND	--	--	--
	10/23/90	ND	ND	0.6	ND	0.5	--	--	--
	01/21/91	ND	ND	ND	ND	ND	--	ND	--
58	01/30/91	ND	ND	ND	ND	ND	--	--	--
	03/28/91	ND	ND	ND	ND	ND	--	--	--

- 1 TVH = Total Volatile Hydrocarbons
- 2 BTXE = Benzene, Toluene, Xylene, and Ethylbenzene
- 3 EPA 8010, ethylene dibromide
- 4 EPA 8010, 1, 2 dichloroethane
- 5 ppb = parts per billion = ug/L = micrograms per liter
- 6 ND = None detected, chemicals not present at concentrations above the detection limits
- 7 -- = Test not performed

## VI CONCLUSIONS

### A. General

Based upon the groundwater quality data generated to date, it is apparent that groundwater pumping has reduced dissolved product concentrations. It is our opinion, that groundwater remediation by extraction will be even more effective once the free product is removed. Off-site soil remediation is currently underway utilizing soil vapor extraction technology. We judge that significant reductions in free product thicknesses and soil contamination concentrations will be realized during the coming months.

The stabilized groundwater conditions during pumping (shown on Plate 2) indicate that groundwater flow directions were reversed



downgradient of Well 28 to a distance of approximately 125 feet. The capture zone for the extraction well was estimated from the groundwater contours and appears to intercept the dissolved product plume. The estimated extent of the capture zone is shown on Plate 2. We therefore conclude that pumping 3 gpm from Well 28 will be effective in capturing the contaminated groundwater plume.

**B. Additional Source of Gasoline Contamination**

Review of the groundwater quality data presented in Table 3 suggests that there may be another source of gasoline contamination in the vicinity of Monitoring Well 29. In 1988, very low concentrations of toluene were detected in this well. Over time, we have observed significant increases in concentrations of gasoline and its soluble constituents in groundwater obtained from the well. For discussion purposes, the data from Table 3 pertinent to Wells 29 and 58 are presented below.

**Table 3. Contaminant Concentrations in Groundwater From Wells 29 and 58**

<u>Test Boring</u>	<u>Sample Date</u>	<u>TVH (ppb)</u>	<u>B (ppb)</u>	<u>T (ppb)</u>	<u>X (ppb)</u>	<u>E (ppb)</u>	<u>Total Organic Lead (ppb)</u>
29	09/02/88	ND	ND	8.1	ND	ND	ND
	04/03/89	450	ND	2.0	6.7	2.0	--
	07/06/89	ND	ND	15	ND	ND	ND
	11/08/89	780	ND	14	32	7.9	ND
	10/23/90	1,800	1.2	6.5	4.8	2.7	--
	01/21/91	1,100	ND	3.7	4.9	1.3	--
	03/28/91	500	ND	1.6	0.8	ND	--
58	01/30/91	ND	ND	ND	ND	ND	ND
	03/28/91	ND	ND	ND	ND	ND	--

The contamination detected in Well 29 appears to be associated with another source unrelated to the Martin Luther King Jr. Way (MLK) groundwater contamination problem. The groundwater sample from Well 58, which is situated between Well 29 and the MLK plume did not contain TVH or BTXE above detection limits. This data indicates that contaminants present in Well 29 are likely not associated with the MLK tank release.

We are currently uncertain of the source of gasoline contamination detected in Well 29. However, preliminary research conducted by SCI suggests that a source may exist in areas north of Well 29.

C. Future Groundwater Monitoring

Groundwater quality monitoring will continue on a quarterly basis. We propose that future sampling be performed on Wells 31, 58, 46, 45, 11, 39 and 32. Free product thicknesses will be measured in Wells 30, 42 and 43. We propose to delete Well 29 from the monitoring program since it appears that the MLK contamination problem does not extend into this area.

List of Attached Plates:

Plate 1	Groundwater Conditions: Before Pumping
Plate 2	Groundwater Conditions: During Pumping
Plate 3	Groundwater Conditions January 21, 1991
Plates 4 thru 6	Logs Of Borings 45, 46 and 58
Plate 7	Unified Soil Classification System

Appendix:

Groundwater Level Data  
Laboratory Test Reports  
Chain-of-Custody Documents

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  
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 94612

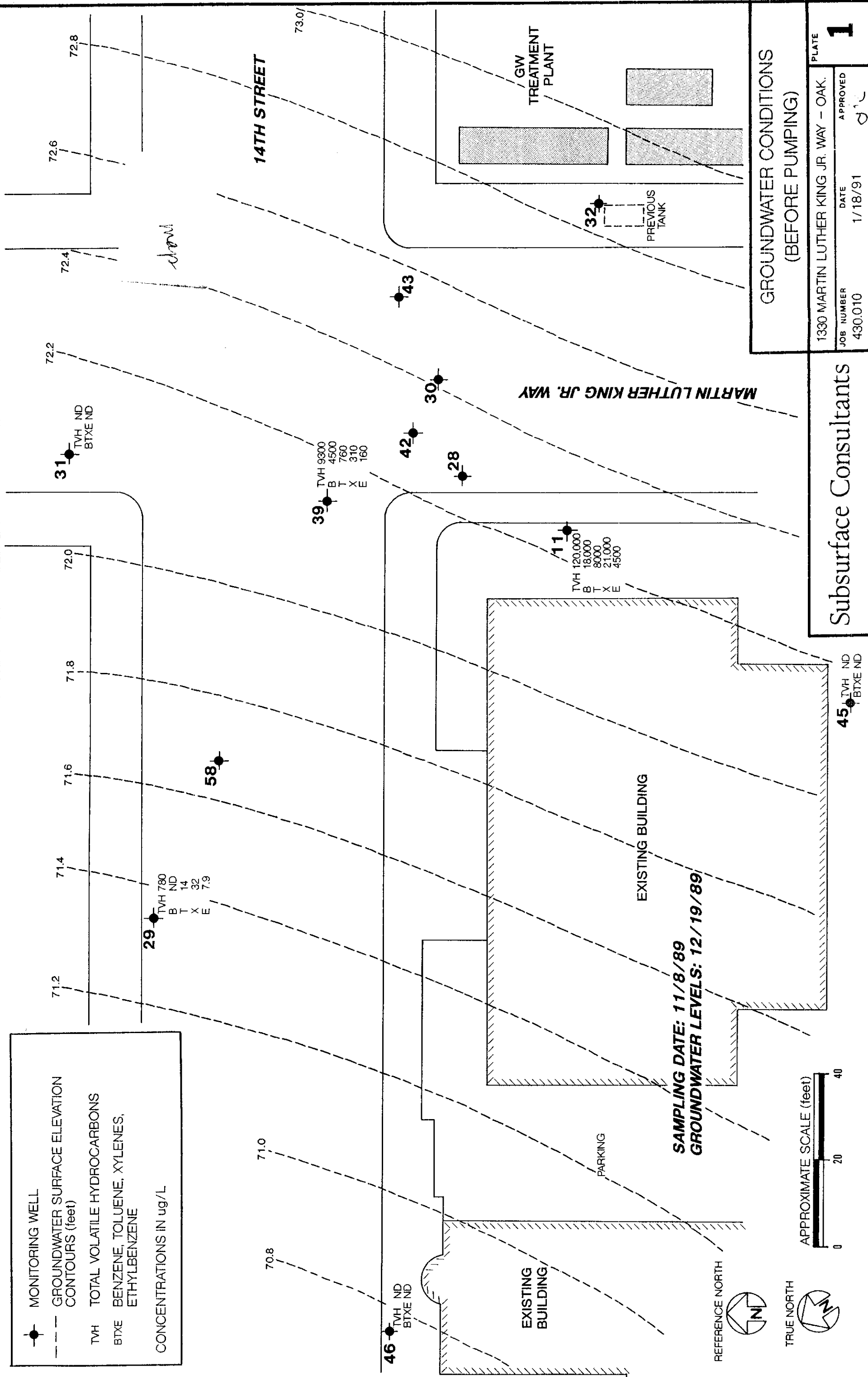
1 copy: Mr. Lester Feldman  
Regional Water Quality Control Board  
1800 Harrison Street, Suite 700  
Oakland, California 94612

1 copy: Mr. Donnell Choy  
City of Oakland  
505 14th Street, 12th Floor  
Oakland, California 94612

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

SOC:JPB:sld

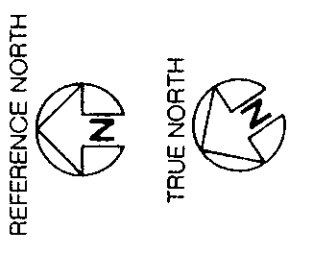
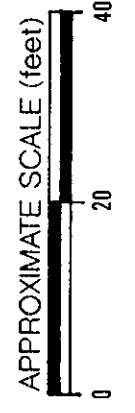
● MONITORING WELL  
 - - - GROUNDWATER SURFACE ELEVATION CONTOURS (feet)  
 TVH TOTAL VOLATILE HYDROCARBONS  
 BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE  
 CONCENTRATIONS IN ug/L



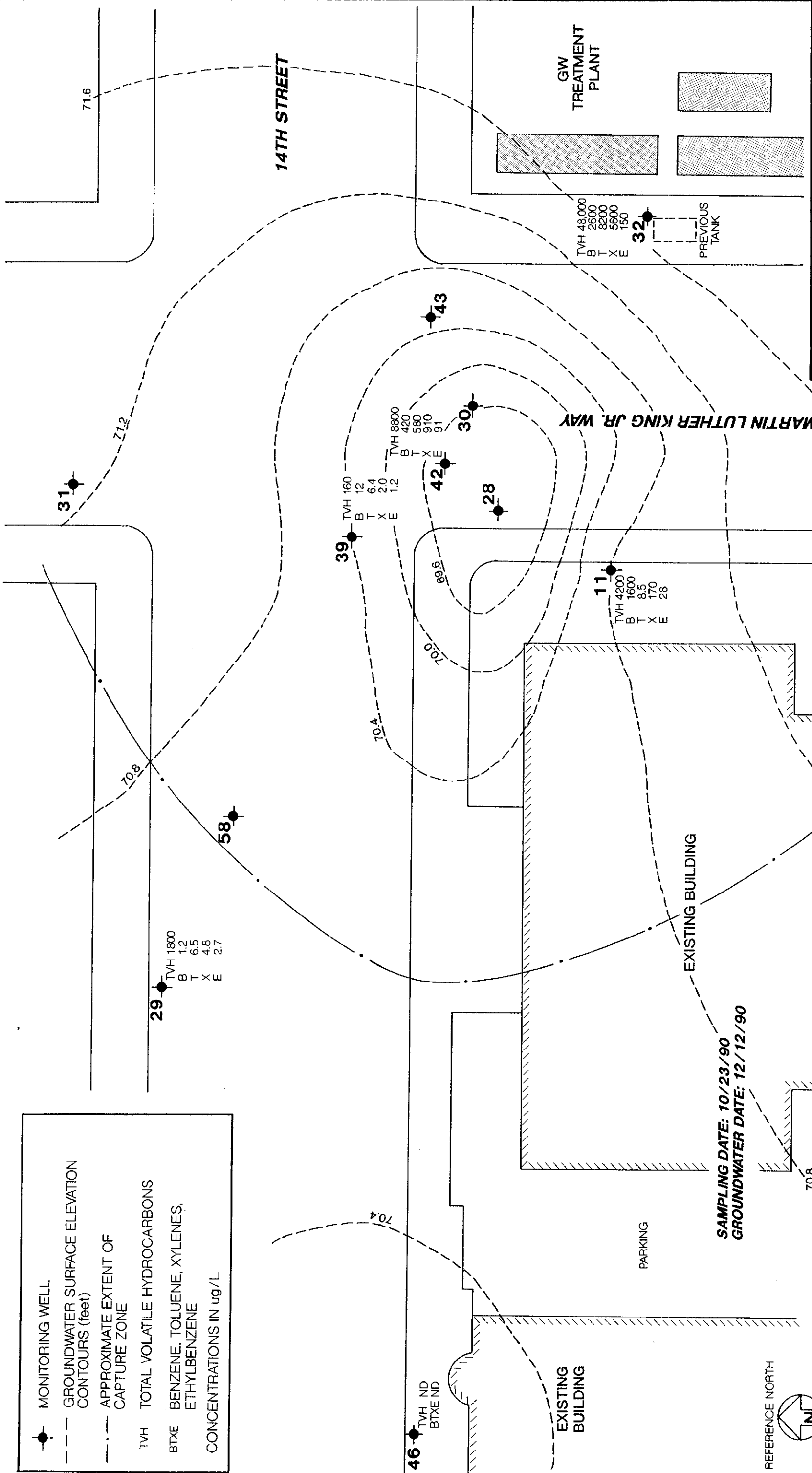
GROUNDWATER CONDITIONS  
 (BEFORE PUMPING)

1330 MARTIN LUTHER KING JR. WAY - OAK.  
 JOB NUMBER 430.010  
 DATE 1/18/91  
 APPROVED *[Signature]*  
 PLATE **1**

Subsurface Consultants



● MONITORING WELL  
 --- GROUNDWATER SURFACE ELEVATION CONTOURS (feet)  
 - - - APPROXIMATE EXTENT OF CAPTURE ZONE  
 TVH TOTAL VOLATILE HYDROCARBONS  
 BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE  
 CONCENTRATIONS IN ug/L



SAMPLING DATE: 10/23/90  
 GROUNDWATER DATE: 12/12/90

REFERENCE NORTH   
 TRUE NORTH

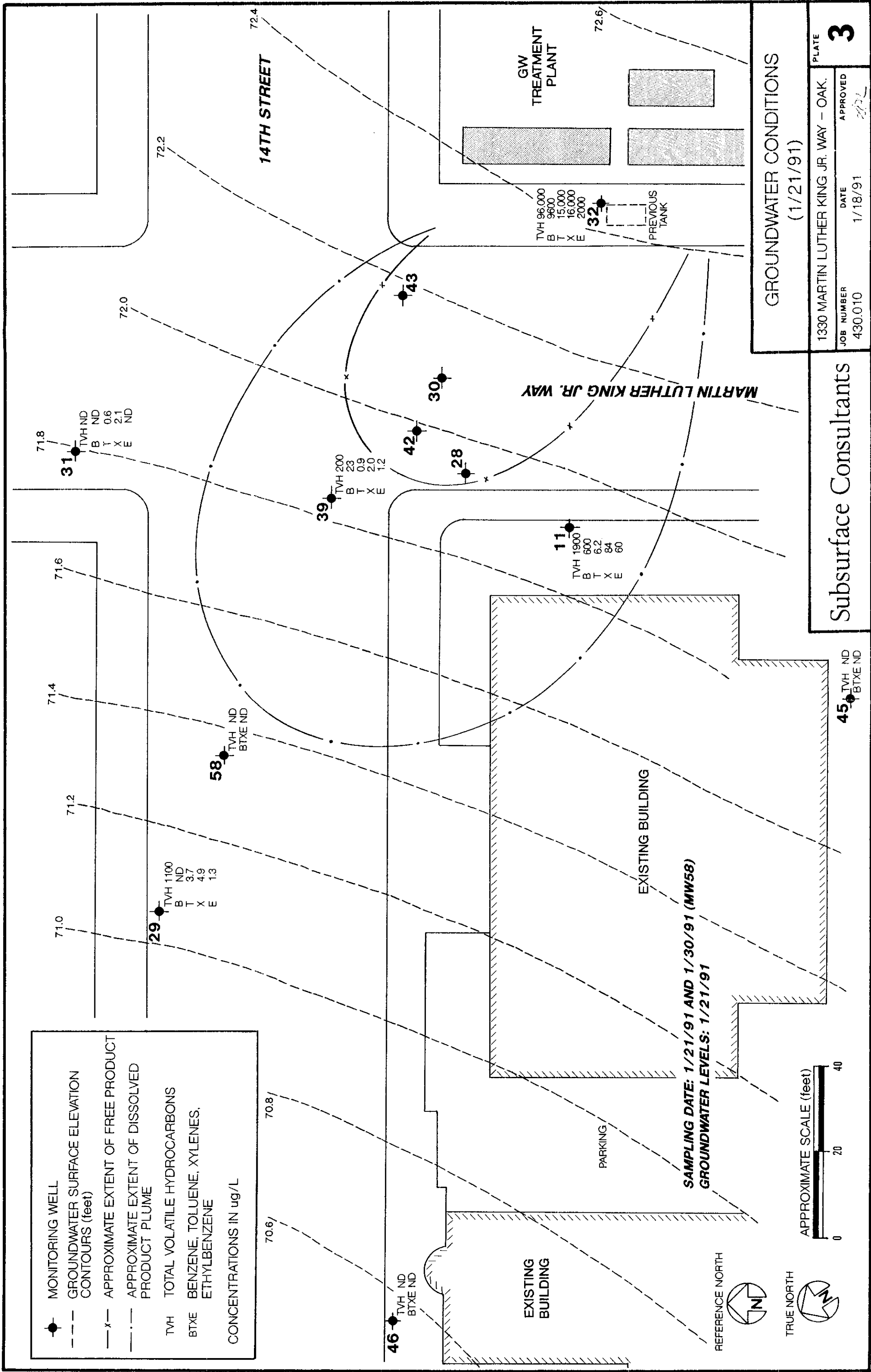
APPROXIMATE SCALE (feet)  
 0 20 40

GROUNDWATER CONDITIONS  
 (DURING PUMPING)

1330 MARTIN LUTHER KING JR. WAY - OAK.  
 JOB NUMBER 430.010  
 DATE 1/18/91  
 APPROVED   
 PLATE **2**

Subsurface Consultants

● MONITORING WELL  
 - - - GROUNDWATER SURFACE ELEVATION CONTOURS (feet)  
 - x - APPROXIMATE EXTENT OF FREE PRODUCT  
 - . . . APPROXIMATE EXTENT OF DISSOLVED PRODUCT PLUME  
 TVH TOTAL VOLATILE HYDROCARBONS  
 BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE  
 CONCENTRATIONS IN ug/L

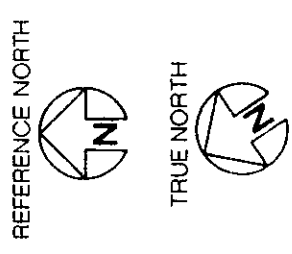


GROUNDWATER CONDITIONS  
 (1/21/91)

1330 MARTIN LUTHER KING JR. WAY - OAK.	DATE	APPROVED
JOB NUMBER	1/18/91	<i>[Signature]</i>
430.010		

PLATE **3**

Subsurface Consultants



46 ● TVH ND  
 BTXE ND

29 ● TVH 1100  
 ND  
 B 37  
 T 49  
 X 1.3  
 E

58 ● TVH ND  
 BTXE ND

11 ● TVH 1900  
 B 600  
 T 6.2  
 X 84  
 E 60

39 ● TVH 200  
 B 23  
 T 0.9  
 X 2.0  
 E 1.2

31 ● TVH ND  
 B ND  
 T 0.6  
 X 2.1  
 E ND

32 ● TVH 96,000  
 B 9600  
 T 15,000  
 X 16,000  
 E 2000

45 ● TVH ND  
 BTXE ND

43 ●

30 ●

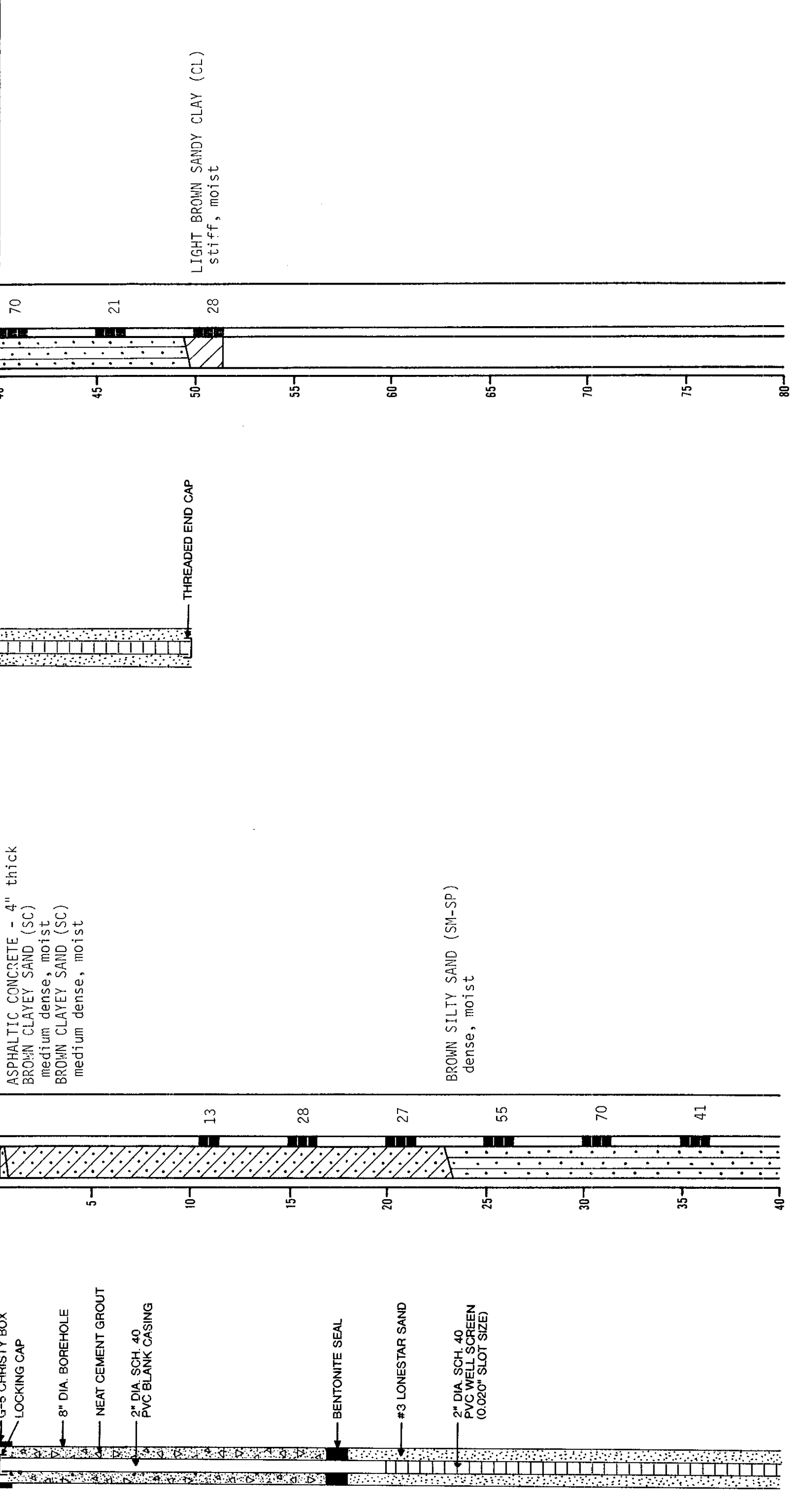
42 ●

28 ●

# LOG OF TEST BORING 45

EQUIPMENT 8" Hollow Stem Auger  
 DATE DRILLED 12/1/89  
 ELEVATION 100.90 feet

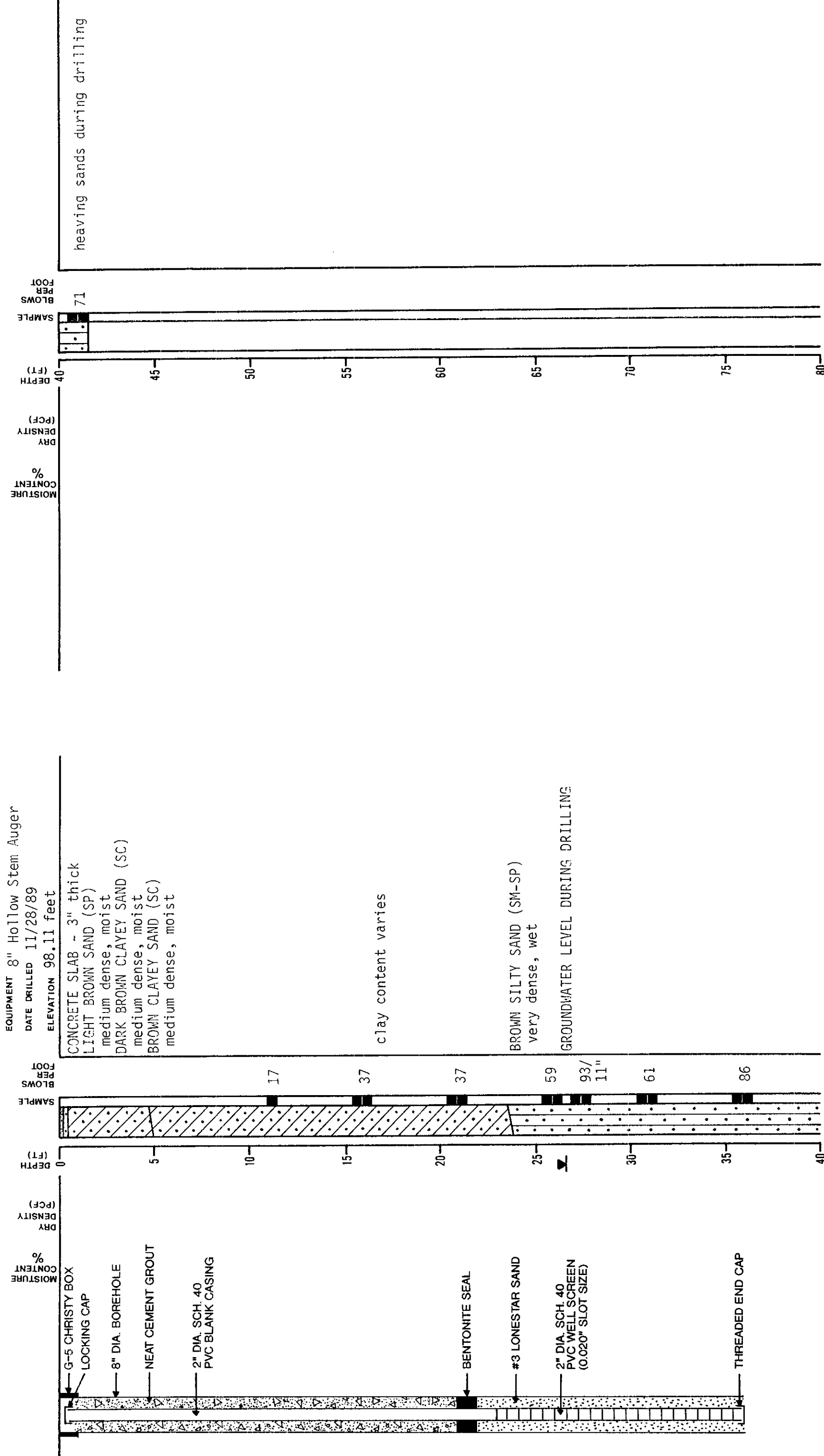
MOISTURE  
 CONTENT %  
 DRY  
 DENSITY (PCF)  
 DEPTH (FT)  
 SAMPLE  
 BLOWS PER FOOT



Subsurface Consultants

MARTIN LUTHER KING JR. WAY & 14TH  
 JOB NUMBER 430.010  
 DATE 3/7/91  
 APPROVED *[Signature]*  
 PLATE 4

# LOG OF TEST BORING 46



Subsurface Consultants

MARTIN LUTHER KING JR. WAY & 14TH  
 DATE 3/7/91  
 APPROVED *[Signature]*  
 JOB NUMBER 430.010

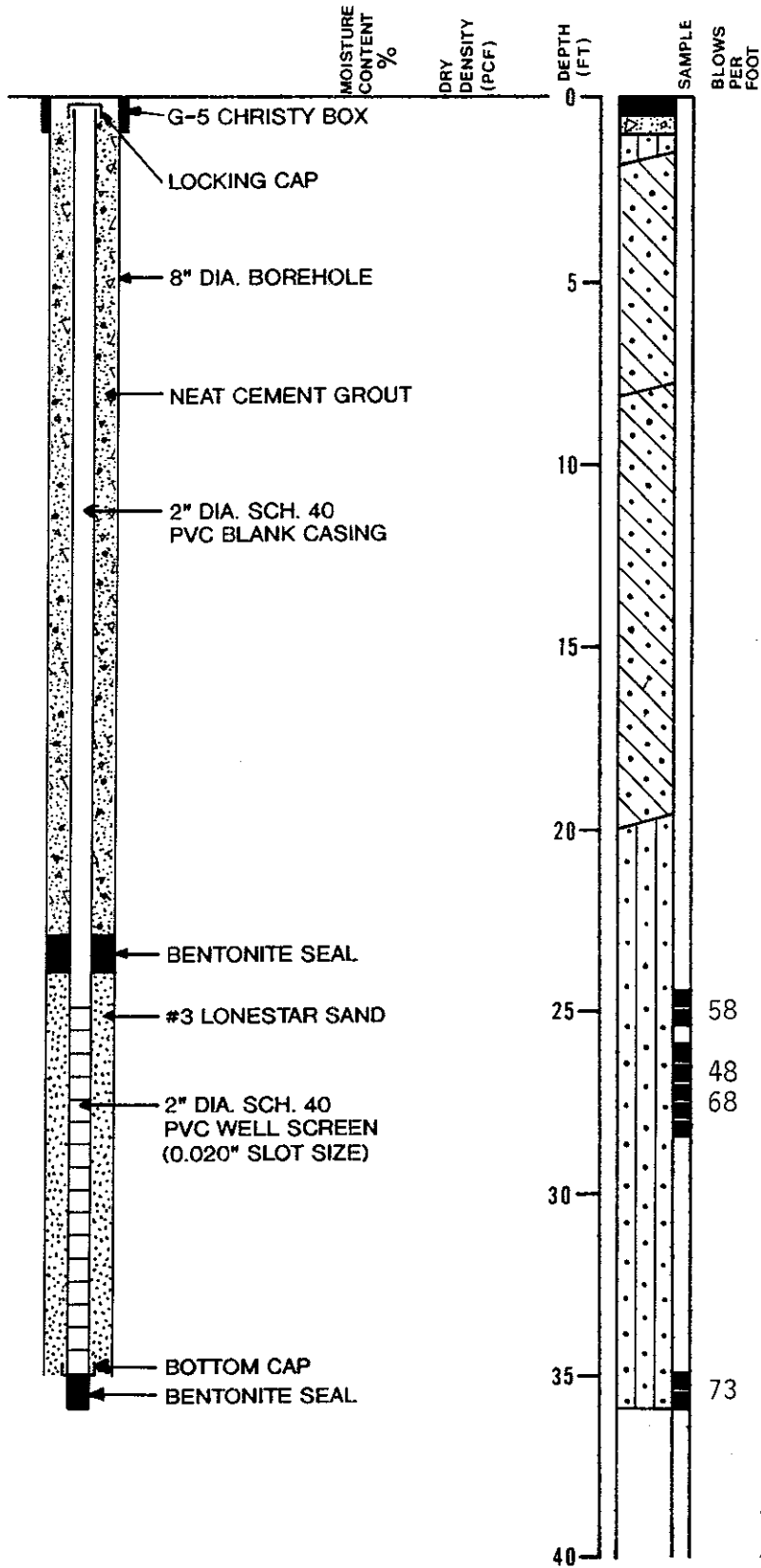
PLATE

5



# LOG OF TEST BORING 58

EQUIPMENT 8" Hollow Stem Auger  
 DATE DRILLED 1/29/91  
 ELEVATION 98.89 feet



ASPHALTIC CONCRETE - 7" thick  
 CONCRETE SLAB - 6" thick  
 GRAY GREEN GRAVELLY SAND (SM)  
 Loose to medium dense, moist (fill)  
 GRAY GREEN CLAYEY SAND (SC)  
 medium dense, moist  
 BROWN CLAYEY SAND (SC)  
 medium dense, moist  
 BROWN SILTY SAND (SM)  
 medium dense, moist

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY  
 JOB NUMBER 430.010  
 DATE 2/28/91  
 APPROVED *[Signature]*

PLATE

6

GENERAL SOIL CATEGORIES		SYMBOLS	TYPICAL SOIL TYPES	
<b>COARSE GRAINED SOILS</b> More than half is larger than No. 200 sieve	<b>GRAVEL</b> 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
	<b>SAND</b> 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
<b>FINE GRAINED SOILS</b> More than half is smaller than No. 200 sieve	<b>SILT AND CLAY</b> 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	
	<b>SILT AND CLAY</b> 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	
<b>HIGHLY ORGANIC SOILS</b>	PT 	Peat and Other Highly Organic Soils		

UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY  
 JOB NUMBER 430.010      DATE 3/13/91      APPROVED *SR*

PLATE

7

Groundwater and Free-Product Elevations

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Ground-water Depth (feet)</u>	<u>Ground-water Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>	<u>Free Product Thickness (feet)</u>		
11	99.66	01/19/89	26.82	72.84	--	--		
		02/17/89	26.79	72.87	--	--		
		03/14/89	26.48	73.18	--	--		
		04/03/89	26.35	73.31	--	--		
		05/04/89	26.45	73.21	--	--		
		06/07/89	26.75	72.91	--	--		
		07/05/89	26.95	72.71	--	--		
		08/16/89	27.01	72.65	--	--		
		09/26/89	27.08	72.58	--	--		
		11/09/89	27.28	72.83	--	--		
		12/19/89	27.44	72.22	--	--		
		01/24/90	27.40	72.26	--	--		
		03/01/90	27.29	72.37	--	--		
		04/18/90	27.52	72.14	--	--		
		04/30/90	27.56	72.10	--	--		
		05/10/90	28.69	70.97	--	--		
		06/01/90	28.74	70.92	--	--		
		07/03/90	28.89	70.77	--	--		
		08/20/90	29.08	70.58	--	--		
		09/25/90	28.10	71.56	--	--		
		10/23/90	28.93	70.73	--	--		
11/12/90	28.97	70.79	--	--				
12/12/90	28.80	70.86	--	--				
01/21/91	27.75	71.91	--	--				
28	98.99	01/19/89	26.16	72.83	--	--		
		02/17/89	26.12	72.87	--	--		
		03/14/89	25.80	73.19	--	--		
		04/03/89	25.70	73.29	--	--		
		05/04/89	25.78	73.21	--	--		
		06/07/89	26.07	72.92	--	--		
		07/05/89	26.26	72.73	--	--		
		08/16/89	26.33	72.66	--	--		
		09/26/89	26.40	72.59	--	--		
		11/09/89	26.59	72.40	--	--		
		12/19/89	26.75	72.24	--	--		
		01/24/90	26.81	72.18	--	--		
		04/30/90	25.95	71.84	--	--		
			97.79	05/10/90	31.83	65.96	67.18	1.22
				06/01/90	26.88	70.92	72.02	1.11
		07/03/90	31.95	65.84	65.88	0.04		

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Ground-water Depth (feet)</u>	<u>Ground-water Elevation (feet)</u>	<u>Free Product Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
		08/20/90	30.92	66.87	--	--
		09/25/90	26.27	71.52	--	--
		10/23/90	31.25	66.54	67.92	1.38
		11/12/90	30.92	66.87	--	--
		12/12/90	29.71	68.08	--	--
		01/21/91	28.00	69.79	--	--
29	97.95	01/19/89	26.14	71.81	--	--
		02/17/89	26.19	71.76	--	--
		03/14/89	25.99	71.96	--	--
		04/03/89	25.88	72.07	--	--
		05/04/89	25.88	72.07	--	--
		06/07/89	26.10	71.85	--	--
		07/05/89	26.19	71.76	--	--
		08/16/89	26.32	71.63	--	--
		09/26/89	26.38	71.57	--	--
		11/09/89	26.51	71.44	--	--
		12/19/89	26.66	71.29	--	--
		01/24/90	26.66	71.29	--	--
		03/01/90	26.54	71.41	--	--
		04/18/90	26.70	71.25	--	--
		04/30/90	26.73	71.22	--	--
		05/10/90	27.04	70.91	--	--
		06/01/90	27.16	70.79	--	--
		07/03/90	27.22	70.73	--	--
		08/20/90	27.46	70.49	--	--
		09/25/90	27.34	70.61	--	--
		10/23/90	27.40	70.55	--	--
		11/12/90	27.35	70.60	--	--
		12/12/90	27.35	70.60	--	--
		01/21/91	26.89	71.06	--	--
30	99.30	01/19/89	27.50	71.80	73.36	1.56
		02/17/89	27.73	71.57	73.53	1.96
		03/14/89	27.96	71.34	74.03	2.69
		04/03/89	28.44	70.86	73.42	2.56
		05/04/89	27.95	71.35	74.01	2.66
		06/07/89	28.47	70.83	73.84	3.01
		07/05/89	28.90	70.40	73.78	3.38
		09/26/89	28.42	69.88	73.55	3.67
		11/09/89	29.52	69.78	73.45	3.67
		01/24/90	27.27	72.08	72.27	0.19
		04/30/90	27.23	72.07	72.36	0.29
		05/10/90	28.64	70.66	71.23	0.57

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Ground-water Depth (feet)</u>	<u>Ground-water Elevation (feet)</u>	<u>Free Product Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
		06/01/90	28.64	70.66	71.23	0.57
		07/03/90	29.07	70.23	71.02	0.79
		08/20/90	28.45	70.85	71.35	0.50
		09/25/90	27.76	71.54	71.81	0.27
		10/23/90	29.07	70.23	71.50	1.27
		11/12/90	28.95	70.35	70.85	0.50
		12/12/90	28.95	70.35	70.85	0.50
		01/21/91	29.00	70.30	72.57	2.27
31	98.90	01/19/89	26.15	72.75	--	--
		02/17/89	26.22	72.68	--	--
		03/14/89	26.01	72.89	--	--
		04/03/89	25.90	73.00	--	--
		05/04/89	25.89	73.01	--	--
		06/07/89	26.11	72.79	--	--
		07/05/89	26.28	72.76	--	--
		08/16/89	26.36	72.54	--	--
		09/26/89	26.50	72.40	--	--
		11/09/89	26.64	72.26	--	--
		12/19/89	26.76	72.14	--	--
		01/24/90	26.84	72.06	--	--
		03/01/90	26.70	72.20	--	--
		04/18/90	26.89	72.01	--	--
		04/30/90	26.87	72.03	--	--
		05/10/90	27.33	71.57	--	--
		06/01/90	27.43	71.47	--	--
		07/03/90	27.50	71.40	--	--
		08/20/90	27.66	71.24	--	--
		09/25/90	27.52	71.36	--	--
		11/12/90	27.64	71.26	--	--
		12/12/90	27.64	71.26	--	--
		01/21/91	27.09	71.81	--	--
		12/19/89	25.65	72.88	--	--
32	98.53	01/24/90	25.64	72.89	--	--
		04/30/90	25.82	72.71	--	--
		06/01/90	26.30	72.23	--	--
		10/23/90	26.70	71.83	--	--
		11/12/90	26.70	71.83	--	--
		12/12/90	26.67	71.86	--	--
		01/21/91	26.06	72.47	--	--

<u>Monitoring Well</u>	<u>TOC Elev<sup>1</sup> (feet)</u>	<u>Date</u>	<u>Ground-water Depth (feet)</u>	<u>Ground-water Elevation (feet)</u>	<u>Free Product Elevation (feet)</u>	<u>Free Product Thickness (feet)</u>
39	99.00	04/03/89	25.87	73.13	--	--
		05/04/89	25.91	73.09	--	--
		06/07/89	26.17	72.83	--	--
		07/05/89	26.38	72.62	--	--
		09/26/89	26.55	72.45	--	--
		11/09/89	26.70	72.30	--	--
		12/19/89	26.85	72.15	--	--
		01/24/90	26.86	72.14	--	--
		03/01/90	27.74	71.26	--	--
		04/18/90	26.89	72.11	--	--
		04/30/90	26.97	72.03	--	--
		05/10/90	28.30	70.70	--	--
		06/01/90	27.96	71.04	--	--
		07/03/90	28.17	70.83	--	--
		08/20/90	28.43	70.57	--	--
		09/25/90	27.67	71.33	--	--
		10/23/90	28.17	70.83	--	--
11/12/90	28.20	70.80	--	--		
12/12/90	28.31	70.69	--	--		
01/21/91	27.15	71.85	--	--		
42	99.12	04/03/89	25.77	73.35	--	--
		05/04/89	25.85	73.27	--	--
		06/07/89	26.13	72.99	--	--
		07/05/89	26.30	72.89	--	--
		09/26/89	26.50	72.62	--	--
		11/09/89	26.66	72.46	--	--
		12/19/89	26.82	72.30	--	--
		01/24/90	26.82	72.30	--	--
		03/01/90	26.69	72.43	--	--
		04/18/90	26.94	72.18	--	--
		04/30/90	26.95	72.17	--	--
		05/10/90	28.65	70.47	--	--
		06/01/90	28.15	70.97	--	--
		07/03/90	28.58	70.54	--	--
08/20/90	28.66	70.46	--	--		
09/25/90	27.52	71.60	--	--		
10/23/90	28.58	70.54	70.62	0.08		
11/12/90	28.66	70.46	70.67	0.21		
12/12/90	28.66	70.46	70.67	0.21		
43	98.87	04/03/89	25.32	73.55	73.63	0.08
		05/04/89	26.21	72.66	73.81	1.15
		06/07/89	26.54	72.33	73.58	1.25
		07/05/89	26.80	72.07	73.41	1.34
		09/26/89	27.92	70.95	73.20	2.25

Monitoring Well	TOC Elev <sup>1</sup> (feet)	Date	Ground-water Depth (feet)	Ground-water Elevation (feet)	Free Product Elevation (feet)	Free Product Thickness (feet)
		11/09/89	28.44	70.43	73.32	2.89
		03/01/90	27.60	71.27	72.11	0.84
		04/18/90	27.54	71.33	72.79	1.46
		04/30/90	27.05	71.82	72.61	0.79
		05/10/90	28.19	70.68	71.87	1.19
		06/01/90	28.06	70.81	71.82	1.01
		07/03/90	28.36	70.51	71.21	0.70
		08/20/90	28.04	70.83	71.38	0.55
		09/25/90	27.26	71.61	71.97	0.36
		10/23/90	28.19	70.68	71.51	0.83
		11/12/90	28.04	70.83	71.38	0.55
		12/12/90	28.04	70.83	71.38	0.55
45	100.90	12/19/89	28.71	72.19	--	--
		04/30/90	28.85	72.05	--	--
		05/10/90	29.26	71.64	--	--
		06/01/90	29.34	71.56	--	--
		07/03/90	29.45	71.45	--	--
		08/20/90	29.55	71.35	--	--
		09/25/90	27.94	72.96	--	--
		10/23/90	29.50	71.40	--	--
		11/12/90	29.50	71.37	--	--
		12/12/90	29.53	71.37	--	--
		01/21/91	29.03	71.87	--	--
46	98.11	12/19/89	27.40	70.71	--	--
		04/30/90	27.46	70.63	--	--
		05/10/90	27.64	70.47	--	--
		06/01/90	27.62	70.49	--	--
		07/03/90	27.75	70.36	--	--
		08/20/90	27.92	70.19	--	--
		09/25/90	27.94	70.17	--	--
		10/23/90	27.86	70.25	--	--
		11/12/90	27.89	70.22	--	--
		12/12/90	27.83	70.28	--	--
		01/21/91	27.60	70.51	--	--

<sup>1</sup> Elevation reference: PG&E manhole approximately 30 feet south of 14th street on Martin Luther King Jr. Way, assumed to be 100.00 feet.



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DATE RECEIVED: 11/09/89  
DATE REPORTED: 12/07/89  
PAGE 1 OF 3

LAB NUMBER: 18662

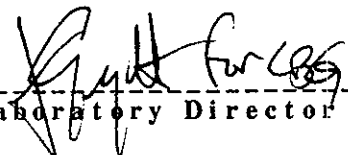
CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.002  
LOCATION: MLK

RESULTS: SEE ATTACHED

  
-----  
QA/QC Officer

  
-----  
Laboratory Director



LABORATORY NUMBER: 18662  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB NUMBER: 430.002  
 JOB LOCATION: MLK

DATE RECEIVED: 11/09/89  
 DATE ANALYZED: 11/22/89  
 DATE REPORTED: 12/07/89  
 PAGE 2 OF 3

Total Volatile Hydrocarbons (TVH) by EPA 8015  
 Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
 Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
18662-1	11	120,000	18,000	8,000	4,500	21,000
18662-2	29	780	ND(1)	14	7.9	32
18662-3	31	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
18662-4	39	9,300	4,500	760	150	310

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	<1
%RECOVERY	83

LABORATORY NUMBER: 18662  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.002  
 LOCATION: MLK

DATE RECEIVED: 11/09/89  
 DATE ANALYZED: 11/21/89  
 DATE REPORTED: 12/07/89  
 PAGE 3 OF 3

=====

ANALYSIS: ETHYLENE DIBROMIDE (EDB)  
 METHOD REFERENCE: EPA 601

=====

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18662-1	11	37	ug/L	0.83
18662-2	29	ND	ug/L	0.05
18662-3	31	ND	ug/L	0.05
18662-4	39	4.0	ug/L	0.05

ND = NOT DETECTED

QA/QC:

=====

RPD, %	3
RECOVERY, %	106

=====



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DEC 04 1989

AM 7 8 9 10 11 12 1 2 3 4 5 6 PM

DATE RECEIVED: 11/09/89  
DATE REPORTED: 11/27/89  
PAGE 1 OF 3

LAB NUMBER: 18748

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

JOB #: 430.002  
LOCATION: MLK

RESULTS: SEE ATTACHED

*M. E. Priyter*  
-----  
QA/QC Officer  
*[Signature]*  
-----  
Laboratory Director

LABORATORY NUMBER: 18748-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB #: 430.002  
 SAMPLE ID: 39

DATE RECEIVED: 11/09/89  
 DATE ANALYZED: 11/20/89  
 DATE REPORTED: 11/27/89  
 PAGE 2 OF 3

Title 26 Metals in Aqueous Solutions

METAL	RESULT mg / L	DETECTION LIMIT mg / L	METHOD
Antimony	ND	0.10	EPA 6010
Arsenic	ND	0.05	EPA 7060
Barium	0.22	0.01	EPA 6010
Beryllium	ND	0.01	EPA 6010
Cadmium	ND	0.01	EPA 6010
Chromium (total)	ND	0.01	EPA 6010
Cobalt	ND	0.01	EPA 6010
Copper	ND	0.01	EPA 6010
Lead	ND	0.05	EPA 7420
Mercury	ND	0.002	EPA 7470
Molybdenum	ND	0.01	EPA 6010
Nickel	ND	0.01	EPA 6010
Selenium	ND	0.05	EPA 6010
Silver	ND	0.01	EPA 6010
Thallium	ND	0.10	EPA 7841
Vanadium	ND	0.01	EPA 6010
Zinc	ND	0.01	EPA 6010

ND = Not Detected

QA/QC SUMMARY

	%RPD	%RECOVERY		%RPD	%RECOVERY
Antimony	2	96	Mercury	6	103
Arsenic	7	99	Molybdenum	4	92
Barium	2	99	Nickel	1	101
Beryllium	<1	96	Selenium	9	88
Cadmium	2	88	Silver	7	83
Chromium	1	101	Thallium	13	87
Cobalt	3	98	Vanadium	2	98
Copper	3	102	Zinc	2	99
Lead	2	97			



LABORATORY NUMBER: 18748-1  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.002  
SAMPLE ID: 39

DATE RECEIVED: 11/09/89  
DATE ANALYZED: 11/20/89  
DATE REPORTED: 11/27/89  
PAGE 3 OF 3

EPA 601  
Purgeable Halocarbons in Water

Compound	Result ug/L	LOD ug/L
chloromethane	ND	5.0
bromomethane	ND	5.0
vinyl chloride	ND	5.0
chloroethane	ND	5.0
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
1,2-dichloroethene (total)	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	36	5.0
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	5.0
bromoform	ND	5.0
tetrachloroethene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

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

QA/QC:

Duplicate: Relative % Difference  
Average Spike Recovery %

6  
74



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DATE RECEIVED: 11/30/89  
DATE REPORTED: 12/05/89  
PAGE 1 OF 4


LAB NUMBER: 18825

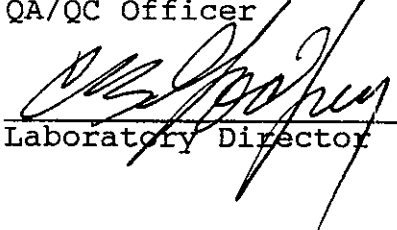
CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

PROJECT #: 430.002  
LOCATION: MLK

RESULTS: SEE ATTACHED

  
QA/QC Officer

  
Laboratory Director

LABORATORY NUMBER: 18825  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.002

DATE RECEIVED: 11/30/89  
 DATE ANALYZED: 12/01/89  
 DATE REPORTED: 12/05/89  
 PAGE 2 OF 4

=====

ORGANIC LEAD  
 DHS METHOD  
 MAY 1988 LUFT MANUAL

=====

LAB ID	CLIENT ID	ORGANIC LEAD	UNITS	DETECTION LIMIT
18825-1	<sup>46</sup> <del>44</del> W <i>Soe</i>	ND	mg/L	0.2

ND = NONE DETECTED

QA/QC SUMMARY

-----

%RPD	<1
%RECOVERY	94

-----



LABORATORY NUMBER: 18825  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.002  
LOCATION: MLK

DATE RECEIVED: 11/30/89  
DATE ANALYZED: 12/04/89  
DATE REPORTED: 12/05/89  
PAGE 3 OF 4

=====  
ANALYSIS: ETHYLENE DIBROMIDE  
METHOD REFERENCE: EPA 504  
=====

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18825-1	<sup>46</sup> <del>44</del> W	ND	ug/L	0.05

ND = NONE DETECTED

QA/QC:

RPD, %	1
RECOVERY, %	103



LABORATORY NUMBER: 18825  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB NUMBER: 430.002  
 JOB LOCATION: MLK

DATE RECEIVED: 11/30/89  
 DATE ANALYZED: 12/01/89  
 DATE REPORTED: 12/05/89  
 PAGE 4 OF 4

Total Volatile Hydrocarbons (TVH) by EPA 8015  
 Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
 Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
18825-1	46 <sup>see</sup> <del>44</del> W	ND(50)	2.1	1.9	ND(1)	2.0

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	2
%RECOVERY	92



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DATE RECEIVED: 12/05/89

DATE REPORTED: 12/11/89

PAGE 1 OF 4

LAB NUMBER: 18865

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

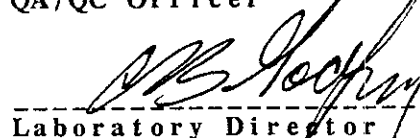
PROJECT #: 430.002

LOCATION: MLK

RESULTS: SEE ATTACHED



QA/QC Officer



Laboratory Director



LABORATORY NUMBER: 18865  
CLIENT: SUBSURFACE CONSULTANTS  
JOB NUMBER: 430.002  
JOB LOCATION: MLK

DATE RECEIVED: 12/05/89  
DATE ANALYZED: 12/06/89  
DATE REPORTED: 12/11/89  
PAGE 2 OF 4

Total Volatile Hydrocarbons (TVH) by EPA 8015  
Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020  
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
18865-1	45 W	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	1
%RECOVERY	84

LABORATORY NUMBER: 18865  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.002/MLK

DATE RECEIVED: 12/05/89  
 DATE ANALYZED: 12/06/89  
 DATE REPORTED: 12/11/89  
 PAGE 3 OF 4

=====

ORGANIC LEAD  
 DHS METHOD  
 MAY 1988 LUFT MANUAL

=====

LAB ID	CLIENT ID	ORGANIC LEAD	UNITS	DETECTION LIMIT
18865-1	45 W	ND	mg /L	0.2

ND = NONE DETECTED

QA/QC SUMMARY

-----

%RPD	<1
%RECOVERY	102

-----

LABORATORY NUMBER: 18865  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.002  
LOCATION: MLK

DATE RECEIVED: 12/05/89  
DATE ANALYZED: 12/08/89  
DATE REPORTED: 12/11/89  
PAGE 4 OF 4

=====  
ANALYSIS: ETHYLENE DIBROMIDE (EDB)  
METHOD REFERENCE: EPA 504  
=====

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18865-1	45 W	ND	ug/L	0.05

ND = NOT DETECTED

QA/QC:

=====  
RPD, % 17  
RECOVERY, % 110  
=====



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AM 7 8 9 10 11 12 1 2 3 4 5 6 PM

DATE RECEIVED: 07/19/90  
DATE REPORTED: 08/07/90

LAB NUMBER: 101113

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.010  
LOCATION: MLK

RESULTS: SEE ATTACHED

*ASE*  
-----  
QA/QC Approval

*[Signature]*  
-----  
Final Approval

LABORATORY NUMBER: 101113  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB NUMBER: 430.010  
 JOB LOCATION: MLK

DATE RECEIVED: 07/19/90  
 DATE ANALYZED: 08/07/90  
 DATE REPORTED: 08/07/90

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)
101113-1	11	26,000	950	19	ND(5.0)	98
101113-2	31	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101113-3	39	ND(50)	4.1	ND(0.5)	ND(0.5)	ND(0.5)
101113-4	46	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, %	116



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

DATE RECEIVED: 10/23/90  
DATE REPORTED: 11/06/90


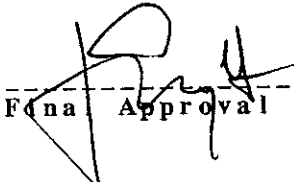
LAB NUMBER: 102046

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 7 WATER SAMPLES

PROJECT #: 430.010  
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval  
  
-----  
Final Approval



LABORATORY NUMBER: 102046  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE RECEIVED: 10/23/90  
 DATE ANALYZED: 11/05/90  
 DATE REPORTED: 11/06/90

=====  
 ANALYSIS: ETHYLENE DIBROMIDE  
 ANALYSIS METHOD: EPA 504  
 =====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
102046-1	11	0.20	ug/L	0.05
102046-3	32	3.8	ug/L	0.05
102046-4	39	ND	ug/L	0.05
102046-5	42	0.70	ug/L	0.05

QA/QC SUMMARY

=====  
 RPD, % 5  
 RECOVERY, % 72  
 =====

LAB NUMBER: 102046-4  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.010  
 SAMPLE ID: 39

DATE RECEIVED: 10/23/90  
 DATE ANALYZED: 10/29/90  
 DATE REPORTED: 11/06/90

EPA 8010  
 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	2.0
bromoform	ND	1.0
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, %	13
RECOVERY, %	94

LAB NUMBER: 102046  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB NUMBER: 430.010  
 JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 10/23/90  
 DATE ANALYZED: 10/31/90  
 DATE REPORTED: 11/06/90

**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)
102046-1	11	4,200	1,600	8.5	28	170
102046-2	29	1,800	1.2	6.5	2.7	4.8
102046-3	32	48,000	7,600	8,200	150	5,600
102046-4	39	160	12	6.4	ND(0.5)	5.0
102046-5	42	8,800	420	580	91	910
102046-6	45	ND(50)	0.9	1.4	ND(0.5)	1.8
102046-7	46	ND(50)	ND(0.5)	0.6	ND(0.5)	0.5

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

**QA/QC SUMMARY**

RPD, %	<1
RECOVERY, %	104



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 01/21/91

DATE REPORTED: 01/30/91

LAB NUMBER: 102801

CLIENT: SUBSURFACE CONSULTANTS

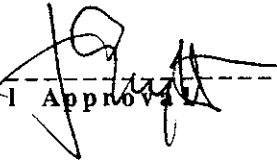
REPORT ON: 6 WATER SAMPLES

PROJECT #: 430.010

LOCATION: MLK GROUNDWATER REMEDIATION

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

Berkeley

Wilmington

Los Angeles

LABORATORY NUMBER: 102801  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 JOB LOCATION: MLK Groundwater Remediation

DATE RECEIVED: 01/21/91  
 DATE ANALYZED: 01/24/91  
 DATE REPORTED: 01/30/91

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)
102801-1	MW-11	1,900	600	6.2	60	84
102801-2	MW-31	ND(50)	ND(0.5)	0.6	ND(0.5)	2.1
102801-3	MW-32	96,000	9,600	15,000	2,000	16,000
102801-4	MW-39	200	23	0.9	1.2	2.0
102801-5	MW-45	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102801-6	MW-46	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, %	4
RECOVERY, %	80

LABORATORY NUMBER: 102801  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010

DATE RECEIVED: 01/21/91  
 DATE ANALYZED: 01/22/91  
 DATE REPORTED: 01/30/91

=====  
 ANALYSIS: ETHYLENE DIBROMIDE  
 ANALYSIS METHOD: EPA 504  
 =====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
102801-1	MW-11	0.15	ug/L	0.05
102801-2	MW-31	ND	ug/L	0.05
102801-3	MW-32	ND	ug/L	0.05
102801-4	MW-39	ND	ug/L	0.05
102801-5	MW-45	ND	ug/L	0.05
102801-6	MW-46	ND	ug/L	0.05

QA/QC SUMMARY

=====  
 RPD, % 11  
 RECOVERY, % 67  
 =====



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DATE RECEIVED: 01/21/91

DATE REPORTED: 01/23/91

LAB NUMBER: 102800


CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

PROJECT #: 430.010

LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

LABORATORY NUMBER: 102800  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 01/21/91  
 DATE ANALYZED: 01/21/91  
 DATE REPORTED: 01/23/91

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)
102800-1	MW-29	1,100	ND(0.5)	3.7	1.3	4.9

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

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	83



LABORATORY NUMBER: 102800  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.010

DATE RECEIVED: 01/21/91  
DATE ANALYZED: 01/23/91  
DATE REPORTED: 01/23/91

=====  
ANALYSIS: ETHYLENE DIBROMIDE (EDB)  
ANALYSIS METHOD: EPA 504  
=====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
102800-1	MW-29	ND	ug/L	0.05

QA/QC SUMMARY

=====  
RPD, % 8  
RECOVERY, % 73  
=====



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 02/01/91

DATE REPORTED: 02/04/91

LAB NUMBER: 102896

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: ONE WATER SAMPLE

PROJECT ID: 430.010

LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

RECEIVED

FEB 3 1991  
AM 7,8,9,10,11,12,13,14,15,16 PM

  
-----  
QA/QC Approval

  
-----  
Final Approval

LABORATORY NUMBER: 102896  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 JOB LOCATION: MLK EXTRACTION

DATE RECEIVED: 02/01/91  
 DATE ANALYZED: 02/04/91  
 DATE REPORTED: 02/04/91

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)
102896-1	MW-58	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, %	6
RECOVERY, %	86



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

DATE RECEIVED: 03/28/91

DATE REPORTED: 04/03/91


LAB NUMBER: 103379

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 7 WATER SAMPLES

PROJECT ID: 430.010  
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

  
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QA/QC Approval

  
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Final Approval

LABORATORY NUMBER: 103379  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 LOCATION: MLK EXTRACTION

DATE RECEIVED: 03/28/91  
 DATE ANALYZED: 03/29/91  
 DATE REPORTED: 04/03/91

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)
103379-1	MW-29	500	ND(0.5)	1.6	ND(0.5)	0.8
103379-2	MW-58	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103379-3	MW-39	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103379-4	WI-25-2	2,800	450	180	29	230
103379-5	I-25	96	2.3	0.8	ND(0.5)	0.5
103379-6	B-25	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103379-7	E-25	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, % 100

# Subsurface Consultants

## CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK  
 CI Job Number: 430.002  
 Project Contact at SCI: Sean Carson  
 Sampled By: Dennis Alexander  
 Analytical Laboratory: Curtis & Tompkins  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
<u>11</u>	<u>W</u>	<u>V(5)</u>	<u>11-8-89</u>		<u>TVH, BTXE &amp; EDB</u>	
<u>29</u>	<u>W</u>	<u>V(5)</u>	<u>11-8-89</u>		<u>TVH, BTXE &amp; EDB</u>	
<u>31</u>	<u>W</u>	<u>V(5)</u>	<u>11-8-89</u>		<u>TVH, BTXE &amp; EDB</u>	
<u>39</u>	<u>W</u>	<u>V(5)</u>	<u>11-8-89</u>		<u>TVH, BTXE &amp; EDB</u>	
					<u>601 Title 26 Metals</u>	
					<u>Requested by phone</u>	
					<u>11/17/89</u>	<u>ee</u>

\* \* \* \* \*

Released by: Dennis Alexander Date: 11-9-89  
 Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by Laboratory: Selinda Peters Date: 11-9-89  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Sample Type: W = water, S = soil, O = other (specify)  
 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  
 S I Job Number: 430.002  
 Project Contact at SCI: Sean Carson  
 Sampled By: Dennis Alexander  
 Analytical Laboratory: Curtis and Tompkins  
 Analytical Turnaround: 48 hr.

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
# 44W	W	G 1liter	11-30-89		TVH	
44W 3e	W	V (5)	"		BIXE TEL EDB	

\* \* \* \* \*

Released by: Dennis Alexander Date: 11-30-89  
 Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: Belinda Peters Date: 11-30-89  
 Relinquished by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = water, S = soil, O = other (specify)  
<sup>2</sup> 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  
 SCI Job Number: 430,010  
 Project Contact at SCI: Sean Carson  
 Sampled By: Mark Kawakami  
 Analytical Laboratory: Curtis + Tompkins  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
<u>11</u>	<u>W</u>	<u>Vx3</u>	<u>7/18/90</u>		<u>TVH/BTXE</u>	<u>8015 / 602</u> <u>5830</u>
<u>31</u>	<u>W</u>	<u>Vx3</u>	<u>7/18/90</u>		<u>TVH/BTXE</u>	
<u>39</u>	<u>W</u>	<u>Vx3</u>	<u>7/18/90</u>		<u>TVH/BTXE</u>	
<u>46</u>	<u>W</u>	<u>Vx3</u>	<u>7/18/90</u>		<u>TVH/BTXE</u>	

\* \* \* \* \*

Released by: Sean O'Carroll Date: 7/19/90  
 Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = water, S = soil, O = other (specify)  
<sup>2</sup> 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 <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
<u>11</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>TVH/BTXE</u>	
	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>EDB</u>	
<u>29</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>TVH/BTXE</u>	
<u>32</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>TVH/BTXE</u>	
	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>EDB</u>	
<u>39</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>TVH/BTXE</u>	
		<u>Vx2</u>	<u>10/23/90</u>		<u>VOLs 8010</u>	
		<u>Vx2</u>	<u>10/23/90</u>		<u>EDB</u>	
<u>42</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>		<u>TVH/BTXE</u>	
		<u>Vx2</u>	<u>10/23/90</u>		<u>EDB</u>	

\* \* \* \* \*

Released by: [Signature] Date: \_\_\_\_\_

Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_

Received by Laboratory: Henry Hatten Date: 10/23/90 340P

Relinquished by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = water, S = soil, O = other (specify)  
<sup>2</sup> 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 Caron  
 Sampled By: Fernando Velez  
 Analytical Laboratory: Curtis + Tompkins  
 Analytical Turnaround: Normal

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
<u>45</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>	<u>    </u>	<u>TVH/BTXE</u>	<u>    </u>
<u>46</u>	<u>W</u>	<u>Vx2</u>	<u>10/23/90</u>	<u>    </u>	<u>TVH/BTXE</u>	<u>    </u>

\* \* \* \* \*

Released by: [Signature] Date: \_\_\_\_\_  
 Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: [Signature] Date: 10/23/90 3:40<sup>p</sup>  
 Relinquished by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = water, S = soil, O = other (specify)  
<sup>2</sup> 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

Project Name: MLK Groundwater Remediation  
 SCI Job Number: 430.010  
 Project Contact at SCI: Sean Carson  
 Sampled By: Dennis Alexander  
 Analytical Laboratory: Curtis & Tompkins  
 Analytical Turnaround: Normal except \* (Rapid)

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
MW-11	W	VOA (5)	1-21-91		TVH/BTXE EDB	
* MW-29						
MW-31						
MW-32						
MW-39						
MW-45						
MW-46	↓	↓	↓		↓	

\* \* \* \* \*

Released by: Dennis Alexander Date: 1-21-91  
 Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by Laboratory: [Signature] Date: 1-21-91 15:46  
 Relinquished by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = water, S = soil, O = other (specify)  
<sup>2</sup> 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  
SCI Job Number: 430.010  
Project Contact at SCI: Sean Carson  
Sampled By: John Wolfe  
Analytical Laboratory: Curtis & Tompkins  
Analytical Turnaround: ~~5 day~~ 24 hr. RUSH!

Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
<u>MW-58</u>	<u>W</u>	<u>VOA (4)</u>	<u>1/30/91</u>		<u>TVH/BTK</u>	

\* \* \* \* \*

Released by: [Signature] Date: 2/1/91

Released by Courier: \_\_\_\_\_ Date: \_\_\_\_\_

Received by Laboratory: Mary Branten Date: 2/1/91 12:50p

Relinquished by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = water, S = soil, O = other (specify)  
<sup>2</sup> 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: Martin Luther King Tr. Way  
 SCI Job Number: 430,010  
 Project Contact at SCI: Sean Carson  
 Sampled By: Charles Pearson  
 Analytical Laboratory: Curtis & Tompkins  
 Analytical Turnaround: Normal

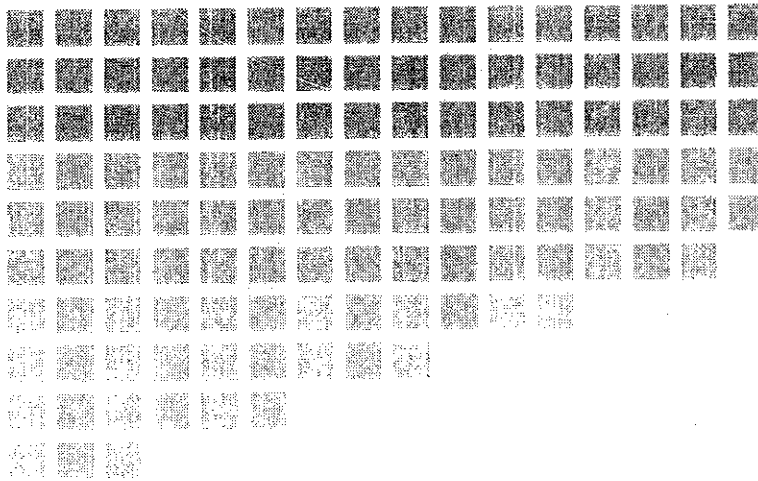
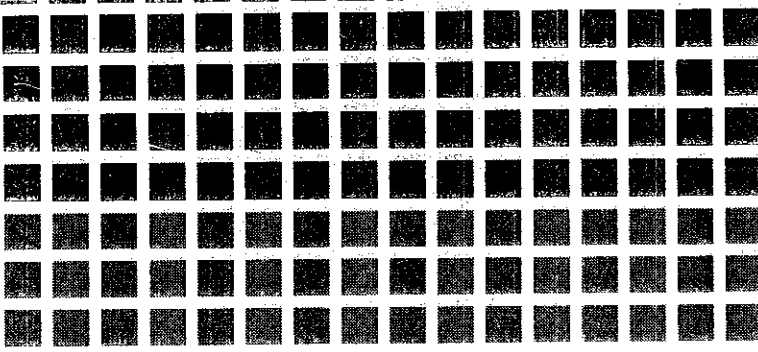
Sample ID	Sample Type <sup>1</sup>	Container Type <sup>2</sup>	Sampling Date	Hold	Analysis	Analytical Method
MW-29	W	3 x Voa	3-28-91		TVH BTEX	
MW-38	W	3 x Voa	"		"	
MW-39	W	3 x Voa	"		"	
<del>WI-25-1</del>	<del>W</del>	<del>2 x Voa</del>	<del>"</del>			
WI-25-2	W	2 x Voa	"		TVH BTEX	
F-25	W	2 x Voa	"		"	
B-25	W	2 x Voa	"		"	
E-25	W	2 x Voa	"		"	

\* \* \* \* \*

Released by: Charles Pearson Received by: Keane Date: 3-28-91  
 Released by: \_\_\_\_\_ Received by: \_\_\_\_\_ Date: 3/28/91  
 Received by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Released by Laboratory: \_\_\_\_\_ Date: \_\_\_\_\_  
 Released by: \_\_\_\_\_ Date: \_\_\_\_\_

<sup>1</sup> Sample Type: W = Water, S = Soil, O = Other (specify)  
<sup>2</sup> 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



7-8-91

■ Subsurface Consultants, Inc.


GROUNDWATER CONTAMINATION ASSESSMENT  
GASOLINE FUEL TANK AND FLOOR DRAIN  
SUMP RELEASES  
13TH AND JEFFERSON STREETS  
OAKLAND, CALIFORNIA  
SCI 430.013

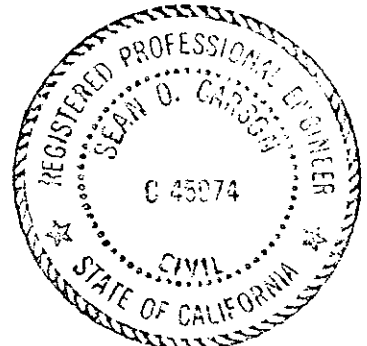
July 8, 1991 STID 3673

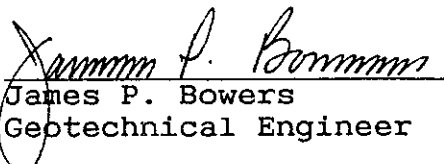
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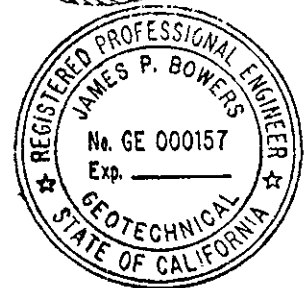
Mr. John Esposito  
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By

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



  
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Geotechnical Engineer 157 (expires 3/31/95)



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July 8, 1991



## I INTRODUCTION

This report records the results of a groundwater contamination assessment performed by Subsurface Consultants, Inc. (SCI) near the northwest corner of the intersection of 13th and Jefferson Streets in Oakland, California. The location of the site is shown on the Site Plan, Plate 1.

SCI has previously conducted studies to characterize the gasoline contamination that existed in the area. The results were recorded in a report dated August 22, 1989. Petroleum hydrocarbon (gasoline) contamination was detected in the soil and groundwater beneath the site. Subsequently, the gasoline contaminated soils were excavated to the lateral extent shown on Plate 1 and to depths of approximately 28 to 34 feet. Approximately 19,000 cubic yards of clean (and) contaminated soils were excavated during remediation efforts. Noncontaminated soils were stockpiled separately from the contaminated materials. The contaminated soils were aerated on-site until total volatile hydrocarbon (TVH) concentrations were less than 100 parts per million (ppm), and then disposed of off-site at a sanitary landfill. The excavation was then backfilled with the stockpiled clean soils, as well as imported materials. The results of gasoline contaminated soil remediation are documented in a report by SCI dated December 6, 1990.

A leaking floor drain sump and associated contaminated soils were remediated by excavation. The location of the sump and the approximate limits of the excavation are shown on the Site Plan, Plate 1. The sump previously contained oil and grease (O&G), low

concentrations of several heavy metals, methylene chloride and very low concentrations of PCBs. A soil sample obtained from 14 feet beneath the sump contained elevated concentrations of oil and grease, and kerosene. No volatile organics (EPA 8240) or PCB's (EPA 8080) were detected. Hydrocarbons were detected in the soil beneath the sump to depths of 26 feet below the ground surface. During remediation, the bottom of the excavation was advanced to a depth of 28 feet. The bottom of the excavation was approximately 15 by 15 feet in plan. Sidewall and bottom samples were obtained at varying depths. Analytical results indicated that no detectable concentrations of hydrocarbons were present in the soils following excavation. The results of sump remediation are recorded in a report dated September 24, 1990.

The purpose of this groundwater contamination assessment was to evaluate groundwater quality impacts resulting from the previous gasoline and sump releases.

## II FIELD INVESTIGATION

After soil remediation, eight (8) test borings were drilled to depths ranging between 36 and 42 feet and converted to monitoring wells. These borings were designated Borings 47 thru 49, 51 thru 54, and 59. The logs of these borings are attached. Monitoring Well 44 was drilled before soil remediation and was subsequently removed by excavation. MW-44 was approximately located where MW-54 now exists. Monitoring Wells 29, 31, 45 and 46 exist a significant

distance downgradient from the release areas and were installed as part of another unrelated gasoline contamination problem. For completeness, the logs of these borings are attached. The test borings were drilled using truck-mounted 8-inch diameter, hollow stem auger equipment. Boring 54 was drilled using 10-inch-diameter, hollow-stem auger equipment. This boring was subsequently converted to a 4-inch-diameter well for possible future use as an extraction well during groundwater remediation. Boring locations are shown on Plate 1.

A member of our engineering staff observed drilling and sampling operations and prepared detailed logs of the borings. Soil samples were obtained from the borings using a California Drive Sampler having an outside diameter of 2.5 inches and inside diameter of 2.0 inches. The sampler was driven with a 140-pound hammer having a drop of 30 inches. The blow counts required to drive the sampler the final 12 inches of an 18-inch penetration were recorded and are shown on the boring logs, Plates 2 through 13. Soils are classified in accordance with the Unified Soil Classification system described on Plate 14.

Soil samples were retained in brass sample liners. Samples for environmental analysis were capped and sealed with plastic tape. Teflon sheeting was placed between the caps and the soil samples. Upon sealing and labeling, the samples were promptly refrigerated on site in an ice chest. The samples remained under refrigeration until delivery to the analytical laboratory.

All augers, drill rods, samplers, well casing, etc., that were placed in the test borings were steam cleaned prior to their initial use and before each subsequent use to reduce the likelihood of cross contamination between borings.

The groundwater monitoring wells were constructed of 2-inch-diameter, Schedule 40 PVC pipe having flush threaded joints with the exception of Well 54. Well 54 has a 4-inch-diameter casing. The lower portion of the wells consists of machine slotted well screen having 0.020-inch wide slots. The annular space around the screened section was backfilled with Lonestar #3 sand. A bentonite seal, approximately 12 inches thick, was placed above the sand. The annulus above the bentonite seal was backfilled with a cement/bentonite grout. The wells were finished either above grade and secured by a lock and steel cover, or below grade and locked within Christy boxes. The specific details of the wells are shown on the boring logs.

The wells were developed by removing water with a Teflon air displacement pump until the water became relatively free of turbidity. After development, the wells were sampled with a precleaned Teflon sampler. The water samples were promptly refrigerated on-site in an ice chest. All samples remained refrigerated until delivery to the analytical laboratory. Chain-of-Custody documents accompanied all samples to the laboratory.

### III GROUNDWATER LEVEL MEASUREMENTS

Groundwater levels were obtained by measuring the depth to groundwater from the top of casing (TOC) using an electronic well sounder. A level survey using an assumed elevation reference, was performed to determine the TOC elevation of each of the monitoring wells. A steel tape with water and gasoline sensitive pastes was used to check for free product in the wells. The water level data are presented in Table 1.

Table 1. Groundwater Elevation Data

<u>Well</u>	<u>Date</u>	<u>TOC<sup>1</sup> Elevation (ft)</u>	<u>Groundwater Depth<sup>2</sup> (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-47	09/24/90	100.50	27.28	73.22
	10/04/90		27.32	73.18
	12/03/90		27.38	73.12
	01/21/91		27.17	73.33
	03/13/91		26.85	73.65
	04/03/91		26.38	74.12
MW-48	07/18/90	102.40	29.08	73.32
	10/04/90		29.29	73.11
	12/03/90		29.28	73.12
	01/21/91		29.03	73.37
	03/13/91		28.72	73.68
	04/03/91		28.24	74.16
MW-49	12/03/90	101.73	28.44	73.29
	01/21/91		28.20	73.53
	03/13/91		27.79	73.94
	04/03/91		27.28	74.45
MW-51	10/04/90	102.64	28.57	74.07
	12/03/90		28.57	74.07
	01/21/91		28.44	74.20
	03/13/91		27.76	74.88
	04/03/91		27.32	75.32
MW-52	10/04/90	102.44	28.41	74.03
	12/03/90		28.38	74.06
	01/21/91		28.24	74.20
	03/13/91		27.57	74.87
	04/03/91		27.16	75.28
MW-53	09/24/90	101.28	27.44	73.84
	10/04/90		27.50	73.78
	12/03/90		27.46	73.82
	01/21/91		28.00	73.28
	03/13/91		27.00	74.28
MW-54	09/24/90	100.78	27.01	73.77
	10/04/90		27.30	73.48
	12/03/90		27.01	73.77
	01/21/91		27.28	74.64
	03/13/91	101.92 <sup>3</sup>	27.40	74.52
MW-59	02/12/91	100.37	27.45	72.92
	03/13/91		27.60	72.77
	04/03/91		27.36	73.01

- 1 Top of Casing  
 2 Depth measured below top of casing  
 3 Well head damaged and repaired

Assumed datum: The elevation of the PG&E manhole in Martin Luther King, Jr. Way, near the northwest corner of the block, was assumed to have an elevation of 100 feet (see Plate 1)

#### IV SITE CONDITIONS

##### A. Site History

The northwest corner of the intersection of 13th and Jefferson Streets was occupied by the 20th Century Garage from 1930 to 1943. According to individuals who lived in the area, the facility dispensed gasoline. The floor drain sump was located as shown on the Site Plan, Plate 1. The location and ultimate disposition of the fuel tanks is uncertain. To date, we have been unable to locate any information documenting their location or removal. The property was subsequently purchased by the City of Oakland in the early 1940's and used as the Oakland Police Department (OPD) garage. The OPD garage was used to service/fuel city vehicles. Discussions with past city employees confirmed the presence of gasoline storage/dispensing facilities. However, specific details of the tank locations/capacities are unavailable. Unsubstantiated information suggests as many as three 3 fuel tanks existed beneath the site along 13th Street near its intersection with Jefferson Street. Excavations observed by SCI during past remediation activities, revealed sandy backfill and a pipeline extending from the southeast corner of the property below the sidewalks along Jefferson and 13th Streets. The pipes were typical of those used to dispense gasoline from underground tanks. However, no tanks were discovered. The estimated tank locations are shown on Plate 1.

So are the  
tanks still  
subsurface?  
Any tanks  
removed?

## B. Subsurface Conditions

### 1. Soil Conditions

Our test borings indicate that soil conditions in the area are relatively uniform. The upper 12 to 15 feet of soil consists of clayey sands. These materials are medium dense and contain appreciable quantities of silt and clay. The imported fill used to backfill the remediation excavations consists of clayey sands from the block south of the site. Below the clayey surface layer, the sands contain significantly less silt and clay.

A clay aquitard exists at a depth of approximately 40 feet. This clay is stiff and possesses low permeability. The clay layer has been encountered in other borings in the area at similar depths.

### 2. Hydrogeologic Conditions

Groundwater was encountered at depths ranging from approximately 26.5 to 29.5 feet below the ground surface. This depth corresponds to elevations of 72.5 to 75.5 feet (assumed datum). Based on this data, it is apparent that groundwater is flowing toward the north-northwest at an average gradient of about 0.7 percent. The direction of the groundwater flow is shown on Plate 1. This groundwater flow direction and gradient are consistent with those documented during other previous studies in the area. No free-floating hydrocarbon product was observed in any of the wells.



#### IV ENGINEERING AND ANALYTICAL TESTING

The engineering properties of the materials encountered were evaluated in our laboratory. The testing program included moisture content/dry density, percent passing a #200 sieve (0.074 mm), sieve analyses and permeability tests. The test results are presented on the boring logs. The sieve analysis results are presented on Plate 15. The permeability tests utilized constant head test methods. The results are presented below.

Table 2. Summary of Permeability Test Results

<u>Boring</u>	<u>Depth (feet)</u>	<u>Permeability (cm/sec)</u>	<u>Soil Type</u>
47	28.5	$5.0 \times 10^{-4}$	Silty Sand (SM/SP)
49	30.5	$2.2 \times 10^{-4}$	Silty Sand (SM/SP)
54	41.0	$1.3 \times 10^{-8}$	Sandy Clay (CL)

Groundwater samples were analyzed by Curtis and Tompkins, Ltd., a California Department of Health Services (DHS) certified laboratory. The following analytical methods were utilized:

Total Volatile Hydrocarbons (TVH)	EPA 8015/5030
Total Extractable Hydrocarbons (TEH)	EPA 8015/3550
Oil and Grease (O&G)	SMWW 5520 B & F
Benzene, toluene, xylene, ethylbenzene (BTXE)	EPA 5030/8020

Halogenated Volatile Organics	EPA 8010
Polychlorinated Biphenyls (PCBs)	EPA 8080/3510
Polynuclear Aromatics (PNAs)	EPA 8270/3520
Organic Lead	DHS-LUFT
Total Lead	EPA 7420
Ethylene Dibromide	EPA 504

The results of analyses are summarized in Tables 3 through 5. Analytical test reports are presented in the Appendix.

Table 3. Petroleum Hydrocarbon Concentrations in Groundwater

<u>Well</u>	<u>Date</u>	<u>OGC<sup>1</sup></u> <u>(ug/L)</u>	<u>TVH<sup>2</sup></u> <u>(ug/L)</u>	<u>TEH<sup>3</sup></u> <u>(ug/L)</u>	<u>B<sup>4</sup></u> <u>(ug/L)</u>	<u>T<sup>5</sup></u> <u>(ug/L)</u>	<u>X<sup>6</sup></u> <u>(ug/L)</u>	<u>E<sup>7</sup></u> <u>(ug/L)</u>
MW-44 <sup>8</sup>	05/16/87	--	25	--	840	910	2230	480
MW-47	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
MW-48	04/06/90	--	ND	--	ND	ND	ND	ND
	07/18/90	ND	ND	ND	ND	ND	ND	ND
	10/04/90	--	--	110	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND	ND
MW-49	04/06/90	--	ND	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
MW-51	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
MW-52	04/06/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
MW-53	09/21/90	--	ND	--	ND	ND	ND	ND
	10/04/90	--	ND	--	ND	ND	ND	ND
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
MW-54	09/21/90	--	1700	--	ND	1.5	20	1.9
	10/04/90	--	1300	--	ND	0.7	12	28
	12/04/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
MW-59	03/13/91	--	ND	--	ND	ND	ND	ND

- 
- 1 Oil and Grease
  - 2 Total Volatile Hydrocarbons
  - 3 Total Extractable Hydrocarbons
  - 4 Benzene
  - 5 Toluene
  - 6 Xylene
  - 7 Ethylbenzene
  - 8 Destroyed during soil remediation

Table 4. Volatile Organic Chemical Concentrations in Groundwater

<u>Well</u>	<u>Date</u>	<u>1,2 DCA<sup>1</sup></u> <u>(ug/L)<sup>3</sup></u>	<u>1,2 DCE<sup>2</sup></u> <u>(ug/L)</u>	<u>Chloroform</u> <u>(ug/L)</u>	<u>Other</u> <u>EPA 8010</u> <u>(ug/L)</u>
MW-29	01/04/91	ND <sup>4</sup>	ND	ND	ND
MW-31	01/04/91	ND	ND	10	ND
MW-45	01/04/91	ND	ND	ND	ND
MW-46	01/04/91	ND	ND	ND	ND
MW-47	12/03/90	ND	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
MW-51	12/04/90	ND	ND	ND	ND
MW-52	12/04/90	ND	ND	1.3	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND

---

<sup>1</sup> 1,2 Dichloroethane  
<sup>2</sup> 1,2 Dichloroethene  
<sup>3</sup> Micrograms/liter = parts per billion  
<sup>4</sup> None detected

Table 5. Contaminant Concentrations in Groundwater

<u>Well</u>	<u>Date</u>	<u>PCB's<sup>1</sup></u> <u>(ug/l)<sup>3</sup></u>	<u>PNA's<sup>2</sup></u> <u>(ug/l)</u>	<u>Total</u> <u>Lead</u> <u>(ug/l)</u>	<u>Organic</u> <u>Lead</u> <u>(ug/l)</u>	<u>Ethylene</u> <u>Dibromide</u> <u>(ug/l)</u>
MW-47	10/04/90	-- <sup>4</sup>	ND <sup>5</sup>	ND	--	--
MW-48	10/04/90	ND	ND	ND	--	--
	12/03/90	ND	--	--	--	--
MW-53	10/04/90	--	--	ND	ND	ND
	03/03/91	--	--	ND	--	ND
MW-54	10/04/90	--	ND	ND	ND	ND
	03/03/91	--	--	ND	--	ND

- 
- 1 Polychlorinated Biphenyls, EPA Method 8080/3510
  - 2 Polynuclear aromatic hydrocarbons, EPA Method 8270/3520
  - 3 Micrograms/liter = parts per billion
  - 4 Test not requested
  - 5 None detected

## V CONCLUSIONS

### A. General

Our investigation indicates that gasoline and the volatile constituents of gasoline, i.e., benzene, toluene, xylene and ethylbenzene (BTXE) are no longer present in the groundwater at the 13th and Jefferson site at concentrations above the analytical detection limits. It appears that the excavation of gasoline contaminated soils at the site has successfully eliminated the (gasoline source.)

*The true source may be USTs we haven't been removed (see p. 7).*

Relatively low concentrations of 1,2-dichloroethane (DCA) have been detected in Monitoring Wells 47 and 48. It is likely that the source of the DCA contamination was the leaking floor drain sump. Trace levels of chloroform were also detected in several of the monitoring wells. 1,2-Dichloroethene (DCE) was detected in Well 47 at a concentration of 11 mg/l on December 3, 1990. However, only DCA has been detected in the well since. We suspect that its presence may be associated with an analytical inconsistency. Our conclusions regarding gasoline and sump releases are discussed in more detail in the following sections.

**B. 13th and Jefferson Gasoline Release**

Gasoline contaminated soil and groundwater were detected during our previous investigations. Based on our observations during remediation, we estimate that the previous tank release areas are as indicated on Plate 1. Following soil remediation, monitoring wells were installed within the remediation area, and up and down gradient of the excavation to monitor groundwater quality.

Groundwater samples obtained from Monitoring Well 54 in September and October, 1990, contained low concentrations of gasoline and BTXE. The hydrocarbon concentrations were observed to decrease. The latest analytical data indicates that gasoline and its soluble constituents are currently not present in groundwater at concentrations above the analytical detection limits.

### C. Floor Drain Sump Release

A floor drain sump previously existed adjacent to Monitoring Well 48 at the location shown on Plate 1. DCA concentrations ranging up to 60 ug/l have been detected in MW-48 with significantly lower concentrations in MW-47. MW-59 which is approximately 155 feet downgradient of the sump contains no detectible concentrations of DCA. Upgradient wells did not contain detectable concentrations of DCA.

Based on the analytical data generated to date, we estimate that the approximate extent of the dissolved product plume is that shown on Plate 1. The data suggests that the DCA plume extends not more than approximately 150 feet downgradient of the previous sump.

The contaminated soils beneath the sump were removed by excavation. DCA was not detected in the soil samples obtained to characterize the sump contamination problem. Consequently, the source of the DCA contamination is currently uncertain. In our opinion, it could be associated with sump releases having leached from the soil into groundwater or possibly be from the gasoline release because DCA is a minor constituent of some gasolines. However, given the lateral distribution of groundwater contamination, we judge that the sump is the most likely source of DCA groundwater contamination.

The DCA concentrations detected in groundwater exceed DHS action levels for drinking water (0.5 ug/l). The scope of any groundwater remediation will have to be negotiated with the RWQCB.

Trace levels of chloroform were detected in Monitoring Wells 31, 52, 53 and 54. The chloroform concentrations were well below the State of California maximum contamination level of 100 ug/l for drinking water. The source of chloroform, although unknown at this time, does not appear to be on-site. Because of the low concentrations, remediation and/or further study will likely not be required by the regulatory agencies.

**D. Groundwater Remediation**

Based on our investigation, we judge that the soil and groundwater contamination associated with the gasoline release near the intersection of 13th and Jefferson Streets has been adequately remediated and no further remedial actions are appropriate at this time. However, it may be necessary to initiate remediation of DCA contaminated groundwater downgradient of the previous floor drain sump. Since the City of Oakland Redevelopment Agency has a water treatment facility currently in operation on the site, we judge that from a cost standpoint it will be most appropriate to initiate groundwater remediation. We judge that the most appropriate remediation method will involve installing a groundwater extraction well downgradient of Well 48, removing water from the well by pumping, and treating the contaminated groundwater at the existing facility utilizing activated carbon filtering methods.



E. Future Monitoring

Groundwater quality monitoring should continue on a quarterly basis. We propose that future sampling be performed on Wells 47, 48, 49, 51, 52, 53, 54, and 59. We propose to delete Wells 29, 31, 45 and 46 from the monitoring program since it appears that the problem does not extend into this area. The water samples should be analyzed for total volatile hydrocarbons (EPA 8015), BTEX (EPA 8020), and volatile organic chemicals (EPA 8010).

**List of Attached Plates:**

Plate 1	Site Plan
Plate 2 thru 13	Logs of Borings 29, 31, 45 thru 49, 51 thru 54, and 59
Plate 14	Unified Soil Classification System
Plate 15	Particle Size Analysis

**Appendix:**

Laboratory Test Reports  
Chain-of-Custody Documents

**Distribution:**

1 copy: Mr. John Esposito  
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Oakland, California 94612

1 copy: Ms. Lois Parr  
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2 copies: Mr. Paul Smith  
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1 copy: Mr. Lester Feldman  
Regional Water Quality Control Board  
1800 Harrison, Suite 700  
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1 copy: Mr. Donnell Choy  
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505 14th Street, 12th Floor  
Oakland, California 94612

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

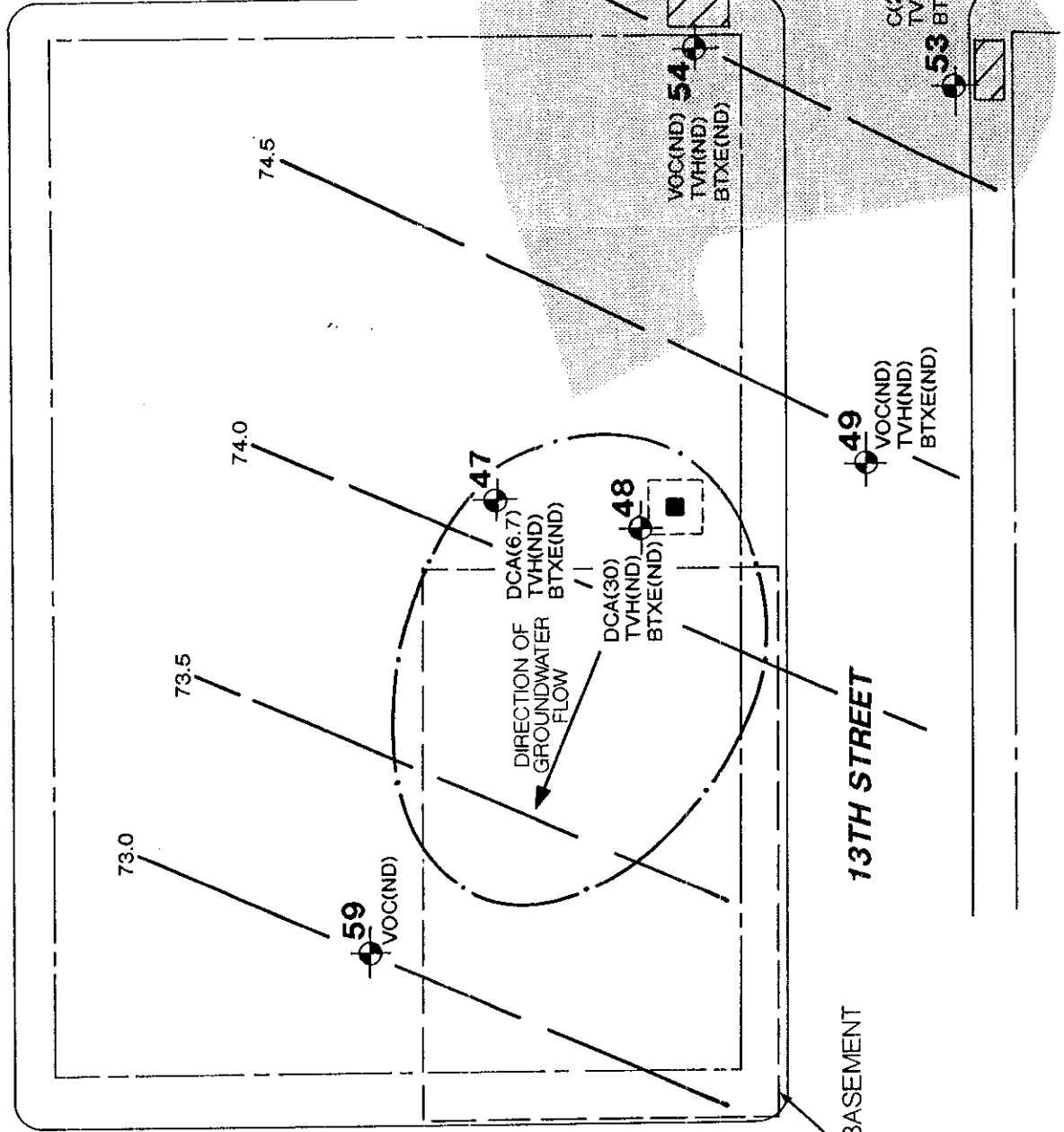
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14TH STREET

JEFFERSON STREET

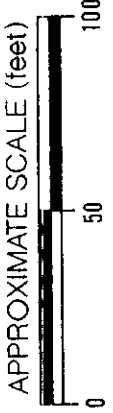
13TH STREET

MARTIN LUTHER KING JR. WAY



GROUNDWATER SAMPLING DATES:  
 WELLS 51,52 12/4/90  
 WELLS 29,31,45,46 1/4/91  
 WELLS 47,48,49,53,54,59 3/12/91

- 73.0 GROUNDWATER CONTOUR ELEVATIONS (4/3/91)
- PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION
- TEST BORING/MONITORING WELL
- PROPERTY LINE
- APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
- PREVIOUS SUMP AND APPROXIMATE EXTENT OF SOIL REMEDIATION
- APPROXIMATE EXTENT OF DCA PLUME
- VOC VOLATILE ORGANIC COMPOUNDS (EPA 8010)
- DCA 1,2 DICHLOROETHANE
- C CHLOROFORM
- TVH TOTAL VOLATILE HYDROCARBONS
- BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE
- ND NONE DETECTED



SITE PLAN

Subsurface Consultants

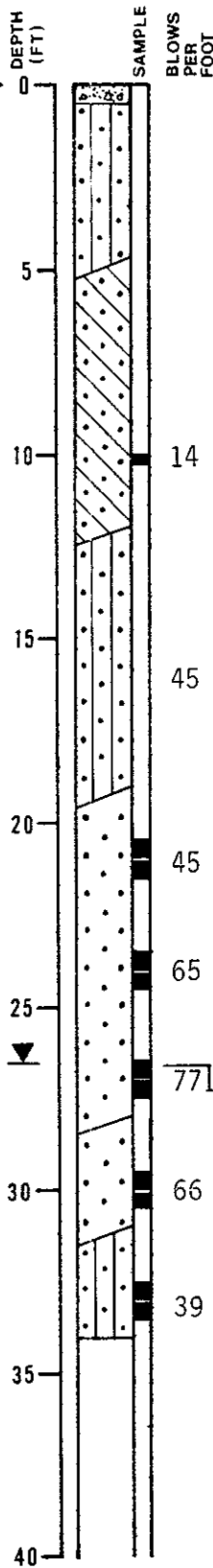
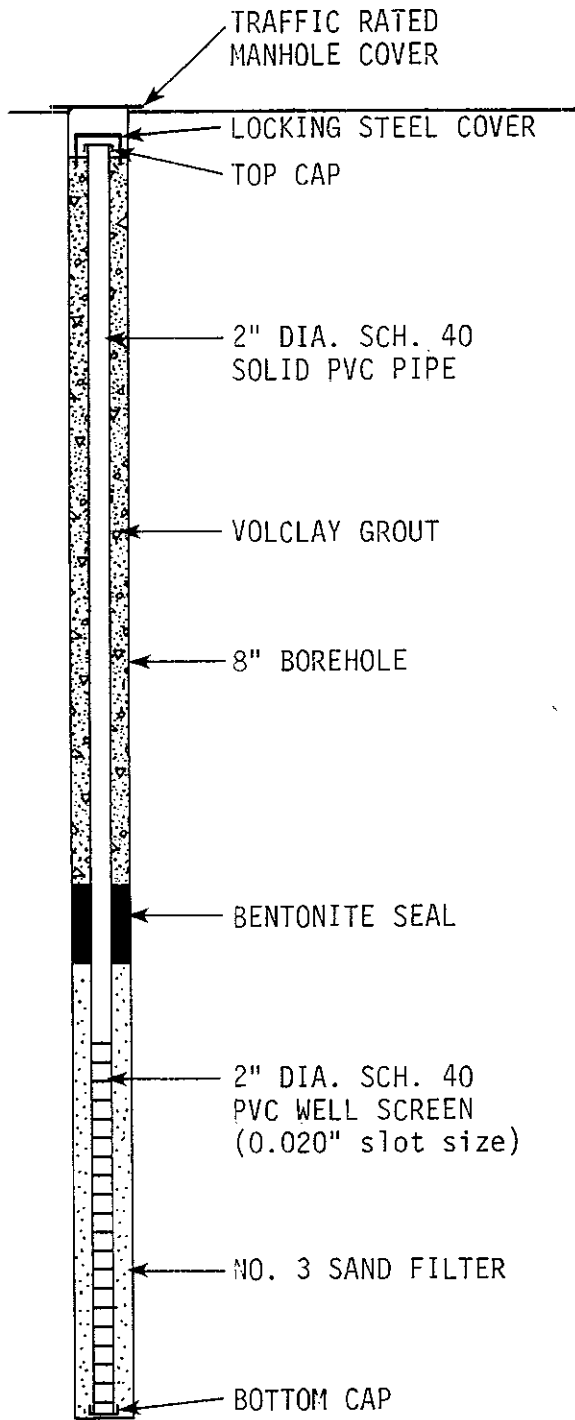
13TH & JEFFERSON - OAKLAND, CA  
 JOB NUMBER 430.013  
 DATE 3/27/91  
 APPROVED [Signature]  
 PLATE 1

# LOG OF TEST BORING 29

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 8/17/88

ELEVATION --



CONCRETE - 6" thick  
 DARK BROWN SILTY SAND (SM)  
 medium dense, moist

MOTTLED OLIVE-BROWN CLAYEY SAND (SC)  
 medium dense, moist

OLIVE-GRAY/BROWN SILTY SAND (SM/SP)  
 dense, moist, fine grained

BROWN SAND (SP)  
 dense, moist, fine grained

slight increase in silt content below 25.0 feet

GROUNDWATER LEVEL 9/28/89

GRAY SAND (SP)  
 dense, wet  
 mild gasoline odor

BROWN SILTY SAND (SM)  
 dense, wet

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1330 MARTIN LUTHER KING, JR. WAY - OAK.

JOB NUMBER

DATE

APPROVED

430.002

9/6/88

PLATE

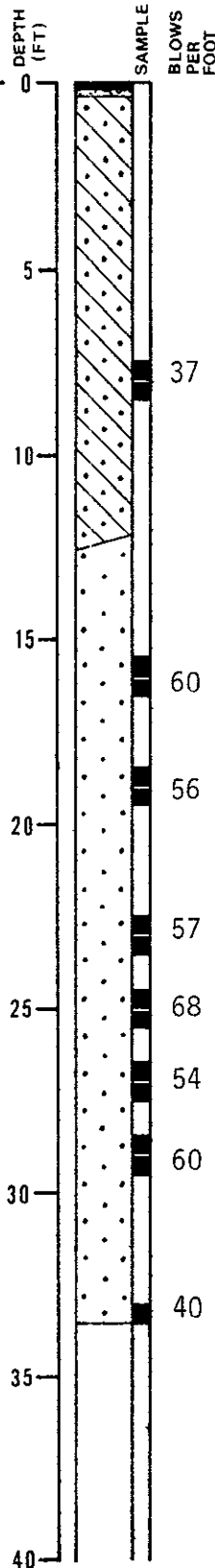
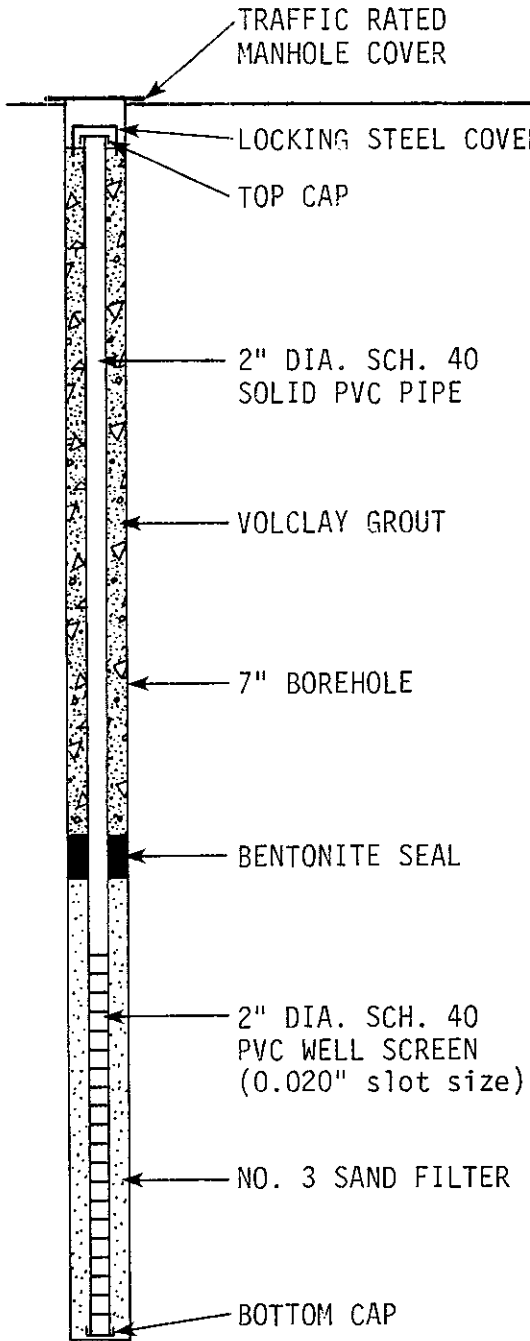
2

# LOG OF TEST BORING 31

EQUIPMENT 7" Hollow Stem Auger

DATE DRILLED 8/26/88

ELEVATION --



ASPHALTIC CONCRETE - 2" thick  
CONCRETE SLAB - 2" thick  
DARK GRAY-BROWN CLAYEY SAND (SC)  
medium dense, moist

BROWN SAND (SP)  
dense, moist

GROUNDWATER LEVEL 9/28/89

Subsurface Consultants

1330 MARTIN LUTHER KING, JR. WAY - OAK.

JOB NUMBER

430.002

DATE

9/6/88

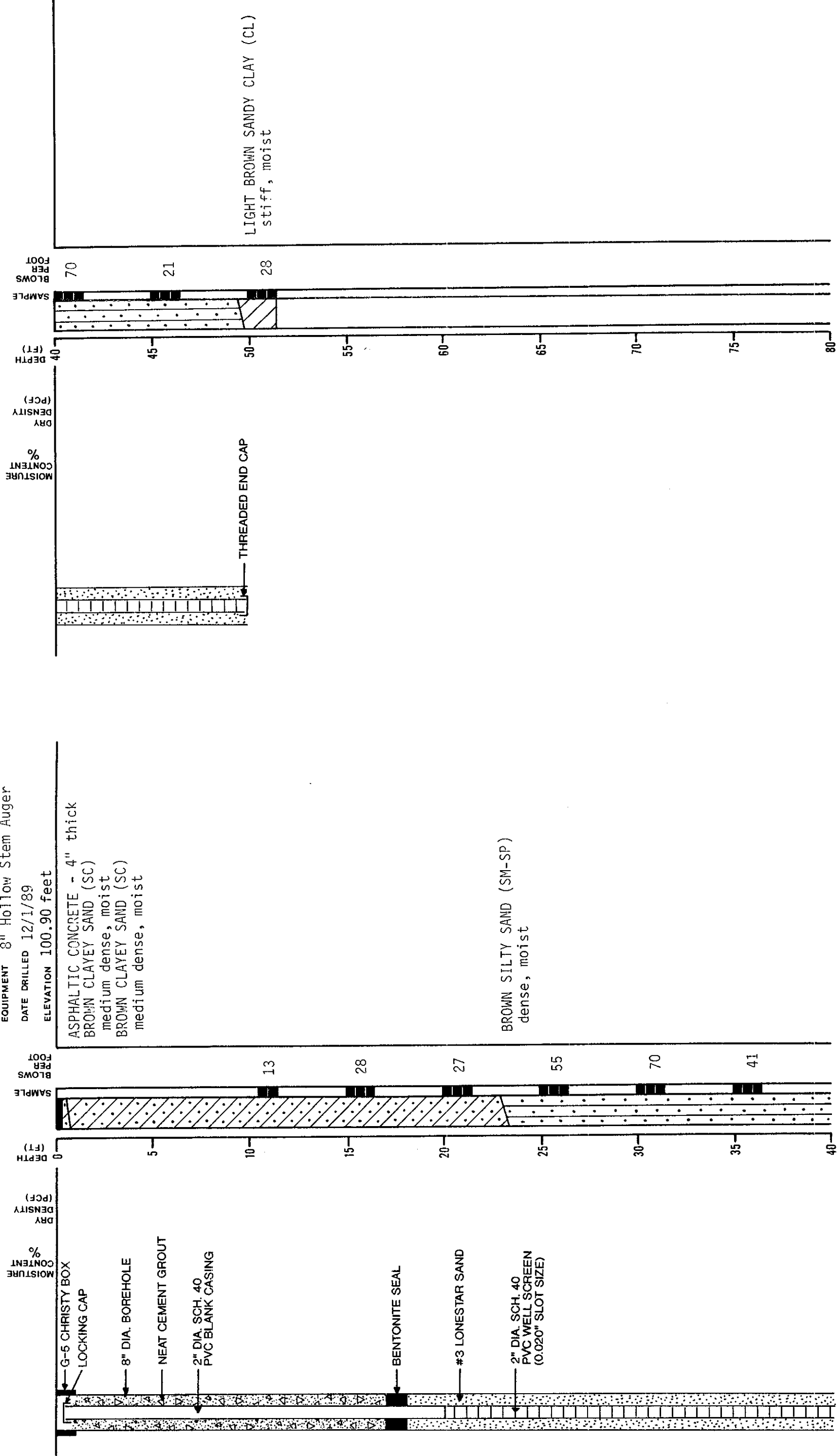
APPROVED

PLATE

**3**

# LOG OF TEST BORING 45

EQUIPMENT 8" Hollow Stem Auger  
 DATE DRILLED 12/1/89  
 ELEVATION 100.90 feet



Subsurface Consultants

MARTIN LUTHER KING JR. WAY & 14TH

APPROVED

DATE

3/7/91

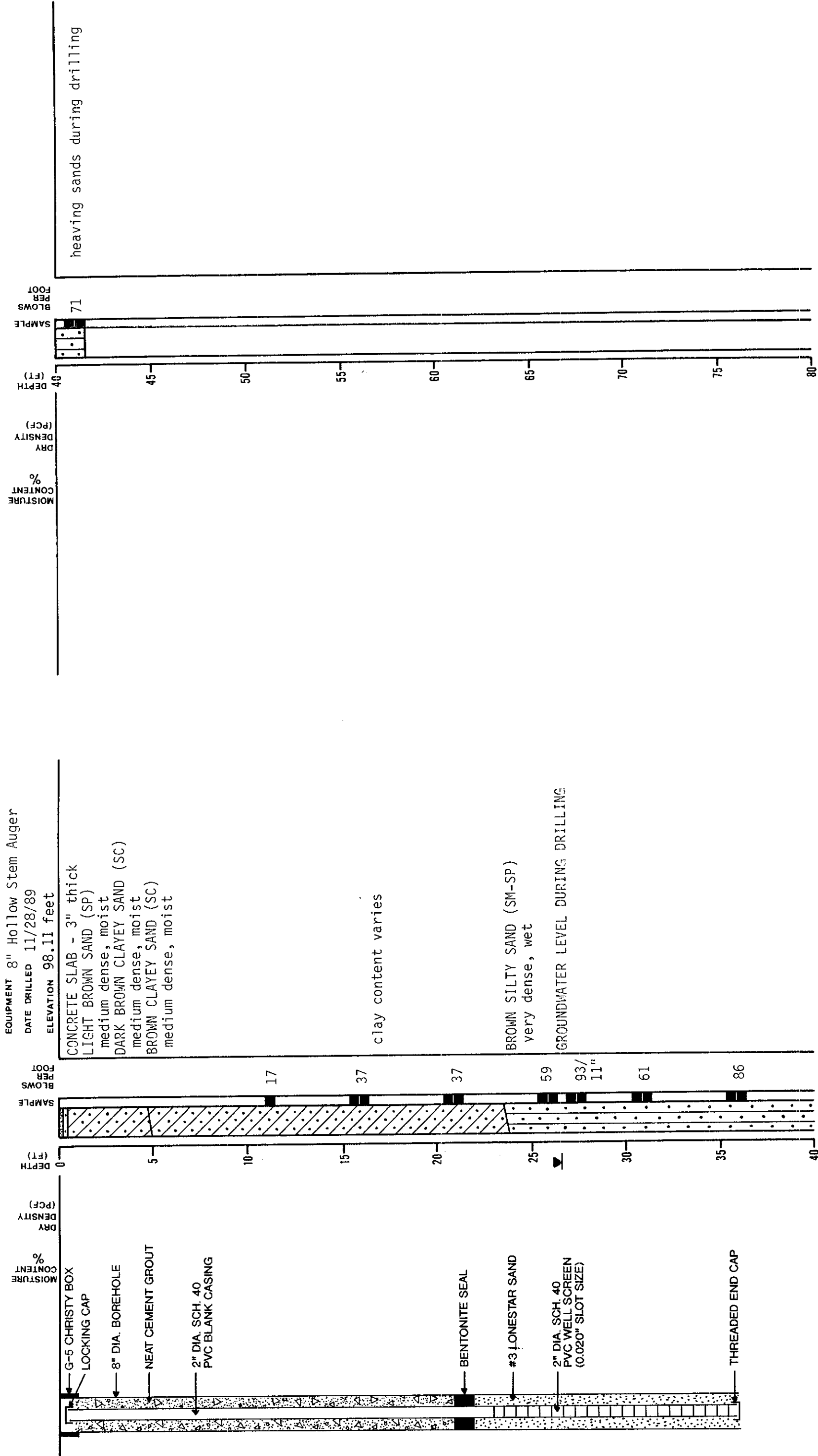
JOB NUMBER

430.010

PLATE

4

# LOG OF TEST BORING 46



Subsurface Consultants

JOB NUMBER 430.010  
 DATE 3/7/91  
 APPROVED *efe*

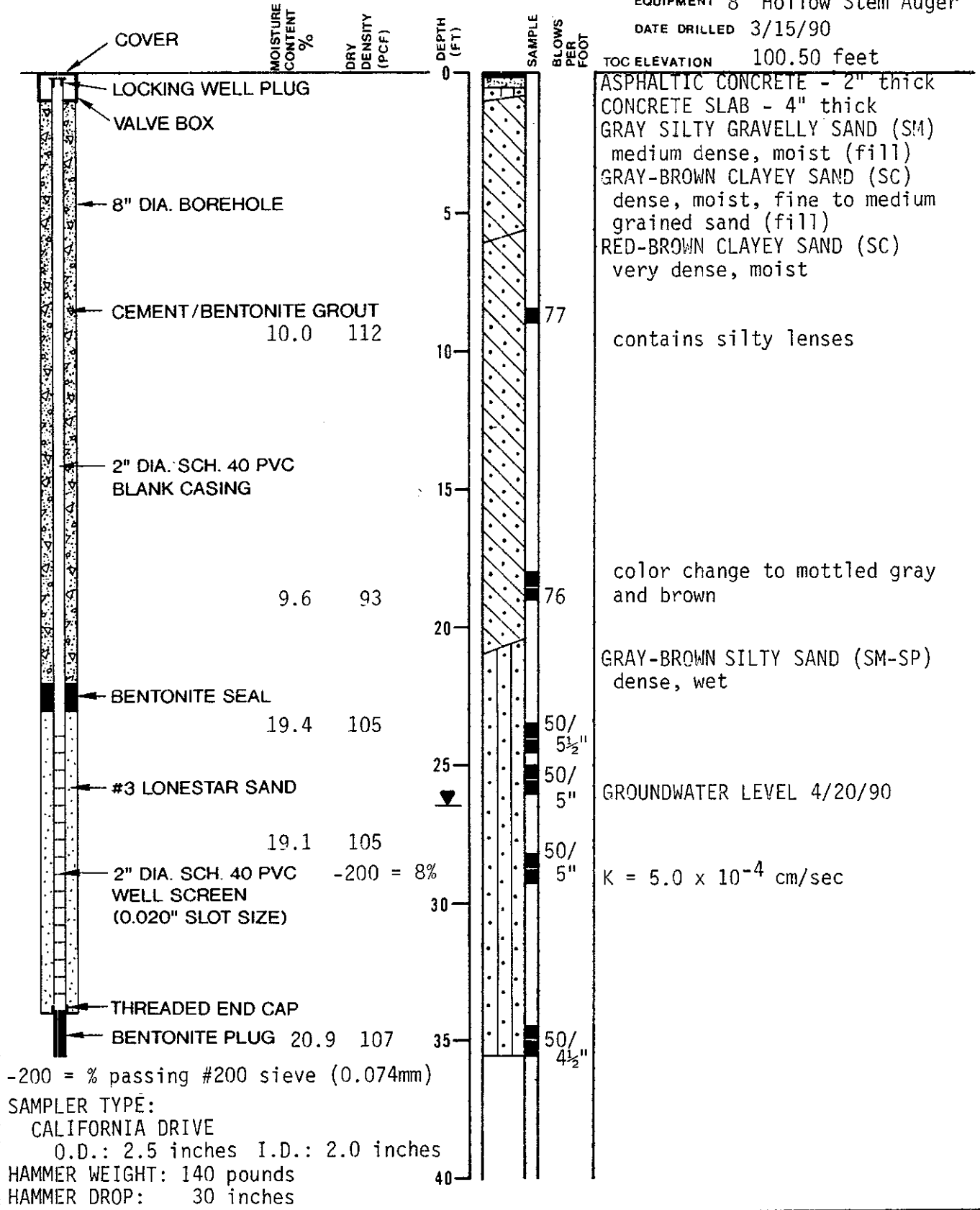
PLATE 5

# LOG OF TEST BORING 47

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 3/15/90

TOC ELEVATION 100.50 feet



-200 = % passing #200 sieve (0.074mm)  
 SAMPLER TYPE:  
 CALIFORNIA DRIVE  
 O.D.: 2.5 inches I.D.: 2.0 inches  
 HAMMER WEIGHT: 140 pounds  
 HAMMER DROP: 30 inches

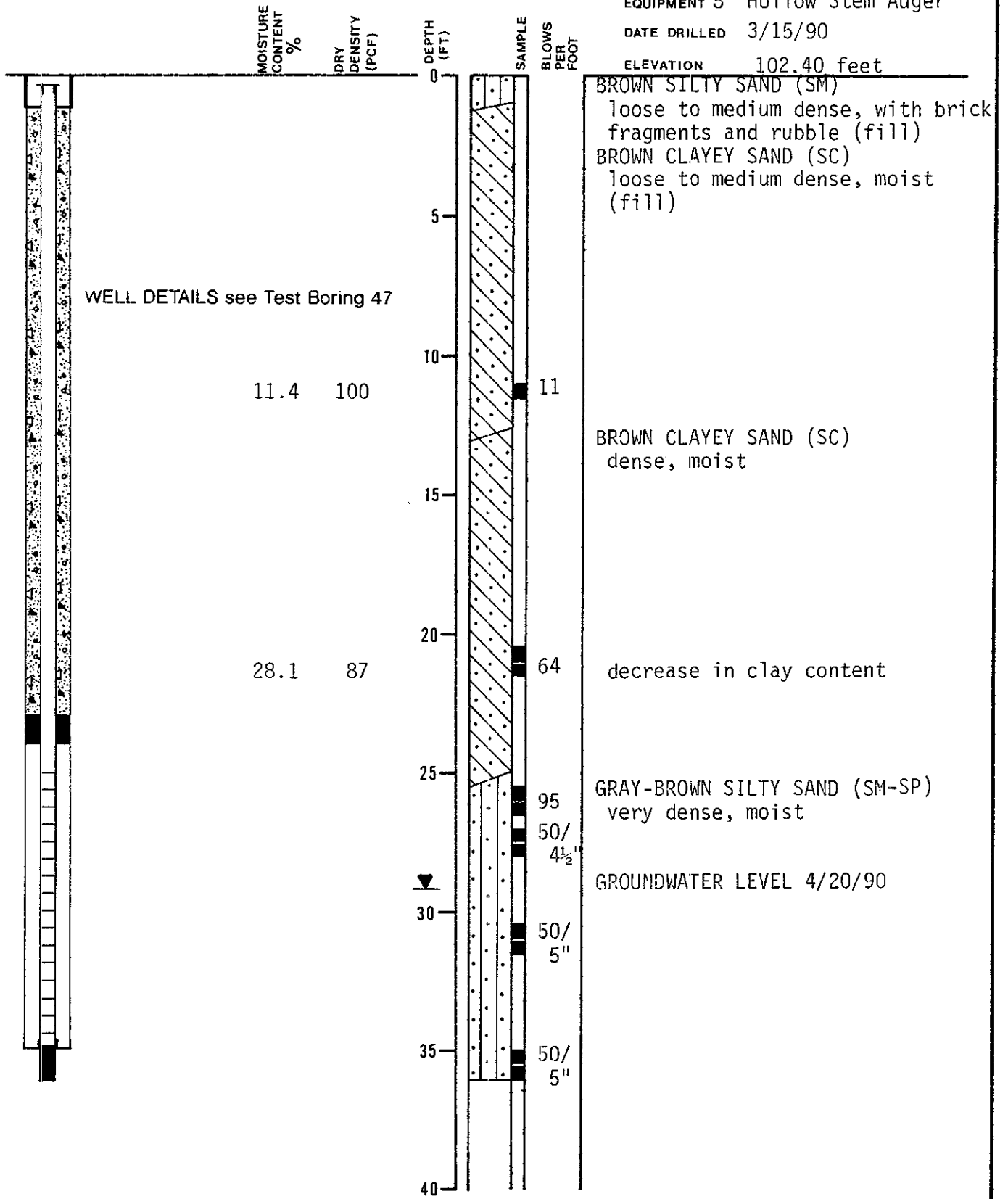


# LOG OF TEST BORING 48

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 3/15/90

ELEVATION 102.40 feet



Subsurface Consultants

13th & JEFFERSON - OAKLAND, CA

JOB NUMBER  
430.003

DATE  
4/23/90

APPROVED  
*[Signature]*

PLATE

**7**

# LOG OF TEST BORING 49

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 3/15/90

ELEVATION 101.73 feet

MOISTURE CONTENT %  
DRY DENSITY (PCF)

DEPTH (FT)  
SAMPLE

BLOWS PER FOOT

ASPHALTIC CONCRETE - 2" thick  
CONCRETE SLAB - 4" thick  
BASE ROCK - 6" thick  
GRAY CLAYEY SAND (SC)  
dense, moist

WELL DETAILS see Test Boring 47

SCH. 80 PVC CASING AND WELL SCREEN FOR THIS WELL

GRAY-GREEN CLAYEY SAND (SC)  
very dense, moist

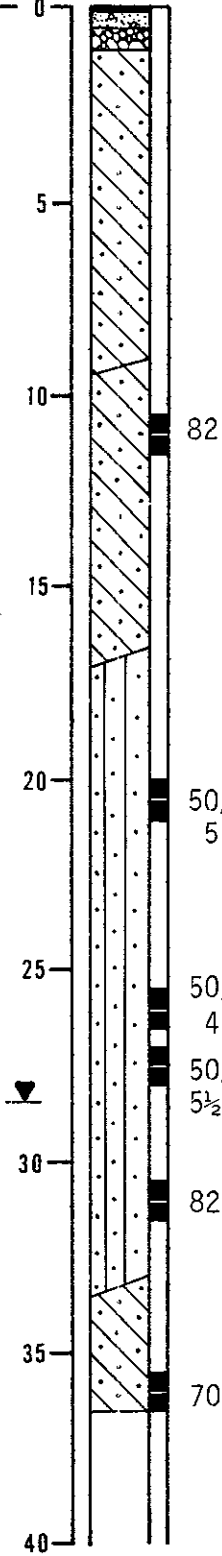
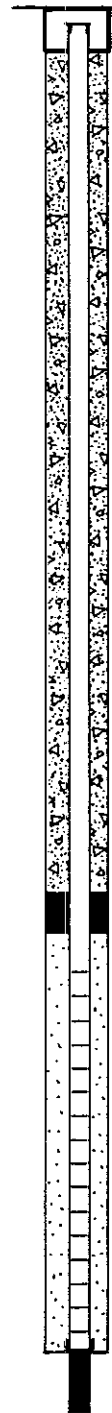
BROWN SILTY SAND (SM-SP)  
very dense, moist

becomes wet

GROUNDWATER LEVEL 4/20/90

GRAY-BROWN CLAYEY SAND (SC)  
dense, wet

20.7 106  
-200 = 6%  
 $K = 2.2 \times 10^{-4}$  cm/sec



Subsurface Consultants

13th & JEFFERSON - OAKLAND, CA

JOB NUMBER  
430.003

DATE  
4/23/90

APPROVED

PLATE

8

# LOG OF TEST BORING 51

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 3/20/90

ELEVATION 102.64 feet

MOISTURE  
CONTENT  
%

DRY  
DENSITY  
(PCF)

DEPTH  
(FT)

SAMPLE

BLOWS  
PER  
FOOT

ASPHALTIC CONCRETE - 4" thick  
 CONCRETE SLAB - 4" thick  
 BASE ROCK - 6" thick  
 BROWN CLAYEY GRAVELLY SAND (SC)  
 medium dense, moist (fill)  
 BROWN CLAYEY SAND (SC)  
 medium dense, moist

WELL DETAILS see Test Boring 47

BROWN SILTY SAND (SM-SP)  
 very dense, moist

becomes wet

GROUNDWATER LEVEL 4/20/90

15.1 115

80

50/  
5"

83

Subsurface Consultants

13th & JEFFERSON - OAKLAND, CA

JOB NUMBER

430.003

DATE

4/23/90

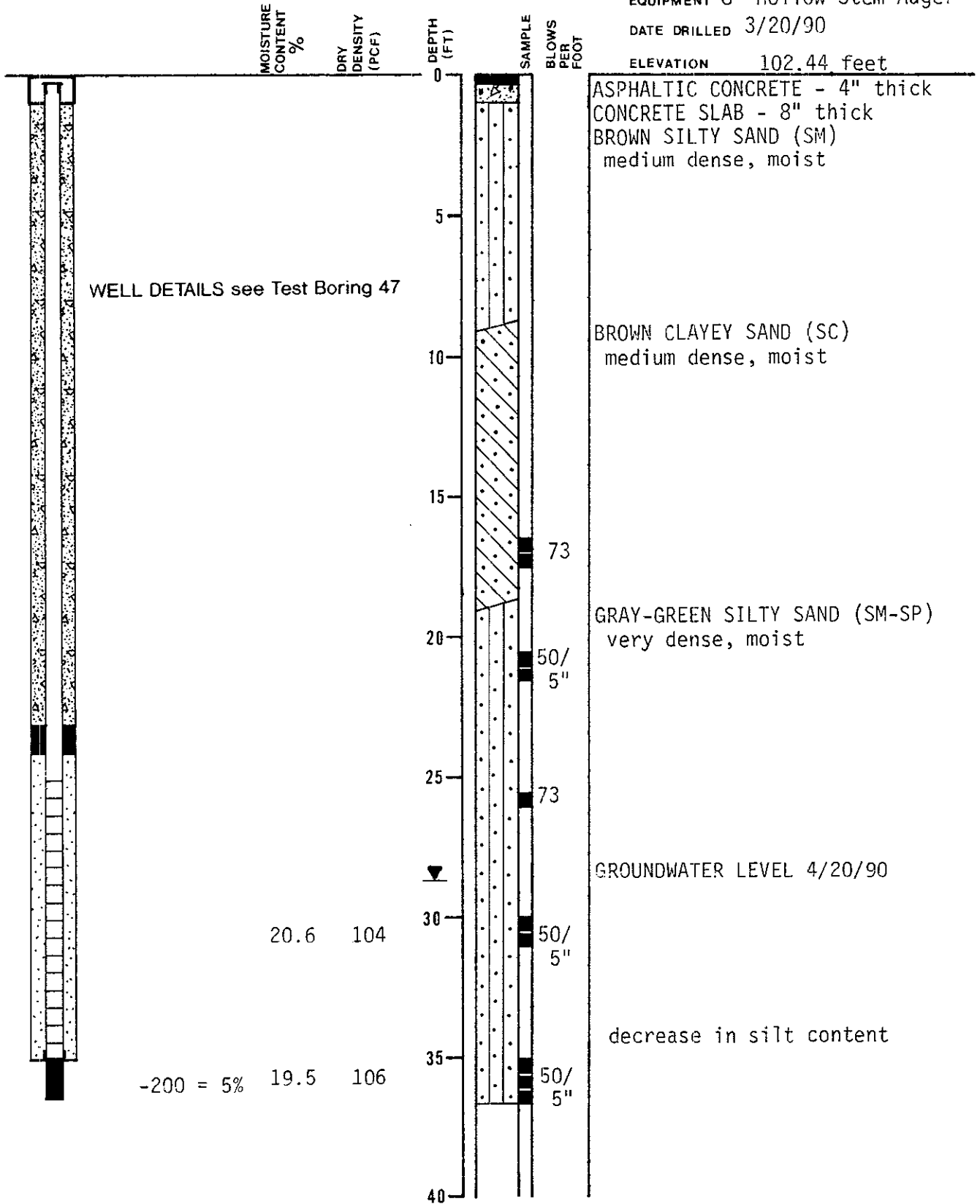
APPROVED

PLATE

9

# LOG OF TEST BORING 52

EQUIPMENT 8" Hollow Stem Auger  
 DATE DRILLED 3/20/90  
 ELEVATION 102.44 feet



Subsurface Consultants

13th & JEFFERSON - OAKLAND, CA

JOB NUMBER  
430.003

DATE  
4/23/90

APPROVED

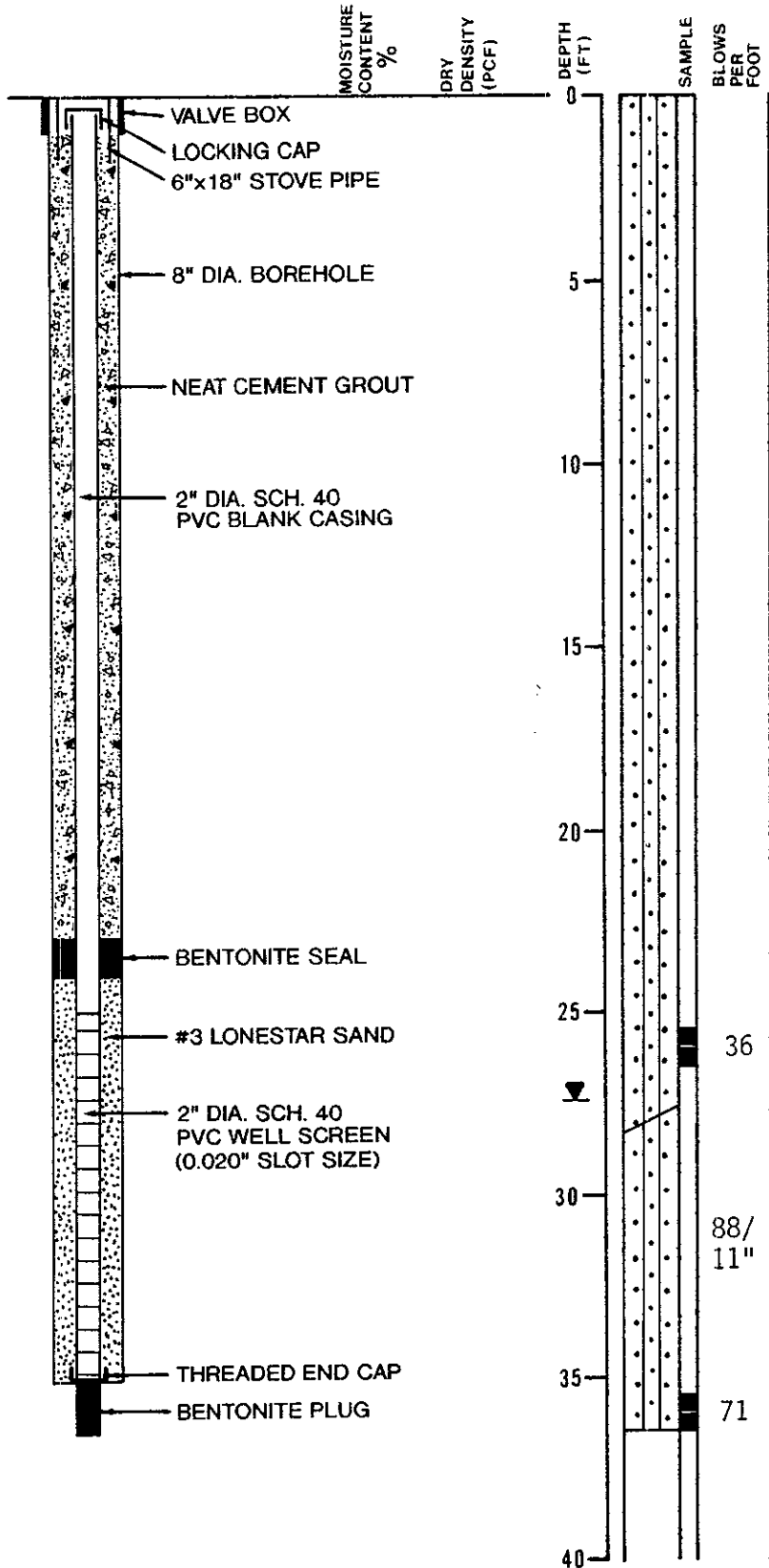
PLATE  
**10**

# LOG OF TEST BORING 53

EQUIPMENT 8" Hollow Stem Auger

DATE DRILLED 9/19/90

ELEVATION 101.28 feet



BROWN SILTY SAND (SM)  
medium dense, moist (fill)

GROUNDWATER LEVEL 9/24/90  
BROWN SILTY SAND (SM)  
very dense, wet

Subsurface Consultants

13TH & JEFFERSON - OAKLAND, CA

JOB NUMBER

430.003

DATE

12/6/90

APPROVED

*[Signature]*

PLATE

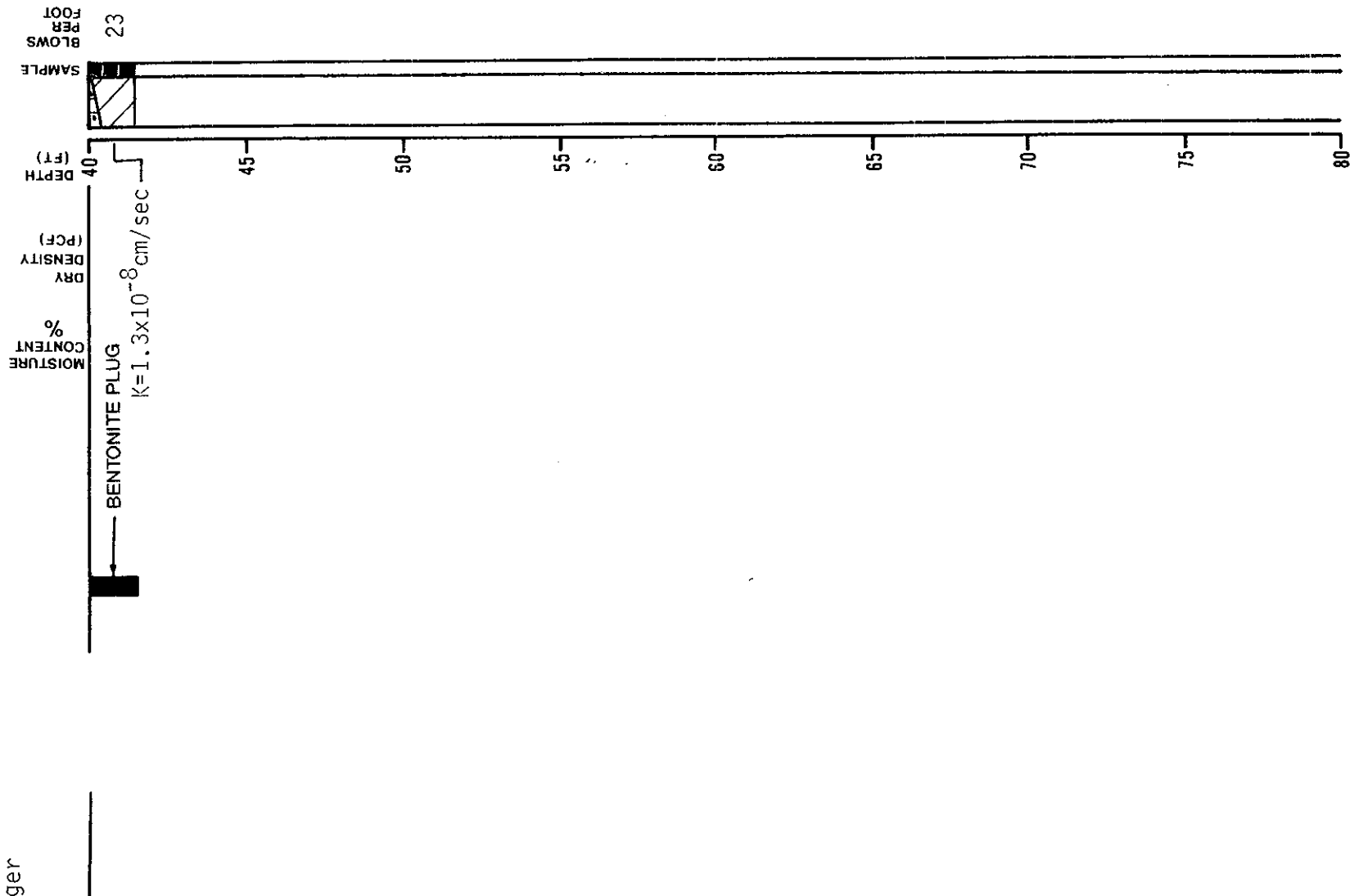
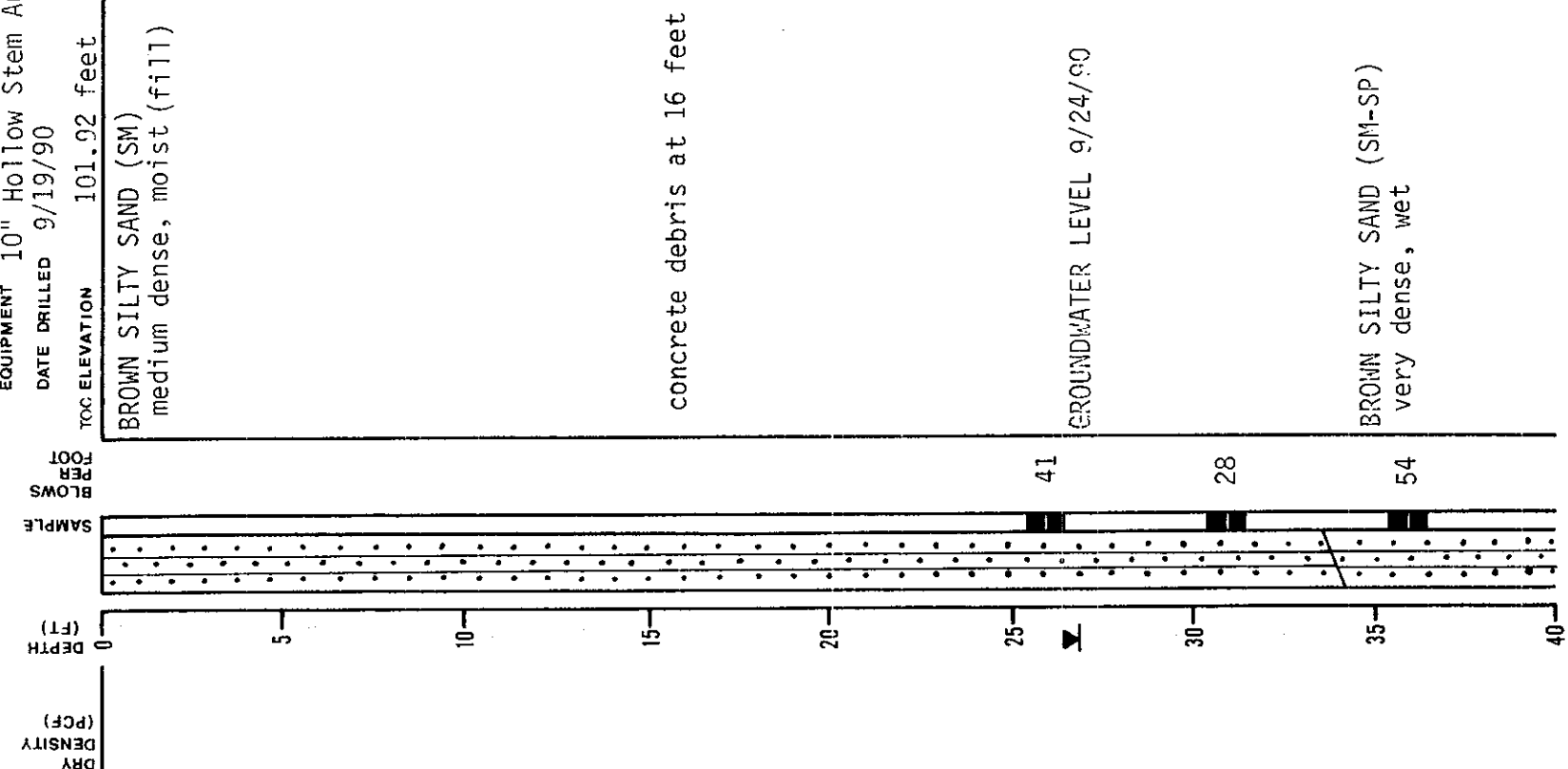
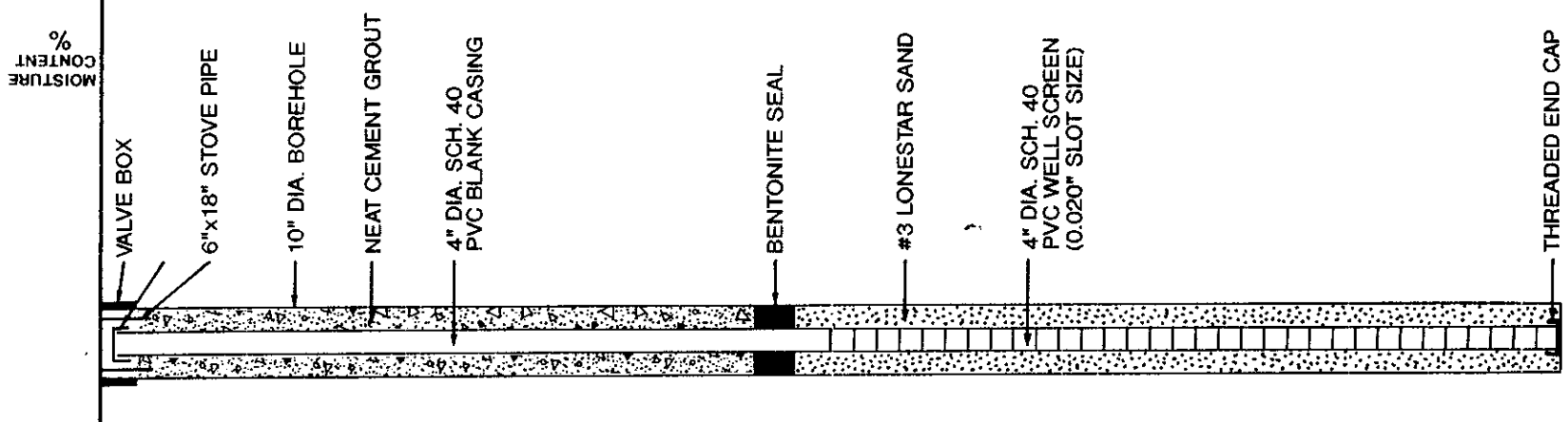
11

# LOG OF TEST BORING 54

EQUIPMENT 10" Hollow Stem Auger  
 DATE DRILLED 9/19/90  
 TOC ELEVATION 101.92 feet

BROWN SILTY SAND (SM)  
 medium dense, moist (fill)

BROWN SANDY CLAY (CL)  
 stiff, moist



Subsurface Consultants

1330 MARTIN LUTHER KING, JR. WAY - OAK  
 JOB NUMBER 430.003  
 DATE 12/6/90  
 APPROVED *[Signature]*

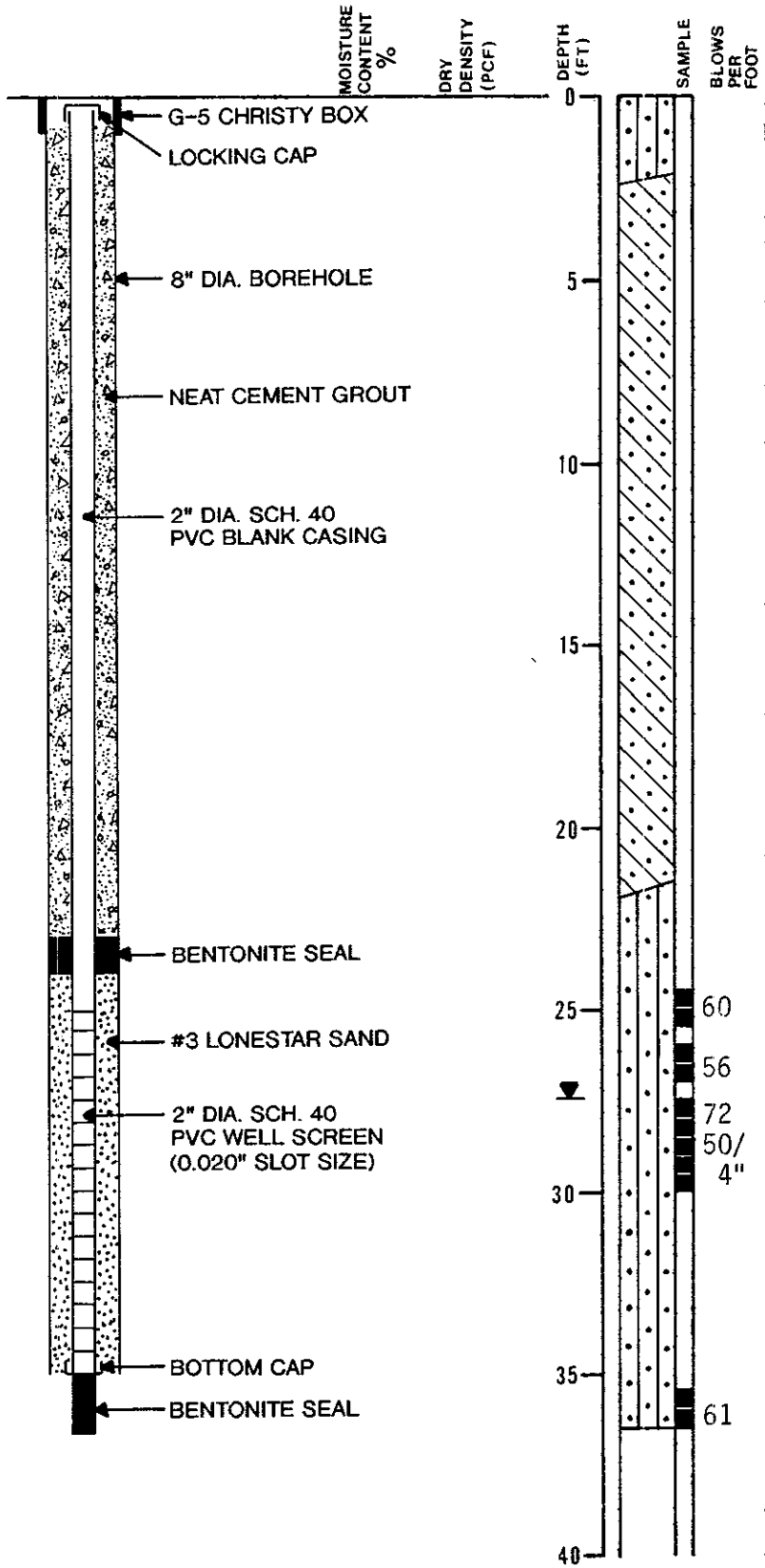
PLATE 12

# LOG OF TEST BORING 59

EQUIPMENT 8" Hollow Stem Auger.

DATE DRILLED 1/29/91

ELEVATION 100.37 feet



BROWN SILTY SAND (SM-SP)  
medium dense, moist (fill)  
BROWN CLAYEY SAND (SC)  
dense, moist

MOTTLED RED & BROWN SILTY SAND (SM-SP)  
medium dense, moist

GROUNDWATER LEVEL 2/12/91

Subsurface Consultants

13TH & JEFFERSON - OAKLAND, CA

JOB NUMBER  
430.013

DATE  
2/28/91

APPROVED

PLATE

13

GENERAL SOIL CATEGORIES		SYMBOLS	TYPICAL SOIL TYPES			
<b>COARSE GRAINED SOILS</b> More than half is larger than No. 200 sieve	<b>GRAVEL</b> 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		
	<b>SAND</b> 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		
			<b>FINE GRAINED SOILS</b> More than half is smaller than No. 200 sieve	<b>SILT AND CLAY</b> 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					
<b>SILT AND CLAY</b> 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				
<b>HIGHLY ORGANIC SOILS</b>		PT	Peat and Other Highly Organic Soils			

**UNIFIED SOIL CLASSIFICATION SYSTEM**

Subsurface Consultants

13TH & JEFFERSON -- OAKLAND, CA

JOB NUMBER  
430.013

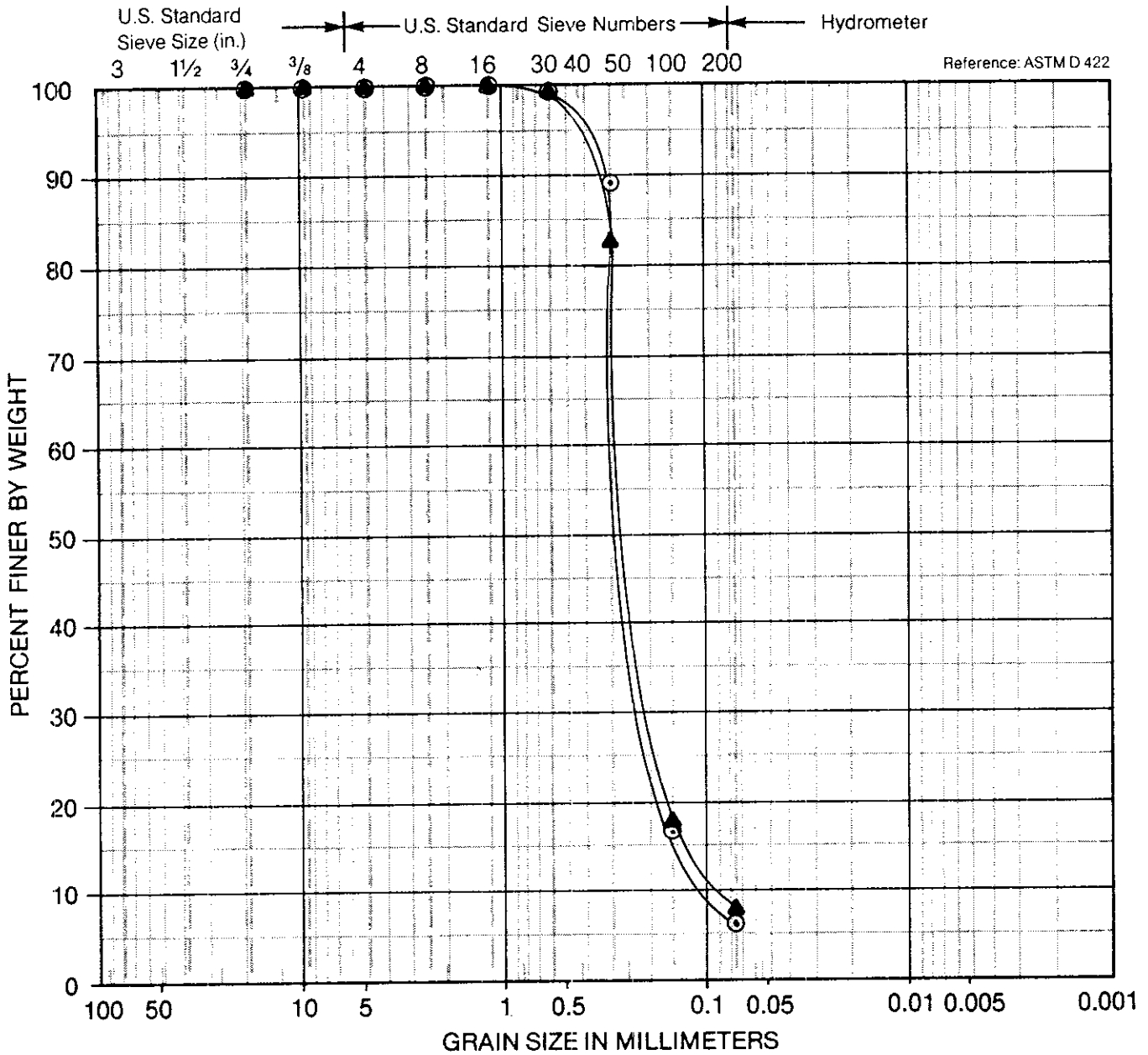
DATE  
4/5/91

APPROVED

PLATE

**14**





COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT OR CLAY
	GRAVEL		SAND			

Symbol	Sample Source	Classification
▲	Boring 47 @ 29.0'	BROWN SILTY SAND (SM-SP)
⊙	Boring 49 @ 31.0'	BROWN SILTY SAND (SM-SP)

**PARTICLE SIZE ANALYSIS**

13TH & JEFFERSON - OAKLAND, CA

JOB NUMBER 430.013	DATE 4/5/91	APPROVED 
-----------------------	----------------	--------------

**Subsurface Consultants**

PLATE  
**15**

# Appendix



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

DATE RECEIVED: 04/09/90  
DATE REPORTED: 04/13/90  
PAGE 1 OF 2


LAB NUMBER: 100116

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 5 WATER SAMPLES

PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

Berkeley

Wilmington

Los Angeles



LABORATORY NUMBER: 100116  
CLIENT: SUBSURFACE CONSULTANTS  
JOB NUMBER: 430.003  
JOB LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 04/09/90  
DATE ANALYZED: 04/12/90  
DATE REPORTED: 04/13/90  
PAGE 2 OF 2

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)
100116-1	47	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100116-2	48	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100116-3	49	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100116-4	51	ND(50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
100116-5	52	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, %  
RECOVERY, %

2  
108



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

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

RECEIVED

SEP 28 1990

7,8,9,10,11,12,13,14,15,16

DATE RECEIVED: 09/24/90  
DATE REPORTED: 09/25/90

LAB NUMBER: 101723

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 WATER SAMPLES

PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

*Adc*  
-----  
QA/QC Approval

*[Signature]*  
-----  
Final Approval



LABORATORY NUMBER: 101723  
CLIENT: SUBSURFACE CONSULTANTS  
JOB NUMBER: 430.003  
JOB LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/24/90  
DATE ANALYZED: 09/24/90  
DATE REPORTED: 09/25/90

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)
101723-1	MW-53	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
101723-2	MW-54	1,700	ND(0.5)	1.5	1.9	20

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

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	104



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

DATE RECEIVED: 10/04/90  
DATE REPORTED: 10/11/90

LAB NUMBER: 101834

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 WATER SAMPLES

PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

RECEIVED  
OCT 16 1990  
ANALYTICAL LABORATORIES

*Al*  
-----  
QA/QC Approval

*[Signature]*  
-----  
Final Approval



LABORATORY NUMBER: 101834  
CLIENT: SUBSURFACE CONSULTANTS  
JOB NUMBER: 430.003  
JOB LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/05/90  
DATE REPORTED: 10/05/90

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)
101834-1	MW-54	1,300	ND(0.5)	0.7	2.8	12
101834-2	MW-53	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





LABORATORY NUMBER: 101834  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

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

=====  
ANALYSIS: LEAD  
ANALYSIS METHOD: EPA 7420  
=====

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
101834-1	MV-54	ND	mg/L	0.05
101834-2	MV-53	ND	mg/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
RPD, % <1  
RECOVERY, % 99  
=====

LABORATORY NUMBER: 101834  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.003  
 LOCATION: 13TH & JEFFERSON

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

=====  
 ANALYSIS: ORGANIC LEAD  
 ANALYSIS METHOD: EPA 7420  
 METHOD: CA DHS METHOD, LUFT MANUAL OCT 1989  
 =====

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
101834-1	MW-54	ND	mg/L	0.1
101834-2	MW-53	ND	mg/L	0.1

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
 RPD, % 2  
 RECOVERY, % 102  
 =====

LABORATORY NUMBER: 101834-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB #: 430.003 - 13TH & JEFFERSON  
 SAMPLE ID: WM-54

DATE RECEIVED: 10/04/90  
 DATE ANALYZED: 10/05/90  
 DATE REPORTED: 10/11/90

POLYNUCLEAR AROMATIC HYDROCARBONS IN WATER  
 BY EPA METHOD 8270

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	5.0
Acenaphthylene	ND	5.0
Acenaphthene	ND	5.0
Fluorene	ND	5.0
Phenanthrene	ND	5.0
Anthracene	ND	5.0
Pyrene	ND	5.0
Benzo(a)anthracene	ND	5.0
Chrysene	ND	5.0
Benzo(b)fluoranthene	ND	5.0
Benzo(k)fluoranthene	ND	5.0
Fluoranthene	ND	5.0
Benzo(a)pyrene	ND	5.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenzo(a,h)anthracene	ND	5.0
Benzo(ghi)perylene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SURROGATE RECOVERY

Nitrobenzene-d5	68 %
2-Fluorobiphenyl	63 %
Terphenyl-d14	51 %



LABORATORY NUMBER: 101834  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/09/90  
DATE REPORTED: 10/09/90

=====  
ANALYSIS: ETHYLENE DIBROMIDE  
ANALYSIS METHOD: AB 1803  
=====

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
101834-1	MW-54	ND	ug/L	0.05
101834-2	MW-53	ND	ug/L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	107



LABORATORY NUMBER: 101834-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.003  
 SAMPLE ID: MW-54

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

EPA 8010  
 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	1.6	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	2.0
bromoform	ND	1.0
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  
 =====

LABORATORY NUMBER: 101834-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.003  
 SAMPLE ID: MW-53

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

EPA 8010  
 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	1.2	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	2.0
bromoform	ND	1.0
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



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DATE RECEIVED: 10/04/90  
DATE REPORTED: 10/16/90


LAB NUMBER: 101842

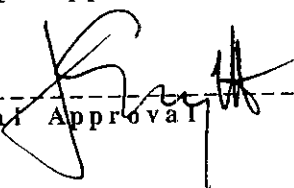
CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 WATER SAMPLES

PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

  
-----  
QA/QC Approval

  
-----  
Final Approval

Berkeley

Wilmington

Los Angeles



LABORATORY NUMBER: 101842  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 10/04/90  
DATE EXTRACTED: 10/16/90  
DATE ANALYZED: 10/17/90  
DATE REPORTED: 10/16/90

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
California DOHS Method  
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
101842-2	48	ND	110	50

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
RPD, % 7  
RECOVERY, % 82  
=====





LABORATORY NUMBER: 101842  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/09/90  
DATE REPORTED: 10/16/90

=====

ANALYSIS: LEAD  
ANALYSIS METHOD: EPA 7420

=====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101842-1	47	ND	mg / L	0.05
101842-2	48	ND	mg / L	0.05

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	103

=====

LAB NUMBER: 101842-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.003  
 SAMPLE ID: 48

DATE RECEIVED: 10/04/90  
 DATE ANALYZED: 10/15/90  
 DATE REPORTED: 10/16/90

=====  
 POLYCHLORINATED BIPHENYLS (PCBs)  
 ANALYSIS METHOD: EPA 8080  
 EXTRACTION METHOD: EPA 3510  
 =====

AROCLOR TYPE	RESULT (ug/L)	REPORTING LIMIT (ug/L)
AROCLOR 1221	ND	1.0
AROCLOR 1232	ND	1.0
AROCLOR 1016	ND	1.0
AROCLOR 1242	ND	1.0
AROCLOR 1248	ND	1.0
AROCLOR 1254	ND	1.0
AROCLOR 1260	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
 RPD, % 22  
 RECOVERY, % 111  
 =====



LABORATORY NUMBER: 101842-1  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
SAMPLE ID: 47

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/10/90  
DATE REPORTED: 10/16/90

Polynuclear Aromatic Hydrocarbons in Water by EPA 8270  
Extraction Method: EPA 3520

COMPOUND	RESULT	REPORTING LIMIT
	ug/L	ug/L
Naphthalene	ND	5.0
Acenaphthylene	ND	5.0
Acenaphthene	ND	5.0
Fluorene	ND	5.0
Phenanthrene	ND	5.0
Anthracene	ND	5.0
Fluoranthene	ND	5.0
Pyrene	ND	5.0
Benzo(a)anthracene	ND	5.0
Chrysene	ND	5.0
Benzo(b)fluoranthene	ND	5.0
Benzo(k)fluoranthene	ND	5.0
Benzo(a)pyrene	ND	5.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenzo(a,h)anthracene	ND	5.0
Benzo(g,h,i)perylene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SURROGATE RECOVERY

Nitrobenzene-d5	76%
2-Fluorobiphenyl	57%
Terphenyl-d14	43%



LABORATORY NUMBER: 101842-2  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
SAMPLE ID: 48

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/10/90  
DATE REPORTED: 10/16/90

Polynuclear Aromatic Hydrocarbons in Water by EPA 8270  
Extraction Method: EPA 3520

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	5.0
Acenaphthylene	ND	5.0
Acenaphthene	ND	5.0
Fluorene	ND	5.0
Phenanthrene	ND	5.0
Anthracene	ND	5.0
Fluoranthene	ND	5.0
Pyrene	ND	5.0
Benzo(a)anthracene	ND	5.0
Chrysene	ND	5.0
Benzo(b)fluoranthene	ND	5.0
Benzo(k)fluoranthene	ND	5.0
Benzo(a)pyrene	ND	5.0
Indeno(1,2,3-cd)pyrene	ND	5.0
Dibenzo(a,h)anthracene	ND	5.0
Benzo(g,h,i)perylene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SURROGATE RECOVERY

Nitrobenzene-d5	72%
2-Fluorobiphenyl	57%
Terphenyl-d14	44%

LABORATORY NUMBER: 101842-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.003  
 SAMPLE ID: 48

DATE RECEIVED: 10/04/90  
 DATE ANALYZED: 10/12/90  
 DATE REPORTED: 10/16/90

EPA 8010  
 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	60	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	2.0
bromoform	ND	1.0
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, %	12
RECOVERY, %	102



LABORATORY NUMBER: 101842-1  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
SAMPLE ID: 47

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/12/90  
DATE REPORTED: 10/16/90

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	1.0
Toluene.....	ND	1.0
Ethyl Benzene.....	ND	1.0
Total Xylenes.....	ND	1.0
Chlorobenzene.....	ND	1.0
1,4-Dichlorobenzene.....	ND	1.0
1,3-Dichlorobenzene.....	ND	1.0
1,2-Dichlorobenzene.....	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	11
RECOVERY, %	102



LABORATORY NUMBER: 101842-2  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
SAMPLE ID: 48

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/12/90  
DATE REPORTED: 10/16/90

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	1.0
Toluene.....	ND	1.0
Ethyl Benzene.....	ND	1.0
Total Xylenes.....	ND	1.0
Chlorobenzene.....	ND	1.0
1,4-Dichlorobenzene.....	ND	1.0
1,3-Dichlorobenzene.....	ND	1.0
1,2-Dichlorobenzene.....	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	11
RECOVERY, %	102



LABORATORY NUMBER: 101842-3  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
SAMPLE ID: 51

DATE RECEIVED: 10/04/90  
DATE ANALYZED: 10/12/90  
DATE REPORTED: 10/16/90

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	1.0
Toluene.....	ND	1.0
Ethyl Benzene.....	ND	1.0
Total Xylenes.....	ND	1.0
Chlorobenzene.....	ND	1.0
1,4-Dichlorobenzene.....	ND	1.0
1,3-Dichlorobenzene.....	ND	1.0
1,2-Dichlorobenzene.....	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	11
RECOVERY, %	102



LABORATORY NUMBER: 101842-4  
 CLIENT: SUBSURFACE CONSULTANTS  
 JOB #: 430.003  
 SAMPLE ID: 52

DATE RECEIVED: 10/04/90  
 DATE ANALYZED: 10/12/90  
 DATE REPORTED: 10/16/90

EPA 8020: Volatile Aromatic Hydrocarbons in Water

COMPOUND	RESULT ug/L	REPORTING LIMIT ug/L
Benzene.....	ND	1.0
Toluene.....	ND	1.0
Ethyl Benzene.....	ND	1.0
Total Xylenes.....	ND	1.0
Chlorobenzene.....	ND	1.0
1,4-Dichlorobenzene.....	ND	1.0
1,3-Dichlorobenzene.....	ND	1.0
1,2-Dichlorobenzene.....	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
 RPD, % 11  
 RECOVERY, % 102  
 =====



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4:00 PM  
1/2/9, 10/11/2, 12/3/4, 5/6

DATE RECEIVED: 12/04/90  
DATE REPORTED: 12/11/90

LAB NUMBER: 102456

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 7 WATER SAMPLES

PROJECT #: 430.003  
LOCATION: 13th & Jefferson

RESULTS: SEE ATTACHED

*Jan Wong*  
-----  
QA/QC Approval

*M. McIntee*  
-----  
Final Approval



LAB NUMBER: 102456  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT # : 430.003

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

ANALYSIS: HYDROCARBON OIL AND GREASE  
METHOD: SMWW 17:5520 B&F

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
102456-2	48	ND	mg / L	20

ND = Not detected at or above reporting limit

QA/QC SUMMARY

=====  
RPD, % 4  
RECOVERY, % 90  
=====



LAB NUMBER: 102456-2  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT: 430.003  
SAMPLE ID: 48

DATE RECEIVED: 12/04/90  
DATE EXTRACTED: 12/07/90  
DATE ANALYZED: 11/09/90  
DATE REPORTED: 12/11/90

=====  
POLYCHLORINATED BIPHENYLS (PCBs)  
ANALYSIS METHOD: EPA 8080  
EXTRACTION METHOD: EPA 3510  
=====

AROCLOR TYPE	RESULT (ug/L)	REPORTING LIMIT (ug/L)
AROCLOR 1221	ND	1.0
AROCLOR 1232	ND	1.0
AROCLOR 1016	ND	1.0
AROCLOR 1242	ND	1.0
AROCLOR 1248	ND	1.0
AROCLOR 1254	ND	1.0
AROCLOR 1260	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
RPD, % 5  
RECOVERY, % 92  
=====



LABORATORY NUMBER: 102456-2  
CLIENT: SUBSURFACE CONSULTANTS  
JOB #: 430.003  
LOCATION: 13Th/Jefferson

DATE RECEIVED: 12/04/90  
DATE EXTRACTED: 12/05/90  
DATE ANALYZED: 12/10/90  
DATE REPORTED: 12/11/90

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
California DOHS Method  
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
102456-2	48	ND	ND	50

ND = Not detected at or above reporting limit.

\*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	6
RECOVERY, %	85



LABORATORY NUMBER: 102456  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.003  
JOB LOCATION: 13Th/Jefferson

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/06/90  
DATE REPORTED: 12/11/90

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

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
102456-1	47	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102456-2	48	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102456-3	49	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102456-4	51	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102456-5	52	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102456-6	53	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
102456-7	54	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, %	86



LABORATORY NUMBER: 102456-1  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
SAMPLE ID: 47

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

EPA 8010  
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)	11	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	2.0
2-chloroethyl vinyl ether	ND	1.0
bromoform	ND	1.0
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, %	87



LABORATORY NUMBER: 102456-2  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
SAMPLE ID: 48

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

EPA 8010  
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	31	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	2.0
bromoform	ND	1.0
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, %	87





LABORATORY NUMBER: 102456-3  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
SAMPLE ID: 49

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

EPA 8010  
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	2.0
2-chloroethyl vinyl ether	ND	1.0
bromoform	ND	1.0
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, %	87



LABORATORY NUMBER: 102456-4  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT #: 430.003  
 SAMPLE ID: 51

DATE RECEIVED: 12/04/90  
 DATE ANALYZED: 12/05/90  
 DATE REPORTED: 12/11/90

EPA 8010  
 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	2.0
2-chloroethyl vinyl ether	ND	1.0
bromoform	ND	1.0
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, % 87  
 =====



LABORATORY NUMBER: 102456-5  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
SAMPLE ID: 52

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

EPA 8010  
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	1.3	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	2.0
bromoform	ND	1.0
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, %	87



LABORATORY NUMBER: 102456-6  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
SAMPLE ID: 53

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

EPA 8010  
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	1.9	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	2.0
bromoform	ND	1.0
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, %	87



LABORATORY NUMBER: 102456-7  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT #: 430.003  
SAMPLE ID: 54

DATE RECEIVED: 12/04/90  
DATE ANALYZED: 12/05/90  
DATE REPORTED: 12/11/90

EPA 8010  
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	1.5	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	2.0
bromoform	ND	1.0
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, %	87



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DATE RECEIVED: 01/04/91  
DATE REPORTED: 01/09/91

LAB NUMBER: 102670

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: SEVEN WATER SAMPLES

PROJECT #: 430.010  
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

*Ale*  
-----  
QA/QC Approval  
*[Signature]*  
-----  
Final Approval



LABORATORY NUMBER: 102670-1  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 SAMPLE ID: MW-29

DATE RECEIVED: 01/04/91  
 DATE ANALYZED: 01/07/91  
 DATE REPORTED: 01/09/91

EPA 8010  
 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	2.0
bromoform	ND	1.0
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, % 97  
 =====

LABORATORY NUMBER: 102670-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 SAMPLE ID: MW-31

DATE RECEIVED: 01/04/91  
 DATE ANALYZED: 01/07/91  
 DATE REPORTED: 01/09/91

EPA 8010  
 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	10	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	2.0
bromoform	ND	1.0
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, %	97





LABORATORY NUMBER: 102670-3  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.010  
SAMPLE ID: MW-45

DATE RECEIVED: 01/04/91  
DATE ANALYZED: 01/07/91  
DATE REPORTED: 01/09/91

EPA 8010  
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	2.0
2-chloroethyl vinyl ether	ND	1.0
bromoform	ND	1.0
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, %	97



LABORATORY NUMBER: 102670-4  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 SAMPLE ID: MW-46

DATE RECEIVED: 01/04/91  
 DATE ANALYZED: 01/07/91  
 DATE REPORTED: 01/09/91

EPA 8010  
 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	2.0
2-chloroethyl vinyl ether	ND	1.0
bromoform	ND	1.0
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, % 97  
 =====



LABORATORY NUMBER: 102670-5  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.010  
SAMPLE ID: MW-47

DATE RECEIVED: 01/04/91  
DATE ANALYZED: 01/07/91  
DATE REPORTED: 01/09/91

EPA 8010  
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	16	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	2.0
bromoform	ND	1.0
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, %	97

LABORATORY NUMBER: 102670-6  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 SAMPLE ID: MW-48

DATE RECEIVED: 01/04/91  
 DATE ANALYZED: 01/07/91  
 DATE REPORTED: 01/09/91

EPA 8010  
 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	15	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	2.0
bromoform	ND	1.0
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, %	97

LABORATORY NUMBER: 102670-7  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.010  
 SAMPLE ID: MW-54

DATE RECEIVED: 01/04/91  
 DATE ANALYZED: 01/07/91  
 DATE REPORTED: 01/09/91

EPA 8010  
 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	2.0
bromoform	ND	1.0
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, %	97



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AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

DATE RECEIVED: 03/13/91  
DATE REPORTED: 03/21/91

LAB NUMBER: 103232

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: EIGHT WATER SAMPLES

PROJECT ID: 430.013  
LOCATION: 13TH & JEFFERSON GW

RESULTS: SEE ATTACHED

*ACE*  
-----  
QA/QC Approval  
*[Signature]*  
-----  
Final Approval

LABORATORY NUMBER: 103232  
 CLIENT: SUBSURFACE CONSULTANTS  
 LOCATION: 13TH & JEFFERSON GW

DATE RECEIVED: 03/13/91  
 DATE ANALYZED: 03/15/91  
 DATE REPORTED: 03/21/91

=====  
 ANALYSIS: LEAD  
 ANALYSIS METHOD: EPA 7420  
 =====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103232-6	53	ND	mg / L	0.06
103232-7	54	ND	mg / L	0.06

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

=====  
 RPD, % 1  
 RECOVERY, % 94  
 =====



LABORATORY NUMBER: 103232  
CLIENT: SUBSURFACE CONSULTANTS  
LOCATION: 13TH & JEFFERSON GW

DATE RECEIVED: 03/13/91  
DATE ANALYZED: 03/18/91  
DATE REPORTED: 03/21/91

=====  
ANALYSIS: Ethylene Dibromide (EDB)  
ANALYSIS METHOD: EPA 504  
=====

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103232-6	53	ND	ug/L	0.03
103232-7	54	ND	ug/L	0.03

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	101



LABORATORY NUMBER: 103232  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW

DATE RECEIVED: 03/13/91  
 DATE ANALYZED: 03/19/91  
 DATE REPORTED: 03/21/91

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)
103232-1	47	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-2	48	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-3	49	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-4	51	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-5	52	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-6	53	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-7	54	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103232-8	59	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, % 4  
 RECOVERY, % 87

LABORATORY NUMBER: 103232  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 LOCATION: 13TH & JEFFERSON GW

DATE RECEIVED: 03/13/91  
 DATE EXTRACTED: 03/13/91  
 DATE ANALYZED: 03/16/91  
 DATE REPORTED: 03/21/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
 California DOHS Method  
 LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
103232-2	48	ND	ND	50

ND = Not detected at or above reporting limit.

\*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	113



LABORATORY NUMBER: 103232-1  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.013  
SAMPLE ID: 47

DATE RECEIVED: 03/13/91  
DATE ANALYZED: 03/15/91  
DATE REPORTED: 03/21/91

EPA 8010  
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	6.7	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	2.0
bromoform	ND	1.0
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, %	15
RECOVERY, %	99

LABORATORY NUMBER: 103232-2  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 SAMPLE ID: 48

DATE RECEIVED: 03/13/91  
 DATE ANALYZED: 03/15/91  
 DATE REPORTED: 03/21/91

EPA 8010  
 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	30	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	2.0
bromoform	ND	1.0
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, %	15
RECOVERY, %	99



LABORATORY NUMBER: 103232-3  
CLIENT: SUBSURFACE CONSULTANTS  
PROJECT ID: 430.013  
SAMPLE ID: 49

DATE RECEIVED: 03/13/91  
DATE ANALYZED: 03/15/91  
DATE REPORTED: 03/21/91

EPA 8010  
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	2.0
bromoform	ND	1.0
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, %	15
RECOVERY, %	99

LABORATORY NUMBER: 103232-6  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 SAMPLE ID: 53

DATE RECEIVED: 03/13/91  
 DATE ANALYZED: 03/15/91  
 DATE REPORTED: 03/21/91

EPA 8010  
 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	2.0	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	2.0
bromoform	ND	1.0
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, %	15
RECOVERY, %	99

LABORATORY NUMBER: 103232-7  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 SAMPLE ID: 54

DATE RECEIVED: 03/13/91  
 DATE ANALYZED: 03/15/91  
 DATE REPORTED: 03/21/91

**EPA 8010**  
**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	2.0
bromoform	ND	1.0
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, %	15
RECOVERY, %	99

LABORATORY NUMBER: 103232-8  
 CLIENT: SUBSURFACE CONSULTANTS  
 PROJECT ID: 430.013  
 SAMPLE ID: 59

DATE RECEIVED: 03/13/91  
 DATE ANALYZED: 03/15/91  
 DATE REPORTED: 03/21/91

EPA 8010  
 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	2.0
bromoform	ND	1.0
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, %	15
RECOVERY, %	99