Client: Subsurface Consultants

Laboratory Login Number: 103232

Project Name: 13TH & JEFFERSON GW
Project Number: 430.013

Report Date: 21 March 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

Lab ID	Sample ID	Matrix	Sampled	Received	Ordered	Analyzed	Result	Units	RL	Method	Analyst	QC Batch
103232-002	#48	Water	13-MAR-91	13-MAR-91	14-MAR-91	19-MAR-91	ND	mg/L	5	5520BF	TR	1065

ND = Not Detected at or above Reporting Limit (RL).

Analyst

Curtis & Tompkins, Ltd.

QC Batch Report

Client: Subsurface Consultants
Project Name: 13TH & JEFFERSON GW
Project Number: 430.013

Laboratory Login Number: 103232
Report Date: 21 March 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 1065

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	5520BF	19-MAR-91

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	86%	5520BF	19-MAR-91
BSD	81%	5520BF	19-MAR-91

		Control Limits
Average Spike Recovery	84%	80% - 120%
Relative Percent Difference	6.1%	< 20%

Curtis & Tompkins, Ltd.

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

DATE RECEIVED: 04/03/91
DATE REPORTED: 04/09/91

LAB NUMBER: 103425

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

PROJECT ID: 430.013
LOCATION: 13TH & JEFFERSON GW

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103425-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.013
SAMPLE ID: MW-59

DATE RECEIVED: 04/03/91
DATE ANALYZED: 04/05/91
DATE REPORTED: 04/09/91

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, %	7
RECOVERY, %	98

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.003

Project Contact at SCI: Sean Carson

Sampled By: John Wolfe, Chris O'Dea

Analytical Laboratory: Curtis-Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
47	W	1 liter 3 VOAs	4/6/90		TVH/BTXE	8015/602
48	W	"	"		" "	" "
49	W	"	"		" "	" "
51	W	"	"		" "	" "
52	W	"	"		" "	" "

* * * * * *

Released by: [signature] Date: 4/9/90

Released by Courier: _____ Date: _____

Received by Laboratory: Nancy A Patten Date: 4/9/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Notes to Laboratory:

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

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

Subsurface Consultants

101723

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.003

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 5 day

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 MW-53	W	V×6	9/21/90		TVH/BTXE	8015/8020/5
2 MW-54	W	V×6	9/21/90		TVH/BTXE	8015/8020/503

* * * * * *

Released by: [signature] Date: SEP-24-90

Released by Courier: Date:

Received by Laboratory: Mary Printon Date: 9/24/90 10:10

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson GW

SCI Job Number: 430.003

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
47	W	V×2	10/4/90		BTXE	EPA 8020
		6L×1			PNAs only	EPA 8270
		P.1			Total Lead	AA
48	W	6L×1	10/4/90		TEH	8015/3550
		VX2			BTXE	8020
					O+G	SMWW 5520 B+F
		P			Total Lead	AA
					PCBs only	EPA 8080
					PNAs only	EPA 8270
		V×2			* VOCs Methylene Chloride	EPA 8010

* * * * * *

Released by: [signature] Date: 10-04-90

Released by Courier: Date:

Received by Laboratory: Mary Printen Date: 10/4/90 4pm

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson GW

SCI Job Number: 430.003

Project Contact at SCI: Sean Casey

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
[redacted]						
S1	W	V×2	10/4/90		BTXE	EPA 8020
S2	W	V×2	10/4/90		BTXE	EPA 8020

* * * * * *

Released by: [signature] Date: 10-04-90

Released by Courier: _____ Date: _____

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

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson GW

SCI Job Number: 430.003

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
MW-54	W	V x 2	10/4/90	*	TVH/BTXE	TOP prior *
		V x 2			VOCs	EPA 8010
		V x 2			EDB	DHS-AB1803
		P x 1			TEL	DHS-LUFT
		P x 1			Total Lead	AA
		G x 1			PNAs only	EPA 8270
MW-53	W	V x 2	10/4/90		TVH/BTXE	
		P x 1			Total Lead	AA
		P x 1			TEL	DHS-LUFT
		V x 2			EDB	DHS-AB1803
		V x 2			VOCs	EPA 8010
*		*	*	*	*	*

Released by: [signature] Date: 10/4/90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 10/4/90 1230

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.003

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 5 day

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
47	W	V x 4	12/3/90		VOC's TVH/BTXE	EPA 8010 EPA 8015/8020/5030
48	W	V x 4	12/3/90		VOCs TVH/BTXE	
	W	G x 3			TEH PCB's O+G	EPA 8015/3550 EPA 8090 SM WW 5520 E
49	W	V x 4	12/3/90		VOC's TVH/BTXE	EPA 8010 EPA 8015/8020/5030
51	W	V x 4	12/4/90		VOC's TVH/BTXE	
52	W	V x 4	12/4/90		VOC's TVH/BTXE	
53	W	V x 4	12/4/90		VOC's TVH/BTXE	
54	W	V x 4	12/4/90		VOC's TVH/BTXE	

* * * * * *

Released by: [signature] Date: 12/4/90

Released by Courier: _____ Date: _____

Received by Laboratory: [signature] Date: 12-4-90 A:OC

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Notes to Laboratory:

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

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

16267-0

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

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
MW-29 1	W	2 VOAs	1-4-90		8010 →	
MW-31 2	W	"	"		8010 →	
MW-45 3	W	"	"		8010 →	
MW-46 4	W	"	"		8010 →	
MW-47 5	W	"	"		8010 →	
MW-48 6	W	"	"		8010 →	
MW-54 7	W	"	"			

* * * * * *

Released by: [signature] Received by: _____ Date: 01-04-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 1/4/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson GW

SCI Job Number: 430.013

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround:

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
47	W	V x 5	3/13/91		VOCs TVH/BTXE	8010 8015/5030
48	W	V x 5 G x 2	3/13/91		VOCs TVH/BTXE	TEH + O+G 8010
49	W	V x 5	3/13/91		VOCs TVH/BTXE	8015/8020/5030
51	W	V x 2	3/13/91		TVH/BTXE	
52	W	V x 2	3/13/91		TVH/BTXE	
53	W	V x 8 P x 1	3/13/91		TVH/BTXE VOCs EDB	tot. lead
54	W	V x 8 P x 1	3/13/91		TVH/BTXE VOCs EDB	tot. lead
59	W	V x 5	3/13/91		TVH/BTXE VOCs	

* * * * * *

Released by: [signature] Received by: 03/13/91 Date:

Released by: Received by: Date:

Received by Laboratory: [signature] Date: 3/13/91

Released by Laboratory: Date:

Released by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson GW

SCI Job Number: 430.013

Project Contact at SCI: Sean Carson

Sampled By: Jairo Lopez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
MW-59	W	V.3	4/3/91		VOC's	EPA 8010

* * * * * *

Released by: Jairo Lopez Received by: _____ Date: 04-03-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: _____ Date: 4/3/91 14:00

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

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

January 29, 1992
SCI 430.014

STD
3623

Mr. Paul Smith
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

City of Oakland
Old Firehouse

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

Dear Mr. Smith:

This letter records the results of the June, September and December 1991 groundwater sampling and analytical testing events performed by Subsurface Consultants, Inc. (SCI) for [illegible] 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 and the results of previous sampling events. SCI submitted a remediation plan to Alameda County Health Care Services Agency (ACHCSA) on July 9, 1991. The letter described SCI's proposal to remediate DCA[1] contaminated groundwater by pumping it into the storm drain with an existing on-site carbon absorption system. The plan is currently under ACHCSA review.

Quarterly Monitoring

Groundwater levels in the wells were measured on June 13, September 11, and December 12, 1991. The groundwater level measurements, including previous readings, are summarized in Table 1.

[1] DCA = 1,2-Dichloroethane

92 JAN 30 AM 11:04

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

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 analytically tested 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);

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);

3. Total extractable hydrocarbons (TEH), sample preparation and analysis using EPA Methods 3550 (sonication) and 8015 (modified gas chromatograph coupled to a flame ionization detector);

4. Hydrocarbon Oil and Grease (O&G), sample preparation and analysis using SMWW 17:5520 E&F; and

5. 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).

TVH and BTXE analyses were performed on the samples to monitor for the presence of gasoline contamination from another source. The results of the analyses are summarized in Tables 2 and 3. Copies of the analytical test reports are attached.

Conclusions

The groundwater flow direction has changed significantly during the last quarter. Groundwater is currently flowing toward the southwest. The change is a result of construction dewatering at the City Center Garage 2 site located between 12th and 13th

Streets, and Martin Luther King Jr. Way and Jefferson Street. Construction dewatering began on November 11, 1991 and will reportedly continue until mid-February 1992.

The most recent analytical test results indicate that 16 ug/L of 1,2-DCA is present in groundwater obtained from Well 48. This concentration is consistent with previous analytical data. Well 48 is the well closest to the former floor drain sump. DCA was not detected in any other wells during this sampling event at concentrations in excess of analytical detection limits. There is no indication that the DCA plume is migrating significantly down gradient, as Well 59 remains free of detectable concentrations of DCA contamination.

As stated previously, the groundwater flow direction has changed significantly during the last quarter. We understand that the condition is temporary. Once dewatering is halted, we anticipate that the flow direction will return to that previously documented. If plans change and construction dewatering continues for a longer period of time, it may be appropriate to modify our monitoring program.

None of the wells being monitored contain hydrocarbon contamination at concentrations in excess of analytical detection limits. We recommend that monitoring for volatile organic chemicals (EPA 8010) 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:vb

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

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

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[1] Elevation (ft)	Groundwater Depth[2] (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
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
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
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[3]	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
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

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

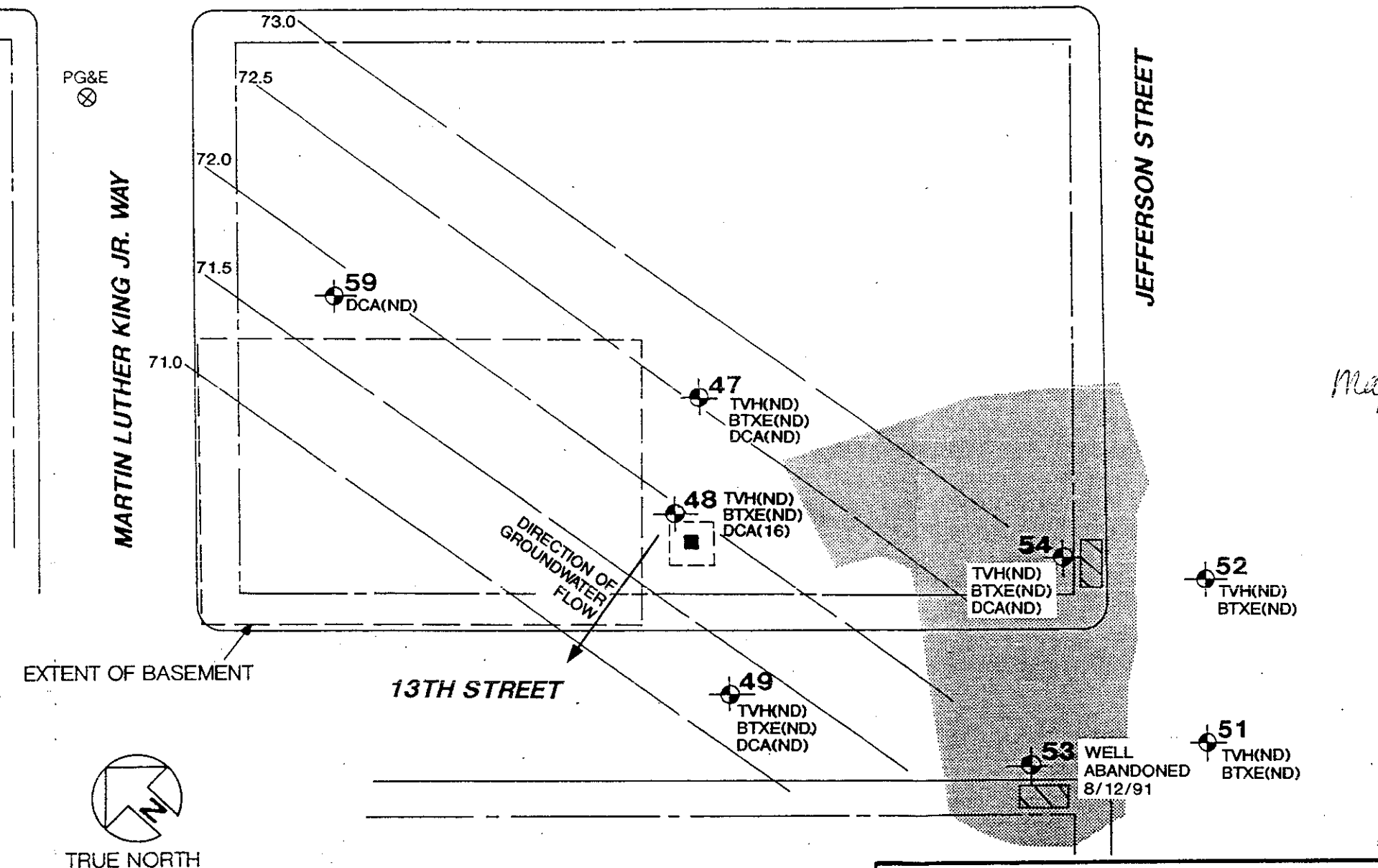
Well	Date	O&G[1] (ug/L)	TVH[2] (ug/L)	TEH[3] (ug/L)	B[4] (ug/L)	T[5] (ug/L)	X[6] (ug/L)	E[7] (ug/L)
MW-47	04/06/90	--	ND[8]	--	ND	ND	ND	ND
	10/04/90	--	--	--	ND	ND	ND	ND
	12/03/90	--	ND	--	ND	ND	ND	ND
	03/13/91	--	ND	--	ND	ND	ND	ND
	06/13/91	--	ND	--	ND	ND	ND	ND
	09/11/91	--	ND	--	ND	ND	ND	ND
	12/12/91	--	ND		ND	ND	ND	ND
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
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
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
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

Table 3.
Halogenated Volatile Organic Chemical Concentrations in Groundwater

Well	Date	1,2 DCA[1] (ug/L)[3]	1,2 DCE[2] (ug/L)	Chloroform (ug/L)	Other EPA 8010 (ug/L)
MW-29	01/04/91	ND[4]	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
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
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
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
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

1 1,2 Dichloroethane
2 1,2 Dichloroethene
3 Micrograms/liter = parts per billion
4 None detected, see test reports for detection limits



Map

NOTE: WELL 53 was abandoned by pressure grouting 8/12/91.

- 73.0 — GROUNDWATER CONTOUR ELEVATIONS (12/12/91)
- 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)

SITE PLAN

Subsurface Consultants

13TH & JEFFERSON – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.013	1/29/92	

PLATE 1

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

Curtis & Tompkins, Ltd

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

Curtis & Tompkins, Ltd.

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	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, %	103

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

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

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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).

Curtis & Tompkins, Ltd.

QC Batch Report

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%

Curtis & Tompkins Ltd.

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

Curtis & Tompkins, Ltd.

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

RPD, %	23
RECOVERY, %	92

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

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

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

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).

Curtis & Tompkins, Ltd.

QC Batch Report

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%

Curtis & Tompkins, Ltd.

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

RPD, %	5
RECOVERY, %	119

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

Surrogate Recovery, %	112

Curtis & Tompkins, Ltd.

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

Curtis & Tompkins, Ltd.

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

104126

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson GW

SCI Job Number: 430.013

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tomplkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method EPA
47	W	V x 5	6/13/91		TVH/BTXE VOC's	8015/8020 / 5030 8010
~~48~~	~~W~~	~~V x 5~~	~~6/13/91~~		~~TVH/BTXE VOC's~~	~~8015/8020/5030 8010~~
		~~G x 2~~			~~O+G TRH~~	~~SMWW 5520 E 8015/3550~~
49	W	V x 5	6/13/91		TVH/BTXE VOC's	8015/8020/5030 8010
51	W	V x 5	6/13/91		TVH/BTXE VOC's	8015/8020/5030 8010
52	W	V x 5	6/13/91		TVH/BTXE VOC's	8015/8020/5030 8010
53	W	V x 5	6/13/91		TVH/BTXE VOC's	8015/8020/5030 8010
54	W	V x 5	6/13/91		TVH/BTXE VOC's	8015/8020/5030 8010
59	W	V x 3	6/13/91		VOC's	8010

* * * * * *

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: _____

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

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

CHAIN OF CUSTODY FORM

PAGE ____ OF ____

PROJECT NAME: 13th + Jefferson

JOB NUMBER: 430.013 LAB: Curtis + Tompkins Ltd

PROJECT CONTACT: Sean Carson TURNAROUND: 5 day

SAMPLED BY: Marianne Watada REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR	CONTAINERS: VOA	LITER	PINT	TUBE	METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: TVH/BTXE EPA 8020/8015/5030	VOCs EPA 8010	TEH 8015/3550	O+G SMWW 17:5520
	MW-47	X				5									12	12	91			X	X		
	MW-48	X				5	2								↓	↓	↓			X	X	X	X
	MW-49	X				5									↓	↓	↓			X	X		
	MW-54	X				3									↓	↓	↓			X			
	MW-59	X				3									↓	↓	↓				X		

COMMENTS & NOTES:

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
Marianne Watada	12/12/91 4:40		
		[signature]	12/12/91 4:35

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 _____

PROJECT NAME: 13th + Jefferson

JOB NUMBER: 430.013 LAB: Curtis + Tompkins Ltd

PROJECT CONTACT: Sean Carson TURNAROUND: 5 day

SAMPLED BY: Craig Fletcher / Maryann Watada REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX						CONTAINERS						METHOD PRESERVED					SAMPLING DATE				NOTES	ANALYSIS REQUESTED												
		WATER	SOIL	WASTE	AIR			VOA	LITER	PINT	TUBE			HCL	H_2SO_4	HNO_3	ICE	NONE	MONTH	DAY	YEAR	TIME			TVH/BTXE EPA 8015/5030	VOC's EPA 8010/8015/3550	TEH 8015/3550	O&G SM5520 E&F							
	MW-47	X						5						X			X		09	10	91			X	X											
	MW-48	X						5	2					X			X							X	X	X	X								
	MW-49	X						5						X			X							X	X										
	MW-51	X						3						X			X							X											
	MW-52	X						3						X			X							X											
	MW-54	X						3						X			X							X											
	MW-59	X						3						X			X								X										

COMMENTS & NOTES:

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	9/11/91 10:15	[signature]	9/11/91 10:15
RELEASED BY: (Signature)	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

STATE OF CALIFORNIA PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, SUITE 500
OAKLAND, CA 94612

Phone: (415) 464-1255
FAX: (415) 464-1380

FACSIMILE COVER SHEET

To: Jne Paul Smith

Fax Number: 415-568-3706

From: Eddy So

Subject: Bramalea Pacific at 15/Jefferson St.

Total pages including cover sheet: 2

If you are having any problems receiving this, please call sender.

Comments:

Re our teleconversation, pls find enclosed for yr info N provide, if U can, those available for my perusal Thanks. (Any Ques call me!).

Fax: 568-3706

ask.

LIA - ACHD [redacted]

18th. / Jefferson St. Drain dump Remediation Plan (1,2 DCA contaminated Gw)

Site Name: Bramalea Pacific

Issues: (Request following info. from RP.)

1. Technical info about the existing carbon adsorption system including system design, carbon column performance curve, current contaminants being treated by the system.

2. Provide me with all rationales to substantiate the selection of the referred location of the extraction well, if any available.

3. What contingency plan will be provided in case of that

(a) pump and/or other plumbing fixtures breakdown?

(b) carbon columns reach to the saturation capacity?

(c) the untreated Gw storage tank rupture or fails due to other mechanical reasons (such as corrosion / cracks in weld lines)

4. How the treatment system monitoring program is modified to suit for the introduction of DCA into the system.

5. An estimate of the duration for P/p-2-treat operation.

6. Clean up level for 1,2-DCA?

7. What is the current usage of the treated water of the treatment plant?

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

LETTER OF TRANSMITTAL

TO: Mr. John Esposito
Bramalea Pacific
1111 Broadway, Suite 1400
Oakland, CA 94612

DATE: July 8, 1991
PROJECT 13th & Jefferson Streets/Gasoline Fuel Tank/Floor Drain Sump
SCI JOS NUMBER: 430.013

WE ARE SENDING YOU:

X 1 copies of our final report	X if you have any questions, please call
a draft of our report	for your review and comment
a Service Agreement	please return an executed copy
a proposed scope of services	for geotechnical services
specifications	with our comments
grading/foundation plans	with Chain of Custody documents
soil samples/groundwater samples	X for your use
an executed contract	

REMARKS:

COPIES TO: (1) Ms. Lois Parr, City of Oakland Redevelopment Agency, 1333 Broadway #900, Oakland, CA
(1) Mr. Lester Feldman, RWQCB, 1800 Harriosn, #700, Oakland, CA 94612
(1) Mr. Donnell Choy, City Attorney, 505 14th Street, 12th Floor, Oakland, CA
(1) Mr. Roy Ikeda, Crosby, Heafey, Roach & May, 1999 Harrison St., Oakland, CA
√(2) Mr. Paul Smith, ACHCSA, 40 Swan Way, #200, Oakland, CA 94621

BY: Sean Carson
Sean O. Carson (cccc)

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

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

July 9, 1991
SCI 430.014

Mr. Paul Smith
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Remediation Plan
DCA Contaminated Groundwater
13th and Jefferson Streets
Oakland, California

91 JUL 12 AM 11:52

Dear Mr. Smith:

This letter presents our remediation plan for the cleanup of contaminated groundwater associated with floor drain sump releases at 1330 Martin Luther King, Jr. Way in Oakland, California. The previous sump location is shown on Plate 1. Subsurface Consultants, Inc. (SCI) previously observed the removal of the concrete sump and associated contaminated soils. The results of these soil remediation activities are recorded in a report dated September 24, 1990. Groundwater quality studies have been conducted by SCI. The results are recorded in a report dated July 8, 1991.

Since sump removal, 1,2-dichloroethane (DCA) has been detected in Monitoring Wells 47 and 48, which are located adjacent to and downgradient of the previous sump. DCA concentrations have ranged from 6 to 60 ug/l. The highest concentrations have been detected in Well 48. A summary of the analytical results are presented in Table 1. Based on our analytical data, we judge that the approximate extent of the DCA plume is as shown on Plate 1.

■ Subsurface Consultants, Inc.

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

Table 1. Volatile Organic Chemical Concentrations in Groundwater

Well	Date	1,2 DCA[1] (ug/L)[3]	1,2 DCE[2] (ug/L)	Chloroform (ug/L)	Other EPA 8010 (ug/L)
MW-47	12/03/90	ND[4]	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-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

---

1 1,2 Dichloroethane
2 1,2 Dichloroethene
3 Micrograms/liter = parts per billion
4 None detected

We propose to remediate the DCA contaminated groundwater by installing an extraction well at the location shown on Plate 1. The well will be installed in accordance with Regional Water Quality Control Board (RWQCB) guidelines. The well will consist of a 4-inch diameter PVC pipe installed in a 12-inch diameter borehole. Hollow auger drilling equipment will be used. The lower portion of the well will consist of machine slotted well screen with 0.02 inch wide slots. The pipe sections will be connected with flush threaded joints. The annulus around the screen will be

filled with an appropriate filter sand. A bentonite seal will be placed above the filter pack and the upper portions of the borehole will be sealed with cement/bentonite grout. The wellhead will be secured below grade in a utility box. The company installing the well will be a licensed well drilling contractor. Details of the well are shown on Plate 2. We estimate that the well will terminate about 45 feet below street levels.

The well discharge pipeline will be installed within the existing basement garage. The discharge pipe will terminate at the water treatment facility located at the corner of 14th Street and Martin Luther King Jr. Way. The water treatment system is owned by the City of Oakland Redevelopment Agency and for the past year has been in operation at the site treating hydrocarbon contaminated groundwater. To date, the system has performed exceptionally well.

The extraction well will be developed by pumping until the water is relatively free of turbidity. Development water will be discharged into the treatment plant.

A pump test will be performed in the extraction well to evaluate the performance characteristics of the well and the hydraulic parameters of the aquifer. The pump test will consist of pumping groundwater from the extraction well at varying rates. Groundwater levels in existing monitoring wells in the area will be measured to determine the radius of influence of the extraction well. From the data generated, we will choose an appropriate pump, estimate the capture zone for the well and confirm that the well location is suitable. Groundwater extracted during the pump test will be discharged into the treatment plant.

The treatment system utilizes granular activated carbon to treat the contaminated groundwater. Effluent from the extraction well will discharged into a 21,000 gallon, closed top holding tank. From the holding tank, the water is pumped through a particulate filter system and then through two granular activated carbon filter columns plumbed in series. The treated groundwater is then discharged into another 21,000-gallon holding tank and then into the EBMUD sanitary sewer system. The treatment system is capable of processing up to 60 gallons per minute (gpm). The present influent flow rate into the system is approximately 3 gpm. The treatment system will be able to accommodate the increased flows that will be generated by the proposed extraction well.

SCI will obtain the necessary permits from EBMUD to discharge the treated DCA contaminated groundwater into the sanitary sewer system. The treatment system monitoring program will be modified to account for the introduction of DCA into the system.

We are prepared to proceed with remediation as soon as your approval is received. If you have any questions, please call.

Yours very truly,

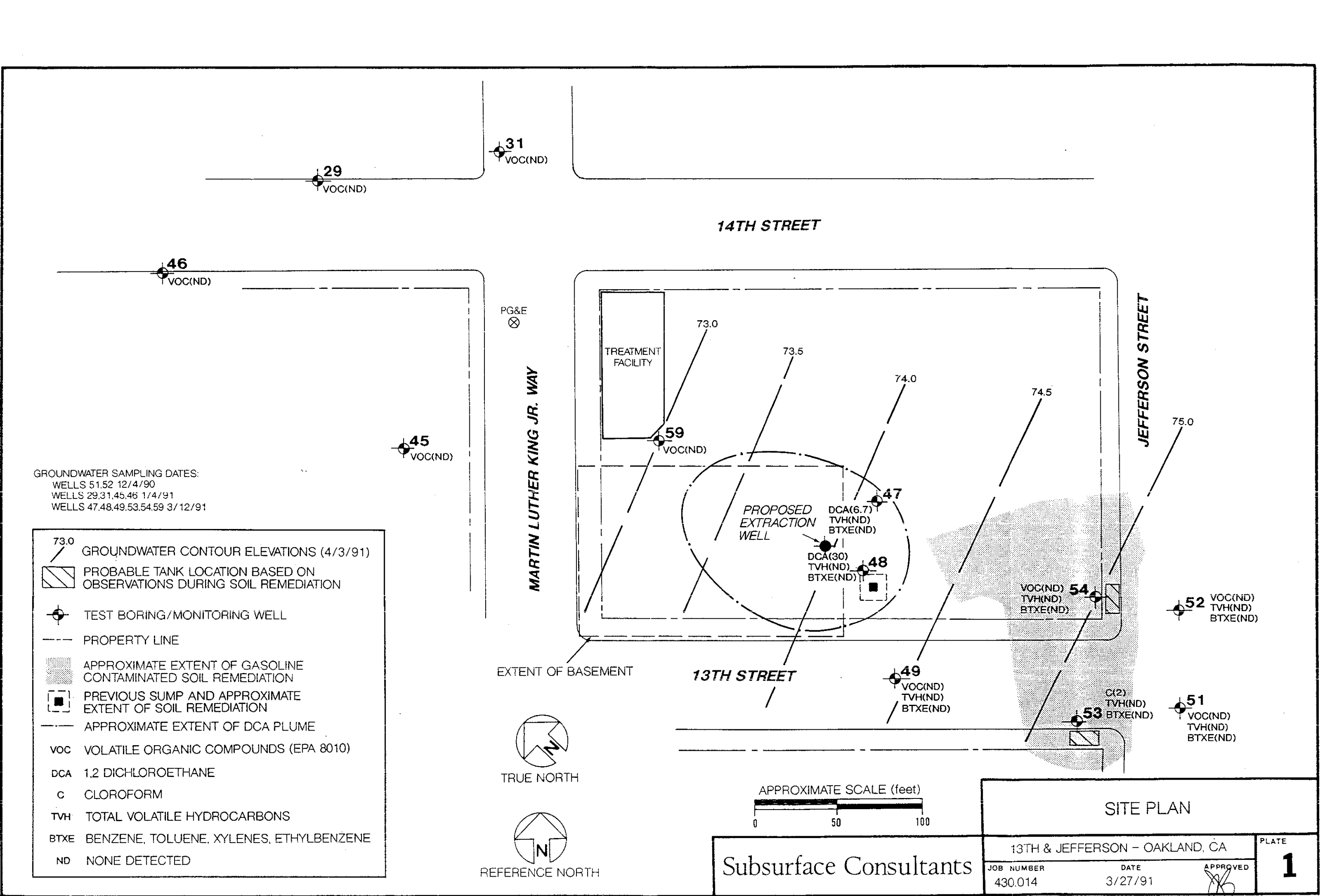
Subsurface Consultants, Inc.

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

Attachments: Plate 1 Site Plan
Plate 2 Typical Well Details

cc: Ms. Lois Parr, City of Oakland Redevelopment Agency
Mr. John Esposito, Bramalea Pacific
Mr. Donnell Choy, City of Oakland
Mr. Roy Ikeda, Crosby, Heafy, Roach, and May
Mr. Lester Feldman, RWQCB
Mr. William Meckel, EBMUD

MK:JPB:sld



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

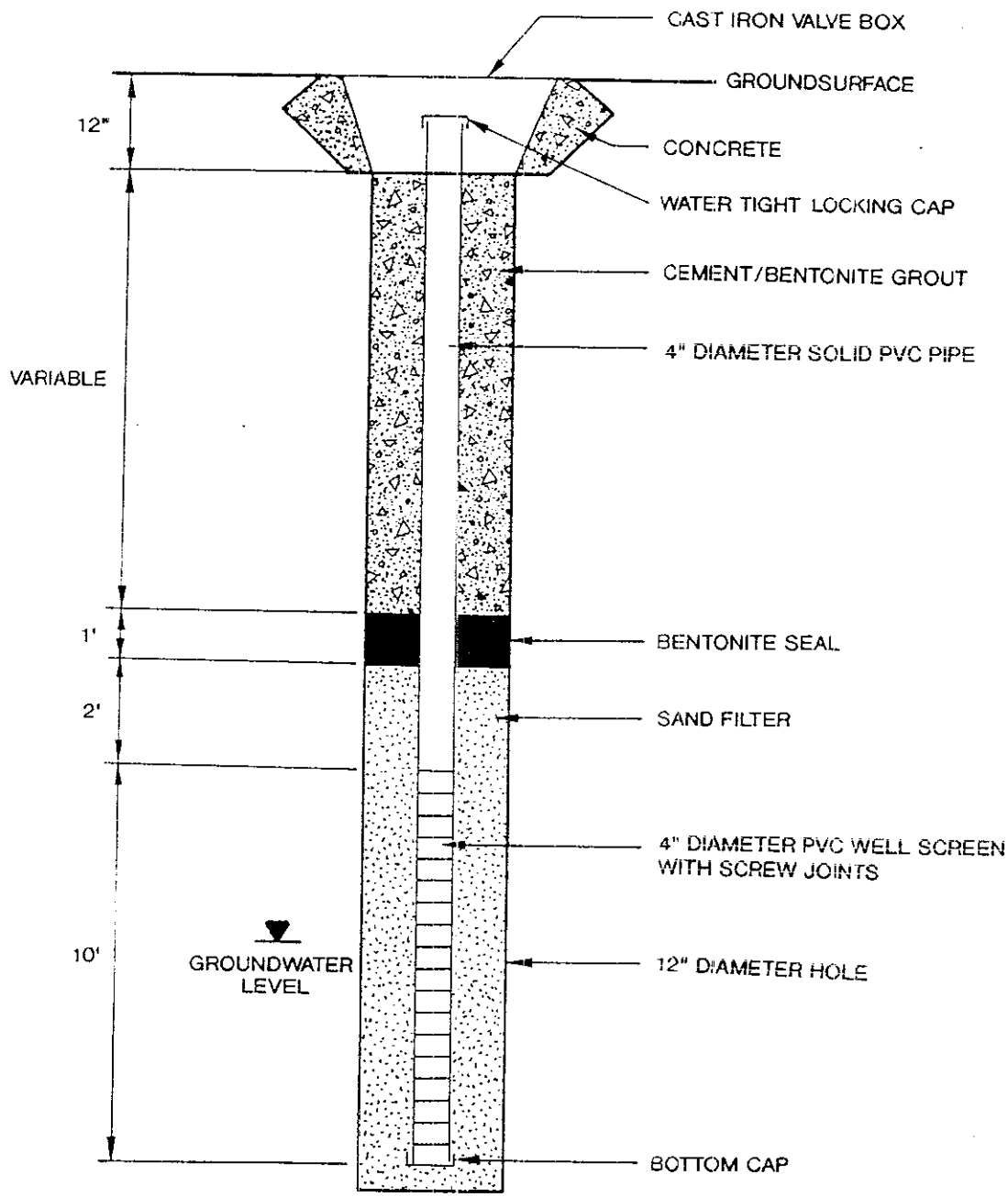
73.0	GROUNDWATER CONTOUR ELEVATIONS (4/3/91)
	PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION
	TEST BORING/MONITORING WELL
	PROPERTY LINE
	APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
	PREVIOUS SUMP AND APPROXIMATE EXTENT OF SOIL REMEDIATION
	APPROXIMATE EXTENT OF DCA PLUME
VOC	VOLATILE ORGANIC COMPOUNDS (EPA 8010)
DCA	1,2 DICHLOROETHANE
C	CLOROFORM
TVH	TOTAL VOLATILE HYDROCARBONS
BTXE	BENZENE, TOLUENE, XYLENES, ETHYLBENZENE
ND	NONE DETECTED

SITE PLAN

13TH & JEFFERSON – OAKLAND, CA

Subsurface Consultants

JOB NUMBER	DATE	APPROVED	PLATE
430.014	3/27/91		1



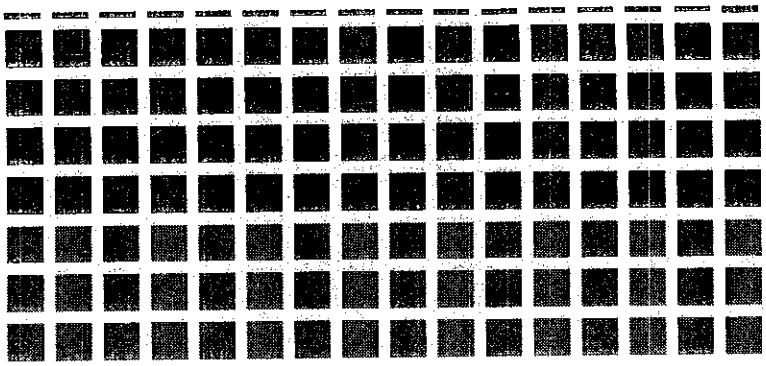
GROUNDWATER EXTRACTION WELL DESIGN

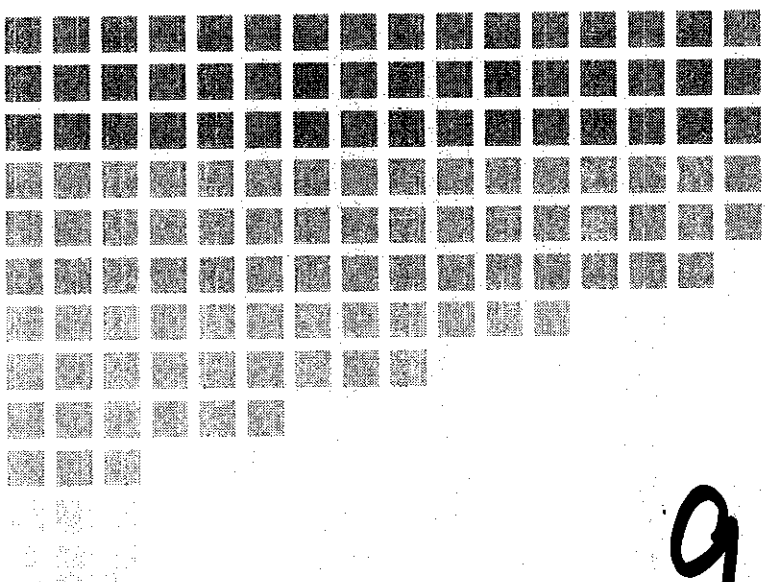
Subsurface Consultants

13TH & JEFFERSON – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.014	7/9/91	

PLATE 2





9-24-90

■ Subsurface Consultants, Inc.

CLOSURE REPORT
FLOOR DRAIN SUMP
13TH AND JEFFERSON STREETS
OAKLAND, CALIFORNIA
SCI 430.006

STID 3623

Prepared for:

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

By:

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

REGISTERED PROFESSIONAL ENGINEER
SEAN O. CARSON
C 45074
CIVIL
STATE OF CALIFORNIA

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/92)

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

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, CA. 95607

September 24, 1990

I INTRODUCTION

This report records our services during the remediation of contamination resulting from a leaking floor drain sump. The location of the sump was approximately 33 feet north of 13th Street and 148 feet west of Jefferson Street in Oakland, California (Site Plan, Plate 1). Subsurface Consultants, Inc. (SCI) performed a preliminary environmental assessment of the site and presented the results in a report dated September 14, 1988. SCI was subsequently retained to oversee site remediation.

During the preliminary environmental assessment, a test boring was drilled adjacent to the sump. The boring was drilled to a depth of 34 feet. Contamination was not encountered in any of the samples obtained from the boring. However, upon removal of the concrete sump, contaminated soil was visible directly beneath it. The soil was stained gray/green and appeared to extend vertically with little or no lateral spreading.

II EXCAVATION AND REMEDIATION

HSR, Inc. performed the soil/sump remediation. Previous sampling of the sump contents indicated the presence of oil and grease, and very low concentrations of heavy metals, methylene chloride and PCB's. The sump, its contents and the soils within about 4 feet of the sump bottom were removed and disposed of at

the USPCI Grassy Mountain Facility in Knolls, Utah. The sump extended about 4 feet below the groundsurface. During initial excavation, the staining associated with the contaminated soils visually appeared to extend to a depth of approximately 14 feet below groundsurface. For this reason, the excavation was initially terminated at this depth. A soil sample was obtained at the bottom of the excavation. The sample was analyzed for a variety of substances. The analytical test results are summarized in Table 1.

The analytical data indicated that petroleum hydrocarbons had leaked from the sump and remained in the soil below the excavation bottom. The excavation was subsequently widened and deepened to depths of 21, 26 and 28 feet. Soil samples were obtained at each interval and analyzed for hydrocarbons and oil and grease. The excavation was advanced until all contaminated materials were removed. A summary of the analytical test data generated during excavation is presented in Table 2. The extent of the final excavation and typical locations of the final soil samples taken are shown on Plate 1. The excavation was backfilled with on-site native soils. The excavation measured about 15 by 15 feet in plan and extended to a maximum depth of 28 feet. Approximately 250 cubic yards of soil (in-place) were removed. The excavation was extended about 1 foot below the groundwater level.

Table 1. CONTAMINANT CONCENTRATIONS IN SOIL[3] BELOW SUMP

Contaminant	Concentration (mg/kg[1])
Metals	
Barium	42
Cadmium	1.1
Chromium (total)	45
Cobalt	6.8
Copper	10
Lead	7.0
Nickel	25
Vanadium	21
Zinc	18
Other Title 22 Metals	ND[2]
Ethylbenzene	Trace
Total Xylenes	11
Other Volatile Organics (EPA 8240)	ND
Pesticides and PCBs (EPA 8080)	ND
Oil and Grease (SMWW 503E)	1,500
Total Extractable Hydrocarbons (TEH)	
Gasoline	380
Kerosene	48,000
Diesel	270
Total TEH	48,650

---

1 mg/kg = milligrams per kilogram

2 ND = None detected at concentrations above detection limits. See test reports for detection limits.

3 Sample Designation: Sump @ 14 feet

Table 2. HYDROCARBON CONCENTRATIONS (mg/kg)[5] IN SOIL

Sample Designation	TEH[1]	O&G[2]	BTXE[3]
Sump @ 14	48,650	1,500	11
Sump @ 21	ND[4]	150	ND
Sump @ 26			
Bottom	ND	89	
North	ND	ND	
South	ND	ND	
West	ND	58	
East	ND	51	
Sump @ 28 (Bottom)	ND	ND	
Well Samples			
N @ 12	ND		
N @ 18	ND		
N @ 24	ND		
S @ 6	ND		
S @ 12	ND		
S @ 18	ND		
S @ 24	34[6]		
S2 @ 24	ND		
E @ 6	ND		
E @ 12	ND		
E @ 18	ND		
E @ 24	ND	ND	
W @ 6	ND		
W @ 12	ND		
W @ 18	ND		
W @ 24	ND	ND	

1 TEH = Total Extractable Hydrocarbons, EPA 8015/3550
2 O&G = Oil and Grease Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene and Ethylbenzene, EPA 8020
4 ND = None detected at concentrations above detection limits. See test reports for detection limits.
5 mg/kg = milligrams per kilogram
6 Contaminated soil was removed and wall was resampled as S2 @ 24

III SAMPLING PROCEDURES

Samples were obtained from the excavation from soil brought to the surface by the excavator bucket. Sampling was performed using the following procedure: approximately 3 inches of soil was scraped away from the surface, and a clean brass sample liner was driven into the soil with a rubber mallet. The ends of the liner were covered with teflon sheeting, capped, sealed with duct tape and labeled. The samples were placed in an iced cooler and transported to the analytical laboratory. Chain-of-Custody documents accompanied the samples to the laboratory; copies are presented in the Appendix.

IV ANALYTICAL TESTING

Analytical testing was performed by Curtis & Tompkins, Ltd., a Department of Health Services (DHS) certified laboratory. Initially, a sample was analyzed for Title 26 metals, volatile organics (EPA 8240), organochlorine pesticides and PCB's (EPA 8080), oil and grease (SMWW 503E), and total extractable hydrocarbons (EPA 8015/3550). The analytical results revealed the presence of gasoline, kerosene, diesel, and oil and grease. Consequently, subsequent analytical testing was directed toward these materials.

V SOIL AERATION AND DISPOSAL

Contaminated soil removed from the excavation was aerated in accordance with requirements of the Bay Area Air Quality Management District (BAAQMD). The contaminated soil was excavated, stockpiled separately from non-contaminated soil, and covered with an impermeable membrane. Samples of the contaminated soil were obtained, composited and analytically tested to evaluate hydrocarbon concentrations. One composite sample was taken for the approximately 50 cubic yards of contaminated soil. During aeration, the contaminated soil was spread in a thin layer within the aeration area. The material was frequently turned and checked with an organic vapor meter. During aeration, samples of the aerated soil were obtained and analyzed for extractable hydrocarbons to monitor the rate and effectiveness of aeration. The test results are summarized in Table 3. Analytical test reports and Chain-of-Custody documents are included in the Appendix.

The aerated soils were disposed of at the West Contra Costa County Sanitary Landfill in Richmond. This is a Class 3 landfill facility and the soil was disposed of as a non-hazardous waste. Copies of non-hazardous waste manifests are included in the Appendix.

Table 3. CONTAMINANT CONCENTRATIONS IN AERATED SOIL (mg/kg)[1]

Sample Designation	Gasoline	Kerosene	Diesel	O&G[2]	BTXE[3]
Pre Aeration					
Sump A-1 thru 4	ND[4]	700	ND		
During Aeration					
Sump C-2	ND	470	ND	ND	ND
Sump C-3	ND	470	ND	ND	ND
Sump C-4	ND	460	ND	ND	ND
C-8	ND	170	ND		
C-9	ND	110	ND		
C-10	ND	130	ND		
C-11	ND	ND	Trace		
C-12	ND	ND	39		
C-13	ND	ND	54		
C-14	ND	ND	32		
Post Aeration					
C-15	ND	ND	ND		
C-16	ND	ND	ND		
C-17	ND	ND	ND		

---

1 mg/kg = milligrams per kilogram
2 O&G = Oil and grease, Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene and Ethylbenzene, EPA 8020
4 ND= None detected at concentrations above detection limits. See test reports for detection limits.

VI GROUNDWATER MONITORING

A groundwater monitoring well (MW-48) was installed adjacent to and downgradient of the sump excavation. The direction of groundwater flow was estimated using groundwater elevation dated from numerous nearby monitoring wells. The well (MW-48) consists of a 2-inch-diameter schedule 40 PVC pipe with flush-threaded joints. The well was constructed through an 8-inch-diameter hollow-stem auger. The well extends about 35 feet below grade. Groundwater was encountered at a depth of about 27 feet. The lower 10 feet of the well consists of machine-slotted well screen having 0.020 inch slots. The annular space around the screened section was backfilled with Lone Star #3 sand. A bentonite plug, approximately 12 inches thick, was placed above the sand. The annulus above the plug was filled with bentonite grout. The well was finished flush with the groundsurface. The wellhead is secured by a locking cover.

The monitoring well was subsequently developed, purged and sampled. The groundwater sample was analytically tested for suspected contaminants. The test results are summarized below in Table 4.

Table 4. ORGANIC CHEMICAL CONCENTRATIONS IN GROUNDWATER

Well	Sampling Date	TEH[1]	O&G[2]	BTXE[3]	TVH[5]
W-48	7/18/90	ND	ND	ND[4]	ND

1 TEH = Total Extractable Hydrocarbons, EPA 8015/3550
2 O&G = Oil and Grease, Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene, Ethylbenzene, EPA 8020
4 ND = None detected at concentrations above detection limits. See test reports for detection limits.

VII CONCLUSIONS

Based upon our observations and analytical test results, we conclude that soil remediation was completed satisfactorily. Excavation removed soils containing hydrocarbons at concentrations above the analytical detection limits.

The groundwater from the monitoring well installed near the sump has been sampled and analytically tested. The analytical test results indicate that no detectable concentrations of petroleum hydrocarbons exist in the groundwater. Based on these results, we conclude that there has not been any significant impact on groundwater as a result of sump leakage.

List of Attached Plates

Plate 1 Site Plan

Appendix:

Analytical Test Results

Chain-of-Custody Documents

Non-Hazardous Waste Manifests

Distribution:

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

1 copy: Ms. Lois Parr
City of Oakland, OEDE
1333 Broadway, Suite 900
Oakland, CA 94612

1 copy: Ms. Katherine Chesick
Alameda County Health Care Services Agency
Division of Hazardous Materials
80 Swan Way, #200
Oakland, CA 94612

1 copy: Mr. Lester Feldman
Regional Water Quality Control Board
1800 Harrison Street, Suite 700
Oakland, CA 94612

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Oakland, CA 94612

SOC:JPB:RWR:mbl:clh

DIRECTION OF GROUNDWATER FLOW

A

A'

48

N

EXTENT OF EXCAVATION

18

W

SUMP

E

S

WALL SAMPLE LOCATIONS

PLAN

BASEMENT WALL

SIDEWALK

13TH STREET

14TH STREET

148'

33'

SUMP

JEFFERSON STREET

13TH STREET

APPROXIMATE SCALE (feet)

0 10 20

APPROXIMATE SCALE (feet)

0 50 100

CROSS SECTION A – A'

BASEMENT

W@6'

W@12'

W@18'

W@24'

E@6'

E@12'

E@18'

E@24'

WATER LEVEL DURING EXCAVATION

WATER LEVEL 7/18/90

SUMP@28'

DEPTH (feet)

0

10

20

30

REFERENCE NORTH

TRUE NORTH

SITE PLAN & CROSS SECTION

Subsurface Consultants

13TH & JEFFERSON – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.006	8/9/90	

PLATE 1

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

DATE RECEIVED: 08/14/89
DATE REPORTED: 08/16/89

LAB NUMBER: 18031

CLIENT: SUBSURFACE CONSULTANTS, INC.

REPORT ON: 1 SOIL SAMPLE

JOB #: 430.005
LOCATION: 13th & JEFFERSON

RESULTS: SEE ATTACHED

for Way for CBG
Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
PROJECT #: 430.005
SAMPLE ID: SUMP @ 14'

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/15/89
DATE REPORTED: 08/16/89

Title 22 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.5	EPA 6010
Arsenic	ND	2.5	EPA 6010
Barium	42	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	1.1	0.5	EPA 6010
Chromium (total)	45	0.5	EPA 6010
Cobalt	6.8	0.5	EPA 6010
Copper	10	0.5	EPA 6010
Lead	7.0	2.5	EPA 7420
Mercury	ND	0.1	EPA 7470
Molybdenum	ND	0.5	EPA 6010
Nickel	25	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1.0	EPA 6010
Thallium	ND	2.5	EPA 6010
Vanadium	21	1.0	EPA 6010
Zinc	18	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	1	94	Mercury	14	62
Arsenic	1	91	Molybdenum	<1	96
Barium	4	105	Nickel	2	91
Beryllium	3	99	Selenium	<1	96
Cadmium	5	98	Silver	1	111
Chromium	20	106	Thallium	1	99
Cobalt	8	92	Vanadium	1	110
Copper	6	91	Zinc	3	106
Lead	16	102			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
JOB #: 430.005
SAMPLE ID: SUMP @ 14'

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 08/16/89

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	5,000
bromomethane	ND	5,000
vinyl chloride	ND	5,000
chloroethane	ND	5,000
methylene chloride	ND	2,500
trichlorofluoromethane	ND	2,500
1,1-dichloroethene	ND	2,500
1,1-dichloroethane	ND	2,500
trans-1,2-dichloroethene	ND	2,500
chloroform	ND	2,500
1,2-dichloroethane	ND	2,500
1,1,1-trichloroethane	ND	2,500
carbon tetrachloride	ND	2,500
bromodichloromethane	ND	2,500
1,2-dichloropropane	ND	2,500
cis-1,3-dichloropropene	ND	2,500
trichloroethylene	ND	2,500
dibromochloromethane	ND	2,500
1,1,2-trichloroethane	ND	2,500
benzene	ND	2,500
trans-1,3-dichloropropene	ND	2,500
2-chloroethylvinyl ether	ND	5,000
bromoform	ND	2,500
1,1,2,2-tetrachloroethane	ND	2,500
tetrachloroethylene	ND	2,500
toluene	ND	2,500
chlorobenzene	ND	2,500
ethyl benzene	TRACE	2,500
Non-Priority Hazardous Pollutant Substances List Compounds		
acetone	ND	5,000
carbon disulfide	ND	2,500
2-butanone	ND	5,000
vinyl acetate	ND	5,000
2-hexanone	ND	5,000
4-methyl-2-pentanone	ND	5,000
styrene	ND	2,500
total xylenes	11,000	2,500
QA/QC SUMMARY: SURROGATE RECOVERIES		
1,2-Dichloroethane-d4	74%	70-12
Toluene-d8	103%	81-11
Bromofluorobenzene	90%	74-12

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
SAMPLE ID: SUMP @ 14'
PROJECT #: 430.005

DATE RECEIVED: 08/14/89
DATE EXTRACTED: 08/15/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 8/16/89

EPA 8080: Organochlorine Pesticides and PCBs in Soil & Wastes
Extraction Method: EPA 3550 - Sonication

COMPOUND	Result (mg/kg)	Detection Limit (mg/kg)
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHA	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor Epoxide	ND	0.05
Endosulfan I	ND	0.05
pp-DDE	ND	0.05
Dieldrin	ND	0.05
Endrin	ND	0.05
Endosulfan II	ND	0.05
Endosulfan Sulfate	ND	0.05
4,4,-DDD	ND	0.05
Endrin Aldehyde	ND	0.05
pp-DDT	ND	0.05
Chlordane	ND	0.5
Toxaphene	ND	0.5
Methoxychlor	ND	0.5
PCB 1016	ND	0.5
PCB 1221	ND	0.5
PCB 1232	ND	0.5
PCB 1242	ND	0.5
PCB 1248	ND	0.5
PCB 1254	ND	0.5
PCB 1260	ND	0.5

ND = Not detected. Limit of detection appears right column.

Curtis & Tompkins, Ltd.

LAB NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
PROJECT # : 430.005

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 08/16/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18031-1	SUMP @ 14'	1,500	mg/Kg	50

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
PROJECT #: 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 08/16/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSINE (mg/Kg)	DIESEL (mg/Kg)
18031-1	SUMP @ 14'	380*	48,000**	270***

* Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C6-C9 boiling range.

** Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C9-C12 boiling range.

*** Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C12-C22 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	7
Spike: % Recovery	94

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DATE RECEIVED: 08/22/89
DATE REPORTED: 08/29/89

LAB NUMBER: 18092

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL SAMPLE

JOB #: 430.005
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

Laboratory Director

Curtis & Tompkins, Ltd.

LAB NUMBER: 18092
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/22/89
DATE ANALYZED: 08/28/89
DATE REPORTED: 08/29/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18092-1	SUMP @ 21	150	mg/Kg	50

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	84

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18092
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/22/89
DATE ANALYZED: 08/28/89
DATE REPORTED: 08/29/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18092-1	SUMP @ 21	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	6
Spike: % Recovery	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18092
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.005
LOCATION: 13TH & JEFFERSON
SAMPLE ID: SUMP @ 21

DATE RECEIVED: 08/22/89
DATE ANALYZED: 08/23/89
DATE REPORTED: 08/29/89

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

COMPOUND	Result ug/Kg	LOD ug/Kg
Benzene	ND	5
Toluene	ND	5
Ethyl Benzene	ND	5
Total Xylenes	ND	5
Chlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5

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

QA/QC:

Duplicate: Relative % Difference	5
Average Spike Recovery %	89

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DATE RECEIVED: 09/07/89
DATE REPORTED: 09/15/89

LAB NUMBER: 18209

CLIENT: SUBSURFACE CONSULTANTS, INC.

REPORT ON: 5 SOIL SAMPLES

JOB #: 430.005
LOCATION: 13th AND JEFFERSON

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18209
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: 13th AND JEFFERSON

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/12/89
DATE REPORTED: 09/15/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18209-1	SUMP @ 26' (BOTTOM)	ND(10)	ND(10)	ND(10)	ND(10)
18209-2	SUMP @ 26' (NORTH)	ND(10)	ND(10)	ND(10)	ND(10)
18209-3	SUMP @ 26' (SOUTH)	ND(10)	ND(10)	ND(10)	ND(10)
18209-4	SUMP @ 26' (WEST)	ND(10)	ND(10)	ND(10)	ND(10)
18209-5	SUMP @ 26' (EAST)	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	<1
Spike: % Recovery	97

Curtis & Tompkins, Ltd.

LAB NUMBER: 18209
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.005
LOCATION: 13th AND JEFFERSON

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/15/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18209-1	SUMP @ 26' (BOTTOM)	89	mg/Kg	50
18209-2	SUMP @ 26' (NORTH)	ND	mg/Kg	50
18209-3	SUMP @ 26' (SOUTH)	ND	mg/Kg	50
18209-4	SUMP @ 26' (WEST)	58	mg/Kg	50
18209-5	SUMP @ 26' (EAST)	51	mg/Kg	50

ND = None Detected

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	84

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LAB NUMBER: 19868
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.006
LOCATION: 13th & JEFFERSON

DATE RECEIVED: 02/08/90
DATE REQUESTED: 03/12/90
DATE ANALYZED: 03/13/90
DATE REPORTED: 03/14/90

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
19868-1	SUMP @ 28	ND	mg/Kg	50
19868-2	E @ 24	ND	mg/Kg	50
19868-3	W @ 24	ND	mg/Kg	50

ND = NOT DETECTED

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	86

QA/QC OFFICER

LABORATORY DIRECTOR

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

DATE RECEIVED: 02/08/90
DATE REPORTED: 02/12/90

RECEIVED
FEB 20 1990

LAB NUMBER: 19538

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 16 SOIL SAMPLES

PROJECT #: 430.006
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

Alan for MEP
QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 19538
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: 13th & JEFFERSON

DATE RECEIVED: 02/08/90
DATE ANALYZED: 02/11/90
DATE REPORTED: 02/12/90

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

LAB ID	CLIENT ID	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
19538-1	SUMP@28	ND(10)	ND(10)	ND(10)
19538-2	N@12	ND(10)	ND(10)	ND(10)
19538-3	N@18	ND(10)	ND(10)	ND(10)
19538-4	N@24	ND(10)	ND(10)	ND(10)
19538-5	S@6	ND(10)	ND(10)	ND(10)
19538-6	S@12	ND(10)	ND(10)	ND(10)
19538-7	S@18	ND(10)	ND(10)	ND(10)
19538-8	S@24	34*	ND(10)	ND(10)
19538-9	E@6	ND(10)	ND(10)	ND(10)
19538-10	E@12	ND(10)	ND(10)	ND(10)
19538-11	E@18	ND(10)	ND(10)	ND(10)
19538-12	E@24	ND(10)	ND(10)	ND(10)
19538-13	W@6	ND(10)	ND(10)	ND(10)
19538-14	W@12	ND(10)	ND(10)	ND(10)
19538-15	W@18	ND(10)	ND(10)	ND(10)
19538-16	W@24	ND(10)	ND(10)	ND(10)

*Fingerprint pattern does not match hydrocarbon standards. Quantitation based on area sum within C10-C16 boiling range.

ND = NOT DETECTED; LIMIT OF DETECTION IN PARENTHESES

QA/QC SUMMARY

Duplicate: Relative % Difference	<1
Spike: % Recovery	97

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

LABORATORY NUMBER: 19586
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: SUMP REMEDIATION

DATE RECEIVED: 02/14/90
DATE ANALYZED: 02/16/90
DATE REPORTED: 02/20/90

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

LAB ID	CLIENT ID	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
19586-1	S2 @ 24'	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	4
Spike: % Recovery	99

M. E. Printeza
QA/QC OFFICER

for CBG
LABORATORY DIRECTOR

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

DATE RECEIVED: 08/23/89
DATE REPORTED: 08/24/89

LAB NUMBER: 18095

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL COMPOSITE

JOB #: 430.005
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

Laboratory Director

Curtis & Tompkins Ltd

LABORATORY NUMBER: 18095
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/23/89
DATE ANALYZED: 08/23/89
DATE REPORTED: 08/24/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18095-1,2,3,4	SUMP A-1/ SUMP A-2/ SUMP A-3/ SUMP A-4	ND(10)	700	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	11
Spike: % Recovery	103

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DATE RECEIVED: 09/13/89
DATE REPORTED: 09/18/89

LAB NUMBER: 18250

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 SOIL SAMPLES

JOB #: 430.006
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18250
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/13/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/18/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18250-1	SUMP C-4	ND(10)	470*	ND(10)	ND(10)
18250-2	SUMP C-2	ND(10)	470*	ND(10)	ND(10)
18250-3	SUMP C-3	ND(10)	460*	ND(10)	ND(10)

*Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on largest peaks within C9-C12 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	7
Spike: % Recovery	96

Curtis & Tompkins, Ltd.

LAB NUMBER: 18250
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.006/13TH & JEFFERSON

DATE RECEIVED: 09/13/89
DATE ANALYZED: 09/15/89
DATE REPORTED: 09/18/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18250-1	SUMP C-2	ND	mg/Kg	50
18250-2	SUMP C-3	ND	mg/Kg	50
18250-3	SUMP C-4	ND	mg/Kg	50

ND = NONE DETECTED

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	88

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18250
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.006
JOB LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/13/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/18/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/kg)	TOLUENE (ug/kg)	TOTAL XYLENES (ug/kg)	ETHYL BENZENE (ug/kg)
18250-1	SUMP C-4	ND(5)	ND(5)	ND(5)	ND(5)
18250-2	SUMP C-2	ND(5)	ND(5)	ND(5)	ND(5)
18250-3	SUMP C-3	ND(5)	ND(5)	ND(5)	ND(5)

ND = NONE DETECTED; LIMIT OF DETECTION IN PARENTHESES.

QA/QC SUMMARY

%RPD	18
%RECOVERY	93

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

LABORATORY NUMBER: 18367
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: JEFFERSON ST. SUMP REMEDIATION

DATE RECEIVED: 09/27/89
DATE ANALYZED: 09/27/89
DATE REPORTED: 09/29/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18267-1	C - 8	ND(10)	170*	ND(10)	ND(10)
18267-2	C - 9	ND(10)	110*	ND(10)	ND(10)
18267-3	C - 10	ND(10)	130*	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

* = Fingerprint pattern does not match Hydrocarbon Standards.
Quantitation based on area sum within C9 to C12 boiling range.

QA/QC SUMMARY

Duplicate: Relative % Difference	2
Spike: % Recovery	98

QA/QC OFFICER

LABORATORY DIRECTOR

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

DATE RECEIVED: 10/11/89
DATE REPORTED: 10/12/59

LAB NUMBER: 18481

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 SOIL SAMPLES

JOB #: 430.006
LOCATION: JEFFERSON ST.

RESULTS: SEE ATTACHED

M.S. Privitera
QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18481
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: JEFFERSON ST. SUMP REMEDIATION

DATE RECEIVED: 10/11/89
DATE ANALYZED: 10/11/89
DATE REPORTED: 10/12/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18481-1	C - 11	ND(10)	ND(10)	TRACE(5.8)*	ND(10)
18481-2	C - 12	ND(10)	ND(10)	39*	ND(10)
18481-3	C - 13	ND(10)	ND(10)	54*	ND(10)
18481-4	C - 14	ND(10)	ND(10)	32*	ND(10)

* Fingerprint pattern does not match hydrocarbon standard. Quantitation based on area sum within C12-C22 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	16
Spike: % Recovery	97

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

DATE RECEIVED: 02/23/90
DATE REPORTED: 03/06/90

LAB NUMBER: 19676

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 SOIL SAMPLES

PROJECT #: 430.006
LOCATION: SUMP REMEDIATION

RESULTS: SEE ATTACHED

A Lau for MEP
QA/QC Officer

for CBS
Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 19676
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: SUMP REMEDIATION

DATE RECEIVED: 02/23/90
DATE ANALYZED: 03/04/90
DATE REPORTED: 03/06/90

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

LAB ID	CLIENT ID	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
19676-1	C-15	ND(10)	ND(10)	ND(10)
19676-2	C-16	ND(10)	ND(10)	ND(10)
19676-3	C-17	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	6
Spike: % Recovery	83

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

DATE RECEIVED: 07/19/90
DATE REPORTED: 07/23/90

LAB NUMBER: 101112

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

PROJECT #: 430.006
LOCATION: 13TH & JEFFERSON SUMP

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LAB NUMBER: 101112
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.006
LOCATION: 13TH & JEFFERSON SUMP

DATE RECEIVED: 07/19/90
DATE ANALYZED: 07/23/90
DATE REPORTED: 07/23/90

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520F (503E)

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101112-1	48	ND	mg/L	20

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	85

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101112
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: 13TH & JEFFERSON SUMP

DATE RECEIVED: 07/19/90
DATE EXTRACTED: 07/19/90
DATE ANALYZED: 07/20/90
DATE REPORTED: 07/23/90

Extractable Petroleum Hydrocarbons in Water
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (mg/L)	DIESEL RANGE (mg/L)	REPORTING LIMIT (mg/L)
101112-1	48	ND	ND	0.5

ND = Not Detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101112
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.006
JOB LOCATION: 13TH & JEFFERSON SUMP

DATE RECEIVED: 07/19/90
DATE ANALYZED: 07/19/90
DATE REPORTED: 07/23/90

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

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101112-1	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

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.005

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: RAPID 24 HOUR

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMP @ 14'8"	S	T	8/14/89		EPA 8240	
					EPA 8080	
					O+G	
					TPH	
					TITLE 22 METALS	

* * * * * *

Released by: J. Thomas Gibbs Date: 8-14-89

Released by Courier: Date:

Received by Laboratory: Date:

Relinquished by Laboratory: Date:

Received by: Michael May Date: 8-14-89

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.005

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 5 day

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
Sump @ 21	S	T	8/21/89		TEH-K	8015/3550
					O+G	503E
					BTXE	8020/5030

* * * * * *

Released by: Denis Alpard Date: 8-22-89

Released by Courier: Date:

Received by Laboratory: Belinda Peters Date: 8/22/89

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th & JEFFERSON

SCI Job Number: 430.0085

Project Contact at SCI: J. BOWERS

Sampled By: D. ALEXANDER

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMP @ 26' (BOTTOM)	S	T	9/6/89		TEH & O+G	
SUMP @ 26' (NORTH)	S	T	9/6/89		TEH & O+G	
SUMP @ 26' (SOUTH)	S	T	9/6/89		TEH, O+G	
SUMP @ 26' (WEST)	S	T	9/6/89		TEH, O+G	
SUMP @ 26' (EAST	S	T	9/6/89		TEH, O+G	

* * * * * *

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

Released by Courier: _____ Date: _____

Received by Laboratory: Nancy Quindon Date: 9/7/89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson [redacted] 8e

SCI Job Number: 430,005

Project Contact at SCI: Sean Carson

Sampled By: David Feinberg

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 1 day Rush!

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
sumpA-1	S	T	8/23/89			
sumpA-2	S	T			TEH-K	8015/3550
sumpA-3	S	T				
sumpA-4	S	T				
		1 composite sample				

* * * * * *

Released by: David L Feinberg Date: 8/23/89

Released by Courier: _____ Date: _____

Received by Laboratory: Steven Swanson Date: 8/23/89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson Sump

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMP C-2	S	T	9/12/89		TEH-K	8015/3550
					O+G	SMWW 503
					BTXE	8020/5030
SUMP C-3	S	T	9/12/89		TEH-K	8015/3550
					O+G	SMWW 503
					BTXE	8020/5030
SUMP C-4	S	T	9/12/89		TEH-K	8015/3550
					O+G	SMWW 503
					BTXE	8020/5030

* * * * * *

Released by: David [signature] Date:

Released by Courier: Date:

Received by Laboratory: [signature] Date: 9/13/89 9:20 am

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: Jefferson St. Sump Remediation

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: 24 hr. RAPID!!!

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
C-8	S	T	9-26-89		TEH	
C-9	↓	↓	↓		↓	
C-10	↓	↓	↓		↓	

* * * * * *

Released by: Dennis Alexander Date: 9-27-89

Released by Courier: _____ Date: _____

Received by Laboratory: Belinda Peters Date: 9-27-89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: Samp Remediation

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis and Tompkins

Analytical Turnaround: * 5 day

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
C-15	S	T	2-23-90		TEH	
C-16	S	T	"		TEH	
C-17	S	T	"		TEH	

* * Call Project Contact for turnaround * * *

Released by: Dennis Alexander Date: 2-23-90

Released by Courier: Date:

Received by Laboratory: [signature] Date: 2-23-90

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants

& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis-Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMPe28	S	T	2/8/90		TEH	EPA 8015/3550
Ne12						
Ne18						
Ne24						
Se6						
Se12						
Se18						
Se24						
Ee6						
Ee12	↓	↓	↓		↓	↓

* * 10 separate tests * * * *

Released by: L. Thomas Tibbs Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
E@18	S	T	2/8/90		TEH	EPA 8015/3550
E@24						
W@6						
W@12						
W@18						
W@24						

* 6 Separate Tests

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: Sump Remediation

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis and Tompkins

Analytical Turnaround: RAPID

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
S2 @ 24'	S	T	2-14-90		TEH	8015 mod/3550
*	*	*	*	*	*	

Released by: Dennis Alexander Date: 2-14-90

Released by Courier: _____ Date: _____

Received by Laboratory: Nancy Wen Date: 2/14/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

VERBAL ADDITIONS / CANCELLATIONS TO ANALYSIS REQUEST SHEET

CLIENT: Subsurface Consultants DATE: 3-12-90

REQUESTED BY: Sean Carson TIME: ____ am 4:40 pm

RECORDED BY: map

Current Lab ID (Previous Lab ID)	Client ID	Circle matrix	Specify (add) or cancel	Analysis	Due date
19868-1 (19538-1) (-)	Sump at 28	(soil) water other	Add	503E	3.15.90
19868-2 (19538-12) (-)	Eat 24	(soil) water other	Add	503E	3.15.90
19868-3 (19538-16) (-)	wat 24	(soil) water other	Add	503E	3.15.90
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			
(-)		soil water other			

Original in job jacket. Copies to analytical departments.

ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis-Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SOUPE28	S	T	2/8/90		TEH	EPA 8015/3550
N e 12						
N e 18						
N e 24						
S e 6						
S e 12						
S e 18						
S e 24						
E e 6						
E e 12	↓	↓	↓		↓	↓

* * 10 separate tests * * * *

Released by: L. Thomas Libb Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

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

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

& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
E@18	S	T	2/8/90		TEH	EPA 8015/3550
E@24						
W@6						
W@12						
W@18						
W@24						

* 6 Separate Tests

Released by: L. Thomas Pelt Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

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 & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson Sump

SCI Job Number: 430,006

Project Contact at SCI: Sean Carson

Sampled By: Mark Kawakami

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
48	W	3 x V	7/18/90		TVH/BTXE	8015/~~5030~~/602
		2 x G	7/18/90		TEH, O+G	8015/3550, ~~SMWW~~ 5520E

* * * * * *

Released by: Sean O Carson Date: 7/19/90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: _____

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

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

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

WASTE MANIFEST

Generators' Name and Address:

City of Oakland

Office of Economic Development and Employment

1417 Clay Street, Oakland, California 94612 Attention: Lois Parr

Phone No.: (415) 273-3692

Transporter Company Name: Stameo

Designated Disposal Facility Name and Address:

West Contra Costa Sanitary Landfill

P.O. Box 5006

Richmond, California 94805 (415) 236-8000

Description of Waste: Soil containing less than 100 parts per million of kerosene

Estimated Quantity of Waste: 22 cu. yds

Special Handling Instructions: wear gloves

Generator/Representative:

Dennis Alexander (for city of Oakland)	Dennis Alexander	11-8-89
(Name)	(Signature)	(Date)

Transporter's Acknowledged Receipt of Material:

Thom Fox	Thom Fox	11-8-89
(Name)	(Signature)	(Date)

Disposal Facility Acknowledged Receipt of Material:

L. Mode	[signature]	11/8/89
(Name)	(Signature)	(Date)

WASTE MANIFEST

Generators' Name and Address:

City of Oakland

Office of Economic Development and Employment

1417 Clay Street, Oakland, California 94612 Attention: Lois Parr

Phone No.: (415) 273-3692

Transporter Company Name: Stanco

Designated Disposal Facility Name and Address:

West Contra Costa Sanitary Landfill

P.O. Box 5006

Richmond, California 94805 (415) 236-8000

Description of Waste: Soil containing less than 100 parts per million of kerosene

Estimated Quantity of Waste: 30 cu. yds.

Special Handling Instructions: wear gloves

RECEIVED
DEC 15 1989
AM 7|8|9|10|11|12|1|2|3|4|5|6 PM

Generator/Representative:

Dennis Alexander (For City of Oakland)	Dennis Alexander	11-8-89
(Name)	**(Signature)**	**(Date)**

Transporter's Acknowledged Receipt of Material:

Thom Fox	Thom Fox	11-8-89
(Name)	**(Signature)**	**(Date)**

Disposal Facility Acknowledged Receipt of Material:

(Name)	**(Signature)**	**(Date)**

WASTE MANIFEST

Generators' Name and Address:

City of Oakland

Office of Economic Development and Employment

1417 Clay Street, Oakland, California 94612 Attention: Lois Parr

Phone No.: (415) 273-3692

Transporter Company Name: Stamco

Designated Disposal Facility Name and Address:

West Contra Costa Sanitary Landfill

P.O. Box 5006

Richmond, California 94805 (415) 236-8000

Description of Waste: Soil containing less than 100 parts per million of kerosene

Estimated Quantity of Waste: 22 cu yds

Special Handling Instructions: wear gloves

Generator/Representative:

Dennis Alexander (For city of Oakland)	Dennis Alexander	11-8-89
(Name)	**(Signature)**	**(Date)**

Transporter's Acknowledged Receipt of Material:

James Hutchison	James Hutchison	11-8-89
(Name)	**(Signature)**	**(Date)**

Disposal Facility Acknowledged Receipt of Material:

D. Modic	D. Modic	11/8/89
(Name)	**(Signature)**	**(Date)**

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

January 10, 1992
SCI 430.015

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

Quarterly Monitoring Report #6 (October 8, 1991 through January 10, 1992)
Wastewater Discharge Permit #001-00009
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 #001-00009, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the seventh quarter of operation (October 8, 1991 through January 10, 1992) approximately 1,544,660 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 34 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTXE) and volatile organic compounds (VOC) 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 seventh quarter are presented in Table 1. Data from the 9/26/91 sampling event is reprinted because the 2nd and 3rd rows were transposed in our letter dated October 9, 1991. Analytical test reports and Chain-of-Custody documents are also attached.

Approximately 922,170 gallons of contaminated water from the adjacent Garage 2 site were treated during this quarter of operation. The water contained low concentrations of chlorinated hydrocarbons. For this reason, the monitoring program was modified to include testing for EPA 8010 chemicals. No detectible

concentration of chlorinated hydrocarbons were discharged into the EBMUD sewer.

The analytical test results indicate that biologic activity within the primary holding tank, which was documented in previous quarterly reports, is on-going. Hydrocarbon concentrations up to approximately 140 parts per billion (ppb) are entering the primary holding tank and not more than 18 ppb of hydrocarbons have been recorded leaving the tank before passing through the carbon treatment system during this quarter. Consequently, hydrocarbon loading of 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)

SOC:JPB:vb

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

cc: Ms. Lois Parr
Oakland Redevelopment Agency, OEDE

✓Mr. Paul Smith
ACHCSA

Mr. Eddy So
RWQCB

Mr. Donnell Choy
City of Oakland

Table 1. Contaminant Concentrations In Water

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene[2] (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	EPA 8010
WI[4]-32-1[5]	09/26/91	240	18	ND[7]	3.4	4.9	NR[10]
WI-32-2		180	5.3	0.9	2.0	6.8	NR
I[6]-32		ND	ND	ND	ND	ND	NR
B[8]-32		NR	ND	ND	ND	ND	NR
E[9]-32		NR	ND	ND	ND	ND	NR
WI-33-1	10/24/91	90	18	ND	ND	ND	NR
WI-33-2		ND	1.2	ND	ND	2.2	NR
I-33			ND	ND	ND	ND	NR
B-33			ND	ND	ND	ND	NR
E-33			ND	ND	ND	ND	NR
WI-34-1	11/18/91	140	7.9	ND	2.6	4.1	NR
WI-34-2		70	5.0	ND	2.9	0.7	NR
WI-34-G2[12]		ND	ND	ND	ND	ND	6.9[11]
I-34			ND	ND	ND	ND	3.7[13]
B-34			ND	ND	ND	ND	15[11]
E-34			ND	ND	ND	ND	ND

---

1 TVH = Total volatile hydrocarbons, EPA 8015/5030
2 BTEX, Analyses by EPA 8020/5030
3 ug/L = micrograms per liter or parts per billion (ppb)
4 WI = Well Influent, i.e. wastewater from well prior to discharge into the primary holding tank
5 -1 indicates sample from Extraction Well #1
6 I = Influent at primary carbon vessel
7 ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits
8 B = Between carbon vessels
9 E = Effluent
10 NR = Test not requested
11 as Methylene Chloride
12 G2 indicates sample from Garage 2
13 as 1-2 dichloroethane (DCA)

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

DATE RECEIVED: 11/15/91
DATE REPORTED: 11/21/91

LABORATORY NUMBER: 105808

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 105808
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/15/91
DATE ANALYZED: 11/15,16/91
DATE REPORTED: 11/21/91

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)
105808-1	WI-33-1	90	18	ND(0.5)	ND(0.5)	ND(0.5)
105808-2	WI-33-2	ND(50)	1.2	ND(0.5)	ND(0.5)	2.2

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

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	90

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105808
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/15/91
DATE ANALYZED: 11/16/91
DATE REPORTED: 11/21/91

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)
105808-3	I-33	ND	ND	ND	ND	0.5
105808-4	B-33	ND	ND	ND	ND	0.5
105808-5	E-33	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	90

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

DATE RECEIVED: 11/18/91
DATE REPORTED: 11/26/91

LABORATORY NUMBER: 105814

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105814
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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)
105814-1	WI-34-1	140	7.9	ND(0.5)	2.6	4.1
105814-2	WI-34-2	70	5.0	ND(0.5)	2.9	0.7
105814-3	WI-34-G2	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.

LABORATORY NUMBER: 105814
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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)
105814-4	I-34	ND	ND	ND	ND	0.5
105814-5	B-34	ND	ND	ND	ND	0.5
105814-6	E-34	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	87

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105814-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: WI-34-G2

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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	6.9	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, %	106

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105814-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: I-34

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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	3.7	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-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, %	104

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 105814-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: B-34

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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	15	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, %	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105814-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: E-34

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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, %	106

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105814
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: METHOD BLANK

DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

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	1.1	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, %	105

Curtis & Tompkins, Ltd.

BS/BSD SUMMARY SHEET FOR EPA 8010(8020)

INSTRUMENT: HP-5890 COLUMN: RESTEK 502.2 DETECTORS: HALL/PID

Operator:	AV	Spike file:	323W/X014
Analysis date:	11/19/91	Spike dup file:	323W\X015
Sample type:	WATER	Instrument:	GC12
		Sequence name	NOV 19

8010 BS/BSD DATA (spiked at 20 ppb) Ave Rec= 106 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	20.50	103 %	OK	61 - 145
Trichloroethene	21.43	107 %	OK	71 - 120
Chlorobenzene	20.72	104 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	21.44	107 %	OK	61 - 145
Trichloroethene	22.16	111 %	OK	71 - 120
Chlorobenzene	21.25	106 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (BS)	104.00	104 %	OK	75 - 120
BROMOBENZENE (BSD)	106.00	106 %	OK	75 - 120

8020 BS/BSD DATA (spiked at 20 ppb) Ave Rec= 102 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	20.74	104 %	OK	76 - 127
Toluene	20.72	104 %	OK	76 - 125
Chlorobenzene	20.17	101 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
Benzene	20.55	103 %	OK	76 - 127
Toluene	20.52	103 %	OK	76 - 125
Chlorobenzene	19.93	100 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (BS)	100.00	100 %	OK	75 - 120
BROMOBENZENE (BSD)	100.00	100 %	OK	75 - 120

RPD DATA 8010 RPD= 3.5 % 8020 RPD= 1.0 %

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	20.50	21.44	4 %	OK	< 14
Trichloroethene	21.43	22.16	3 %	OK	< 14
Chlorobenzene	20.72	21.25	3 %	OK	< 13
8020 COMPOUNDS					
Benzene	20.74	20.55	1 %	CK	< 11
Toluene	20.72	20.52	1 %	CK	< 13
Chlorobenzene	20.17	19.93	1 %	CK	< 13

REVIEWED BY: Neel C Kay

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

DATE RECEIVED: 09/26/91
DATE REPORTED: 09/30/91

LABORATORY NUMBER: 105275

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105275
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 09/26/91
DATE ANALYZED: 09/28/91
DATE REPORTED: 09/30/91

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)
105275-3	I-32	ND	ND	ND	ND	0.5
105275-4	B-32	ND	ND	ND	ND	0.5
105275-5	E-32	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	112

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105275
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 09/26/91
DATE ANALYZED: 09/28/91
DATE REPORTED: 09/30/91

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)
105275-1	WI-32-1	240	18	ND(0.5)	3.4	4.9
105275-2	WI-32-2	180	5.3	0.9	2.0	6.8

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

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	112

CHAIN OF CUSTODY FORM

PAGE 1 OF 1

PROJECT NAME: MLK GW Extraction

JOB NUMBER: 430.015 LAB: Curtis + Tompkins Ltd

PROJECT CONTACT: Sean Carson TURNAROUND: Normal

SAMPLED BY: _____ REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR			CONTAINERS: VOA	LITER	PINT	TUBE			METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: TVH / BTXE	BTXE
	WI-32-1	X						3						X			X		09	26	91			X	
	WI-32-2	X						3						X			X							X	
	I-32	X						2						X			X							X	
	B-32	X						2						X			X							X	
	E-32	X						2						X			X							X	

COMMENTS & NOTES:

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
Charles Pearce	9/26/91 10:30 am		
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
		J Keane	9/26/91 10:30

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

PROJECT CONTACT: Sean Carson TURNAROUND: Normal

SAMPLED BY: Charles Pearson REQUESTED BY:

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR	CONTAINERS: VOA	LITER	PINT	TUBE	METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: TVH-I/BTXE	BTXE
	WI-33-1	X				3				X			X		10	24	91	4:20 pm		X	
	WI-33-2	X				3				X			X								
	I-33	X				2				X			X							X	X
	B-33	X				2				X			X								
	E-33	X				2				X			X							X	X

COMMENTS & NOTES:

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	11/15/91 2:00 pm		11/15/91 2:00
RELEASED BY: (Signature)	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 1 OF 1

PROJECT NAME: MLK GW Treatment Plant

JOB NUMBER: 430.015 LAB: Curtis + Tompkins

PROJECT CONTACT: Sean Carson TURNAROUND: Normal

SAMPLED BY: Fernando Velez REQUESTED BY:

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR	CONTAINERS: VOA	LITER	PINT	TUBE	METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: TVH/BTXE	BTXE EPA 8010
	WI-34-1	X				3				X			X		11	18	91			X	X
	WI-34-2	X				3				X			X							X	X
	WI-34-G2	X				6				X			X								
	I-34	X				6				X			X								
	B-34	X				6				X			X								
	E-34	X				6				X			X								

COMMENTS & NOTES:

Actual sample date 11/18/91
-sample bottles say 11/15/91

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
	11/18/91 10:30		
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
		[illegible]	11/18/91 1630

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

91 OCT 1 1 11:27

October 9, 1991
SCI 430.015

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

Quarterly Monitoring Report #6 (July 10 thru October 8, 1991)
Wastewater Discharge Permit #001-00009
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 #001-00009, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the sixth quarter of operation (July 10th through October 8, 1991) approximately 626,210 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 32 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTXE) and volatile organic compounds (VOC) 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 sixth quarter are presented in Table 1. Analytical test reports and Chain-of-Custody documents are also attached.

Approximately 105,000 gallons of contaminated water from the adjacent Garage 2 site were treated during the first part of this quarter of operation. The water contained low concentrations of chlorinated hydrocarbons. For this reason, the monitoring program was modified to include testing for EPA 8010 chemicals.

The analytical test results indicate that biologic activity within the primary holding tank, which was documented in previous quarterly reports, is on-going. Hydrocarbon concentrations up to

approximately 1300 parts per billion (ppb) are entering the primary holding tank and not more than 130 ppb of hydrocarbons have been recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of 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)

SOC:JPB:ddh

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

cc: Ms. Lois Parr
Oakland Redevelopment Agency, OEDE

✓ Mr. Paul Smith
ACHCSA

Mr. Lester Feldman
RWQCB

Mr. Donnell Choy
City of Oakland

Table 1. Contaminant Concentrations In Water

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene[2] (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	EPA 8010
WI[4]-30-2[5]	07/23/91	1300	170	71	22	100	NR[10]
WI-30-G2[12]		ND[7]	ND	ND	ND	ND	1.1[11]
I[6]-30		ND	ND	ND	ND	1.7	ND
B[8]-30		ND	ND	ND	ND	ND	ND
E[9]-30		ND	ND	ND	ND	ND	ND
WI-31-2	08/26/91	790	91	20	9.3	62	NR
I-31		130	0.6	ND	ND	3.2	NR
B-31		ND	ND	ND	ND	ND	NR
E-31		ND	ND	ND	ND	ND	NR
WI-32-1	09/26/91	240	18	ND	3.4	4.9	NR
WI-32-2		NR	ND	ND	ND	ND	NR
I-32		180	5.3	0.9	2.0	6.8	NR
B-32		NR	ND	ND	ND	ND	NR
E-32		NR	ND	ND	ND	ND	NR

1 TVH = Total volatile hydrocarbons, EPA 8015/5030
2 BTEX, Analyses by EPA 8020/5030
3 ug/L = micrograms per liter or parts per billion (ppb)
4 WI = Well Influent, i.e. wastewater from well prior to discharge into the primary holding tank
5 -2 indicates sample from Extraction Well #2
6 I = Influent at primary carbon vessel
7 ND = None detected, chemicals not present at concentrations above the detection limits; see test reports for detection limits
8 B = Between carbon vessels
9 E = Effluent
10 NR = Test not requested
11 as Tetrachlorethene
12 G2 indicates sample from Garage 2

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

DATE RECEIVED: 07/23/91
DATE REPORTED: 07/25/91

LAB NUMBER: 104582

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104582
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 07/23/91
DATE ANALYZED: 07/23/91
DATE REPORTED: 07/25/91

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)
104582-1	WI-30-2	1,300	170	71	22	100
104582-2	WI-30-G2	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104582-3	I-30	ND(50)	1.2	ND(0.5)	ND(0.5)	ND(0.5)
104582-4	B-30	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
104582-5	E-30	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, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104582-2
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: WI-30-G2

DATE RECEIVED: 07/23/91
DATE ANALYZED: 07/23/91
DATE REPORTED: 07/25/91

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	1.1	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, %	8
RECOVERY, %	82

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104582-3
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: I-30

DATE RECEIVED: 07/23/91
DATE ANALYZED: 07/23/91
DATE REPORTED: 07/25/91

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, %	8
RECOVERY, %	82

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104582-4
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: B-30

DATE RECEIVED: 07/23/91
DATE ANALYZED: 07/23/91
DATE REPORTED: 07/25/91

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, %	8
RECOVERY, %	82

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104582-5
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: E-30

DATE RECEIVED: 07/23/91
DATE ANALYZED: 07/23/91
DATE REPORTED: 07/25/91

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, %	8
RECOVERY, %	82

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

DATE RECEIVED: 08/26/91
DATE REPORTED: 08/30/91

LABORATORY NUMBER: 104962

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104962
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 08/26/91
DATE ANALYZED: 08/27/91
DATE REPORTED: 08/30/91

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)
104962-1	WI-31-2	790	91	20	9.3	62
104962-2	I-31	130	0.6	ND(0.5)	ND(0.5)	3.2

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

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	107

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104962
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 08/26/91
DATE ANALYZED: 08/27/91
DATE REPORTED: 08/30/91

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)
104962-3	B-31	ND	ND	ND	ND	0.5
104962-4	E-31	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	107

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

DATE RECEIVED: 09/26/91
DATE REPORTED: 09/30/91

LABORATORY NUMBER: 105275

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105275
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 09/26/91
DATE ANALYZED: 09/28/91
DATE REPORTED: 09/30/91

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)
105275-3	I-32	ND	ND	ND	ND	0.5
105275-4	B-32	ND	ND	ND	ND	0.5
105275-5	E-32	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	112

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 105275
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 09/26/91
DATE ANALYZED: 09/28/91
DATE REPORTED: 09/30/91

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)
105275-1	WI-32-1	240	18	ND(0.5)	3.4	4.9
105275-2	WI-32-2	180	5.3	0.9	2.0	6.8

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

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	112

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.015

Project Contact at SCI: Sean Carson

Sampled By: Charles Pearson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-30-2	W	V×2	7/23/91		TVH/BTXE	8015/8020/5030
WI-30-G2	W	V×3	7/23/91		TVH/BTXE/VOC's	8015/8020/8010/5030
I-30	W	V×3	7/23/91		TVH/BTXE/VOC's	8015/8020/8010/5030
B-30	W	V×3	7/23/91		TVH/BTXE/VOC's	8015/8020/8010/5030
E-30	W	V×3	7/23/91		TVH/BTXE/VOC's	8015/8020/8010/5030

* * * * * *

Released by: Charles C Pearson Received by: _____ Date: 7/23/91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: Nancy Wilson Date: 7/23/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

10142

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Charles Pearson

Analytical Laboratory: Curtis Tompkins Ltd

Analytical Turnaround: Normal

	Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
	WI-31-2	W	V x 2	8/26/91		TVH/BTXE	8015/8020/5030
2	I-31	W	V x 2	8/26/91		TVH/BTXE	8015/8020/5030
3	B-31	W	V x 2	8/26/91		BTXE	8020/5030
4	E-31	W	V x 2	8/26/91		BTXE	8020/5030

* * * * * *

Released by: [signature] Received by: ______ Date: 8/26/91

Released by: ______ Received by: ______ Date: ______

Received by Laboratory: [signature] Date: [illegible]

Released by Laboratory: ______ Date: ______

Released by: ______ Date: ______

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

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

CHAIN OF CUSTODY FORM

PAGE 1 OF 1

PROJECT NAME: MLK GW Extraction

JOB NUMBER: 430.015 LAB: Curtis + Tompkins Ltd

PROJECT CONTACT: Sean Carson TURNAROUND: Normal

SAMPLED BY: _____ REQUESTED BY: Sean Carson

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR			CONTAINERS: VOA	LITER	PINT	TUBE			METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME				NOTES	ANALYSIS REQUESTED: TVH / BTXE	BTXE
	WI-32-1	X						3						X			X		09	26	91					X	
	WI-32-2	X						3						X			X									X	
	I-32	X						2						X			X										X
	B-32	X						2						X			X										X
	E-32	X						2						X			X										X

COMMENTS & NOTES:

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
Charles Pearce	9/26/91 10:30 AM		
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
		J Keane	9/26/91 1030

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

91 JUL 25 PM 12:53

July 23, 1991
SCI 430.017

Mr. John Esposito
Bramalea Pacific
1111 Broadway, Suite 1400
Oakland, California 94607

Water Release from Treatment Plant
1330 Martin Luther King, Jr. Way
Old Firehouse Site
Oakland, California

Dear Mr. Esposito:

The purpose of this letter is to document our understanding of events leading up to and following a release of water from the referenced treatment facility. The basis of our understanding is (1) discussions with Mr. Frank Jurado of HSR, Inc. and their letter dated July 15, 1991, and (2) our personal observations. A copy of the July 15th HSR letter is attached. We note that the date on the letter is incorrect; it should be July 22. Additionally, some of the dates referenced in the letter are also inaccurate. However, their reference to individual days is correct, i.e., Saturday and Sunday. We have discussed these discrepancies with Mr. Keith Dorsa of HSR and he has acknowledged them.

The attached HSR letter summarizes details of their observations. We have reviewed the letter and conclude that it is relatively complete and accurate from SCI's standpoint. We make the following additional comments.

In brief, the primary holding tank for the water treatment facility was overtopped on Sunday, July 21, 1991. Our best estimate is that overtopping resulted in a release of approximately 500 gallons or less of groundwater. The release caused water to accumulate on-site adjacent to the tank. According to HSR, no water flowed off-site and into the storm drain system. All water seeped into the surface soils near the north end of the tank.

The cause of the release was associated with the failure of level sensors in the tank. HSR personnel or subcontractors removed and reinstalled the sensors in the tank on Saturday, July 20. Reinstallation of the sensors was inadvertently done in a manner

that did not allow them to function properly. Sean Carson of SCI, on Sunday, July 21, at approximately 6:00 p.m., inspected the treatment plant and corrected the condition. He reestablished functioning of the treatment facility. HSR personnel removed the level sensors without SCI's knowledge. A key to the facility was provided to HSR by SCI because of their need to install their own pump shut-off level sensors in the tank and discharge pipeline. It was also necessary for them to gain intermittent access to the facility to monitor the transfer of groundwater from their holding tanks.

HSR reports that in their opinion, the quantity of water released was on the order of several hundred gallons. This estimate appears to agree reasonably well with (1) our estimate based on available freeboard within the tank and the rate at which groundwater was being discharged into the system by SCI (about 3 gpm), and (2) our observations of the wetted area on Monday morning, after the release.

The water released was from the primary holding tank of the treatment facility and hence, may have contained low levels of petroleum hydrocarbons. Analyses that were previously conducted by SCI indicated that the influent being discharged into the tank contained the following concentrations of hydrocarbons.

Sample	Sampling Date	TVH (ug/L)[3]	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
WI-29-2	06/24/91	1300	150	56	22	92

The actual concentrations of hydrocarbons in the released water are uncertain because average concentrations in the tank are substantially less than the influent. Substantial dilution occurs within the tank.

In accordance with your instructions, we have notified the Alameda County Health Care Services Agency of the release on Monday, July 22.

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

Yours very truly,

Subsurface Consultants, Inc.

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

SOC:JPB:clh

cc: Ms. Lois Parr, City of Oakland Redevelopment Agency
Mr. Donnell Choy, City of Oakland
Mr. Paul Smith, Alameda County Health Care Services Agency

Attachment: HSR letter dated July 15, 1991

HSR Inc.

3851 Charter Park Drive, Suite A • San Jose, California 95136 • Phone 408-265-4300 Fax 408-265-1664

July 15, 1991

Mr. David Ferworn
Schnabel Foundation Company
3075 Citrus Circle, Suite 150
Walnut Creek, CA 94598

RE: Water Treatment System Overflow Summary

Dear David:

The following is a brief description of the events surrounding the slight overflow of water from the treatment system located at the intersection of 14th and Martin Luther King Jr. Way.

On Saturday, July 22, HSR installed the electrical system which runs the dewatering process. This included installing the pumps in the wells, the pump in the HSR supplied Baker Tanks on 13th Street, and placing a level sensor and control box on the influent Baker Tank on the treatment system.

The level control system in the treatment system tank has the specific purpose of shutting off the transfer pump in the HSR Baker Tanks when the treatment system nears capacity. During the placement of the level control system, it was necessary to measure the depth of the sensors used to regulate the water level in the treatment system tank to assure that our level controls were placed at a correct depth to work in a synchronized manner with the existing system.

The sump pump in the treatment system tank in regulated by a float bulb similar to the type HSR installed to regulate flow into the tank.

Upon the completion of the dewatering system setup, HSR performed a system checkout. The well pumping system was tested, as well as the Baker Tank transfer system. At 5:00 P.M., approximately 500 gallons of water were pumped from the HSR tank to the treatment system tank. When the water level in the treatment tank rose to the predetermined shutoff height, the level control system shut off the transfer pump in the HSR tank as designed.

Although the water level in the treatment system was high, the sump pump in the treatment tank did not begin to operate. HSR was unsure why the treatment system did not start to pump water through the system, since the water in the treatment tank appeared to be high enough to activate the treatment system. HSR inspected the circuit breaker box which supplies the

treatment system with power. None of the circuit breakers were tripped. Since power was available to all of the different units in the treatment system, HSR felt that there were two rational reasons why the pump in the treatment system might not be operating:

1. Maybe the treatment system sump pump was run on a time delay.

2. A relay in one of the treatment system electrical panels had been "chattering" (clicking on and off in rapid fashion) for several days prior to Saturday. No chattering was heard from the electrical box at this time. If this relay was responsible for activating the pump, maybe the chattering had burned out the relay points, causing the pump to be inoperative.

Although the pump was not functioning for whatever reason, HSR was confident that this would not create a problem. The level control which governed the HSR transfer pump worked correctly, so no additional water would be transferred to the treatment system if the treatment system continued to not operate. The wells which normally supply the treatment system with it's only source of water continued to pump 3 gallons of water per minute into the treatment system tank. This was not felt to be a problem because Sean Carson of Subsurface Consultants had previously shown HSR the emergency shut off sensors in the tank. The sensors were wired to automatically shutoff the well pumps operated by Subsurface Consultants if the water in the tank reached a very high level.

HSR continued to pump water from the dewatering wells into the HSR Baker Tank, knowing that no water would be transferred to the treatment system unless the water level in the treatment tank dropped due to the activation of the treatment sump pump.

The flow rate into the HSR Baker Tanks was evaluated, and it was calculated that the 40,000 gallon storage capacity was sufficient to continue dewatering operations through the night without transferring water to the treatment system.

HSR departed the sight at 6:45 P.M.

On Sunday, July 21, HSR returned to the sight at 12:30 P.M. The HSR Baker Tanks were noted to be 75% full. Upon inspection of the treatment system area, it was noted that the systems storage tank was completely full and a small amount of water had overflowed onto the ground. It was observed that the one of the wells operated by Subsurface Consultants was still pumping water into the treatment system at this time. In order to stop the flow of water, HSR released the circuit breaker governing the pump in the well operated by Subsurface Consultants. All flow into the treatment system tank ceased.

Since the treatment system was inoperative and the HSR storage capacity was nearing maximum, it was decided to shut down the dewatering operation until the treatment system was properly operating. Phone calls were placed to the answering machines of George Ford of Woodward-Clyde and Sean Carson of Subsurface to make them aware of the situation as soon as possible.

HSR departed the sight at 2:00 P.M.

On Monday, July 22, HSR met with Sean Carson at the treatment system. Sean had discovered the problem with the system. The electrical cord of a float sensor responsible for turning on the system's pump had been pulled up slightly such that the float bulb was held in place by the cord's tie down. This caused the bulb to be unable to float, so the pump was unable to function.

The problem was already rectified by Sean Carson, and the treatment system was operating correctly. Sean stated that his emergency shutoff system had failed to operate correctly, causing the overflow. HSR reactivated its well pumps and began transferring water to the treatment system.

Matt Sherrill of Bramalea Pacific and Jim Bowers of Subsurface Consultants visited the treatment facility. Jim Bowers stated that the volume of water which overflowed was negligible, and that dewatering progress should continue. Dewatering was commenced.

If you have any questions regarding this summary, please do not hesitate to contact me.

Graciously,

Denny McIlvaine
Project Manager

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
415/271-4320

[X] HAZARDOUS MATERIALS RELEASE AND NOTIFICATION REPORT (H&SC 25180.7)
[ ] EMERGENCY RESPONSE

1. INFORMATION RECEIVED BY: Paul Smith
   DATE: 7/22/91 TIME: 4:20 pm
2. INCIDENT LOCATION: 1330 Martin Luther King Jr Way
   CITY: Oakland ZIP CODE: 94612
3. DATE OF INCIDENT: 7/21/91 TIME OF INCIDENT: 11:30 AM
4. REPORTED BY: Jim Bowers AGENCY: Subsurface Consultants Inc. ~~SCS Consultants~~
   ADDRESS: 171 12th Street Suite 201 CITY, ZIP: Oakland 94607
   TELEPHONE: 268-0461 CONTACT: _____
   PHONE: _____
5. TYPE OF DISCHARGE:
   [ ] Discharge from vehicle License Plate No. _____
   Manifest/Shipping Information: _____
   [ ] Abandoned Material [ ] Fixed Facility
   Name: _____ Address: _____
   City: _____ Zip Code: _____
   [ ] Other (specify) Overfill pump & treat system primary tank Capacity 20,000 gal
6. ESTIMATED QUANTITY DISCHARGED: 500 gal
   QUANTITY THREATENED TO BE RELEASED: problem rectified
7. NATURE OF MATERIAL:
   [ ] Solid [X] Liquid [ ] Gas [ ] Powder [ ] Granular
   [ ] Radioactive [ ] Other ppb 1300 TVH
   Chemical Name: water containing fuel hydrocarbons Common Name: 150 ppb benzene
8. HAZARDOUS PROPERTIES: [ ] Corrosive [ ] Ignitable [X] Toxic
   [ ] Reactive [ ] Other
9. HAZARDOUS MATERIAL WAS RELEASED TO:
   [ ] Air [ ] Storm Drain [ ] San Francisco Bay [ ] Sanitary Sewer
   [ ] Other Natural Waterway (creek, lake, reservoir) [ ] Groundwater
   [X] Groundsurface (soil, road, etc.) [ ] Other (specify) _____
10. WEATHER CONDITIONS: dry, sunny
11. NUMBER OF INJURED PERSONS REQUIRING HOSPITALIZATION: 0
    NAMES AND ADDRESSES OF HOSPITALS UTILIZED:

12. PERSONS PRESENT AT SCENE:

NAME:	AFFILIATION	PHONE NO.
Contractor		

13. RESPONSIBLE PARTY:
NAME: _____ PHONE NO. _____
ADDRESS: _____

14. EVIDENCE COLLECTED (SAMPLES, PHOTOGRAPHS, ETC.)

15. CLEAN-UP ACTIONS: overfill problem in Baker Tank corrected

NAMES AND ADDRESSES OF PERSONS DOING CLEAN-UP:

DESCRIPTION OF CLEAN-UP ACTIONS:

16. TIME INCIDENT CLOSED: 12:00 pm Sunday 7/21/91

17. ELAPSED TIME: _____

18. [ ] DISCHARGE NOT TO BE NOTIFIED:
___ Unlikely to Cause Substantial Injury to Public Health & Safety
___ Public knowledge ___ Ongoing criminal investigations
___ Permitted Discharge ___ Other

19. [ ] DISCHARGE TO BE NOTIFIED:
FACTORS DETERMINING THAT THIS HAZARDOUS WASTE DISCHARGE OR POTENTIAL DISCHARGE IS LIKELY TO CAUSE SUBSTANTIAL INJURY TO THE PUBLIC HEALTH OR SAFETY:

20. NOTIFICATION:
___ Board of Supervisors
___ Health Officer
___ Alameda County Press Room
___ California Department of Health Services
___ Reporting Agency or Individual

By copy of this report to the above listed agencies and officials, we are hereby submitting this information on behalf of all designated employees of the Department of Environmental Health, according to Section 25180.7, Health & Safety Code. The information submitted in this report is based upon the best available information at the time the report was completed.

Inspector's Name: _____ Date: _____
Inspector's Signature: _____

EH/mam/88

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

August 9, 1991
SCI 430.017

Mr. Hossian Kazemi
San Francisco Regional Water
Quality Control Board
2101 Webster Street, Room 500
Oakland, California 94612

Contaminated Groundwater Release
1330 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Kazemi:

The purpose of this letter is to document a release of contaminated groundwater from the treatment plant located at the referenced address. The treatment plant is owned by the Oakland Redevelopment Agency and is being operated by Subsurface Consultants, Inc. (SCI). Gasoline contaminated groundwater is being (1) pumped from beneath the site, (2) temporarily stored in a 21,000 gallon above ground storage tank, and (3) subsequently treated using granular activated carbon. The water is then discharged under permit into the EBMUD sanitary sewer. Our work is being performed in coordination with the Alameda County Health Care Services Agency (ACHCSA).

On July 21, 1991, approximately 500 gallons of water was released onto the groundsurface as a result of over-topping of the storage tank. The tank over-topping occurred as a result of the failure of the level controls. The level controls had inadvertently been manipulated by a subcontractor resulting in gasoline contaminated groundwater being discharged at a rate of 3 gallons per minute (gpm) onto the groundsurface for approximately 2 to 2 1/2 hours. The contractor was in the process of installing new plumbing and level controls.

The release was discovered on Sunday afternoon by the contractor (HSR. Inc.) who then shut off the power supply to the groundwater pump. According to the contractor, no water flowed off-site but rather seeped into the soils around the tank. A letter from HSR, Inc. is attached confirming this observation. SCI observed the release area on Sunday evening and observed no indications that the water flowed off-site. The release area is shown on the attached Site Plan (Plate 1). Our estimates of the quantity of water that

was released are based on our observations of the wetted soil in the area of the release, and calculations of the flow rate and the available freeboard in the tank that was measured on Saturday, July 20, 1991.

The water released was from the primary holding tank of the treatment facility and hence, may have contained low levels of petroleum hydrocarbons. Recent analysis of the groundwater being pumped into the tank (influent) indicated the following concentrations of hydrocarbons.

Table 1.
Contaminant Concentrations in Influent Water

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene[2] (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
WI[4]-30-2	07/23/91	1300	170	71	22	100

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1 TVH = Total volatile hydrocarbons, EPA 8015 mod./5030
2 BTEX, analyses by EPA 8020/5030
3 ug/L = micrograms per liter or parts per billion (ppb)
4 WI = Well influent, i.e. wastewater from well prior to discharge into the primary holding tank

The actual concentrations of hydrocarbons in the released water are uncertain because average concentrations in the tank are substantially less than the influent. Previous analytical tests have indicated that effluent from the tank contains no detectable concentrations of hydrocarbons. Biodegradation is occurring within the closed top tank.

The ACHCSA and the Regional Water Quality Control Board (RWQCB) were notified of the release on Monday, July 22, 1991. On Wednesday, July 24, 1991, Mr. Paul Smith of the ACHCSA met with SCI at the site. During the visit SCI obtained 2 samples of the soil in the release area. Mr. Smith observed the sampling locations. The samples were obtained using hand sampling equipment. One soil sample was obtained from 6 to 12 inches beneath the groundsurface and another from 2 to 2 1/2 feet beneath the groundsurface. Both samples appeared wet indicating that the release had seeped deeper than 2 1/2 feet below the groundsurface. The samples were retained in brass liners. The ends of the sample liners were covered with

Teflon sheets before capping, sealing with plastic tape and labeling. Both samples were refrigerated on-site and transported to the analytical laboratory with a chain-of-custody record. Analytical testing was performed by Curtis & Tompkins, Ltd., a State of California Department of Health Services (DHS) certified analytical laboratory. The samples were analyzed for total volatile hydrocarbons, as gasoline, using EPA method 8015 modified/5030 and for benzene, toluene, ethylbenzene and xylene, (BTEX) using EPA method 8020/5030. The analytical test results are presented below. Analytical test reports are attached.

Table 2.
Contaminant Concentrations in Soil

Sample	Sampling Date	TVH[1] (mg/kg)[3]	Benzene (ug/kg)[4]	Ethyl Toluene (ug/kg)	Total Benzene (ug/kg)	Xylenes (ug/kg)
TOF-1 @ 6"	7/24/91	ND[5]	ND	ND	ND	ND
TOF-1 @ 24"	7/24/91	ND	ND	ND	ND	ND

1 TVH = total volatile hydrocarbons, EPA 8015 mod./5030
2 BTEX, analyses by EPA 8020/5030
3 mg/kg = milligrams per kilogram or parts per million (ppm)
4 ug/kg = micrograms per kilogram or parts per billion (ppb)
5 ND = None detected, chemicals not present at concentrations above detection limits, see test reports for detection limits.

Conclusions

The analytical test results indicate that no detectable concentrations of petroleum hydrocarbons are present in the soil in the area of the release. In our opinion, the release of water has not created any condition worthy of remediation or further study. The groundwater treatment system has been repaired and precautions have been implemented to prevent future overtopping problems.

If you have any questions or require further documentation of the event, please call.

Yours very truly,

Subsurface Consultants, Inc.

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

SOC:JPB:sld

Attachments: Plate 1 - Site Plan
Analytical Test Reports
Chain-of-Custody Documents
HSR Letter Dated July 26, 1991

cc: Mr. Paul Smith, ACHCSA
Ms. Lois Parr, Oakland Redevelopment Agency
Mr. John Esposito, Bramalea Pacific
Mr. Matt Sherrill, Bramalea Pacific
Mr. Donnell Choy, City of Oakland

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

DATE RECEIVED: 07/24/91
DATE REPORTED: 07/25/91

LAB NUMBER: 104592

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.017

LOCATION: MLK

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104592
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.017
LOCATION: MLK

DATE RECEIVED: 07/24/91
DATE ANALYZED: 07/24/91
DATE REPORTED: 07/25/91

Total Volatile Hydrocarbons with BTXE in Soils and Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
104592-1	TOF-1 @ 6"	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
104592-2	TOF-1 @ 24"	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

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

QA/QC SUMMARY

RPD, %	6
RECOVERY, %	94

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK

SCI Job Number: 430.017

Project Contact at SCI: Sean Carson

Sampled By: Charles Pearson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid -24 hr.

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
TOF-1@6"	S	T	7-24-91		TVH + BTXE	8015/8020
TOF-1@24"	S	T	7-24-91		TVH + BTXE	8015/8020

* * * * * *

Released by: [signature] Received by: ______ Date: 7-24-91

Released by: ______ Received by: ______ Date: ______

Received by Laboratory: [signature] Date: 7/25/91

Released by Laboratory: ______ Date: ______

Released by: ______ Date: ______

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

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

H S R Inc.

3851 Charter Park Drive, Suite A • San Jose, California 95136 • Phone 408-265-4300 Fax 408-265-1664

July 26, 1991

Mr. Jim Bowers
Subsurface Consultants, Inc.
171 12th St., Suite 201
Oakland, CA 94607

Dear Jim:

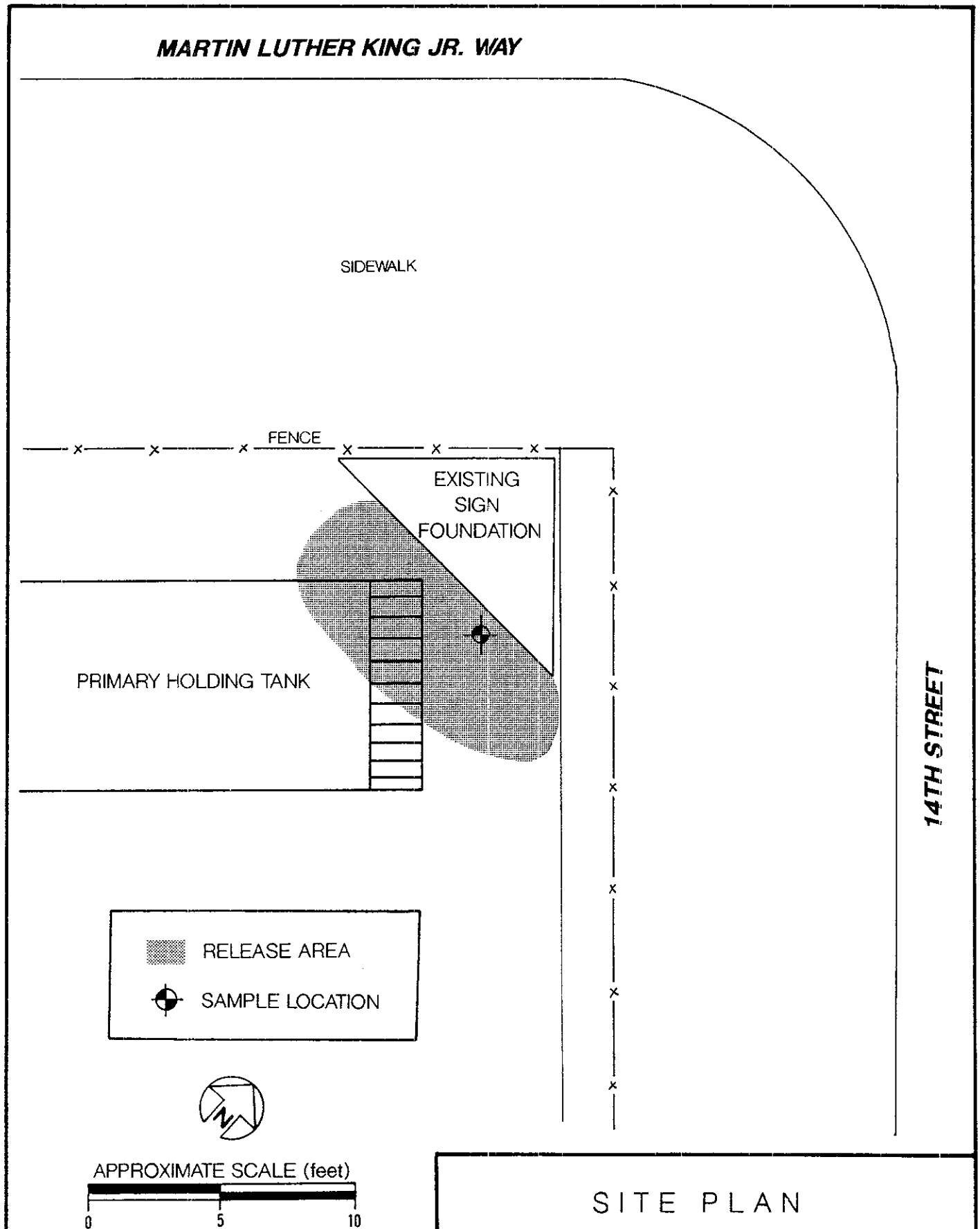
On Sunday, July 21, 1991 I witnessed the overflow of water from the water treatment facility located at the intersection of 14th and Martin Luther King Jr. Way in Oakland. At the time of my arrival at approximately 12:30 P.M., very little water had escaped from the treatment system storage tank. No water encroached upon the sidewalk, gutter, or storm drains in the area.

In order to stop the flow of water, I tripped the circuit breaker that governed the downwell pump which was delivering water to the storage tank.

If you have any questions regarding this matter, please do not hesitate to contact me at (408) 265-4300.

Graciously,

Denny McIlvaine
Project Manager



SITE PLAN

Subsurface Consultants

1330 MARTIN LUTHER KING JR. WAY

JOB NUMBER	DATE	APPROVED
430.017	7/25/91	

PLATE 1

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

91 JUL 11 PM 2:33

July 10, 1991
SCI 430.010

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

Quarterly Monitoring Report #5 (April 10 thru July 10, 1991)
Wastewater Discharge Permit #001-00009
1330 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Meckel:

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

During the fifth quarter of operation (April 10, 1991 through July 10, 1991) approximately 527,670 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 29 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 fifth quarter are presented in Table 1. Analytical test reports and Chain-of-Custody documents are also attached.

Extraction Well #1 (EW-1) has not been operating during the fifth quarter. Extraction Well #2 (EW-2) has been pumping approximately 4 gallons per minute (gpm) during the fifth quarter.

The analytical test results indicate that biological activity within the primary holding tank, which was documented in previous quarterly reports, is on-going. Hydrocarbon concentrations of up to approximately 6200 parts per billion (ppb) are entering the primary holding tank and not more than 1.7 ppb of hydrocarbons have

been recorded leaving the tank before passing through the carbon treatment system. Consequently, hydrocarbon loading of 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)

SOC:JPB:ddh

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

cc: Mr. John Esposito
Bramalea Pacific

Ms. Lois Parr
Oakland Redevelopment Agency, OEDE

Mr. Paul Smith
ACHCSA

Mr. Lester Feldman
RWQCB

Mr. Donnell Choy
City of Oakland

Mr. Roy Ikeda
Crosby, Heafey, Roach and May

Table 1. Contaminant Concentrations In Water

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene[2] (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
WI[4]-26-2[5]	04/10/91	3400	450	260	38	310
I[6]-26		ND[7]	ND	ND	ND	1.7
B[8]-26		ND	ND	ND	ND	ND
E[9]-26		ND	ND	ND	ND	ND
WI-27-2	04/24/91	2900	310	180	23	330
I-27		ND	ND	ND	ND	ND
B-27		ND	ND	ND	ND	ND
E-27		ND	ND	ND	ND	ND
WI-28-2	05/24/91	6200	580	380	79	420
I-28		NR[10]	ND	ND	ND	ND
B-28		NR	ND	ND	ND	ND
E-28		NR	ND	ND	ND	ND
WI-29-2	06/24/91	1300	150	56	22	92
I-29		NR	ND	ND	ND	ND
B-29		NR	ND	ND	ND	ND
E-29		NR	ND	ND	ND	ND

---

1 TVH = Total volatile hydrocarbons, EPA 8015/5030

2 BTEX, Analyses by EPA 8020/5030

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

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

5 -2 indicates sample from Extraction Well #2

6 I = Influent at primary carbon vessel

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

8 B = Between carbon vessels

9 E = Effluent

10 NR = Test not requested

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

DATE RECEIVED: 04/10/91
DATE REPORTED: 04/16/91

LAB NUMBER: 103501

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: FOUR WATER SAMPLES

PROJECT ID: 430.010
LOCATION: MLK EXTRATION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103501
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 04/10/91
DATE ANALYZED: 04/11/91
DATE REPORTED: 04/16/91

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)
103501-1	WI-26-2	3,400	450	260	38	310
103501-2	I-26	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	1.7
103501-3	B-26	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103501-4	E-26	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, %	101

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: 103626

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010
LOCATION: MLK EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103626
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK EXTRACTION

DATE RECEIVED: 04/24/91
DATE ANALYZED: 04/26/91
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)
103626-1	WI-27-2	2,900	310	180	23	330
103626-2	I-27	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103626-3	B-27	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103626-4	E-27	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, %	102

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

DATE RECEIVED: 05/28/91
DATE REPORTED: 06/04/91

LAB NUMBER: 103929

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103929
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 05/28/91
DATE ANALYZED: 05/31/91
DATE REPORTED: 06/04/91

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)
103929-2	I-28	ND	ND	ND	ND	0.5
103929-3	B-28	ND	ND	ND	ND	0.5
103929-4	E-28	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	112

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103929
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 05/28/91
DATE ANALYZED: 05/31/91
DATE REPORTED: 06/04/91

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)
103929-1	WI-28-2	6,200	580	380	79	420

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	112

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

DATE RECEIVED: 06/25/91
DATE REPORTED: 06/28/91

LAB NUMBER: 104273

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.010

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104273
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 06/25/91
DATE ANALYZED: 06/28/91
DATE REPORTED: 06/28/91

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)
104273-1	WI-29-2	1,300	150	56	22	92

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 104273
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 06/25/91
DATE ANALYZED: 06/27/91
DATE REPORTED: 06/28/91

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)
104273-2	I-29	ND	ND	ND	ND	0.5
104273-3	B-29	ND	ND	ND	ND	0.5
104273-4	E-29	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	103

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK GW Ext.

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins Ltd.

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-26-2	W	V×2	4/10/91		TVH/BTXE	
I-26	W	V×2	4/10/91		TVH/BTXE	
B-26	W	V×2	4/10/91		TVH/BTXE	
E-26	W	V×2	4/10/91		TVH/BTXE	

* * * * * *

Released by: [signature] ~~Received~~ by: _____ Date: 4/10/91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 4/10/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: C+T

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-27-2	W	V×2	4/24/91		TVH/BTXE	
I-27	W	V×2	4/24/91		TVH/BTXE	
B-27	W	V×2	4/24/91		TVH/BTXE	
E-27	W	V×2	4/24/91		TVH/BTXE	

* * * * * *

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: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: MLK GW Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-28-2	W	V x 3	5/24/91		TVH/BTXE	
I-28	W	V x 2	5/24/91		BTXE	
B-28	W	V x 2	5/24/91		BTXE	
E-28	W	V x 2	5/24/91		BTXE	

* * * * * *

Released by: [signature] Received by: _____ Date: 05/28/91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 5/28/91 0845

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK Gold Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-29-2	W	V x 3	6/24/91		TVH/BTXE	
I-29	W	V x 2	6/24/91		BTXE	
B-29	W	V x 2	6/24/91		BTXE	
E-29	W	V x 2	6/24/91		BTXE	

* * * * * *

Released by: D. Cleveland Received by: _____ Date: 6/25/91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: Joanne Deaths Date: 6/25/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

June 18, 1991
SCI 430.015

Mr. William Meckel
East Bay Municipal Utility District
Wastewater Department MS 59
P.O. Box 24055
Oakland, California 94623

Garage 2 Site Source Addition
Wastewater Discharge
1330 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Meckel:

This letter serves to notify you of our intent to treat and discharge groundwater from an additional source at the referenced facility. The treated water will be discharged into the East Bay Municipal Utility District (EBMUD) sanitary sewer under permit number 001-0009. The contaminated water resulted from a leaking underground gasoline tank.

The new source of contaminated groundwater will be from temporary dewatering during construction of the City of Oakland Garage 2 project. The contaminated water exists near the corner of 12th Street and Martin Luther King Jr. Way in Oakland. Approximately 3000 gallons of water from this location was treated and discharged under the existing permit in September, 1990 and documented in a letter to you dated September 24, 1990.

A summary of the analytical test results performed on the contaminated groundwater is presented in Table 1. The water samples were obtained from pits excavated within the contaminated area.

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

Table 1
Contaminant Concentrations in Groundwater
From the Garage 2 Site

Sample	TPH[1] (mg/L)[3]	Benzene (ug/L)[4]	Toluene (ug/L)[1]	Xylene (ug/L)[1]	Ethyl-Benzene (ug/L)	Other VOCs[2] (ug/L)	Chloro-form (ug/L)[3]	PCE[5] (ug/L)
GW-1	0.140	0.7	5.4	57	2.9	ND	3.1	5.5
GW-2	0.840	8	100	430	46	ND	4.0	9.9

1 TPH = Total Petroleum Hydrocarbons, EPA 8015/5030
2 VOCs = Volatile Organic Compounds, EPA 8010/5030
3 mg/L = milligrams per liter or parts per million (ppm)
4 ug/L = micrograms per liter or parts per billion (ppb)
5 PCE = tetrachloroethene

Additionally, trace levels of several heavy metals were detected in the water samples. The results are indicated on the attached analytical test reports.

The treatment plant performance has been excellent to date. The analytical results from 27 sampling events, indicate that organic compounds are being adsorbed by the granular activated carbon (GAC) and no detectable concentrations of hydrocarbons are being discharged into the EBMUD sanitary sewer system.

We anticipate that groundwater will be extracted from the Garage 2 site for several months at a maximum rate of approximately 15,000 gallons per day. The concentrations of contaminants in the water from the Garage 2 site are substantially less than that currently being treated by the system. Consequently, we conclude that the discharge should have little or no effect on system performance.

We propose to continue monitoring treatment plant performance in accordance with our existing approved monitoring program. However, we will additionally analyze the treated water for volatile organic compounds (EPA 8010) to monitor the removal of tetrachloroethene (PCE). A flow meter will be installed on the Garage 2 discharge line so that volumes can be accurately measured and reported to you.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

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

Attachments: Analytical Test Reports

1 copy: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94621

1 copy: Ms. Lois Parr
City of Oakland - OEDE
1333 Broadway, Suite 900
Oakland, California 94612

1 copy: Mr. Paul Smith
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California 94621

1 copy: Mr. Lester Feldman
California Regional Water Quality Control Board
1800 Harrison Street, Suite 700
Oakland, California 94612

1 copy: Mr. Donnell Choy
City of Oakland
505 14th Street, 12th Floor
Oakland, California 94612

1 copy: Mr. Roy Ikeda
Crosby, Heafey, Roach and May
1999 Harrison Street
Oakland, California 94612

SOC:JPB:sld

CAM 17 TOTAL METALS ANALYSIS

PROJECT NAME: BRAMALEA PACIFIC
PROJECT NUMBER: 90C0028A
PROJECT MANAGER: GEORGE FORD

COC#: 900197
CONC UNITS: mg/L
METHOD: 6010 & 7000
MATRIX: WATER

WCC LAB ID: / SAMPLE ID: / DATE ANALYZED	METHOD BLANK 9-19-90	900197-01-05 GW1 9-19-90	900197-02-05 GW2 9-19-90	DETECTION LIMIT	STLC LIMITS (mg/L)	TTLC LIMITS (mg/kg)
ANTIMONY	ND	0.27	0.48	0.05	15	500
ARSENIC	ND	0.005	0.007	0.001	5.0	500
BARIUM	ND	0.28	0.66	0.05	100	10000
BERYLLIUM	ND	ND	ND	0.007	0.75	75
CADMIUM	ND	0.02	0.06	0.02	1.0	100
CHROMIUM	ND	0.17	0.49	0.02	560	2500
COBALT	ND	ND	0.18	0.05	80	8000
COPPER	ND	0.02	0.07	0.01	25	2500
LEAD*	ND	ND	0.07	0.05	5.0	1000
MERCURY	ND	0.0006	0.0004	0.0002	0.2	20
MOLYBDENUM*	ND	ND	ND	0.02	350	3500
NICKEL*	ND	0.12	0.26	0.03	20	2000
SELENIUM*	ND	ND	ND	0.05	1.0	100
SILVER	ND	ND	0.04	0.02	5	500
THALLIUM*	ND	ND	ND	0.08	7.0	700
VANADIUM*	ND	0.09	0.16	0.01	24	2400
ZINC	ND	0.14	0.27	0.05	250	5000

* - ANALYZED BY STC SANTA ROSA

REVIEWED BY:

Woodward-Clyde Consultants

BENZENE, TOLUENE, ETHYLBENZENE, XYLENES DATA SHEET

CLIENT: BRAMELEA PACIFIC
PROJECT: 900028A
PROJ.MGR.: GEORGE FORD

DATE RECEIVED: 09-17-90
METHOD ID: 8020
UNITS: ug/L

WCC LAB ID:	METHOD	900197-01-02	900197-02-02
SAMPLE ID LINE 1:	BLANK	GW1	GW2
SAMPLE ID LINE 2:			
DATE SAMPLED:		09-17-90	09-17-90
DATE ANALYZED:	09-17-90	09-17-90	09-17-90
DETECTION LIMIT:	1	0.5	5
BENZENE	ND	0.7	8
TOLUENE	ND	5.4	110
ETHYLBENZENE	ND	2.9	46
XYLENES	ND	57	430

QUALITY ASSURANCE INFORMATION

AVG REC #1	AVG REC #2	AVG RPD
82	85	4

ND - NOT DETECTED: SAMPLE CONTAINED THE PARAMETER BELOW THE PRACTICAL QUANTITATION LIMIT.

REVIEWED BY:

Woodward-Clyde Consultants

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT: BRAMALEA PACIFIC
PROJECT: 90C0028A
PROJ.MGR.: GEORGE FORD

DATE RECEIVED: 09-17-90
METHOD ID: 602
UNITS: ug/L

WCC LAB ID:	METHOD	900197-01-01	900197-02-01
SAMPLE ID LINE 1:	BLANK	GW1	GW2
SAMPLE ID LINE 2:			
DATE SAMPLED:		09-17-90	09-17-90
DATE ANALYZED:	09-17-90	09-17-90	09-17-90
DETECTION LIMIT:	0.5	0.5	0.5
BENZENE	ND	0.7	8
TOLUENE	ND	5.4	110
CHLOROBENZENE	ND	ND	ND
ETHYLBENZENE	ND	2.9	46
1,3-DICHLOROBENZENE	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND

QUALITY ASSURANCE INFORMATION

AVG REC #1	AVG REC #2	AVG RPD
82	85	4

ND - NOT DETECTED: SAMPLE CONTAINED THE PARAMETER BELOW THE PRACTICAL QUANTITATION LIMIT.

REVIEWED BY:

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 8015

COC# 900197

PROJECT NAME: BRAMALEA PACIFIC
PROJECT NUMBER: 90C00258
PROJECT MANAGER: GEORGE FORD

WCC LAB ID	SAMPLE ID	MATRIX	COLLECTION DATE	EXTRACTION DATE	ANALYSIS DATE	DETECTION LIMIT (UG/L)	TPH (UG/L)
METHOD BLANK	-	WATER	-	09-17-90	09-17-90	50	ND
900197-01-02	GW1	WATER	09-17-90	09-17-90	09-17-90	50	140
900197-02-02	GW2	WATER	09-17-90	09-17-90	09-17-90	50	840

Quantitated as Leaded Gasoline.

REVIEWED BY:

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT: BRAMELEA PACIFIC
PROJECT: 90C0028A
PROJ.MGR.: GEORGE FORD

DATE RECEIVED: 09-17-90
METHOD ID: 8010
UNITS: ug/L

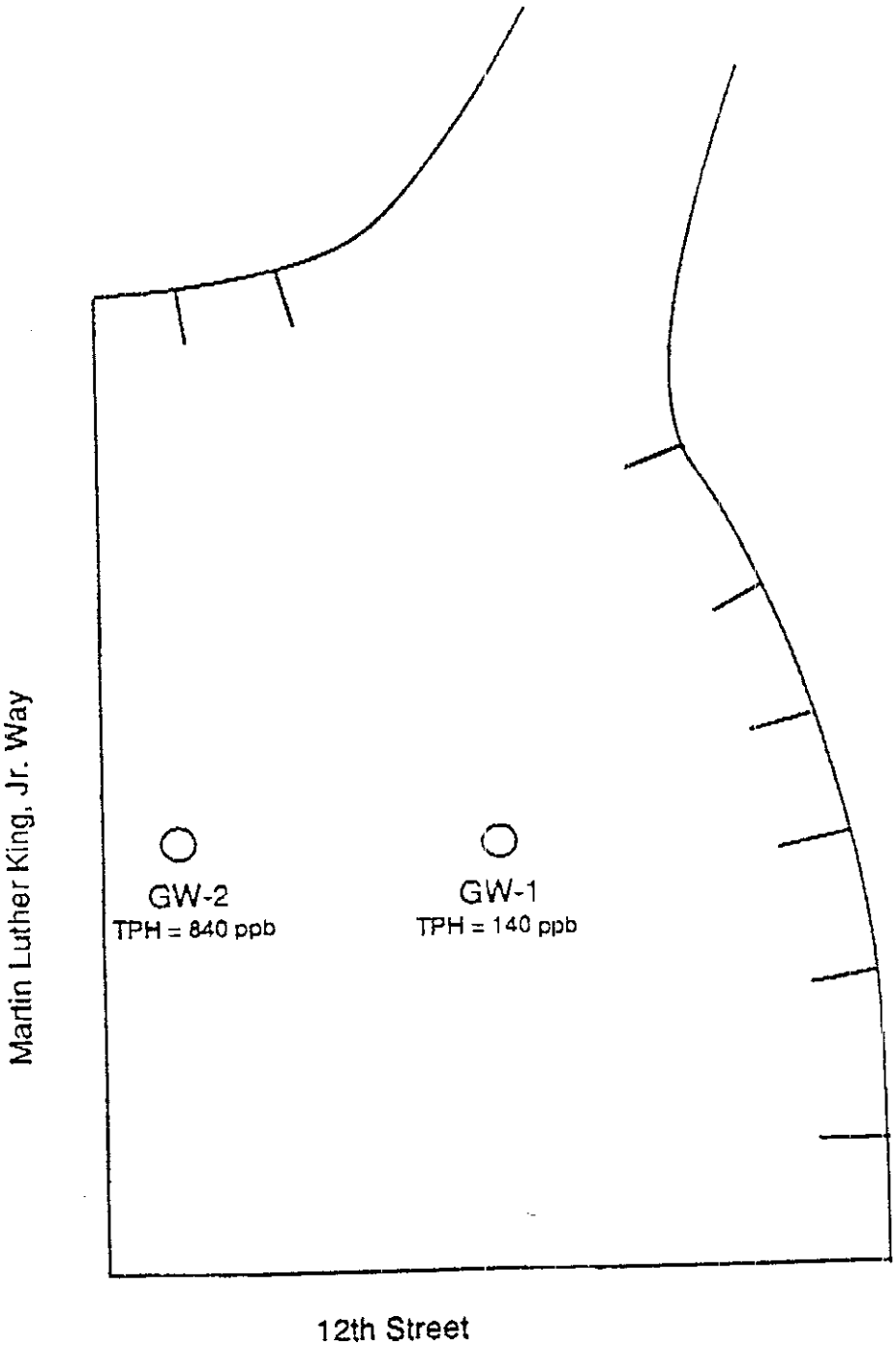
WCC LAB ID:	METHOD	900197-01-01	900197-02-01
SAMPLE ID LINE 1:	BLANK	GW1	GW2
SAMPLE ID LINE 2:			
DATE SAMPLED:		09-17-90	09-17-90
DATE ANALYZED:	09-17-90	09-17-90	09-17-90
DETECTION LIMIT:	0.5	0.5	0.5
BROMODICHLOROMETHANE	ND	ND	ND
BROMOFORM	ND	ND	ND
BROMOMETHANE	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND
CHLOROBENZENE	ND	ND	ND
CHLOROETHANE	ND	ND	ND
2-CHLOROETHYLVINYL ETHER	ND	ND	ND
CHLOROFORM	ND	3.1	4.0
CHLOROMETHANE	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND
DICHLORODIFLUOROMETHANE	ND	ND	ND
1,1-DICHLOROETHANE	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND
1,1-DICHLOROETHENE	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND
TETRACHLOROETHENE	ND	5.5	9.9
1,1,1-TRICHLOROETHANE	ND	ND	ND
1,1,2-TRICHLOROETHANE	ND	ND	ND
TRICHLOROETHENE	ND	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND

QUALITY ASSURANCE INFORMATION

AVG REC #1	AVG REC #2	AVG RPD
100	114	12

ND = NOT DETECTED: SAMPLE CONTAINED THE PARAMETER BELOW THE PRACTICAL QUANTITATION LIMIT.

REVIEWED BY:



Note: not to scale

Legend:

○ Location of water sample

Project No. 90C0028A	City Center Garage II	Water Sampling Locations Base of Excavation	
Woodward-Clyde Consultants			

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

91 APR 12 AM 9:56

April 10, 1991
SCI 430.010

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

Quarterly Monitoring Report #4
Wastewater Discharge Permit #001-00009
1330 Martin Luther King Jr. Way
Oakland, California 94612

Dear Mr. Meckel:

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

During the fourth quarter of operation (January 10, 1991 through April 9, 1991) approximately 333,620 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 25 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 fourth quarter are presented in Table 1. Analytical test reports and Chain-of-Custody documents are also attached.

The groundwater pumping and treatment system were not operational between 12/12/90 and 2/13/91. Groundwater from 2 extraction wells was processed by the treatment system when pumping resumed on February 13, 1991. Extraction wells 1 and 2 (EW-1 and EW-2) pumped 2 gallons per minute (gpm) each until 3/18/91 when EW-2 was adjusted to 4 gpm. On 3/24/91 the pump from EW-1 ceased functioning and is presently not operational. EW-2 continues to extract approximately 4 gpm. EW-2 is approximately 45 feet east of EW-1 and is located within the same contaminant plume.

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

The analytical test results indicate that biological activity within the primary holding tank, which was documented in the second and third quarterly reports is on-going. Hydrocarbon concentrations of up to approximately 3600 parts per billion (ppb) are entering the primary holding tank and not more than 150 ppb of hydrocarbons are leaving the tank before passing through the carbon treatment system. Therefore, hydrocarbon loading of 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)

SOC:RWR:ddh

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

cc: Mr. John Esposito
Bramalea Pacific

Ms. Lois Parr
Oakland Redevelopment Agency, OEDE

Ms. Katherine Chesick
ACHCSA

Mr. Lester Feldman
RWQCB

Mr. Donnell Choy
City of Oakland

Mr. Roy Ikeda
Crosby, Heafey, Roach and May

Table 1. Contaminant Concentrations In Water

Sample	Sampling Date	TVH[1] (ug/L)[3]	Benzene[2] (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
WI[4]-23-1[5]	02/27/91	3600	830	430	24	310
WI-23-2[6]		3200	460	350	70	440
I[7]-23		150	0.7	2.4	ND[8]	25
B[9]-23		ND	ND	ND	ND	ND
E[10]-23		ND	ND	ND	ND	ND
WI-24-1	03/13/91	1300	410	49	1.6	120
WI-24-2		2000	360	120	25	270
I-24		ND	ND	ND	ND	ND
B-24		ND	ND	ND	ND	ND
E-24		ND	ND	ND	ND	ND
WI-25-2	03/28/91	2800	450	180	29	230
I-25		96	2.3	0.8	ND	0.5
B-25		ND	ND	ND	ND	ND
E-25		ND	ND	ND	ND	ND

---

1 TVH = Total volatile hydrocarbons, EPA 8015/5030

2 BTEX, Analyses by EPA 8020/5030

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

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

5 -1 indicates sample from Extraction Well #1

6 -2 indicates sample from Extraction Well #2

7 I = Influent at primary carbon vessel

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

9 B = Between carbon vessels

10 E = Effluent

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

DATE RECEIVED: 02/27/91
DATE REPORTED: 03/04/91

LAB NUMBER: 103104

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: FIVE WATER SAMPLES

PROJECT ID: 430.010
LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103104
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 02/27/91
DATE ANALYZED: 03/01/91
DATE REPORTED: 03/04/91

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)
103104-1	WI-23-1	3,600	830	430	24	310
103104-2	WI-23-2	3,200	460	350	70	440
103104-3	I-23	150	0.7	2.4	ND(0.5)	25
103104-4	B-23	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103104-5	E-23	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, %	89

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

DATE RECEIVED: 03/13/91
DATE REPORTED: 03/19/91

LAB NUMBER: 103231

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: FIVE WATER SAMPLES

PROJECT ID: 430.010
LOCATION: MLK GW TREATMENT

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103231
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.010
LOCATION: MLK GW TREATMENT

DATE RECEIVED: 03/13/91
DATE ANALYZED: 03/18/91
DATE REPORTED: 03/19/91

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)
103231-1	WI-24-1	1,300	410	49	1.6	120
103231-2	WI-24-2	2,000	360	120	25	270
103231-3	I-24	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103231-4	B-24	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
103231-5	E-24	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, %	83

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

QA/QC Approval

Final Approval

Curtis & Tomkins, Ltd

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 GW Extraction

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Fernando Velez

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-23-1	W	V x 2	2-27-91		TVH/BTXE	
WI-23-2	W	V x 2			TVH/BTXE	
I-23	W	V x 2			TVH/BTXE	
B-23	W	V x 2			TVH/BTXE	
E-23	W	V x 2			TVH/BTXE	

* * * * * *

Released by: [signature] Received by: _____ Date: 2-27-91

Released by: _____ Received by: _____ Date: _____

Received by Laboratory: [signature] Date: 2/27/91

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: MLK GW Treatment

SCI Job Number: 430.010

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Normal

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
WI-24-1	W	V x 2	3/13/91		TVH/BTXE	
WI-24-2	W	V x 2	3/13/91		TVH/BTXE	
I-24	W	V x 2	3/13/91		TVH/BTXE	
B-24	W	V x 2	3/13/91		TVH/BTXE	
E-24	W	V x 2	3/13/91		TVH/BTXE	

* * * * *

Released by: [signature] Received by: 03/13/91 Date:

Released by: Received by: Date:

Received by Laboratory: [signature] Date: 3/13/91

Released by Laboratory: Date:

Released by: Date:

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

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

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: Martin Luther King Jr. 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[1]	Container Type[2]	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	"		"	
~~WI-25-W~~	~~W~~	~~2 x Voa~~	"			
WI-25-2	W	2 x Voa	"		TVH BTEX	
I-25	W	2 x Voa	"		"	
B-25	W	2 x Voa	"		"	
E-25	W	2 x Voa	"		"	

* * * * * *

Released by: Charles G Pearson Received by: J Keane Date: 3-28-91

Released by: _____ Received by: _____ Date: 3/29/91

Received by Laboratory: _____ Date: _____

Released by Laboratory: _____ Date: _____

Released by: _____ Date: _____

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

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

CITY CENTER GARAGE II
REMEDATION PROGRAM
CITY CENTER GARAGE II PARCEL
OAKLAND, CALIFORNIA

4-1591

Woodward-Clyde Consultants

Woodward-Clyde Consultants

CITY CENTER GARAGE II
REMEDATION PROGRAM
CITY CENTER GARAGE II PARCEL
OAKLAND, CALIFORNIA

Prepared for

Bramalea Pacific Inc. and
The Redevelopment Agency of the City of Oakland

April 15, 1991

Prepared by

Woodward-Clyde Consultants
500 12th Street, Suite 100
Oakland, CA 94607-4014

Woodward-Clyde Consultants

CITY CENTER GARAGE II
REMEDATION PROGRAM
CITY CENTER GARAGE II PARCEL
OAKLAND, CALIFORNIA

Prepared for

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April 15, 1991

Prepared by

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500 12th Street, Suite 100
Oakland, CA 94607-4014

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

April 17, 1991

Mr. Paul M. Smith
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

Subject: City Center Garage II Site Remediation Report

Dear Mr. Smith:

This letter transmits a copy of a recently completed report describing remediation activities undertaken to remove native soil containing gasoline and imported fill containing oil, grease and lead from the site of the proposed City Center Garage II. This site is bounded by 12th and 13th Streets and Jefferson Street and Martin Luther King Jr. Way in downtown Oakland.

Previous correspondence regarding this site has been sent to Ms. Katherine Chesick of your office. However, from our recent conversations with you, we understand that you are now the primary contact for projects located within the 94612 zip code, so we are sending this report to you. In accordance with our mutual understanding from previous projects in the area, we are also sending a copy of this report directly to Mr. Lester Feldman of the San Francisco Bay Regional Water Quality Control Board.

Official correspondence regarding this site should be addressed to:

Ms. Lois R. Parr
Redevelopment Agency of the City of Oakland
1333 Broadway, 9th Floor
Oakland, California 94612

Please send copies of official correspondence to:

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

91 APR 22 AM 12:47

I would also appreciate receiving copies of official correspondence. If you have questions regarding the remedial activities described in this report, please feel free to call me at 874-3203.

Yours truly,
WOODWARD-CLYDE CONSULTANTS

George A. Ford
Associate

Enclosure: Report: City Center Garage II Remediation Program, City Center Garage II Parcel, Oakland, California, April 15, 1991

cc: Mr. Lester Feldman, SFRWQCB (with report)
Ms. Lois R. Parr (transmittal only)
Mr. John Esposito (transmittal only)

500 12th Street
Suite 100
Oakland, CA 94607-4014
(415) 893-3600

Woodward-Clyde Consultants

April 15, 1991

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

Subject: City Center Garage II Remediation Program
Final Report

Dear Mr. Esposito:

We are pleased to submit our report for the City Center Garage II Remediation Program. This report describes the work completed to characterize, excavate and remediate the soil containing petroleum hydrocarbons at the site.

It has been a pleasure working with you on this project. If you have any questions, please do not hesitate to call.

Yours truly,

WOODWARD-CLYDE CONSULTANTS

George A. Ford
Senior Project Geologist

90C0028A2/COT

Enclosure

cc: Ms. Lois Parr
Office of Economic Development and Employment

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EXECUTIVE SUMMARY

Removal of Soil Containing Gasoline

Chemical analysis of soil and groundwater samples obtained from the site of the proposed City Center Garage II in downtown Oakland in mid-1989 indicated the southwest corner of the site contained soil with elevated concentrations of petroleum hydrocarbons as gasoline. The area of the site containing gasoline-bearing soil was beneath a gas station formerly located on the property. Additional investigations performed by WCC in late 1989 included soil sampling and chemical analysis. Results of this study indicated the gasoline-bearing soil occurred in a layer between the depths of 20 to 25 feet in a relatively narrow band across the southwestern corner of the site.

Various alternatives for remediation of the contaminated soil were evaluated. The method of soil remediation consisting of the excavation and on-site aeration of soil followed by off-site disposal was chosen as the most practical. Plans and specifications for the soil removal and treatment were prepared in February 1990, and a contractor was selected to perform the soil excavation and aeration.

In April through August, 1990, approximately 6600 bank cubic yards of soil were excavated from the site and stockpiled on the site and the adjacent "Old Firehouse Site." The excavation was extended downward to within approximately one foot of the groundwater surface in most parts of the excavation. Portions of the excavation were extended to depths of 4 to 7 feet below groundwater to remove contaminated soil occurring below the groundwater. The areas excavated below the groundwater level were backfilled with uncontaminated sandy fill borrowed from other areas of the site to elevations approximately one foot above the groundwater surface.

Approximately 650 cubic yards of uncontaminated soil from the excavation were used to backfill an open excavation on the adjacent Old Firehouse site. The remaining soil was aerated in accordance with the requirements of the Bay Area Air Quality Management District (BAAQMD) until no gasoline could be detected in the soil. The aerated soil was then disposed in two local Class III landfills, in accordance with local and State regulations.

Closure sampling performed at the bottom of the excavation showed no detectable gasoline remaining in the soil at the locations sampled. Closure sampling performed in the sides of the excavation indicate that gasoline remains in the soil in one area sampled in the west side of the excavation adjacent to Martin Luther King, Jr. Way at a depth of 20 to 25 feet. If required by regulatory agencies, decontamination of soil beyond the vertical limits of the garage basement may be accomplished most efficiently by means of a vapor extraction system during or after construction. Elevated concentrations of petroleum hydrocarbons were not detected in closure samples obtained from the eastern and northern sides of the excavation occurring within the interior of the site.

Removal of Fill

During the initial stages of the excavation of the gasoline-bearing soil, a five-foot-thick layer of surface fill (approximately 1300 cubic yards) was removed and stockpiled separately from native and gasoline-contaminated soils. Chemical analysis of fill samples indicated elevated concentrations of lead and oil and grease in the stockpiled fill.

Based on the occurrence of contaminated fill in the southwest corner of the site, WCC explored for fill immediately beneath the surface of the remainder of the site. A program of chemical analysis of soil samples collected from soil borings, test pits, and the excavated soil surface indicated irregular layer of fill up to a thickness of about 10 feet

covering native soil over the entire site. The fill was segregated based on field observations and the results of the analytical program.

Approximately 4000 cubic yards (6300 tons) of fill was: 1) a hazardous waste based on the concentration of oil and grease and/or lead; 2) contained concentrations of oil and grease and/or lead above Class II and Class III disposal limits. This material was disposed at a Class I landfill during July 1990.

Approximately 6800 cubic yards of fill, including the 1800-cubic-yard stockpile of fill from the gasoline excavation, was disposed at a Class III landfill from June through August 1990.

Closure sampling in the bottom of the fill removal area showed no detectable oil and grease, and total lead concentrations typical for area native soil at the locations sampled.

It is expected that dewatering for construction of the new garage foundation may produce groundwater from the southwest corner of the site containing gasoline or gasoline components. Contaminated groundwater may be collected separately and piped to the groundwater treatment system operated by the Agency at 14th Street and Martin Luther King Jr. Way, for treatment and discharge to EBMUD. Some segregation, treatment and disposal of backfill soil from the deep excavation may be required if the backfill soil is removed during foundation construction activities. Similarly, excavations for utility vaults beneath the sidewalk on 12th Street may encounter some soil containing gasoline that will require aeration and/or disposal at a Class III landfill.

1.0 INTRODUCTION

1.1 AUTHORIZATION AND SCOPE

This report presents the results of work performed to characterize, remove and dispose of soils containing petroleum hydrocarbons (gasoline), oil and grease and lead that were found on the site of the proposed City Center Garage II in Oakland, California. Woodward-Clyde Consultants (WCC) performed this work on behalf of Bramalea Pacific, Inc. (Bramalea). Bramalea is acting as the agent for the Redevelopment Agency of the City of Oakland (Agency). The services were performed in accordance with the December 20, 1989 Consulting Services Agreement between WCC and Bramalea.

The scope of services for this project was modified over the course of the project, but may generally be described as:

1) Reviewing available data and performing additional soil sampling as needed to characterize contaminated soils at the City Center Garage II site;

2) Developing a remedial program which is consistent with the objectives of Bramalea and the Agency; and

3) Carrying out the remedial program.

WCC began working on this phase of the project in December 1989. Site cleanup including treatment and disposal of soil excavated at the site was completed in November, 1990.

1.2 LIMITATIONS

This report was prepared in general accordance with the accepted standard of practice which exists in the San Francisco Bay Area at the time the investigation was performed. No other warranties are expressed or implied.

2.0
PREVIOUS INVESTIGATIONS

Pre-construction environmental investigations were conducted in 1989 at the site of the City Center Garage II by WCC under a separate contract with the Agency. The results of these studies are discussed in WCC's Environmental Site Assessment report dated September 5, 1989 and the Hydrocarbon Assessment report dated November 1989. The Environmental Site Assessment report consisted of four tasks: 1) collection of information on the site history; 2) review of regulatory agency records for lists of contaminated sites in the area; 3) installation of 12 soil borings and three groundwater monitoring wells with collection and laboratory analysis of soil and groundwater samples; and 4) interpretation of the data and presentation of conclusions.

Generally, the Environmental Site Assessment study concluded that Total Petroleum Hydrocarbons (TPH) as gasoline and low concentrations of organic solvents and phenol occurred in the soil and groundwater samples from beneath the former location of an automobile service station located at the corner of 12th Street and Martin Luther King Jr. Way, in the southwestern corner of the site.

WCC's recommendations included additional soil and groundwater sampling and analysis to more fully characterize the vertical and lateral extent and concentration of gasoline in the soil and groundwater at the former service station site.

These recommendations formed the basis for WCC's subsequent Hydrocarbon Assessment Study. In order to investigate the on-site plume of gasoline contamination, 15 additional borings were drilled and two groundwater

monitoring wells were installed in September 1989. Soil and groundwater samples were collected for laboratory analysis.

The conclusions of the November 1989 Hydrocarbon Assessment Study were as follows:

1) TPH as gasoline occurred in a layer between depths of 20 to 25 feet below the street and in a relatively narrow band across the southwestern corner of the site. The band probably extends off-site to the west. TPH-gasoline concentrations in soil ranged up to 11,000 ppm in samples taken adjacent to the Martin Luther King Jr. Way side of the site.

2) Concentrations of TPH-gasoline and benzene, toluene, ethyl benzene, and xylenes (BTEX) in the southwestern corner of the site were probably high enough to require groundwater remediation. The data suggested that a plume of hydrocarbons in groundwater may extend westward off-site, beneath Martin Luther King, Jr. Way.

Based on WCC's recommendation, the Agency elected to execute a program of soil remediation prior to construction of the new parking garage on the site.

3.0
EVALUATION OF MITIGATION ALTERNATIVES

3.1 RATIONALE FOR THE REMEDIATION PROGRAM

Initial investigations of the City Center Garage II site performed by WCC in 1989 indicated that relatively high concentrations of TPH-gasoline and BTEX occurred in a layer between depths of 20 to 25 feet in the southwestern corner of the site. The new City Center Garage II is proposed to be a multi-story structure with two levels of underground parking, requiring an excavation extending to approximately 23 to 25 feet below street level. Because it was clear that the contaminated soil would be encountered by the foundation excavation for the new garage, and because Bramalea and the Agency were concerned that the special soil handling and disposal procedures required might delay the project's construction contractor, it was concluded that it was preferable to remove the contaminated soil prior to the start of construction. Accordingly, WCC began an evaluation of the various means of removing the contaminated soil. The two principal excavation alternatives considered are described in the following sections.

3.2 UNSHORED EXCAVATION ALTERNATIVE

WCC evaluated an unshored excavation with 1H:1V side slopes. In this alternative, the excavation would encompass at least two lanes (approximately 25 feet) of both 12th Street and Martin Luther King, Jr. Way, and major utilities, including an underground 115 KV power line, a 12-inch water line, and a sanitary sewer line would require temporary support or relocation. In addition, the excavation would require temporary or permanent backfilling with imported or native fill material in order to

restore the sidewalk and streets before the start of garage construction. The costs associated with relocating utilities, restoring the streets and sidewalks and providing temporary backfill made this alternative substantially more costly than the shored excavation alternatives described below.

3.3 SHORED EXCAVATION ALTERNATIVE

WCC's evaluation indicated that a shored excavation with vertical walls was preferable because the overall expense would be less than the unshored alternative. The principal advantages of the shored excavation alternative are as follows: 1) no temporary backfilling would be required because the excavation could be left open until construction began; 2) no reexcavation would be required because the shoring could be incorporated into the later excavation for the parking structure; 3) no underground utilities would be exposed or relocated; and 4) the closing of streets to traffic and removal and restoration of the pavement and sidewalks would not be required. The shored excavation with vertical walls was selected by Bramalea and the Agency, and was incorporated by WCC into the plans and specifications prepared for the remediation project. The choice of the type of shoring system to be used was postponed until the contractor's bids could be evaluated.

4.0
SOIL REMOVAL OPERATIONS

4.1 CONTRACTOR SELECTION

Plans and specifications for excavation, aeration, and disposal of soil containing gasoline were prepared by WCC and incorporated into a solicitation and bid package prepared by Bramalea. In accordance with the requirements of the Agency, bids were solicited from interested contractors through public advertisements beginning February 12, 1990. Three responsive bids were received at the public bid opening on March 13, 1990. The contract to perform the work was awarded to the low bidder, HSR, Inc. of San Jose, California. HSR began site preparation work on April 2, 1990.

4.2 EXCAVATION OF SOIL

The initial excavation limits used in the plans and specifications were selected based on the results of chemical analysis of soil samples obtained during the November 1989 hydrocarbon assessment. This area covered approximately 10,000 square feet in the southwest corner of the parcel, as shown on Figure 1. Initial site preparation consisted of removing the asphalt concrete pavement and light standards. The asphalt was recycled. Excavation of soil began on April 6, 1990. A distinctive layer of soil interpreted as fill material was found to occur in a 5-foot-thick layer immediately beneath the asphalt. This dark brown to black soil containing brick fragments was stockpiled on the eastern side of the excavation.

Based on a lower bid price for a soil nail and shotcrete shoring system, the soil nailing alternative was selected to reinforce and shore

the excavation. The excavation process consisted of the removal and stockpiling of a 5-foot-thick layer of soil followed by the installation of a 5-foot-high row of soil nails and shotcrete. The installation of each lift of soil nails required 2 to 3 days. The first row of soil nails was installed beginning April 13, 1990.

During the soil nailing process, the excavation crew continued to work in the areas of the excavation more remote from the vertical faces adjacent to the streets. As the excavation progressed, hotspots of soil within the excavation and some soil nail auger cuttings drilled from beneath 12th Street and Martin Luther King, Jr. Way were found to contain gasoline. An approximately 10-foot-diameter area of soil believed to contain gasoline was identified beneath the fill approximately 40 feet east of Martin Luther King, Jr. Way and 90 feet north of 12th Street. On April 15, 1990, the hotspot was excavated to a depth of 22 feet using a track-mounted excavator to remove and separately stockpile the soil containing gasoline. The gasoline-bearing soil formed a cone which increased in diameter with increasing depth. This soil was removed and placed near the intersection of 14th Street and Martin Luther King, Jr. Way in a separate, covered stockpile.

As the excavation progressed, efforts were made to segregate soil containing gasoline from clean native soil prior to stockpiling. The volume of soil containing gasoline generally increased within each successive 5-foot-thick layer. The first through the fifth excavated lifts contained a percentage of gasoline-bearing soil of approximately 10%, 40%, 75%, 100%, and 100%, respectively. The gasoline-bearing soil was stockpiled in three stockpiles: 1) on the adjacent parking lot south of 13th Street; 2) near the northwest corner of the Old Firehouse Site (the adjacent block to the north bounded by 13th and 14th Streets and Jefferson Street and Martin Luther King, Jr. Way); and 3) on the closed portion of 13th Street adjacent to the City Center Garage II parcel. The clean soil was stockpiled near the northeast corner of the Old Firehouse Site.

Work on the lowermost level of soil nails began on May 8, 1990 after excavation of the final lift of soil. Excavation work was completed by May 11, 1990. The base of the excavation occurs at approximately 27 feet below the street elevation, or approximately elevation 6 to 7 feet, based on the City of Oakland Datum (C.O.O.D.). This elevation was approximately 0.5 foot above the water table. The approximate configuration of the completed excavation is shown in Figure 2.

5.0
SOIL DISPOSAL

5.1 AERATION OF SOIL CONTAINING GASOLINE

A total of 63 samples of the excavated soil were obtained and submitted for laboratory analysis at various times throughout the excavation and shoring process. The purpose of the analytical program was to measure the concentration of TPH-gasoline to evaluate whether the soil could be disposed of directly at a Class III landfill or would require aeration prior to the off-site disposal. Most Class III landfills specify that soil must contain less than 100 ppm TPH to be accepted for disposal. If the TPH concentration is greater than 100 ppm, the soil may be aerated to volatilize the hydrocarbons until concentrations are less than this threshold. For soil requiring aeration, the allowable rate of aeration is specified by the Bay Area Air Quality Management District (BAAQMD) based on the average concentration of TPH in the soil to be aerated.

Composite samples of excavated soil were obtained from four discrete samples in accordance with BAAQMD guidelines. The samples were retained in 2-inch-diameter by 4-inch-long brass liners. The ends were sealed using teflon sheeting placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromalab Inc., a State-certified subcontractor testing laboratory.

The analytical results are summarized in Table 1 and shown in Appendix B. The analytical results may be summarized as follows:

1) The reported concentration of TPH-gasoline ranged from zero to 1000 ppm in the analyzed samples. The average TPH concentration for soil samples from the three major stockpiles was 184 ppm, 250 ppm, and 14 ppm.

2) The reported concentration of total lead in the stockpiled soil ranged from 2.3 ppm to 29 ppm in the analyzed samples.

3) Oil and Grease was not detected in any of the 7 analyzed samples.

WCC reported the average TPH-gasoline concentrations by telephone to the BAAQMD on May 16, 1990 as required by BAAQMD regulation 8, rule 40, "Aeration of Contaminated Soil and Removal of Underground Storage Tanks", July 16, 1986.

Aeration operations on the two stockpiles averaging greater than 50 ppm TPH began on July 17, 1990. The aeration areas were located in the north and east sides of the Old Firehouse Site, in the closed portions of 13th Street and Jefferson Street and in the eastern portion of the City Center Garage II site. The aeration process involved spreading of soil from the stockpiles using a rubber-tired loader into lifts approximately 8 to 10 inches thick. The layer of soil was then rototilled several times per day using a tractor-powered rototiller. Aeration was considered complete when gasoline vapors became negligible and the concentration of hydrocarbon vapors as measured by an organic vapor detector became less than 100 ppm. After post-aeration sample collection, the aerated soil was stockpiled on-site for later hauling to a disposal site. Aeration of approximately 8400 bulk cubic yards of soil containing gasoline was completed in late October, 1990. Figure 3 shows typical locations on the site and the adjacent Old Firehouse site which were used for soil stockpiles and aeration operations.

5.2 DISPOSAL OF AERATED SOIL

Samples of the aerated soil were obtained for analysis to characterize the soil sufficiently for disposal in a local Class III landfill. Samples were obtained in accordance with the Leaking Underground Fuel Tank (LUFT) Field Manual, May 1988 and BAAQMD guidelines. Four discrete samples were collected from every approximately 50 cubic yards. These four samples were then composited at the analytical laboratory forming one composite sample for analysis. Samples were retained in four-inch brass liners with teflon sheeting placed between the soil and plastic end caps. The samples were placed in an ice chest with "blue ice" for shipment to Chromalab Analytical Laboratory under chain-of-custody control. The aerated soil samples were analyzed for TPH using EPA Method 8015, modified, and BTEX using EPA Method 8020. Selected samples were analyzed for total lead using EPA Method 3050/7420, extractable lead using EPA Method 3010/7420 with extraction as per CAM title 22 WET, diesel using EPA Method 3500/8015, and oil and grease using EPA Method 503 D&E.

The results of the laboratory analysis of the aerated soil samples are summarized in Table 1 and shown in Appendix B. The results of the soil analysis are summarized as follows:

1) No TPH, BTEX, diesel, or oil and grease were reported above detection limits in any of the 184 soil samples analyzed.

2) One hundred sixty post-aeration soil samples were analyzed for total lead. Total lead concentrations were reported to range from below the detection limit to 41.0 ppm. Of the 181 pre- and post-aeration soil samples analyzed for total lead, only 7, or 4%, contained reported concentrations of lead higher than the range of lead expected for clean native soil in downtown Oakland.

3) One hundred fifty samples were analyzed for extractable lead using the Waste Extraction Test. Concentrations of extractable lead were reported to range from below the detection limit to 1.98 ppm.

On May 4 and 7, 1990, approximately 600 bulk cubic yards of unaerated soil containing less than 100 ppm TPH-gasoline was hauled and disposed at the Redwood Sanitary Landfill, Novato, California. The concentration of TPH-gasoline in this soil was reported to range from below the detection limit (2.5 ppm) to 24 ppm with an average TPH concentration of 4 ppm. The reported concentration of total lead in three samples (DT1 through DT3) ranged from 5.0 ppm to 10 ppm, within the range of lead concentrations expected for native soil in downtown Oakland. The analytical results are summarized in Table 1 and shown in Appendix B. The sample numbers are DT1 through DT3 and DT9 through DT11.

After accepting approximately 600 cubic yards, the Redwood landfill refused to accept any additional soil from the entire City Center Garage II site based on the landfill's concerns regarding possible lead and oil and grease contamination of the soil. Redwood Landfill's concern focused on the occurrence of fill elsewhere on the site containing lead and oil and grease at concentrations above what was acceptable for disposal at the landfill. In the opinion of WCC, the Redwood's concern was unfounded because the soil proposed for disposal at Redwood Landfill was sampled and analyzed following standard practice and the all chemical analyses indicated the soil met the landfill's criteria for disposal.

Approximately 650 cubic yards of uncontaminated soil was segregated from hydrocarbon-bearing soil during the excavation of the second and third excavation lifts. This native soil was stockpiled at the northeast corner of the Old Firehouse Site. Eighteen soil samples from this stockpile were obtained for chemical analysis to document a lack of hydrocarbons in this soil. Samples of this unaerated soil were obtained in accordance with the guidelines in the Leaking Underground Fuel Tank (LUFT) Field Manual, May 1988. Four discrete samples were collected from every approximately 50

cubic yards. These four samples were then composited at the analytical laboratory forming one composite sample for analysis. Samples were retained in four-inch brass liners with teflon sheeting placed between the soil and plastic end caps. The samples were placed in an ice chest with "blue ice" for shipment to Chromalab under chain-of-custody control.

The 18 soil samples were analyzed for TPH using EPA Method 8015, modified and BTEX using EPA Method 8020. The analytical results are summarized in Table 1 and shown in Appendix B. The samples are designated CN5 through CN9, CN26 through CN33, and SC1 through SC5. No TPH-gasoline or BTEX was reported above detection limits in any of the 18 soil samples.

After consultation and agreement with Bramalea, the Agency and Subsurface Consultants, Inc. (the consultant for remedial work at the Old Firehouse Site), the 650 cubic yards of uncontaminated soil was placed in the excavated pit on the Old Firehouse Site for eventual use as compacted backfill.

An application for disposal of approximately 1700 cubic yards of aerated soil was submitted to Zanker Material Recovery Systems, Inc. (Zanker Road Landfill), San Jose, California on August 15, 1990. The landfill agreed to accept this soil. HSR hauled and disposed the soil at Zanker Road Landfill in late August 1990.

During efforts to locate a disposal site for the 1700-cubic-yard batch of aerated soil discussed above, an additional 1300 cubic yards of soils had been aerated. An application for disposal of this soil was submitted to Durham Road Landfill in Fremont, California. Despite repeated efforts to get a response from the landfill, no acceptance or denial of the application was ever received.

Chemical analysis of soil samples from several stockpiles containing approximately 1900 cubic yards of aerated soil indicated that extractable lead concentrations with the stockpiles exceeded those acceptable for

Mountain View Landfill, but fell within the range of concentrations acceptable to Zanker Road Landfill. WCC, therefore, submitted an application for disposal of the 1900-cubic-yard stockpile of aerated soil to the Zanker landfill on October 26, 1990. The soil was accepted for disposal and hauled to the landfill for disposal in late October.

Aeration was completed in mid-October 1990. After the initial disposal of soil in August, approximately 7000 cubic yards of soil were aerated and stockpiled. Because of inaction regarding the disposal application at Durham Landfill, WCC contacted other Class III landfills in the region regarding disposal of aerated soil. Mountain View Landfill in Mountain View, California was selected as the best disposal alternative based on disposal cost and acceptance criteria.

WCC submitted two separate applications for disposal of approximately 1450 bulk cubic yards and 3950 bulk cubic yards of aerated soil to the Mountain View Landfill on October 31, 1990 and November 6, 1990, respectively. Upon acceptance of the application, the aerated soil was hauled and disposed at Mountain View Landfill in mid-November, 1990.

6.0
FILL REMOVAL OPERATIONS

6.1 CHARACTERIZATION OF FILL

A 5-foot-thick layer of fill soil located immediately below the pavement surface in the area of the excavation was excavated and stockpiled adjacent to the east side of the excavation, separate from native soil. The location of this stockpile is shown on Figure 3.

Samples of the fill were obtained from the stockpile in order to characterize the chemical nature of the material so that disposal options could be evaluated. Eight samples were collected on April 9, 1990 for analysis to provide a preliminary characterization. The samples were retained in 2-inch diameter by 4-inch long brass liners hand-driven at the base of a one-foot-deep hole in the stockpile. Teflon sheeting was placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromalab.

The fill samples were analyzed for TPH-gasoline using EPA Method 8015, modified, BTEX using EPA Method 8020, and oil and grease using EPA Method 503 D&E. Selected samples were analyzed for CAM 17 metals. A composite sample composed of four discrete samples was analyzed for chlorinated pesticides using EPA Method 8080 and volatile organics using EPA Method 8270.

The results of the laboratory analysis of the fill soil samples are summarized in Table 2 and shown in Appendix B. These fill samples are

numbered FL-1 through FL-8. The results of the soil analysis are summarized as follows:

1) No TPH - gasoline or BTEX was detected above detection limits in any of the 8 samples.

2) Thhe concentration of oil and grease was reported to range from below the detection limit (50 ppm) to 66 ppm.

An additional eight samples were obtained on May 4, 1990 for analysis to provide additional chemical characterization of the fill. The samples were retained in 2-inch diameter by 4-inch long brass liners hand-driven at the base of a one-foot-deep hole in the stockpile. Teflon sheeting was placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromalab Analytical Laboratory.

The fill samples were analyzed for total lead using EPA Method 3050/7420, extractable lead using EPA Method 3010/7420 with extraction per CAM Title 22 WET, and oil and grease using EPA Method 503 D&E.

The results of the laboratory analysis of the fill soil samples are summarized in Table 2 and shown in Appendix B. These samples are designated FL-9 through FL-16. The results of the soil analysis are summarized as follows:

1) The concentration of total lead was reported to range from 37 ppm to 86 ppm in the analyzed samples.

2) The concentration of extractable lead, extracted as per WET procedures, was reported to range from 0.2 ppm to 0.8 ppm in the analyzed samples.

3) The concentration of oil and grease was reported to range from below the detection limit (50 ppm) to 100 ppm in the analyzed samples.

The occurrence of extractable lead concentrations exceeding 0.5 ppm limited the available Class III landfill disposal options. Zanker landfill in San Jose was the only Bay Area landfill identified that could accept the fill. The results of chemical analysis of the fill were transmitted to the landfill. After acceptance of the soil by the landfill, HSR, Inc. hauled the approximately 1300-cubic-yard stockpile of fill to Zanker Landfill in late June 1990.

Based on the occurrence of elevated lead and oil and grease in the surface fill removed from the gasoline excavation area, additional shallow borings were drilled on the rest of the site in order to characterize the lead and oil and grease content of other surficial fill on the site.

The initial fill investigation consisted of drilling nine borings on June 1, 1990 to explore the thickness and chemical characteristics of fill over the rest of the site. The borings were drilled to depths of between 6 feet and 11 feet using 8-inch, hollow stem augers. The locations of the soil borings, designated FL1 through FL9, are shown on Figure 4. The borings were advanced to slightly below the contact between the fill material and native soil. The depth of this contact was interpreted by WCC field personnel based on the appearance of the recovered soil samples. The thickness of the fill layer identified in the borings varies from about 4 feet to 10 feet but averaged approximately 5 feet.

Soil samples for chemical analysis were obtained at selected depths within the fill in each boring using a 2-inch inside-diameter drive sampler. Samples were generally obtained at depths of 3 feet in the fill material and 6 feet in native soil. The samples were retained in brass liners capped with teflon sheeting and plastic end caps. The soil sampler was cleaned between each sample and between borings by washing in an

Alconox detergent and tap water solution followed by a tap water rinse. Soil samples were immediately placed in an ice chest with "blue ice" for transport to Chromalab Analytical Laboratory under chain-of-custody control. Logs of the borings showing the depth of the contact between fill and native soil and the depth of soil samples are included in Appendix A.

Eleven soil samples of the fill were analyzed for oil and grease using EPA Method 503 D&E, total lead using EPA Method 3050/7420, and extractable lead using EPA Method 3010/7420 with extraction as per California Assessment Manual (CAM) Title 22 Waste Extraction Test (WET). The results of the laboratory analysis of the soil samples are summarized in Table 2 and are shown in Appendix B.

Based on the results of the first round of fill sampling, a second round of soil borings was drilled on June 13 and 14, 1990 to further characterize the fill in accordance with the additional analytical requirements of area landfills. Generally, local Class III landfills require a minimum sampling frequency of one sample per 100 cubic yards. Therefore, 140 samples would be required to dispose of the estimated maximum volume of fill of about 14,000 bulk cubic yards. Twenty-seven samples from the stockpile and the nine borings discussed above had already been analyzed. A total of 45 additional borings were drilled to obtain the required 113 samples using 6-inch diameter solid augers. The borings were drilled to a depth of 4 feet and 5 feet in alternate borings. Two samples were obtained in the 4-foot borings at depths of 2 feet and 4 feet. Three samples were obtained in the 5-foot borings at depths of 1 feet, 3 feet, and 5 feet. The locations of the soil borings, designated F1 through F45, are shown on Figure 4.

Soil samples for chemical analysis were obtained at the selected depths within each boring using a 2-inch inside-diameter drive sampler. The samples were retained in brass liners capped with teflon sheeting and plastic end caps. The soil sampler was cleaned between each sample and

between borings by washing in an Alconox detergent and tap water solution followed by a tap water rinse. Soil samples were immediately placed in an ice chest with "blue ice" for transport to Chromalab Analytical Laboratory under chain-of-custody control. Logs of the borings showing the depth of the soil samples are included in Appendix A.

One hundred thirteen samples of the fill were analyzed for oil and grease using EPA Method 503 D&E and total lead using EPA Method 3050/7420. The results of the laboratory analysis of the soil samples are summarized in Table 2 and are shown in Appendix B. The results may be summarized as follows:

1) The concentration of oil and grease in soil samples was reported to range from below the detection limit (50 ppm) to 4,800 ppm. The average concentration for all samples was 59 ppm.

2) The concentration of total lead in soil samples was reported to range from 2 ppm to 2,630 ppm. Two samples from borings F8 and F21 contained lead at concentrations greater than 1000 ppm, the Total Threshold Limit Concentration (TTLC). The TTLC is the threshold beyond which a material is characterized as a hazardous waste under Title 22 of the California Administrative Code (CAC). Therefore, at least a portion of the fill material may be classified as a hazardous waste based on its total lead content.

3) The concentration of extractable lead, analyzed using the WET test, was reported to range from 0.2 to 0.8 ppm. The Soluble Threshold Limit Concentration (STLC) for lead is 5 ppm. Generally, materials yielding WET lead results in excess of 5 ppm would be considered hazardous waste for purposes of disposal under Title 22 of the CAC.

6.2 EXCAVATION OF FILL

The results of chemical analysis of fill samples, discussed above in Section 6.1, indicated that portions of the fill contained oil and grease and lead exceeding the 100 ppm concentration limit for disposal at Zanker Landfill. During late June and early July 1990, HSR, under the direction of WCC, excavated and segregated fill material from the City Center Garage II site to a depth of between 1 and 10 feet. WCC estimated the depth of excavation based on the results of chemical analysis of the fill samples. The criteria for the segregation of the fill was the 100 ppm oil and grease concentration limit for disposal at Zanker Landfill.

After this initial excavation, WCC performed additional fill sampling in areas previously yielding samples with concentrations of lead greater than 50 ppm. The purpose of the additional sampling was to further define areas of fill suitable for disposal at Zanker Road Landfill and segregate material unacceptable for disposal at the landfill. WCC collected 40 samples, designated SF1 through SF40, at the ground surface after the removal of a layer of fill. Twelve test pit samples designated TP1-1 through TP4-2, were collected in excavations to explore the thickness of fill. Five samples designated Z1 through Z5 were collected from stockpiles. The sampling locations are shown on Figure 4. The results of the chemical analysis of these samples are summarized in Table 2 and shown in Appendix B.

At each sampling location, a 2-inch by 4-inch brass liner was hand-driven into the soil surface. The sample liners were initially cleaned using an Alconox detergent and tap water solution followed by a tap water rinse. The soil samples were retained in the brass liners with teflon sheeting placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromolab Analytical Laboratory.

The fill samples were analyzed for total lead using EPA Method 3050/7420, extractable lead using EPA Method 3010/7420 with extraction as per CAM Title 22 WET, and oil and grease using EPA Method 503 D&E.

The results of this round of fill sampling are summarized as follows:

1) The concentration of oil and grease in soil samples was reported to range from below the detection limit (50 ppm) to 230 ppm. Oil and grease was reported in five samples. Soil containing greater than 100 ppm oil and grease was unacceptable for disposal at Zanker Landfill.

2) The concentration of total lead in soil samples was reported to range from 0.05 ppm to 694 ppm. Although no reported concentrations exceeded the 1000 ppm TTLC for lead, it was generally thought that soil containing over 100 ppm total lead would probably yield WET lead results exceeding the 5 ppm STLC value, rendering it unacceptable for disposal at the Zanker landfill.

3) The concentrations of extractable lead, as analyzed using the WET test, ranged from below the detection limit (0.10 ppm) to 12.8 ppm. The STLC for lead is 5 ppm. Soil with greater than 5 ppm extractable lead was considered hazardous waste for the purposes of disposal.

4) Polynuclear aromatic (PNA) organic compounds were not detected in the "Z" samples.

HSR, under the direction of WCC, constructed two stockpiles of fill based on the analytical results of samples collected from borings, surface samples, test pits, and stockpiles. The criteria for segregation was whether the material yielded samples with concentrations of oil and grease and/or lead exceeding disposal limits at Zanker Road Landfill or which defined the material as a hazardous waste.

6.3 DISPOSAL OF FILL

HSR hauled and disposed of approximately 3000 cubic yards of fill with high oil and grease and/or lead concentrations at the Chemical Waste Management, Inc. Class I facility at Kettleman Hills California during mid-July 1990. The remaining 5500 cubic yards of fill containing lower concentrations of oil and grease and/or lead were hauled and disposed at Zanker Landfill in late July, 1990.

7.0
END-OF-PROJECT CONDITIONS

7.1 GASOLINE EXCAVATION

7.1.1 Excavation Bottom Sampling and Soil Removal

Four rounds of excavation and sampling were required to remove soil containing gasoline from the bottom of the excavation. Initially, soil samples were collected from the bottom of the completed excavation at approximately 27 feet below the street surface on May 4, 1990. The sampling locations are shown on Figure 2. Sixteen soil samples were obtained from the following areas: 1) nine samples from the base of the excavation designated BTM1 through BTM9; 2) two from the base of the wall on the 12th Street side designated 12TH1 and 12TH2; 3) two from the base of the wall on the Martin Luther King, Jr. Way side designated MLK1 and MLK2; and 4) three from the unshored, sloping face designated WALL1 through WALL3. At each sampling location, a 2-inch diameter by 4-inch long brass liner was hand-driven at the base of a one-foot-deep hole. The soil samples were retained in the brass liners with teflon sheeting placed between the soil and plastic endcaps. The samples were placed in an ice chest with blue ice for transport under chain-of-custody control to Chromalab Analytical Laboratory. The soil samples were analyzed for TPH as gasoline using EPA Method 8015 (modified) and BTEX using EPA Method 8020.

In the nine samples from the floor of the excavation, the concentration of TPH-gasoline was reported to range from below the detection limit (2.5 ppm) to 47 ppm. The analytical results are summarized in Table 3 and shown in Appendix B.

Because of the low concentrations of TPH as gasoline and BETX present in the bottom of the excavation, after consultation with the Agency and Bramalea, WCC directed HSR to rototill the bottom of the excavation to promote aeration. After aeration for several weeks, WCC collected a second round of soil samples from the excavation bottom. Analytical results of these samples, designated B-1 through B-9 and F-1 through F-3, are summarized in Table 3 and shown in Appendix B. The results are summarized as follows:

1) The concentration of TPH-gasoline in soil samples was reported to range from below the detection limit (50 ppm) to 6900 ppm.

2) The concentration of xylenes in soil samples were reported to range from below the detection limit (0.005 ppm) to 64 ppm.

A third round of excavation was then required to remove the TPH hotspots identified by the second round of sampling.

Because the excavation occurred at elevation 6 to 7 feet C.O.O.D., approximately 0.5 foot above the groundwater, temporary dewatering was required to deepen the excavation any farther. HSR excavated two small pits for the collection of groundwater samples. The analytical results of the groundwater samples are summarized in Table 4 and shown in Appendix B. Because TPH-gasoline and BTEX were identified in the groundwater, the groundwater was pumped from a sump pit to a Baker tank for temporary storage. After completion of the dewatering, the stored groundwater was pumped from the Baker tank to the ground water treatment system on the Old Firehouse Site for treatment. After treatment, the groundwater was discharged to the sanitary sewer with the approval of EBMUD.

Approximately 300 cubic yards of soil was removed from the bottom of the excavation during the third round of excavation. Generally, the excavation was deepened to elevation 3 to 4 feet C.O.O.D. In one area along Martin Luther King Jr. Way, the excavation was deepened to approximate elevation minus 1 foot C.O.O.D. HSR transported the excavated soil to the pre-aeration stockpiles and borrowed clean native soil from elsewhere on the City Center Garage II site. The clean borrow was placed in the excavation and lightly compacted using a rubber-tired loader to bring the excavation bottom up to elevations 5 to 6 feet C.O.O.D., above the static groundwater level.

WCC collected 8 soil samples from the bottom of the gasoline excavation after the completion of the third round of excavation. The sampling locations are shown in Figure 2. At each sampling location, a 2-inch by 4-inch brass liner was hand-driven at the base of the excavation. The sample liners were initially cleaned using an Alconox detergent and tap water solution followed by a tap water rinse. The soil samples were retained in the brass liners with teflon sheeting placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromolab Analytical Laboratory.

The soil samples were analyzed for TPH-gasoline using EPA Method 8015, modified, and BTEX using EPA Method 8020. The results of chemical analysis of these samples, designated 1 through 8, are summarized in Table 3 and shown in Appendix B. TPH-gasoline was reported in one soil sample at a concentration of 6.8 ppm. WCC then directed HSR to excavate soil from the area of the sample and backfill the excavation with clean soil from elsewhere on the site.

WCC collected two soil samples from this re-excavated area. The sampling locations are shown on Figure 2. At each sampling location, a 2-inch by 4-inch brass liner was hand-driven at the base of the

excavation. The sample liners were initially cleaned using an Alconox detergent and tap water solution followed by a tap water rinse. The soil samples were retained in the brass liners with teflon sheeting placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromolab Analytical Laboratory.

The soil samples were analyzed for TPH-gasoline using EPA Method 8015, modified and BTEX using EPA Method 8020. The results of chemical analysis of these samples, designated 9 and 10, are summarized in Table 3 and shown in Appendix B. The concentration of TPH-gasoline and BTEX was reported below the detection limit of 2.5 ppm and 0.005 ppm, respectively. At this point, removal of soil containing gasoline was considered complete based on the non-detection of TPH-gasoline or BTEX in soil samples of soil in the bottom of the excavation.

7.1.2 TPH Concentrations Adjacent to the Excavation

As discussed above in Section 6.1, WCC collected five soil samples from the walls of the excavation adjacent to 12th Street, Martin Luther King Jr. Way and the adjacent portion of the site.

Two samples were obtained from the base of the excavation wall along Martin Luther King, Jr. Way. Reported TPH-gasoline concentrations ranged from below the detection limit to 890 ppm. Reported benzene concentrations ranged from 0.032 ppm to 3.5 ppm. Reported toluene ranged from 0.0051 ppm to 10.0 ppm. Reported ethyl benzene concentrations ranged from below the detection limit (0.005) to 7.5 ppm. Reported xylenes ranged from 0.005 to 14.0 ppm.

Two samples were obtained from the base of the 12th Street wall of the excavation. TPH and BTEX were not detected in these samples. Soil nail borings extended horizontally beneath 12th Street at approximate depths of

5 and 10 feet beneath the sidewalk locally produced small quantities of soil cuttings with a gasoline odor. The occurrence of contaminated soil in these borings suggests that some gasoline may remain in the soil at relatively shallow depths beneath 12th Street and/or the sidewalks. It is inferred that the gasoline in soil at shallow depth beneath the street does not apparently extend to greater depth or impact the groundwater because: 1) samples taken from the excavation wall adjacent to 12th Street at depth showed no detectable gasoline or BTEX; 2) soil nail borings at depths of 15 and 20 feet in the same area produced no contaminated soil; and 3) groundwater samples taken from monitoring wells MW-26 and -27 (shown in Figure 1) prior to excavation showed no detectable gasoline or BTEX.

Three samples were obtained from the base of the unshored, sloping wall of the excavation within the interior of the site. TPH and BTEX were not detected in these samples. The analytical results are summarized in Table 3 and shown in Appendix B.

7.2 FILL AREA

WCC collected 60 closure soil samples in the fill areas outside the gasoline excavation. The sampling locations are shown on Figure 5. Twenty samples were collected at the ground surface. Forty subsurface samples were collected in pits excavated using a backhoe; 20 at a depth of 2 to 3 feet and 20 at a depth of 5 feet. The subsurface samples were composited into 20 samples, i.e., one sample per pit. At each sampling location, a 2-inch by 4-inch brass liner was hand-driven into the soil. The sample liners were initially cleaned using an Alconox detergent and tap water solution followed by a tap water rinse. The soil samples were retained in the brass liners with teflon sheeting placed between the soil and plastic endcaps. The samples were placed in an ice chest with "blue ice" for transport under chain-of-custody control to Chromalab Analytical Laboratory.

The fill samples were analyzed for total lead using EPA Method 3050/7420, and oil and grease using EPA Method 503 D&E. The results of chemical analysis of these samples, designated C-1a through C-20bc, are summarized in Table 4 and shown in Appendix B. The results are summarized as follows:

1) The concentrations of total oil and grease, including non-petroleum fatty acids, were reported to range in three samples from 50 ppm to 76 ppm. The detection limit was 50 ppm.

2) Non-polar oil and grease (the petroleum hydrocarbon fraction) was not detected at concentrations exceeding the detection limit of 100 ppm.

3) The concentration of total lead was reported to range from 1.2 ppm to 4.7 ppm, concentrations typical for native soil of the Merritt Formation.

Because of concern that some of the samples could contain petroleum-type oil and grease at concentrations between 50 and 100 ppm, six of the samples were reanalyzed for non-polar (petroleum-type) oil and grease using a lower detection limit of 50 ppm. The samples included the three samples containing reported oil and grease. The results of these chemical analyses, summarized in Table 4 and shown in Appendix B, indicate that no petroleum-type oil and grease was detected in any sample except sample C-2a at a concentration of 88 ppm. Soil from the area of sample C-2a was excavated and transported to a stockpile of soil for disposal at a landfill as discussed in Section 5.2. Based on the results of this closure sampling and the additional cleanup in the vicinity of sample C-2a, the removal of fill contaminated with lead and oil and grease was considered complete.

After the completion of the removal of fill and gasoline-bearing soil, program, approximately 8000 cubic yards of clean native soil was borrowed from the site to use as backfill in an excavation on the east side of the Old Firehouse Site. As part of this work, HSR regraded the fill area to

develop stable slopes adjacent to bordering streets. The end-of-project conditions are shown schematically on Figure 6.

7.3 STATUS OF UNDERGROUND TANKS

WCC presently believes that it is unlikely that underground tanks continue to exist on site for the following reasons:

1) City of Oakland Fire Department records indicate that a permit was issued in 1979 for the removal of tank(s) from the site;

2) No underground tanks were encountered within the gasoline-soil excavation area; and

3) No underground tanks were encountered by holes drilled for the installation of the soil nail shoring system along 12th Street and Martin Luther King Jr. Way.

7.4 STATUS OF MONITORING WELLS

Monitoring wells MW-4, -5, -12, -26 and -27 installed by WCC for the November 1989 hydrocarbon assessment performed for the Agency were physically removed from the site during the 1990 remediation activities. The former locations of these monitoring wells are shown on Figure 1. Monitoring well MW-4 was removed by the gasoline soil removal activities performed by Subsurface Consultants and HSR at the intersection of 13th and Jefferson Streets. Wells MW-5, -26 and -27 were removed from the southwestern corner of the properly during the excavation of gasoline bearing soil described in this report. Monitoring well MW-12 was removed from the southeastern corner of the site during the fill removal operations.

8.0
RECOMMENDATIONS

8.1 FOUNDATION CONSTRUCTION

8.1.1 Foundations Within the Gasoline-Soil Excavation

Within the gasoline-soil excavation at the southwestern corner of the site, certain areas were excavated to elevations ranging from minus 1 foot to plus 6 feet C.O.O.D., below the bottom of the planned footing elevations. The area has been backfilled with fill up to average elevation 5 to 6 feet C.O.O.D. In order to maintain a homogeneous foundation system, WCC's December 17, 1991 Final Geotechnical Engineering Study recommended that the design footing elevation be lowered so that the footings will be founded on native undisturbed soils. As an alternative, the area should be cleared of all fill materials down to the native soils and be backfilled with lean-mix concrete up to the planned bottom of the footings. The actual depth of the required footing and/or backfill concrete excavation will need to be determined in the field by the Geotechnical Engineer. Dewatering wells and/or sumps will be required to lower the groundwater level in order to properly remove all fill and loose soils without causing further disturbance of the natural dense sands by pumping. Based on the conditions observed when the excavation was initially extended below the groundwater, it may be possible to dewater the corner sufficiently (for a short period) using interior sumps only. The dewatering system should remain in operation until the lean concrete is poured. At that time, the wells and/or sumps should be backfilled with cement grout or lean concrete, as appropriate.

A less desirable alternative would be to support the southwestern corner of the building on drilled pier foundations. Because some differential settlements between piers and adjacent spread footings may be expected, WCC recommends that a construction joint be placed at the transition between the spread footing and drilled pier areas of the building. WCC's December 17 geotechnical report provides design recommendations for piers.

8.1.2 General Site Excavation

Although it is our opinion that the remedial work described in this report has removed the soil containing high concentrations of TPH-gasoline from the area to be excavated for the City Center Garage II foundation, WCC recommends that the project's general contractor and excavating and shoring subcontractors be made aware of the possibility of encountering petroleum hydrocarbons within the site. We recommend that the contractors consider the health and safety issues for workers and prepare a plan which includes the contingency of encountering possible contaminants. WCC will be available to assist with preparation or implementation of health and safety guidelines.

The backfill soil placed in the deep excavation has been in contact with groundwater containing approximately 1 ppm gasoline for several months. It is likely that this backfill soil will contain trace quantities of gasoline when (and if) it is removed from the excavation. Any backfill soil exhibiting detectable petroleum odors should be segregated from other clean soil, aerated and disposed at a local Class III landfill in accordance with local and State regulations.

During the intitial excavation at the site, soil nail borings extended beneath 12th Street at approximate depths of 5 and 10 feet below sidewalk level locally produced small quantities of soil cuttings with a gasoline odor. These cuttings were aerated and disposed in accordance with local

and State regulations. These borings indicate that there is some possibility that utility vault excavations to be made beneath the 12th Street sidewalk may encounter soil containing gasoline. If encountered, such soil should be segregated from other clean soil, aerated and disposed at a local Class III landfill in accordance with local and State regulations.

8.2 DEWATERING ACTIVITIES

Field observations made and groundwater samples taken during the site remedial work indicate that groundwater beneath the western end of the City Center Garage II Site contains TPH-gasoline and related compounds. The initial water discharged from dewatering wells and/or sumps in this area should be tested for petroleum hydrocarbons such as gasoline, and benzene, toluene, ethylbenzene and xylenes (TPH/BTEX). Discharge water found to contain TPH/BTEX may then be routed to the existing groundwater treatment facility operated by the Agency at 14th Street and Martin Luther King, Jr. Way. Provision should be made in the project specifications to allow for separate plumbing of sumps and dewatering wells as required, and for installation of a pipe to transfer water from the project site to the treatment facility.

The groundwater discharge to the treatment facility and the untreated water from other areas of the site discharged to the storm sewer should be periodically sampled and analyzed to document that no improper discharges are occurring.

In general, because monitoring, treatment and disposal of contaminated groundwater is costly, anything that can be done, consistent with good construction and engineering practice, to reduce the duration of dewatering and the quantity of water produced will help hold construction costs down.

9.0
REFERENCES

Woodward-Clyde Consultants, September 5, 1989, Environmental Site Assessment, City Center Garage II Parcel, Jefferson and 13th Streets, Oakland, California.

---- November 1989, Hydrocarbon Assessment, City Center Garage II Parcel, Jefferson and 13th Streets, Oakland, California.

---- February 12, 1990, Technical Specifications, Soil Excavation, Aeration and Disposal, City Center Garage II Parcel, Oakland, California.

---- December 17, 1990, Final Report, Geotechnical Engineering Study, City Center Garage West, Oakland, California.

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II

Pre-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Oil & Grease[5]
DT-1	ND	ND	0.012	0.011	0.088	5.0	ND
DT-2	ND	ND	0.0075	0.005	0.042	7.6	ND
DT-3	24	ND	0.15	0.024	2.3	10	ND
DT-4	77	ND	ND	ND	ND	--	--
DT-5	ND	ND	ND	ND	ND	--	--
DT-6	61	0.0083	0.02	0.023	0.014	--	--
DT-7	850	0.085	7.7	17	32	--	--
DT-8	ND	ND	ND	ND	ND	--	--
DT-9	ND	ND	ND	ND	ND	--	--
DT-10	ND	ND	ND	ND	ND	--	--
DT-11	ND	ND	ND	ND	ND	--	--
DT-12	ND	0.019	0.015	ND	0.0081	--	--
DT-13	71	0.034	0.15	0.17	0.8	--	--
DT-14	390	0.15	0.45	0.83	3.1	--	--
DT-15	55	ND	ND	0.0072	0.039	--	--
DT-16	1000	0.8	3.2	4.1	12.0	--	--
DT-17	27	ND	ND	0.0073	0.12	--	--
DT-18	ND	ND	ND	ND	ND	--	--
DT-19	ND	ND	ND	ND	ND	--	--
DT-20	ND	ND	ND	ND	ND	--	--
DT-21	ND	ND	ND	ND	ND	--	--
DT-22	3.6	ND	ND	ND	ND	--	--
DT-23	ND	ND	ND	ND	ND	--	--
DT-24	110	0.093	0.110	0.065	0.28	--	--
DT-25	ND	ND	ND	ND	ND	--	--
CN-1	61	0.0074	0.110	0.42	0.84	14	ND
CN-2	ND	ND	ND	ND	ND	29	ND
CN-3	ND	ND	ND	ND	ND	7.1	ND
CN-4	ND	ND	ND	ND	ND	6.8	ND
CN-5	ND	ND	ND	ND	ND	6.4	--
CN-6	ND	ND	ND	ND	ND	3.5	--
CN-7	ND	ND	ND	ND	ND	5.9	--
CN-8	ND	ND	ND	ND	ND	2.3	--
CN-9	ND	ND	ND	ND	ND	6.6	--
CN-10	22	ND	ND	9.8	ND	5.7	--
CN-11	ND	ND	ND	ND	ND	4.4	--
CN-12	ND	ND	ND	ND	ND	4.5	--
CN-13	ND	ND	ND	ND	ND	3.8	--
CN-14	ND	ND	ND	ND	ND	--	--

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Pre-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Oil & Grease[5]
CN-15	ND	ND	ND	ND	ND	--	--
CN-16	ND	ND	ND	ND	ND	--	--
CN-17	ND	ND	ND	ND	ND	--	--
CN-18	ND	ND	ND	ND	ND	--	--
CN-19	3.2	ND	ND	ND	ND	--	--
CN-20	ND	ND	ND	ND	ND	--	--
CN-21	ND	ND	ND	ND	ND	--	--
CN-22	ND	ND	ND	ND	ND	--	--
CN-23	ND	ND	ND	ND	ND	--	--
CN-24	ND	ND	ND	ND	ND	--	--
CN-25	ND	ND	ND	ND	ND	--	--
CN-26	ND	ND	ND	ND	ND	--	--
CN-27	ND	ND	ND	ND	ND	--	--
CN-28	ND	ND	ND	ND	ND	--	--
CN-29	ND	ND	ND	ND	ND	--	--
CN-30	ND	ND	ND	ND	ND	--	--
CN-31	ND	ND	ND	ND	ND	--	--
CN-32	ND	ND	ND	ND	ND	--	--
CN-33	ND	ND	ND	ND	ND	--	--
SC-1	ND	ND	ND	ND	ND	6.99	--
SC-2	ND	ND	ND	ND	ND	3.54	--
SC-3	ND	ND	ND	ND	ND	7.14	--
SC-4	ND	ND	ND	ND	ND	4.62	--
SC-5	ND	ND	ND	ND	ND	3.62	--
detection limit	2.5	0.005	0.005	0.005	0.005	0.05	50

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Post-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Extractable Lead[6]	Diesel[7]	Oil and Grease[5]
G1	ND	ND	ND	ND	ND	--	--	--	--
G2	ND	ND	ND	ND	ND	--	--	--	--
G3	ND	ND	ND	ND	ND	--	--	ND	ND
G4	ND	ND	ND	ND	ND	--	--	ND	ND
G5	ND	ND	ND	ND	ND	--	--	--	--
G6	ND	ND	ND	ND	ND	ND	--	--	--
G7	ND	ND	ND	ND	ND	--	--	--	--
G8	ND	ND	ND	ND	ND	--	--	--	--
G9	ND	ND	ND	ND	ND	--	--	--	--
G10	ND	ND	ND	ND	ND	--	--	--	--
G11	ND	ND	ND	ND	ND	--	--	--	--
G12	ND	ND	ND	ND	ND	--	--	--	--
G13	ND	ND	ND	ND	ND	--	--	--	--
G14	ND	ND	ND	ND	ND	--	--	--	--
G15	ND	ND	ND	ND	ND	--	--	--	--
G16	ND	ND	ND	ND	ND	--	--	--	--
G17	ND	ND	ND	ND	ND	--	--	--	--
G18	ND	ND	ND	ND	ND	--	--	--	--
G19	ND	ND	ND	ND	ND	--	--	--	--
G20	ND	ND	ND	ND	ND	--	--	--	--
G21	ND	ND	ND	ND	ND	3.46	ND	--	--
G22	ND	ND	ND	ND	ND	3.77	ND	--	--
G23	ND	ND	ND	ND	ND	11.8	ND	--	--
G24	ND	ND	ND	ND	ND	6.77	ND	--	--
G25	ND	ND	ND	ND	ND	3.51	ND	--	--
G26	ND	ND	ND	ND	ND	3.67	ND	--	--
G27	ND	ND	ND	ND	ND	3.08	0.27	--	--
G28	ND	ND	ND	ND	ND	3.44	0.20	--	--
G29	ND	ND	ND	ND	ND	4.47	ND	--	--
G30	ND	ND	ND	ND	ND	4.24	ND	--	--
G31	ND	ND	ND	ND	ND	--	--	--	--
G32	ND	ND	ND	ND	ND	--	--	--	--
G33	ND	ND	ND	ND	ND	--	--	--	--
G34	ND	ND	ND	ND	ND	--	--	--	--
G35	ND	ND	ND	ND	ND	6.06	ND	--	--
G36	ND	ND	ND	ND	ND	5.33	ND	--	--
G37	ND	ND	ND	ND	ND	5.47	ND	--	--
G38	ND	ND	ND	ND	ND	5.60	ND	--	--
G39	ND	ND	ND	ND	ND	4.35	ND	--	--

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Post-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Extractable Lead[6]	Diesel[7]	Oil and Grease[5]
G40	ND	ND	ND	ND	ND	4.16	ND	--	--
G41	ND	ND	ND	ND	ND	5.03	ND	--	--
G42	ND	ND	ND	ND	ND	4.19	ND	--	--
G43	ND	ND	ND	ND	ND	7.19	ND	--	--
G44	ND	ND	ND	ND	ND	5.70	ND	--	--
G45	ND	ND	ND	ND	ND	6.21	ND	--	--
G46	ND	ND	ND	ND	ND	4.67	ND	--	--
G47	ND	ND	ND	ND	ND	5.62	ND	--	--
G48	ND	ND	ND	ND	ND	4.19	ND	--	--
G49	ND	ND	ND	ND	ND	3.85	ND	--	--
G50	ND	ND	ND	ND	ND	5.45	0.51	--	--
G51	ND	ND	ND	ND	ND	5.81	ND	--	--
G52	ND	ND	ND	ND	ND	4.42	ND	--	--
G53	ND	ND	ND	ND	ND	5.72	0.64	--	--
G54	ND	ND	ND	ND	ND	5.57	0.51	--	--
G55	ND	ND	ND	ND	ND	8.36	1.30	--	--
G56	ND	ND	ND	ND	ND	9.87	ND	--	--
G57	ND	ND	ND	ND	ND	5.12	ND	--	--
G58	ND	ND	ND	ND	ND	4.42	ND	--	--
G59	ND	ND	ND	ND	ND	10.22	0.78	--	--
G60	ND	ND	ND	ND	ND	10.98	0.40	--	--
G61	ND	ND	ND	ND	ND	12.85	0.63	--	--
G62	ND	ND	ND	ND	ND	5.48	0.86	--	--
G63	ND	ND	ND	ND	ND	7.06	0.72	--	--
G64	ND	ND	ND	ND	ND	10.3	1.56	--	--
G65	ND	ND	ND	ND	ND	7.40	0.42	--	--
G66	ND	ND	ND	ND	ND	5.19	1.88	--	--
G67	ND	ND	ND	ND	ND	6.16	0.68	--	--
G68	ND	ND	ND	ND	ND	6.47	0.57	--	--
G69	ND	ND	ND	ND	ND	6.79	0.29	--	--
G70	ND	ND	ND	ND	ND	5.99	0.46	--	--
G71	ND	ND	ND	ND	ND	5.23	0.31	--	--
G72	ND	ND	ND	ND	ND	25.4	1.34	--	--
G73	ND	ND	ND	ND	ND	6.01	1.02	--	--
G74	ND	ND	ND	ND	ND	2.01	1.17	--	--
G75	ND	ND	ND	ND	ND	3.88	0.88	--	--

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Post-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Extractable Lead[6]	Diesel[7]	Oil and Grease[5]
G76	ND	ND	ND	ND	ND	6.71	1.00	--	--
G77	ND	ND	ND	ND	ND	5.94	0.77	--	--
G78	ND	ND	ND	ND	ND	7.01	0.64	--	--
G79	ND	ND	ND	ND	ND	8.83	0.89	--	--
G80	ND	ND	ND	ND	ND	5.38	0.77	--	--
G81	ND	ND	ND	ND	ND	6.27	1.23	--	--
G82	ND	ND	ND	ND	ND	8.00	0.90	--	--
G83	ND	ND	ND	ND	ND	6.86	ND	--	--
G84	ND	ND	ND	ND	ND	6.22	ND	--	--
G85	ND	ND	ND	ND	ND	13.2	ND	--	--
G86	ND	ND	ND	ND	ND	5.72	ND	--	--
G87	ND	ND	ND	ND	ND	6.19	ND	--	--
G88	ND	ND	ND	ND	ND	10.6	ND	--	--
G89	ND	ND	ND	ND	ND	10.4	ND	--	--
G90	ND	ND	ND	ND	ND	9.16	ND	--	--
G91	ND	ND	ND	ND	ND	7.50	ND	--	--
G92	ND	ND	ND	ND	ND	10.3	ND	--	--
G93	ND	ND	ND	ND	ND	6.19	ND	--	--
G94	ND	ND	ND	ND	ND	6.45	ND	--	--
G95	ND	ND	ND	ND	ND	6.55	ND	--	--
G96	ND	ND	ND	ND	ND	4.46	ND	--	--
G97	ND	ND	ND	ND	ND	5.95	ND	--	--
G98	ND	ND	ND	ND	ND	6.54	ND	--	--
G99	ND	ND	ND	ND	ND	5.95	ND	--	--
G100	ND	ND	ND	ND	ND	3.19	ND	--	--
G101	ND	ND	ND	ND	ND	5.48	ND	--	--
G102	ND	ND	ND	ND	ND	8.05	ND	--	--
G103	ND	ND	ND	ND	ND	5.10	ND	--	--
G104	ND	ND	ND	ND	ND	ND	ND	--	--
G105:1-4	ND	ND	ND	ND	ND	9.15	ND	--	--
G105:5-8	ND	ND	ND	ND	ND	6.08	ND	--	--
G105:9-12	ND	ND	ND	ND	ND	6.98	ND	--	--
G105:13-16	ND	ND	ND	ND	ND	7.96	ND	--	--
G105:17-20	ND	ND	ND	ND	ND	6.99	ND	--	--
G105:21-24	ND	ND	ND	ND	ND	10.9	ND	--	--
G105:25-28	ND	ND	ND	ND	ND	6.61	ND	--	--
G105:29-32	ND	ND	ND	ND	ND	7.36	ND	--	--
G105:33-36	ND	ND	ND	ND	ND	7.97	ND	--	--
G105:37-40	ND	ND	ND	ND	ND	7.99	ND	--	--

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Post-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Extractable Lead[6]	Diesel[7]	Oil and Grease[5]
G106	ND	ND	ND	ND	ND	8.45	ND	--	--
G107	ND	ND	ND	ND	ND	9.52	ND	--	--
G108	ND	ND	ND	ND	ND	7.46	ND	--	--
G109	ND	ND	ND	ND	ND	9.75	ND	--	--
G110	ND	ND	ND	ND	ND	5.92	ND	--	--
G111	ND	ND	ND	ND	ND	8.41	ND	--	--
G112	ND	ND	ND	ND	ND	8.12	ND	--	--
G113	ND	ND	ND	ND	ND	8.20	ND	--	--
G114	ND	ND	ND	ND	ND	8.05	ND	--	--
G115	ND	ND	ND	ND	ND	6.86	ND	--	--
G126	ND	ND	ND	ND	ND	6.18	ND	--	--
G127	ND	ND	ND	ND	ND	6.16	ND	--	--
G128	ND	ND	ND	ND	ND	6.21	ND	--	--
G129	ND	ND	ND	ND	ND	6.18	ND	--	--
G130	ND	ND	ND	ND	ND	10.3	ND	--	--
G131	ND	ND	ND	ND	ND	9.11	ND	--	--
G132	ND	ND	ND	ND	ND	9.60	ND	--	--
G133	ND	ND	ND	ND	ND	41.0	0.36	--	--
G134	ND	ND	ND	ND	ND	13.2	ND	--	--
G135	ND	ND	ND	ND	ND	13.3	ND	--	--
G136	ND	ND	ND	ND	ND	12.2	ND	--	--
G137	ND	ND	ND	ND	ND	10.2	ND	--	--
G138	ND	ND	ND	ND	ND	7.31	ND	--	--
G139	ND	ND	ND	ND	ND	13.3	ND	--	--
G140	ND	ND	ND	ND	ND	14.4	ND	--	--
G141	ND	ND	ND	ND	ND	8.36	ND	--	--
G142	ND	ND	ND	ND	ND	11.6	ND	--	--
G143	ND	ND	ND	ND	ND	13.6	ND	--	--
G144	ND	ND	ND	ND	ND	11.4	1.26	--	--
G145	ND	ND	ND	ND	ND	14.3	1.23	--	--
G146	ND	ND	ND	ND	ND	13.4	1.35	--	--
G147	ND	ND	ND	ND	ND	12.1	1.98	--	--
G148	ND	ND	ND	ND	ND	12.0	1.13	--	--
G149	ND	ND	ND	ND	ND	9.70	1.06	--	--
G150	ND	ND	ND	ND	ND	9.63	0.94	--	--
G151	ND	ND	ND	ND	ND	11.7	0.84	--	--
G152	ND	ND	ND	ND	ND	11.3	0.66	--	--
G153	ND	ND	ND	ND	ND	10.6	0.32	--	--
G154	ND	ND	ND	ND	ND	15.6	0.44	--	--

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Post-Aeration Soil Samples

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]	Total Lead[4]	Extractable Lead[6]	Diesel[7]	Oil and Grease[5]
G155	ND	ND	ND	ND	ND	13.4	0.67	--	--
G156	ND	ND	ND	ND	ND	33.6	1.22	--	--
G157	ND	ND	ND	ND	ND	12.2	1.00	--	--
G158	ND	ND	ND	ND	ND	10.6	0.86	--	--
G159	ND	ND	ND	ND	ND	10.8	1.31	--	--
G160	ND	ND	ND	ND	ND	8.70	1.18	--	--
G161	ND	ND	ND	ND	ND	9.25	0.66	--	--
G162	ND	ND	ND	ND	ND	3.95	ND	--	--
G163	ND	ND	ND	ND	ND	4.69	0.44	--	--
G164	ND	ND	ND	ND	ND	12.2	ND	--	--
G165	ND	ND	ND	ND	ND	22.9	0.12	--	--
G166	ND	ND	ND	ND	ND	19.3	0.18	--	--
G167	ND	ND	ND	ND	ND	14.8	0.12	--	--
G168	ND	ND	ND	ND	ND	14.5	0.11	--	--
G169	ND	ND	ND	ND	ND	14.6	0.10	--	--
G170	ND	ND	ND	ND	ND	10.5	0.27	--	--
G171	ND	ND	ND	ND	ND	15.1	0.12	--	--
G172	ND	ND	ND	ND	ND	27.9	0.14	--	--
G173	ND	ND	ND	ND	ND	15.9	0.14	--	--
G174	ND	ND	ND	ND	ND	15.0	0.39	--	--
G175	ND	ND	ND	ND	ND	14.6	0.39	--	--
G176	ND	ND	ND	ND	ND	8.57	0.19	--	--
G177	ND	ND	ND	ND	ND	5.04	0.16	--	--
G178	ND	ND	ND	ND	ND	4.63	0.19	--	--
G179	ND	ND	ND	ND	ND	4.47	0.16	--	--
G180	ND	ND	ND	ND	ND	4.39	0.13	--	--
G181	ND	ND	ND	ND	ND	4.77	0.16	--	--
G182	ND	ND	ND	ND	ND	7.14	0.19	--	--
G183	ND	ND	ND	ND	ND	5.04	0.13	--	--
G184	ND	ND	ND	ND	ND	8.96	0.30	--	--
detection limit	2.5	0.005	0.005	0.005	0.005	0.05	0.10	5	50

Table 1. SUMMARY OF CHEMICAL ANALYSES OF SOIL CONTAINING GASOLINE[1], CITY CENTER GARAGE II (Continued)

Notes:

[1] All results reported as parts-per-million (ppm), dashed where no analysis performed, ND=not detected

[2] TPH = Total Petroleum Hydrocarbons, analyzed by EPA Method 8015, Modified

[3] Analyzed by EPA Method 8020

[4] Analyzed by EPA Method 3050/7420, TTLC=1000 PPM

[5] Analyzed by EPA Method 503 D&E

[6] Analyzed by EPA Method 3010/7420, extracted as per California Assessment Manual Title 22 Waste Extraction Test (WET), STLC=5 ppm

[7] Analyzed by EPA Method 3500/8015

Table 2. SUMMARY OF CHEMICAL ANALYSES OF FILL[1]
CITY CENTER GARAGE II (Continued)

Samples from Soil Borings

Sample Number	Depth (feet)	Oil and[5] Grease	Total[4] Lead	Extractable[6] Lead
FL6-1	4	87	48.4	--
FL7-1	4	ND	2.56	--
FL8-1	4	ND	2.78	--
FL9-1	4	ND	2.90	--
F1-1	2	110	411	--
F1-2	4	ND	36.6	--
F2-1	1	ND	837	--
F2-2	3	ND	43.9	--
F2-3	5	ND	3.0	--
F3-1	2	ND	3.05	--
F3-2	4	ND	2.77	--
F4-1	1	55	51.1	--
F4-2	3	55	26.2	--
F4-3	5	55	4.12	--
F5-1	2	ND	4.23	--
F5-2	4	ND	14.0	--
F6-1	1	82	5.53	--
F6-2	3	ND	10.9	--
F6-3	5	ND	13.4	--
F7-1	1	110	149	--
F7-2	3	110	46.1	--
F7-3	5	69	142	--
F8-1	2	120	2630	--
F8-2	4	ND	6.16	--
F9-1	1	ND	5.60	--
F9-2	3	ND	12.5	--
F9-3	5	ND	2.48	--
F10-1	2	ND	24.2	--
F10-2	4	ND	2.81	--
F11-1	1	52	15.5	--
F11-2	3	ND	3.41	--
F11-3	5	ND	3.14	--
F12-1	2	100	16.7	--
F12-2	4	ND	3.15	--
F13-1	2	250	30.7	--
F13-2	4	65	35.9	--
F14-1	1	ND	276	--
F14-2	3	ND	2.76	--
F14-3	5	ND	2.05	--
F15-1	2	ND	241	--
F15-2	4	ND	2.86	--

Table 2. SUMMARY OF CHEMICAL ANALYSES OF FILL[1]
CITY CENTER GARAGE II (Continued)

Samples from Soil Borings

Sample Number	Depth (feet)	Oil and[5] Grease	Total[4] Lead	Extractable[6] Lead
F16-1	1	ND	3.20	--
F16-2	3	ND	2.49	--
F16-3	5	ND	2.70	--
F17-1	2	ND	31.2	--
F17-2	4	ND	2.90	--
F18-1	1	ND	2.88	--
F18-2	3	ND	3.14	--
F18-3	5	160	5.38	--
F19-1	1	59	62.2	--
F19-2	3	ND	4.97	--
F19-3	5	ND	9.81	--
F20-1	2	ND	212	--
F20-2	4	ND	3.12	--
F21-1	1	69	2540	--
F21-2	3	ND	4.34	--
F21-3	5	ND	2.53	--
F22-1	2	ND	3.58	--
F22-2	4	ND	3.02	--
F23-1	1	420	423	--
F23-2	3	ND	4.17	--
F23-3	5	ND	3.16	--
F24-1	2	ND	3.02	--
F24-2	4	ND	3.20	--
F25-1	1	ND	3.46	--
F25-2	3	ND	2.65	--
F25-3	5	ND	3.87	--
F26-1	2	ND	3.41	--
F26-2	4	ND	3.80	--
F27-1	1	ND	56.4	--
F27-2	3	ND	2.76	--
F27-3	5	ND	3.28	--
F28-1	2	ND	2.48	--
F28-2	4	ND	2.70	--
F29-1	1	ND	91.5	--
F29-2	3	ND	3.02	--
F29-3	5	ND	3.11	--
F30-1	2	ND	3.81	--
F30-2	4	ND	2.59	--
F31-1	1	ND	5.69	--
F31-2	3	ND	2.76	--
F31-3	5	ND	2.47	--

Table 2. SUMMARY OF CHEMICAL ANALYSES OF FILL[1]
CITY CENTER GARAGE II (Continued)

Samples from Soil Borings

Sample Number	Depth (feet)	Oil and[5] Grease	Total[4] Lead	Extractable[6] Lead
F32-1	2	ND	50.4	--
F32-2	4	ND	3.49	--
F33-1	1	ND	2.50	--
F33-2	3	ND	2.74	--
F33-3	5	ND	4.36	--
F34-1	2	ND	3.56	--
F34-2	4	ND	4.49	--
F35-1	1	4800	84.3	--
F35-2	3	ND	811	--
F35-3	5	ND	3.13	--
F36-1	2	ND	10.0	--
F36-2	4	ND	4.24	--
F37-1	1	ND	147	--
F37-2	3	ND	2.94	--
F37-3	5	ND	3.08	--
F38-1	2	74	54.6	--
F38-2	4	ND	2.70	--
F39-1	1	ND	3.69	--
F39-2	3	ND	3.01	--
F39-3	5	ND	2.71	--
F40-1	2	ND	3.00	--
F40-2	4	ND	2.76	--
F41-1	1	ND	5.24	--
F41-2	3	ND	2.59	--
F41-3	5	ND	4.62	--
F42-1	2	ND	2.77	--
F42-2	4	ND	4.17	--
F43-1	1	ND	3.35	--
F43-2	3	ND	3.02	--
F43-3	5	ND	4.85	--
F44-1	2	ND	2.48	--
F44-2	4	ND	3.35	--
F45-1	1	ND	4.93	--
F45-2	3	ND	2.61	--
F45-3	5	ND	3.78	--

Table 2. SUMMARY OF CHEMICAL ANALYSES OF FILL[1]
CITY CENTER GARAGE II (Continued)

Samples from Fill Hotspots

Sample Number	Oil and[5] Grease	Total[4] Lead	Extractable[6] Lead
SF-1	N.D.	3.45	--
SF-2	N.D.	3.80	--
SF-3	N.D.	3.08	--
SF-4	N.D.	2.99	--
SF-5	N.D.	2.75	--
SF-6	N.D.	2.68	--
SF-7	N.D.	4.50	--
SF-8	N.D.	44.8	8.60
SF-9	N.D.	3.13	--
SF-10	N.D.	2.58	--
SF-11	N.D.	3.45	--
SF-12	N.D.	3.69	--
SF-13	230	30.0	3.50
SF-14	N.D.	393	--
SF-15	71	368	--
SF-16	53	600	--
SF-17	N.D.	385	--
SF-18	N.D.	3.36	--
SF-19	N.D.	19.4	N.D.
SF-20	N.D.	3.08	--
SF-21	N.D.	3.37	--
SF-22	N.D.	2.79	--
SF-23	N.D.	16.2	N.D.
SF-24	N.D.	44.2	4.90
SF-25	N.D.	31.1	N.D.
SF-26	N.D.	22.4	0.28
SF-27	N.D.	52.9	3.69
SF-28	N.D.	49.6	3.29
SF-29	N.D.	70.8	11.0
SF-30	N.D.	42.1	1.22
SF-31	N.D.	48.6	4.03
SF-32	N.D.	15.4	8.34
SF-33	N.D.	5.70	--
SF-34	N.D.	2.64	--
SF-35	N.D.	9.47	--
SF-36	N.D.	72.5	12.8
SF-37	N.D.	1.72	--
SF-38	N.D.	4.16	--
SF-39	N.D.	3.59	--
SF-40	N.D.	3.01	--

Table 2. SUMMARY OF CHEMICAL ANALYSES OF FILL[1]
CITY CENTER GARAGE II (Continued)

Samples from Test Pits

Sample Number	Oil and[5] Grease	Total[4] Lead	Extractable[6] Lead
TP1-1	N.D.	2.37	--
TP1-2	N.D.	3.16	--
TP1-3	N.D.	2.33	--
TP2-1	N.D.	694	--
TP2-2	N.D.	2.43	--
TP2-3	N.D.	2.08	--
TP2-4	N.D.	4.05	--
TP3-1	N.D.	2.87	--
TP3-2	N.D.	1.99	--
TP3-3	N.D.	2.53	--
TP4-1	N.D.	169	--
TP4-2	N.D.	2.41	--
Samples from Stockpiles			
Z1	N.D.	84.0	--
Z2	N.D.	94.8	--
Z3	N.D.	37.7	--
Z4	54	24.0	--
Z5	N.D.	48.8	--
Detection Limit	50	0.05	0.10

Table 2. SUMMARY OF CHEMICAL ANALYSES OF FILL[1]
CITY CENTER GARAGE II

METALS, total - CAM 17

	Detection Limit	FL-1	FL-4	FL-6	TTLC[7]
Antimony	20	ND	ND	ND	500
Arsenic	0.5	11	8.1	7.9	500
Barium	5	88	57	51	10,000
Beryllium	5	ND	ND	ND	75
Cadium	5	ND	ND	ND	100
Chromium (VI)	0.5	NA	NA	NA	500
Chromium	5	36	32	30	2,500
Cobalt	5	10	11	ND	8,000
Copper	5	20	14	12	2,500
Lead	20	96	77	46	1,000
Mercury	0.05	0.11	0.40	0.08	20
Molybdenum	10	ND	ND	ND	3,500
Nickel	5	22	17	19	2,000
Selenium	0.5	ND	ND	ND	100
Silver	2	ND	ND	ND	500
Thallium	30	ND	ND	ND	700
Vanadium	5	29	22	23	2,400
Zinc	5	110	64	52	5,000

Notes:

1 All results reported as parts-per-million (ppm), dashed where no analysis performed, ND = not detected

2 TPH = Total Petroleum Hydrocarbons, analyzed by EPA Method 8015, Modified

3 Analyzed by EPA Method 8020

4 Analyzed by EPA Method 3050/7420, TTLC = 1000 PPM

5 Analyzed by EPA Method 503 D&E

6 Analyzed by EPA Method 3010/7420, extracted as per California Assessment Manual Title 22 Waste Extraction Test (WET), STLC = 5 ppm

7 TTLC = Total Threshold Limit Concentration

Table 3. SUMMARY OF CHEMICAL ANALYSES OF SOIL SAMPLES FROM BOTTOM OF GASOLINE EXCAVATION, CITY CENTER GARAGE II

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl[3] Benzene	Xylene[3]
BTM1	ND	0.0054	ND	ND	ND
BTM2	38	0.024	0.0062	0.016	0.3
BTM3	47	0.37	0.18	0.17	0.46
BTM4	ND	ND	ND	ND	ND
BTM5	45	0.33	0.096	0.032	0.39
BTM6	ND	0.075	0.04	ND	0.033
BTM7	21	0.39	0.43	0.18	0.4
BTM8	ND	ND	ND	ND	ND
BTM9	ND	0.032	0.0051	ND	0.005
MLK1	890	3.5	10.0	7.5	14.0
MLK2	ND	ND	ND	ND	ND
12TH1	ND	ND	ND	ND	ND
12TH2	ND	ND	ND	ND	ND
WALL1	ND	ND	ND	ND	ND
WALL2	ND	ND	ND	ND	ND
WALL3	ND	ND	ND	ND	ND
B-1	320	ND	ND	ND	4.9
B-2	1.5	ND	ND	ND	0.015
B-3	ND	ND	ND	ND	ND
B-4	1800	ND	ND	ND	64
B-5	6900	ND	ND	ND	19
B-6	ND	ND	ND	ND	ND
B-7	ND	ND	ND	ND	ND
B-8	ND	ND	ND	ND	ND
B-9	11	ND	ND	ND	0.017
F-1	ND	ND	ND	ND	ND
F-2	ND	ND	ND	ND	ND
F-3	ND	ND	ND	ND	ND
Preliminary Closure Soil Samples					
1	ND	ND	ND	ND	ND
2	6.8	0.025	0.012	ND	0.067
3	ND	ND	ND	ND	ND
4	ND	ND	ND	ND	ND
5	ND	ND	ND	ND	ND

Table 3. SUMMARY OF CHEMICAL ANALYSES OF SOIL SAMPLES FROM BOTTOM OF GASOLINE EXCAVATION, CITY CENTER GARAGE II (Continued)

Sample Number	TPH[2]	Benzene[3]	Toluene[3]	Ethyl Benzene[3]	Xylene[3]
6	ND	ND	ND	ND	ND
7	ND	ND	ND	ND	ND
8	ND	ND	ND	ND	ND
Final Closure Soil Samples					
9	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND
Detection Limit	2.5	0.005	0.005	0.005	0.005

Notes:

[1] All results reported as parts-per-million (ppm), dashed where no analysis performed, ND=not detected

[2] TPH = Total Petroleum Hydrocarbons, analyzed by EPA Method 8015, Modified

[3] Analyzed by EPA Method 8020

Table 4. SUMMARY OF CHEMICAL ANALYSIS OF GROUNDWATER SAMPLES,[1] CITY CENTER GARAGE II

	GW1	GW2	Detection[4] Limit	STLC Limits (mg/l)
TPH-Gasoline[2]	0.14	0.84	0.05	
Benzene[3]	0.0007	0.008		
Toluene[3]	0.0054	0.110		
Ethylbenzene[3]	0.0029	0.046		
Xylenes[3]	0.057	0.430		
Antimony	0.27	0.48	0.05	15
Arsenic	0.005	0.007	0.001	5.0
Barium	0.22	0.66	0.05	100
Beryllium	ND	ND	0.007	0.75
Cadmium	0.02	0.06	0.02	1.0
Chromium	0.17	0.49	0.02	560
Cobalt	ND	0.18	0.05	80
Copper	0.02	0.07	0.01	25
Lead*	ND	0.07	0.05	5.0
Mercury	0.0006	0.0004	0.0002	0.2
Molybdenum*	ND	ND	0.02	350
Nickel*	0.12	0.26	0.03	20
Selenium*	ND	ND	0.05	1.0
Silver	ND	0.04	0.02	5
Thallium*	ND	ND	0.08	7.0
Vanadium*	0.09	0.16	0.01	24
Zinc	0.14	0.27	0.05	250

1 All results imported as parts-per-million (ppm), dashed where no analysis performed, ND=not detected.

2 TPH=Total Petroleum Hydrocarbons, analyzed by EPA Method 8015, Modified.

3 Analyzed by EPA Method 8020.

4 The detection limit for BTEX for samples: GW1 = 0.0005 ppm, GW2 = 0.005 ppm

TABLE 5. SUMMARY OF CHEMICAL ANALYSES OF CLOSURE SAMPLES IN FILL EXCAVATED AREA[1], CITY CENTER GARAGE II

Sample No.	Oil and Grease, Total[2] (ppm)	Oil and Grease, Non-Polar[3] (ppm)	Total Lead[4] (ppm)
First Round			
Surface Samples			
C-1a	N.D.	N.D.	2.2
C-2a	76	N.D.	2.8
C-3a	N.D.	N.D.	1.3
C-4a	N.D.	N.D.	1.8
C-5a	N.D.	N.D.	1.8
C-6a	N.D.	N.D.	1.5
C-7a	N.D.	N.D.	2.3
C-8a	N.D.	N.D.	1.7
C-9a	N.D.	N.D.	2.5
C-10a	N.D.	N.D.	2.6
C-11a	N.D.	N.D.	4.7
C-12a	N.D.	N.D.	2.4
C-13a	N.D.	N.D.	1.7
C-14a	N.D.	N.D.	2.0
C-15a	N.D.	N.D.	2.1
C-16a	N.D.	N.D.	2.4
C-17a	N.D.	N.D.	1.8
C-18a	N.D.	N.D.	1.8
C-19a	N.D.	N.D.	2.1
C-20a	N.D.	N.D.	3.0
Subsurface Samples, composited from depths of 3 feet and 5 feet			
C-1bc	N.D.	N.D.	1.7
C-2bc	N.D.	N.D.	2.0
C-3bc	N.D.	N.D.	2.5
C-4bc	N.D.	N.D.	2.4
C-5bc	N.D.	N.D.	2.4
C-6bc	N.D.	N.D.	1.8
C-7bc	N.D.	N.D.	1.8
C-8bc	N.D.	N.D.	1.4
C-9bc	N.D.	N.D.	1.9
C-10bc	N.D.	N.D.	1.7
C-11bc	N.D.	N.D.	1.2
C-12bc	N.D.	N.D.	1.2
C-13bc	N.D.	N.D.	1.7
C-14bc	N.D.	N.D.	1.5
C-15bc	N.D.	N.D.	1.6
C-16bc	N.D.	N.D.	1.4

TABLE 5. SUMMARY OF CHEMICAL ANALYSES OF CLOSURE SAMPLES IN FILL EXCAVATED AREA[1], CITY CENTER GARAGE II (Continued)

Sample No.	Oil and Grease, Total[2] (ppm)	Oil and Grease, Non-Polar[3] (ppm)	Total Lead[4] (ppm)
C-17bc	N.D.	N.D.	1.3
C-18bc	50	N.D.	1.8
C-19bc	50	N.D.	1.6
C-20bc	N.D.	N.D.	1.5
Detection Limit	50	100	0.2
Second Round, reanalysis			
C-2a	--	88	--
C-17a	--	N.D.	--
C-4bc	--	N.D.	--
C-11bc	--	N.D.	--
C-18bc	--	N.D.	--
C-19bc	--	N.D.	--
Detection Limit		50	--

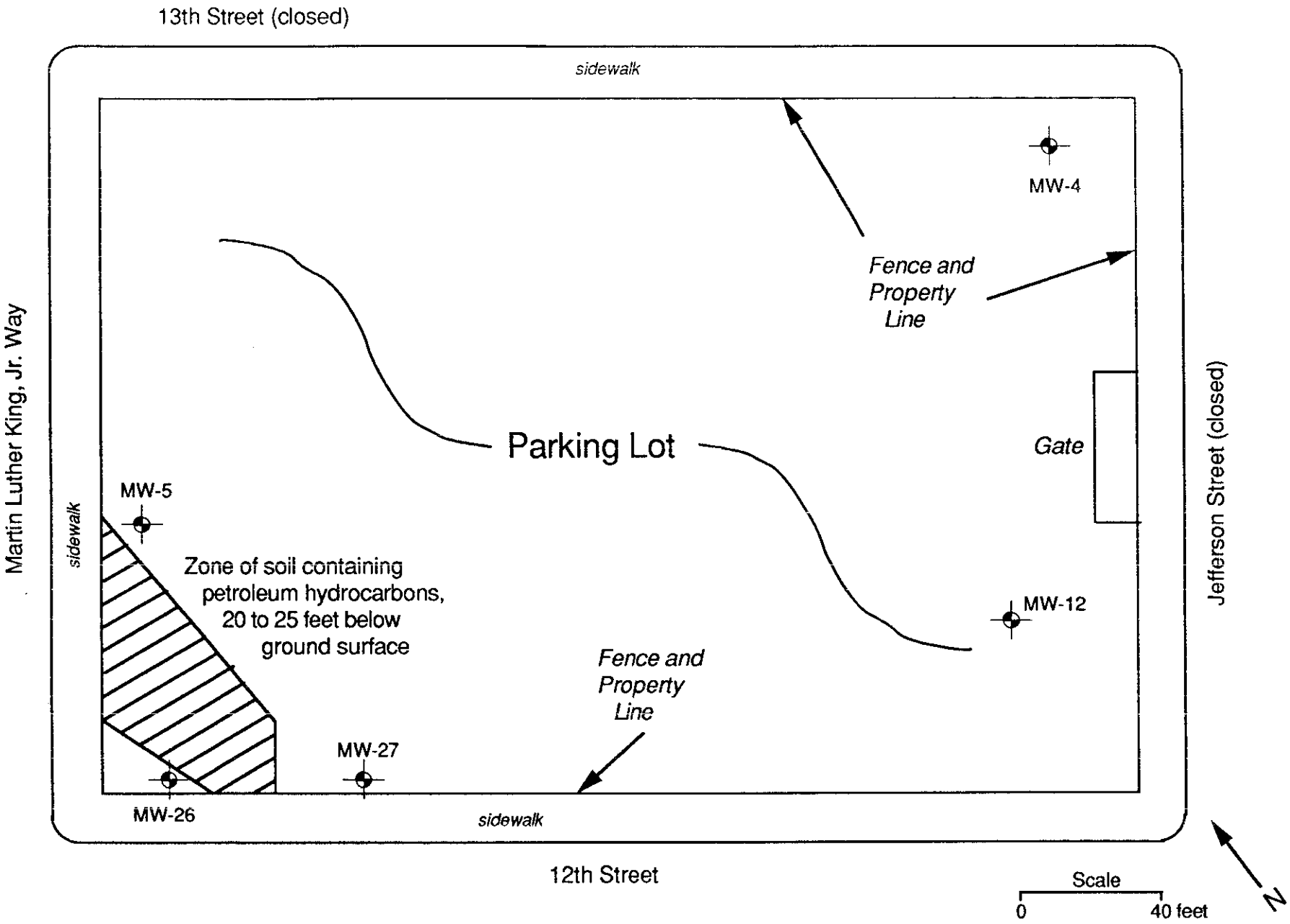
Notes:

1. All results reported as parts-per-million (ppm), dashed where no analysis performed, ND = not detected.

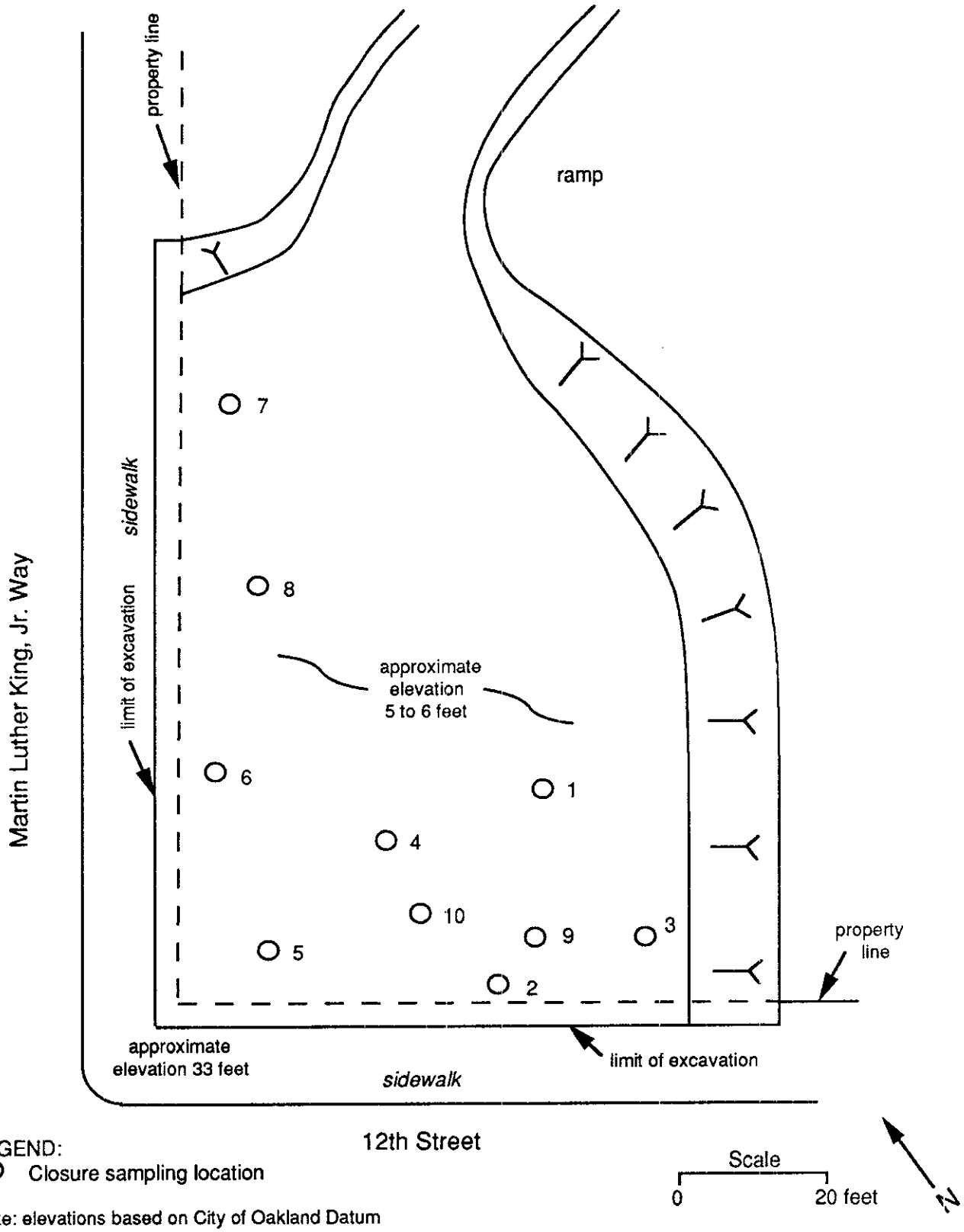
2. Analyzed by EPA Method 9071.

3. Analyzed by EPA Method 503 D/E.

4. Analyzed by EPA Method 7421.

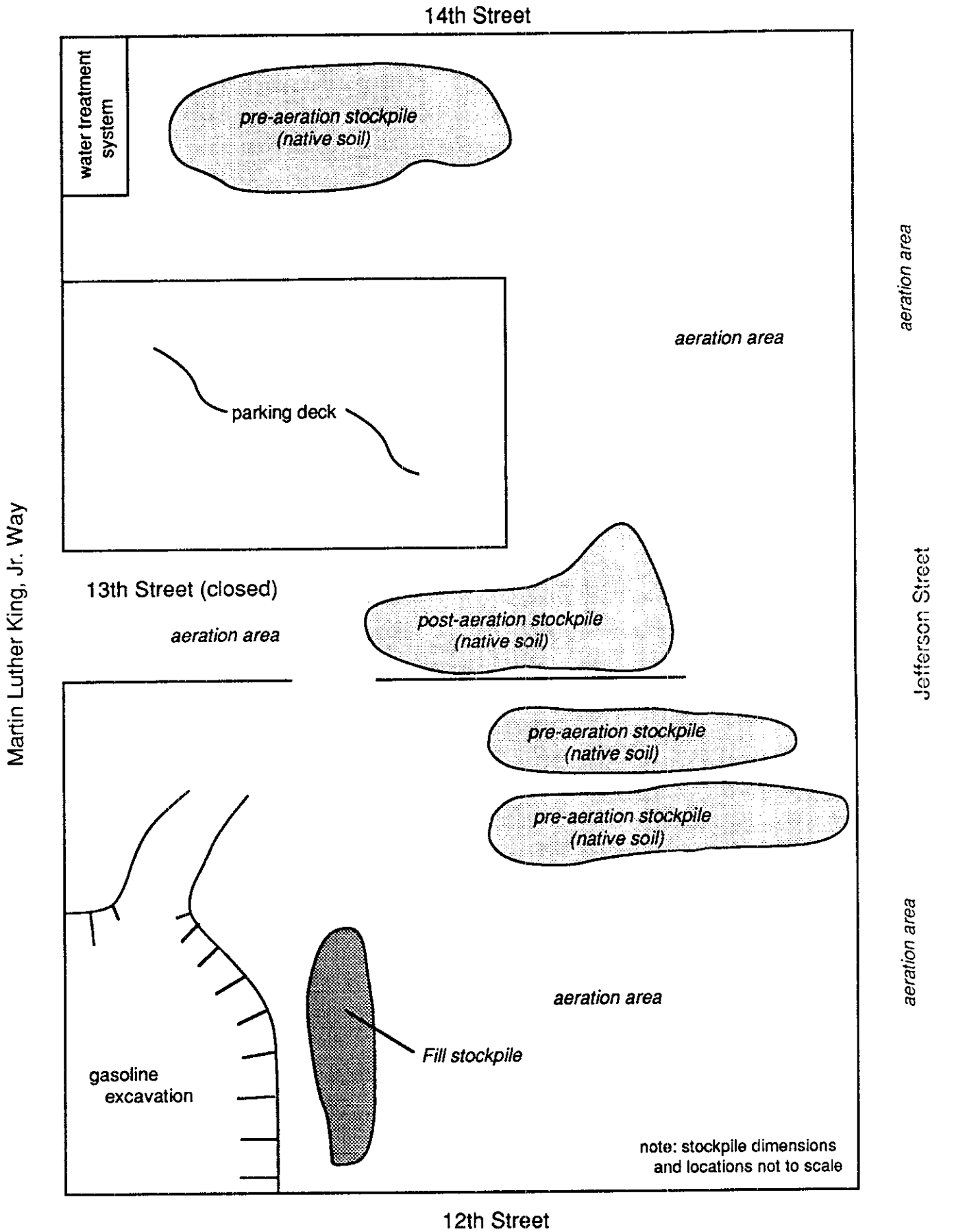


Project No. 90C0028A	City Center Garage II	Initial Site Configuration - Area of Petroleum Contamination	Figure 1
Woodward-Clyde Consultants			

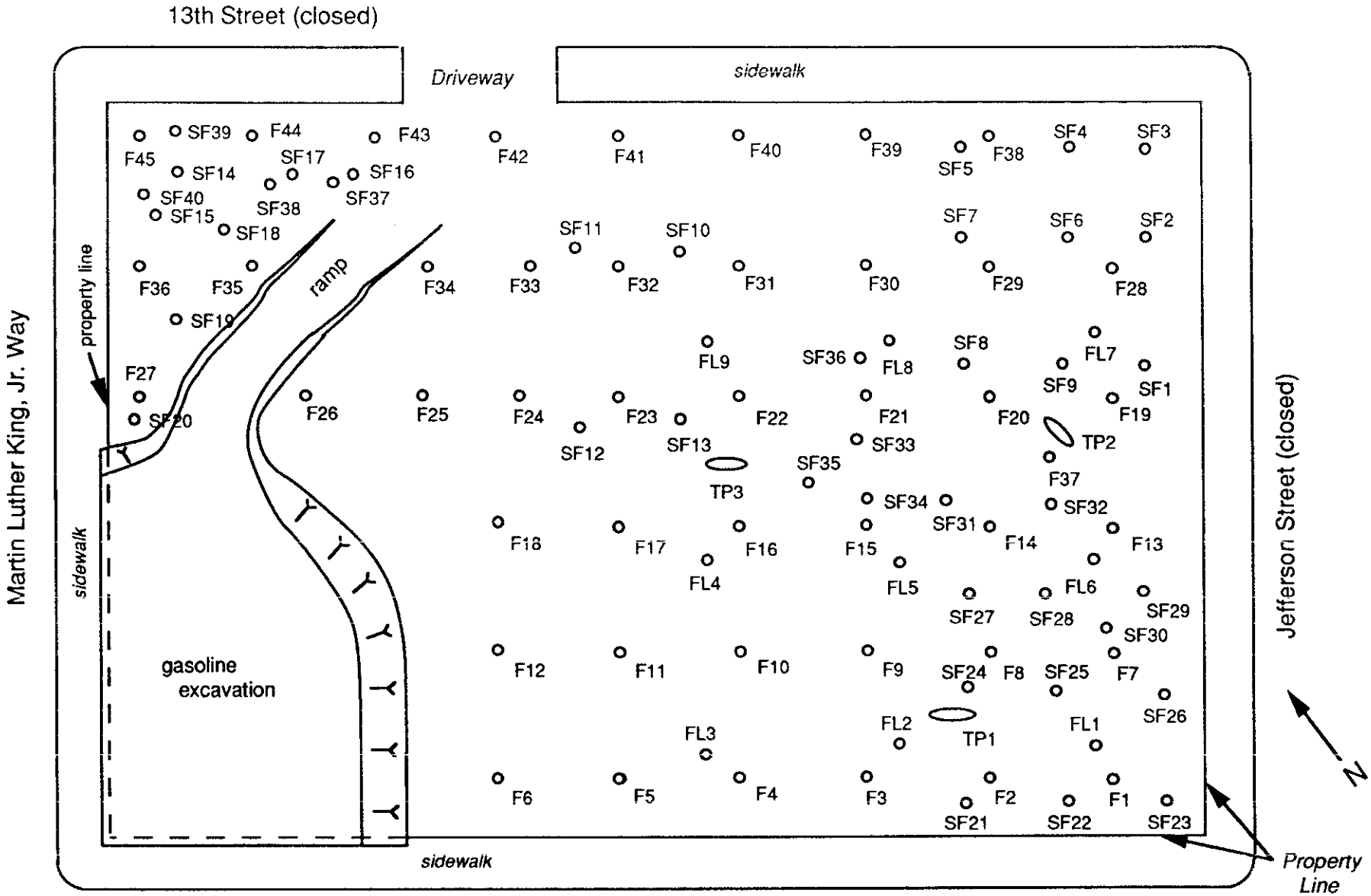


note: elevations based on City of Oakland Datum

Project No. 90C0028A	City Center Garage II	Gasoline Excavation Closure Sampling Locations	Figure 2
Woodward-Clyde Consultants			



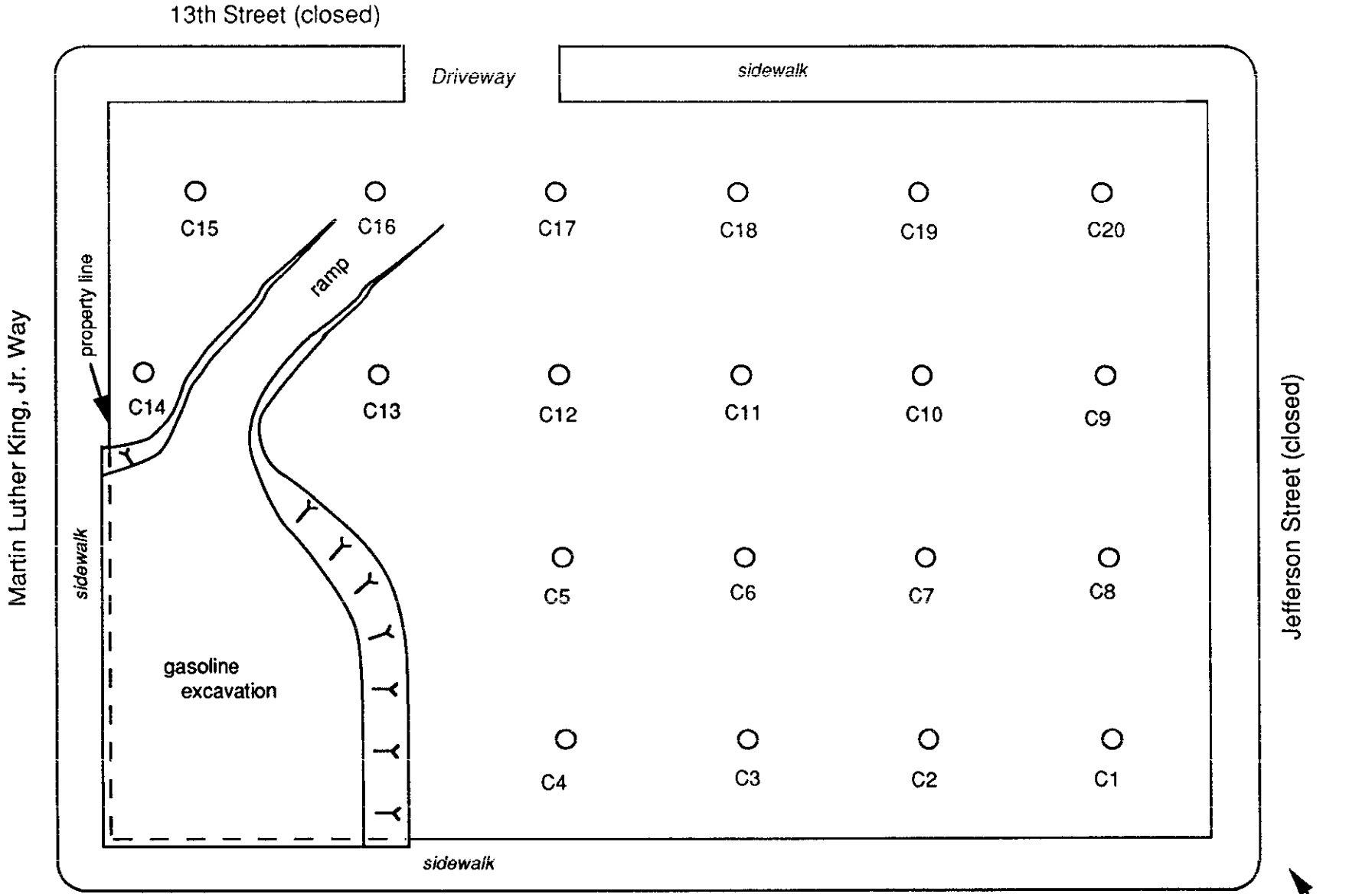
Project No. 90C0028A	City Center Garage II	Typical Locations of Stockpiles and Aeration Areas	Figure 3
Woodward-Clyde Consultants			



LEGEND:
- Soil sample location
- Test pit location

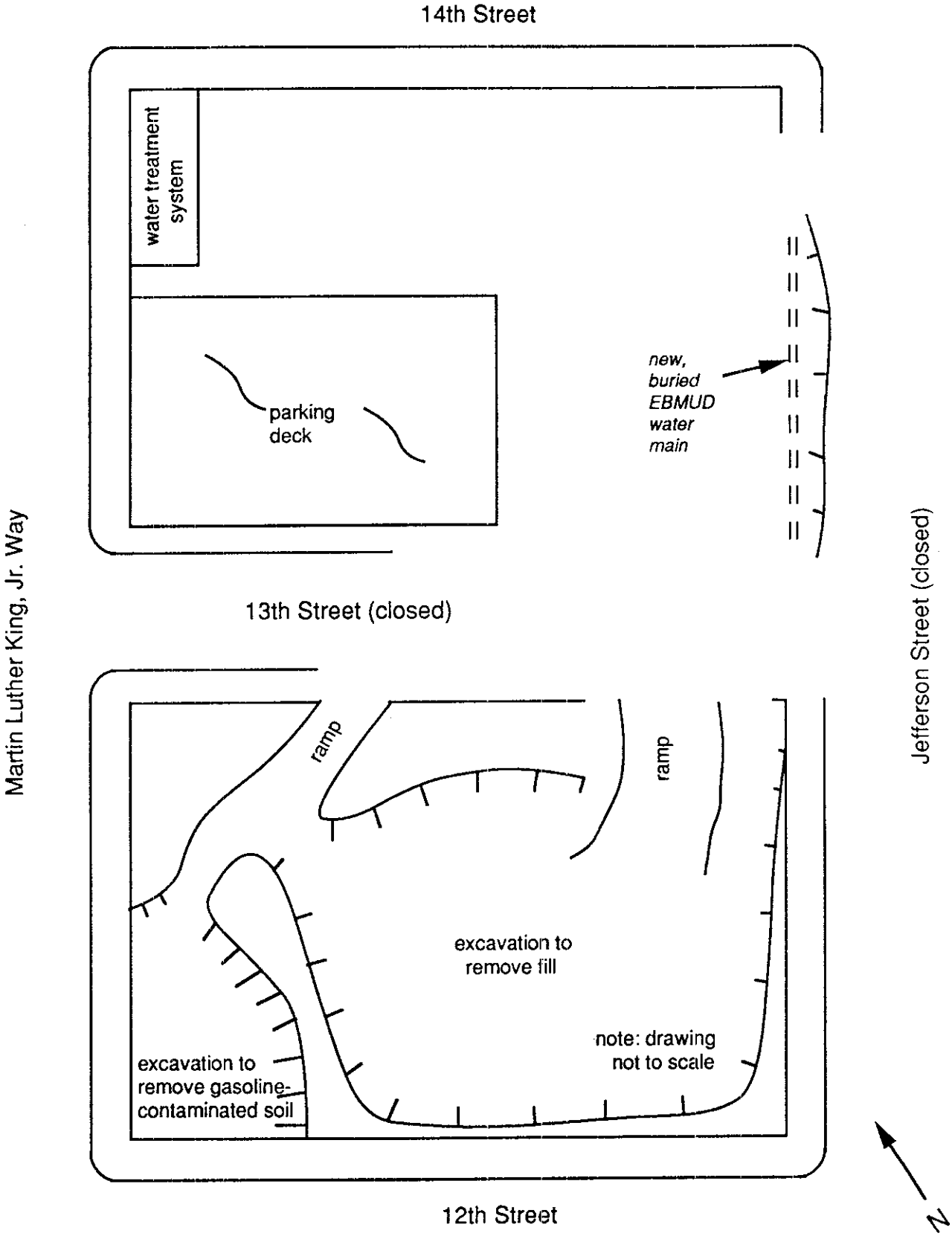
Scale: 0 — 40 feet

Project No. 90C0028A	City Center Garage II	Fill Area - Sampling Locations	Figure 4
Woodward-Clyde Consultants			



Note: three samples collected at each location; a - surface, b - 2 to 3 feet deep, c - 5 feet deep. Samples b and c were composited.

Project No. 90C0028A	City Center Garage II	Fill Area - Closure Sampling Locations	Figure 5
Woodward-Clyde Consultants			



Project No. 90C0028A	City Center Garage II	End-of-Project Conditions	Figure 6
Woodward-Clyde Consultants			

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL1		ELEVATION AND DATUM	
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted	DATE STARTED / DATE FINISHED June 1, 1990	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 9.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION
	asphaltic concrete + gravel base
5	SILTY SAND (SM) black, dry, pieces of brick, gravel to 1" diameter (FILL)
10	SILTY SAND (SM) reddish brown, some clay, damp (NATIVE SOIL)
	Bottom of Boring - 9 feet
15	
20	
25	
30	
35	

DEPTH (feet)	SAMPLES Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
5	1	1			
10	2	2			
15					
20					
25					
30					
35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL2		ELEVATION AND DATUM	
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted	DATE STARTED / DATE FINISHED June 1, 1990	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 6.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL	LOGGED BY: W. Copeland	CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO FL		
TYPE OF SEAL NO. 1 NA	FROM TO FL		
NO. 2 NA	FROM TO FL		

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base					
	SILTY SAND (SM) black, dry, pieces of brick (FILL)					
	becomes gray brown, no debris	1	1			
5	CLAYEY SAND (SC) mottled reddish brown and gray, some silt, moist (NATIVE SOIL)	2	2			
	Bottom of Boring - 6 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL3		ELEVATION AND DATUM	
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted	DATE STARTED / DATE FINISHED June 1, 1990	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 11.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) gray brown, dry, pieces of brick (FILL)						
	becomes clayey		1	1			
5	decreasing clay	5	2	2			
	becomes gray with black spots, wood fragments		3	3			
	becomes saturated		4				
10	SILTY SAND (SM) reddish brown, some gray mottling, damp (NATIVE SOIL)	10	5	4			
	Bottom of Boring - 11 feet						
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL4			ELEVATION AND DATUM		
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted		DATE STARTED / DATE FINISHED June 1, 1990		
DRILLING EQUIPMENT Mobile B-53			COMPLETION DEPTH 6.0'		SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT		NO. OF SAMPLES DIST. NA		UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA		COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.		LOGGED BY: W. Copeland		CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO FT.				
TYPE OF SEAL NO. 1 NA	FROM TO FT.				
NO. 2 NA	FROM TO FT.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) brown, dry, pieces of brick (FILL) becomes black becomes red (brick fragments) becomes dark brown		1	1			
5	CLAYEY SAND (SC) mottled reddish brown and gray, some silt, damp (NATIVE SOIL)	5	2	2			
	Bottom of Boring - 6 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL5			ELEVATION AND DATUM		
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted		DATE STARTED / DATE FINISHED June 1, 1990		
DRILLING EQUIPMENT Mobile B-53			COMPLETION DEPTH 6.0'		SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT		NO. OF SAMPLES	DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL	FIRST NA	COMPL. NA / 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: W. Copeland		CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) black, dry, pieces of brick (FILL)		1	1			
5	SILTY SAND (SM) mottled reddish brown and gray, some silt, damp (NATIVE SOIL)	5	2	2			
	Bottom of Boring - 6 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL6			ELEVATION AND DATUM		
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted		DATE STARTED / DATE FINISHED June 1, 1990		
DRILLING EQUIPMENT Mobile B-53			COMPLETION DEPTH 6.0'		SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT		NO. OF SAMPLES DIST. NA		UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA		COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.		LOGGED BY: W. Copeland		CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO FT.				
TYPE OF SEAL NO. 1 NA	FROM TO FT.				
NO. 2 NA	FROM TO FT.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) dark brown, dry, pieces of brick (FILL)		1	1			
5	CLAYEY SAND (SC) mottled reddish brown and gray, some silt, damp (NATIVE SOIL)	5	2	2			
	Bottom of Boring - 6 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL7		ELEVATION AND DATUM	
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted	DATE STARTED / DATE FINISHED June 1, 1990	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 6.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL	LOGGED BY: W. Copeland	CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO FL		
TYPE OF SEAL NO. 1 NA	FROM TO FL		
NO. 2 NA	FROM TO FL		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) black, dry, pieces of brick, rebar, gravel (FILL)		1	1			
5	CLAYEY SAND (SC) mottled reddish brown and gray, some silt, moist (NATIVE SOIL)	5	2	2			
	Bottom of Boring - 6 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL8			ELEVATION AND DATUM		
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted		DATE STARTED / DATE FINISHED June 1, 1990		
DRILLING EQUIPMENT Mobile B-53			COMPLETION DEPTH 6.0'		SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT		NO. OF SAMPLES DIST. NA		UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA		COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.		LOGGED BY: W. Copeland		CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO FT.				
TYPE OF SEAL NO. 1 NA	FROM TO FT.				
NO. 2 NA	FROM TO FT.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) black, dry, pieces of brick, cloth, gravel (FILL)						
	becomes medium brown		1	1			
5	CLAYEY SAND (SC) mottled reddish brown and gray, some silt, damp (NATIVE SOIL)	5	2	2			
	Bottom of Boring - 6 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER FL9		ELEVATION AND DATUM	
DRILLING AGENCY Sierra Pacific Exploration	DRILLER Phil / Ted	DATE STARTED / DATE FINISHED June 1, 1990	
DRILLING EQUIPMENT Mobile B-53		COMPLETION DEPTH 6.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 8" Hollow Stem Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: W. Copeland	CHECKED BY: G. Ford
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	asphaltic concrete + gravel base						
	SILTY SAND (SM) black, dry, pieces of brick (FILL)		1	1			
5	CLAYEY SAND (SC) mottled reddish brown and gray, some silt, damp (NATIVE SOIL)	5	2	2			
	Bottom of Boring - 6 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F1		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED	June 13, 1990
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Black, dry, fine grain, pieces of bricks and wood (FILL)		1	F1-1		8 10	
			2	F1-2		4 5	
	Bottom of Boring - 4 feet						
5		5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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BORING NUMBER F2		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION
	Asphaltic concrete + gravel base
	SILTY SAND (SM) Black, dry, fine grain, with brick fragments (FILL)
5	becomes reddish-brown, damp (NATIVE SOIL?)
	Bottom of Boring - 5 feet

DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	1	F2-1			
	2	F2-2			
5	3	F2-3			

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F3			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 13, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 4.0'		SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA		UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA		COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: W. Copeland		CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Asphaltic concrete + gravel base					
	SILTY SAND (SM) Black, dry, fine grain (FILL)	1	F3-1			
	becomes medium brown (NATIVE SOIL?)	2	F3-2			
5	Bottom of Boring - 4 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F4		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F4-1			
	SILTY SAND (SM) Medium brown, dry, fine grain, with brick fragments (FILL)		2	F4-2			
	Some clay		3	F4-3			
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F5		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Greenish-brown, dry, fine grain sand with some clay (FILL)		1	F5-1			
			2	F5-2			
5	Bottom of Boring - 4 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F6			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 13, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type	
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA	UNDIST. 3	
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA	COMPL. NA	24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: W. Copeland	CHECKED BY:	
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F6-1			
	SILTY SAND (SM) Reddish brown with black areas, damp, with some clay (FILL)		2	F6-2			
	Brick fragments		3	F6-3			
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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BORING NUMBER F7		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F7-1			
	SILTY SAND (SM) Black, damp, fine grain sand with some clay (FILL)		2	F7-2			
	becomes reddish-brown		3	F7-3			
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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BORING NUMBER F8		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Black, dry, fine grain (FILL)		1	F8-1			
			2	F8-2			
5	Bottom of Boring - 4 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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BORING NUMBER F9		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F9-1			
	SILTY SAND (SM) Dark brown, dry, fine grain (FILL)		2	F9-2			
5		5	3	F9-3			
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F10			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 13, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type	
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA	UNDIST. 2	
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA	COMPL. NA	24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL.		LOGGED BY: W. Copeland	CHECKED BY: G. Ford	
SIZE AND TYPE OF PACK NA	FROM TO FL.				
TYPE OF SEAL NO. 1 NA	FROM TO FL.				
NO. 2 NA	FROM TO FL.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark brown, dry, fine grain with little clay (FILL)		1	F10-1			
	No Clay		2	F10-2			
5	Bottom of Boring - 4 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F11		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F11-1			
	SILTY SAND (SM) Medium brown, damp, with brick and mortar fragments (FILL)		2	F11-2			
5		5	3	F11-3			
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F12		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Black, dry, fine grain, with brick fragments (FILL)		1	F12-1			
			2	F12-2			
5	Bottom of Boring - 4 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F13		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Black, damp, fine grain (FILL) contains gravel and mortar		1	F13-1			
			2	F13-2			
5	Bottom of Boring - 4 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F14		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F14-1			
	SILTY SAND (SM) Black, dry, fine grain sand with debris (FILL)		2	F14-2			
5		5	3	F14-3			
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F15			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 13, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type	
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA	UNDIST. 2	
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA	COMPL. NA	24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: W. Copeland	CHECKED BY:	
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Black, dry, fine grain sand with debris (FILL)		1	F15-1			
			2	F15-2			
5	Bottom of Boring - 4 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F16		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F16-1			
	SILTY SAND (SM) Black, dry, fine grain sand with debris (FILL)		2	F16-2			
5		5	3	F16-3			
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F17		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Asphaltic concrete + gravel base					
	SILTY SAND (SM) Black, dry, with brick and mortar fragments (FILL)	1	F17-1			
		2	F17-2			
5	Bottom of Boring - 4 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F18			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 13, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type	
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA	UNDIST. 3	
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA	COMPL. NA	24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: W. Copeland	CHECKED BY:	
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F18-1			
	SILTY SAND (SM) Black, dry, fine grain sand with debris (FILL)		2	F18-2			
5		5	3	F18-3			
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F19		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED	June 14, 1990
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Asphaltic concrete + gravel base	1	F19-1		6, 4	
	SILTY SAND (SM) Dark brown, dry, fine grain sand, contains brick, wood fragments and gravel (FILL)	2	F19-2		5, 6	
		3	F19-3		5, 7	
5	Bottom of Boring - 5 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F20		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark brown, moist, fine grain sand, with brick fragments and gravel (FILL)		1	F20-1		5 6	
5		5	2	F20-2		5 6	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F21		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO FL		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F21-1		7 9	
	SILTY SAND (SM) Dark grey-brown, damp, fine grain sand with brick fragments (FILL)		2	F21-2		9 9	
			3	F21-3		5 6	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F22		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark brown, moist, fine grain sand with brick fragments (FILL)		1	F22-1		6 6	
5		5	2	F22-2		6 7	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F23		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED	June 14, 1990
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F23-1		14 / 19	
	SILTY SAND (SM) Dark grey-brown, damp to moist, fine grain sand with brick fragments (FILL)		2	F23-2		7 / 8	
	Becomes brown		3	F23-3		6 / 8	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F24		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 13, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 4.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: W. Copeland	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Asphaltic concrete + gravel base					
	SILTY SAND (SM) Black, dry, fine grain with debris (FILL)	1	F24-1			
		2	F24-2			
5	Bottom of Boring - 4 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F25		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F25-1		3 4	
	SILTY SAND (SM) Dark brown, moist, fine grain sand with debris (FILL)		2	F25-2		2 3	
	becomes lighter brown		3	F25-3		3 6	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F26		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION
	Asphaltic concrete + gravel base
	SILTY SAND (SM) Dark brown, damp, fine grain sand with debris (FILL)
	becomes lighter in color
5	Bottom of Boring - 5 feet
10	
15	
20	
25	
30	
35	

DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	1	F26-1		4 4	
	2	F26-2		4 4	
5					
10					
15					
20					
25					
30					
35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F27		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F27-1		9 9	
	SILTY SAND (SM) Dark grey-brown, moist, fine grain (FILL) becomes lighter brown		2	F27-2		4 6	
			3	F27-3		3 5	
5	SILTY SAND (SM) (NATIVE)	5					
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F28		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED	June 14, 1990
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION
	Asphaltic concrete + gravel base
	SILTY SAND (SM) Dark grey-brown, damp, fine grain sand (FILL)
	becomes light brown
5	Bottom of Boring - 5 feet
10	
15	
20	
25	
30	
35	

DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
5	1	F28-1		3 3	
	2	F28-2		4 4	
10					
15					
20					
25					
30					
35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F29		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Asphaltic concrete + gravel base	1	F29-1		10 5	
	SILTY SAND (SM) Dark grey-brown, moist, fine grain (FILL)	2	F29-2		3 4	
		3	F29-3		4 6	
5	Bottom of Boring - 5 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F30		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
0	Asphaltic concrete + gravel base					
	SILTY SAND (SM) mottled brown and dark brown, moist, fine grain (FILL)	1	F30-1		4 4	
		2	F30-2		4 7	
5	Bottom of Boring - 5 feet					
10						
15						
20						
25						
30						
35						

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F31		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F31-1		5 4	
	SILTY SAND (SM) Dark brown, moist, fine grain (FILL)		2	F31-2		2 3	
	becomes lighter brown		3	F31-3		3 4	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F32		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark grey-brown, moist, fine grain sand with brick and wood fragments (FILL)		1	F32-1		4 4	
	becomes brown, with reddish-brown mottling		2	F32-2		4 4	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F33			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 14, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0'		SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA		UNDIST. 3
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA		COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: C. Rambo		CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor etc.)
	Asphaltic concrete + gravel base		1	F33-1		8/7	
	SILTY SAND (SM) Dark brown, moist, fine grain sand with debris (FILL)		2	F33-2		3/4	
	becomes lighter brown		3	F33-3		3/4	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F34			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 14, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0'		SAMPLER 2" Modifiec California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES	DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL	FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: C. Rambo		CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.				
TYPE OF SEAL NO. 1 NA	FROM TO Ft.				
NO. 2 NA	FROM TO Ft.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM)						
	Dark grey-brown, dry, fine grain sand with debris (FILL)						
	becomes lighter brown		1	F34-1		3 3	
	some clay		2	F34-2		3 5	
5		5					
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F35		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F35-1		8 / 8	
	SILTY SAND (SM) Dark brown, with fine gravel, damp (FILL)						
	becomes brown, damp		2	F35-2		3 / 3	
5		5	3	F35-3		3 / 6	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F36			ELEVATION AND DATUM
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 14, 1990
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0' / SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES / DIST. NA / UNDIST. 2
SIZE AND TYPE OF CASING NA			WATER LEVEL / FIRST NA / COMPL. NA / 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL		LOGGED BY: C. Rambo / CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FL		
TYPE OF SEAL NO. 1 NA	FROM TO FL		
NO. 2 NA	FROM TO FL		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Brown, damp to moist, fine grain sand (FILL)		1	F36-1		4 5	
5		5	2	F36-2		4 6	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F37		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FL		
TYPE OF SEAL NO. 1 NA	FROM TO FL		
NO. 2 NA	FROM TO FL		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F37-1		10 12	
	SILTY SAND (SM) mottled dark brown and orange-brown, moist, fine grain (FILL)						
	becomes orange-brown		2	F37-2		10 11	
5		5	3	F37-3		4 5	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F38			ELEVATION AND DATUM		
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 14, 1990		
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type	
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES DIST. NA	UNDIST. 2	
SIZE AND TYPE OF CASING NA			WATER LEVEL FIRST NA	COMPL. NA	24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FL.		LOGGED BY: C. Rambo	CHECKED BY:	
SIZE AND TYPE OF PACK NA	FROM TO FL.				
TYPE OF SEAL NO. 1 NA	FROM TO FL.				
NO. 2 NA	FROM TO FL.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark grey-brown, damp, with gravel (FILL)		1	F38-1		6 9	
	becomes lighter brown		2	F38-2		3 4	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER	F39			ELEVATION AND DATUM			
DRILLING AGENCY	HEW Exploration	DRILLER	Jasper/Jeff	DATE STARTED / DATE FINISHED	June 14, 1990		
DRILLING EQUIPMENT	CME 45			COMPLETION DEPTH	5.0'	SAMPLER	2" Modified California Type
DRILLING METHOD	6" Solid Auger	DRILL BIT		NO. OF SAMPLES	DIST. NA	UNDIST.	3
SIZE AND TYPE OF CASING	NA			WATER LEVEL	FIRST NA	COMPL. NA	24 HRS. NA
TYPE OF PERFORATION	NA	FROM	TO FT.	LOGGED BY:		CHECKED BY:	
SIZE AND TYPE OF PACK	NA	FROM	TO FT.	C. Rambo			
TYPE OF SEAL	NO. 1 NA	FROM	TO FT.				
	NO. 2 NA	FROM	TO FT.				

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F39-1		5 6	
	SILTY SAND (SM) Dark brown, moist, with brick fragments (FILL)		2	F39-2		3 4	
5		5	3	F39-3		4 5	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F40		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark brown, moist, fine grain (FILL)		1	F40-1		4 4	
			2	F40-2		4 4	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F41			ELEVATION AND DATUM
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff		DATE STARTED / DATE FINISHED June 14, 1990
DRILLING EQUIPMENT CME 45			COMPLETION DEPTH 5.0' / SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT		NO. OF SAMPLES / DIST. NA / UNDIST. 3
SIZE AND TYPE OF CASING NA			WATER LEVEL / FIRST NA / COMPL. NA / 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.		LOGGED BY: C. Rambo / CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F41-1		10 / 12	
	SILTY SAND (SM) Dark brown, moist, fine grain sand (FILL)						
	becomes lighter brown		2	F41-2		7 / 7	
5		5	3	F41-3		6 / 14	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F42		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO Ft.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO Ft.		
TYPE OF SEAL NO. 1 NA	FROM TO Ft.		
NO. 2 NA	FROM TO Ft.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	SAMPLES: Sample Number	SAMPLES: Recov. (Feet.)	SAMPLES: Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark grey-brown, damp, fine grain sand (FILL)		1	F42-1		6 6	
	becomes lighter brown		2	F42-2		7 9	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F43		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F43-1		5 / 5	
	SILTY SAND (SM) Dark brown, damp, fine grain (FILL)						
	becomes lighter brown		2	F43-2		4 / 5	
			3	F43-3		4 / 8	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

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PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F44		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED June 14, 1990	
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 2
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base						
	SILTY SAND (SM) Dark brown, damp to moist, fine grain (FILL)		1	F44-1		3 3	
	becomes light brown to brown		2	F44-2		3 5	
5	Bottom of Boring - 5 feet	5					
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

Woodward-Clyde Consultants

PROJECT NAME City Center Garage II NO. 90C0028A

BORING NUMBER F45		ELEVATION AND DATUM	
DRILLING AGENCY HEW Exploration	DRILLER Jasper/Jeff	DATE STARTED / DATE FINISHED	June 14, 1990
DRILLING EQUIPMENT CME 45		COMPLETION DEPTH 5.0'	SAMPLER 2" Modified California Type
DRILLING METHOD 6" Solid Auger	DRILL BIT	NO. OF SAMPLES DIST. NA	UNDIST. 3
SIZE AND TYPE OF CASING NA		WATER LEVEL FIRST NA	COMPL. NA 24 HRS. NA
TYPE OF PERFORATION NA	FROM TO FT.	LOGGED BY: C. Rambo	CHECKED BY:
SIZE AND TYPE OF PACK NA	FROM TO FT.		
TYPE OF SEAL NO. 1 NA	FROM TO FT.		
NO. 2 NA	FROM TO FT.		

DEPTH (feet)	DESCRIPTION	DEPTH (feet)	SAMPLES: Drive Number	Sample Number	Recov. (Feet.)	Blow Counts	REMARKS (Drill Rate, Fluid Loss, Odor, etc.)
	Asphaltic concrete + gravel base		1	F45-1		5 5	
	SILTY SAND (SM) Dark grey-brown, damp, fine grain (FILL)						
	becomes lighter brown		2	F45-2		3 3	
5		5	3	F45-3		5 7	
	Bottom of Boring - 5 feet						
10		10					
15		15					
20		20					
25		25					
30		30					
35		35					

APPENDIX B

CHEMICAL ANALYTICAL RESULTS

Contents:

3203

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

April 20, 1990 ChromaLab File No.: 0490068

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: ~~George Ford~~

RE: Seven rush soil samples for Gasoline/BTEX, Oil & Grease, and Total Lead analyses

Project Number: 90C0028A
Duration of Analysis: April 18-20, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)	Lead (mg/Kg)
DT-1	N.D.	N.D.	12	11	88	N.D.	5.0
DT-2	N.D.	N.D.	7.5	5.0	42	N.D.	7.6
DT-3	24	N.D.	150	240	2300	N.D.	10
CN-1	61	7.4	110	420	840	N.D.	14
CN-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	29
CN-3	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	7.1
CN-4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	6.8
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	102.5%	92.8%	98.3%	99.6%	95.2%	-----	96.4%
DETECTION LIMIT	2.5	5	5	5	5	50	0.1
METHOD OF ANALYSIS	MOD. 8015	8020	8020	8020	8020	503 D&E	7420

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

May 1, 1990

ChromaLab File No.: 0490102

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Five soil samples for Gasoline/BTEX analysis

Project Number: 90C0028A
Duration of Analysis: April 26-May 1, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
DT-4	7.7	N.D.	N.D.	N.D.	N.D.
DT-5	N.D.	N.D.	N.D.	N.D.	N.D.
DT-6	61	8.3	20	23	140
DT-7	850	85	7700	17000	32000
DT-8	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	88.1%	83.2%	87.7%	86.1%	81.6%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	MOD.8015	8020	8020	8020	8020

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

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- Drinking Water (#955)
- Waste Water
- Consultation

April 26, 1990

ChromaLab File No.: 0490102

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Greg Ford

RE: Nine rush soil samples for Gasoline/BTEX and Total Lead analyses

Project Number: 90C0028A
Duration of Analysis: April 24-26, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)
CN-5	N.D.	N.D.	N.D.	N.D.	N.D.	6.4
CN-6	N.D.	N.D.	N.D.	N.D.	N.D.	3.5
CN-7	N.D.	N.D.	N.D.	N.D.	N.D.	5.9
CN-8	N.D.	N.D.	N.D.	N.D.	N.D.	2.3
CN-9	N.D.	N.D.	N.D.	N.D.	N.D.	6.6
CN-10	22	N.D.	N.D.	9.8	N.D.	5.7
CN-11	N.D.	N.D.	N.D.	N.D.	N.D.	4.4
CN-12	N.D.	N.D.	N.D.	N.D.	N.D.	4.5
CN-13	N.D.	N.D.	N.D.	N.D.	N.D.	3.8
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	102.5%	92.8%	98.3%	99.6%	95.2%	99.4%
DETECTION LIMIT	2.5	5	5	5	5	0.1
METHOD OF ANALYSIS	MOD. 8015	8020	8020	8020	8020	3005/ 7420

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
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CHROMALAB, INC.

Analytical Laboratory
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- Drinking Water (#955)
- Waste Water
- Consultation

May 1, 1990 ChromaLab File No.: 0490120

WOODWARD-CLYDE CONSULTANTS, INC. Attn: George Ford

RE: Twenty-three rush soil samples for Gasoline/BTEX analysis

Project Number: 90C0028A
Duration of Analysis: April 29-May 1, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
CN-14	N.D.	N.D.	N.D.	N.D.	N.D.
CN-15	N.D.	N.D.	N.D.	N.D.	N.D.
CN-16	N.D.	N.D.	N.D.	N.D.	N.D.
CN-17	N.D.	N.D.	N.D.	N.D.	N.D.
CN-18	N.D.	N.D.	N.D.	N.D.	N.D.
CN-19	3.2	N.D.	N.D.	N.D.	N.D.
CN-20	N.D.	N.D.	N.D.	N.D.	N.D.
CN-21	N.D.	N.D.	N.D.	N.D.	N.D.
CN-22	N.D.	N.D.	N.D.	N.D.	N.D.
CN-23	N.D.	N.D.	N.D.	N.D.	N.D.
CN-24	N.D.	N.D.	N.D.	N.D.	N.D.
CN-25	N.D.	N.D.	N.D.	N.D.	N.D.
CN-26	N.D.	N.D.	N.D.	N.D.	N.D.
CN-27	N.D.	N.D.	N.D.	N.D.	N.D.
CN-28	N.D.	N.D.	N.D.	N.D.	N.D.
CN-29	N.D.	N.D.	N.D.	N.D.	N.D.
CN-30	N.D.	N.D.	N.D.	N.D.	N.D.
CN-31	N.D.	N.D.	N.D.	N.D.	N.D.
CN-32	N.D.	N.D.	N.D.	N.D.	N.D.
CN-33	N.D.	N.D.	N.D.	N.D.	N.D.
DT-9	N.D.	N.D.	N.D.	N.D.	N.D.
DT-10	N.D.	N.D.	N.D.	N.D.	N.D.
DT-11	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	84.0%	105.5%	101.7%	81.7%	88.1%
DUPLICATED SPIKE RECOVERY	92.4%	111.8%	110.4%	98.5%	98.7%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	MOD.8015	8020	8020	8020	8020

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

May 14, 1990 ChromaLab File No.: 0590040

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Thirty soil samples for Gasoline/BTEX, Oil & Grease, Total Lead, and Wet Lead analyses

Project Number: 90C0028A
Date Sampled: May 4, 1990 Date Submitted: May 4, 1990
Duration of Analysis: May 4-12, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
DT 12	N.D.	19	15	N.D.	8.1	----	----	----
DT 13	71	34	150	170	800	----	----	----
DT 14	390	150	450	830	3100	----	----	----
DT 15	55	N.D.	N.D.	7.2	39	----	----	----
DT 16	1000	800	3200	4100	12000	----	----	----
DT 17	27	N.D.	N.D.	7.3	120	----	----	----
FL 9	----	----	----	----	----	N.D.	55	0.7
FL 10	----	----	----	----	----	N.D.	74	0.6
FL 11	----	----	----	----	----	N.D.	37	0.2
FL 12	----	----	----	----	----	N.D.	78	0.5
FL 13	----	----	----	----	----	N.D.	42	0.5
FL 14	----	----	----	----	----	N.D.	51	0.6
FL 15	----	----	----	----	----	100	47	0.6
FL 16	----	----	----	----	----	61	86	0.8
BTM 1	N.D.	5.4	N.D.	N.D.	N.D.	----	----	----
BTM 2	38	24	6.2	16	300	----	----	----
BTM 3	47	370	180	170	460	----	----	----
BTM 4	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
BTM 5	45	330	96	32	390	----	----	----
BTM 6	N.D.	75	40	N.D.	33	----	----	----
BTM 7	21	390	430	180	400	----	----	----
BTM 8	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
BTM 9	N.D.	32	5.1	N.D.	5.0	----	----	----

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

May 16, 1990 ChromaLab File No.: 0590062

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Eight soil samples for Gasoline/BTEX analysis

Project Number: 90C0028A
Date Sampled: May 8, 1990 Date Submitted: May 8, 1990
Date Extracted: May 12-14, 1990 Date Analyzed: May 12-14, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
DT-18	N.D.	N.D.	N.D.	N.D.	N.D.
DT-19	N.D.	N.D.	N.D.	N.D.	N.D.
DT-20	N.D.	N.D.	N.D.	N.D.	N.D.
DT-21	N.D.	N.D.	N.D.	N.D.	N.D.
DT-22	3.6	N.D.	N.D.	N.D.	N.D.
DT-23	N.D.	N.D.	N.D.	N.D.	N.D.
DT-24	110	93	110	65	280
DT-25	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	90.4%	99.5%	108.4%	92.7%	94.7%
DUP. SPIKE RECOVERY	95.2%	91.4%	88.2%	99.6%	109.5%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	MOD.8015	8020	8020	8020	8020

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

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- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

April 20, 1990 ChromaLab File # 04900680

Client: Woodward-Clyde Consultants Attn: George Ford

Date Submitted: April 18, 1990
Date of Analysis: April 20, 1990

Project No: 90C0028A
Sample I.D.: DT-3
Method of Analysis: EPA 8240 Detection Limit: 10 ug/Kg

COMPOUND NAME	ug/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	99.8%
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	84.4%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
BENZENE	N.D.	93.1%
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	150	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	90.9%
ETHYL BENZENE	240	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	83.9%
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	2300	---

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

CHROMALAB, INC.

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Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

April 20, 1990

ChromaLab File # 04900688

Client: Woodward-Clyde Consultants Attn: George Ford

Date Submitted: April 18, 1990
Date of Analysis: April 20, 1990

Project No: 90C0028A
Sample I.D.: DT-2
Method of Analysis: EPA 8240 Detection Limit: 10 ug/Kg

COMPOUND NAME	ug/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	99.8%
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	84.4%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
BENZENE	N.D.	93.1%
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	90.9%
ETHYL BENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	83.9%
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	42	---

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

April 20, 1990 ChromaLab File # 0490068A

Client: Woodward-Clyde Consultants Attn: George Ford

Date Submitted: April 18, 1990
Date of Analysis: April 20, 1990

Project No: 90C0028A
Sample I.D.: DT-1
Method of Analysis: EPA 8240 Detection Limit: 10 µg/Kg

COMPOUND NAME	µg/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	99.8%
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	---
1,1-DICHLOROETHENE	N.D.	84.4%
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	---
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
BENZENE	N.D.	93.1%
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
TOLUENE	12	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	---
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	90.9%
ETHYL BENZENE	11	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	83.9%
1,2-DICHLOROBENZENE	N.D.	---
TOTAL XYLENES	88	---

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

MOBILE CHEM LABS INC.

1678 Reliez Valley Road
Lafayette, CA 94549 • (415) 945-1266

Chromalab Inc.
2239 Omega Road
San Ramon, CA 94583
Attn: Eric Tam

Date Sampled:04-30-90
Date Received:04-30-90
Date Reported:05-01-90

ORGANIC LEAD

Sample Number	Sample Description	Detection Limit	Sample Results
		ppm	ppm
	Proj. # 0490102-120		
B040172	DT-6	0.010	ND
B040173	DT-9	0.010	ND
B040174	CN-14	0.010	ND
B040175	CN-18	0.010	ND
B040176	CN-30	0.010	ND

QA/QC: * Spike Recovery is 108%
Preformed on Sample # B040176

Note: Analysis - California LUFT Manual, 12/87

MOBILE CHEM LABS

For Ronald G. Evans
Lab Director

CHROMALAB, INC.

Analytical Laboratory
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- Drinking Water (#955)
- Waste Water
- Consultation

May 21, 1990

ChromaLab File No.: 0590130

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Five rush soil samples for Gasoline/BTEX and Total Lead analyses

Project Number: 90C0028A
Date Sampled: May 18, 1990
Date Extracted: May 20, 1990

Date Submitted: May 18, 1990
Date Analyzed: May 20-21, 1990

RESULTS:

Sample NO.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Lead (mg/Kg)
SC-1	N.D.	N.D.	N.D.	N.D.	N.D.	6.99
SC-2	N.D.	N.D.	N.D.	N.D.	N.D.	3.54
SC-3	N.D.	N.D.	N.D.	N.D.	N.D.	7.14
SC-4	N.D.	N.D.	N.D.	N.D.	N.D.	4.62
SC-5	N.D.	N.D.	N.D.	N.D.	N.D.	3.62
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	90.4%	91.4%	88.2%	99.6%	98.7%	89.1%
DUP. SP. RECOVERY	95.2%	96.7%	90.1%	98.5%	109.5%	102.7%
DETECTION LIMIT	2.5	5	5	5	5	0.05
METHOD OF ANALYSIS	MOD. 8015	8020	8020	8020	8020	7420

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1799 Facsimile 415/831-9798

05.21.90 01:35 PM P01

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Bleyeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method 8240 VOCs	EPA Method 503 O&G	TPH/gas/BETX	Total Pb	Number of Containers
4/17	NA	DT-1	S			X	X	X	X	1
↓	↓	DT-2	↓			X	X	X	X	1
		DT-3				X	X	X	X	1
		CN-1					X	X	X	1
		CN-2					X	X	X	1
		CN-3					X	X	X	1
		CN-4					X	X	X	1

REMARKS (Sample preservation, handling procedures, etc.)

48 hour turnaround

questions + results to George Ford 874-3203

TOTAL NUMBER OF CONTAINERS: 7

SOIL

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	-90 4:[illegible]	[illegible signature]			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) [signature]

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BETX	Total Pb				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
4/24		DT-4	S					X	X				1	
		DT-5											1	
		DT-6											1	
		DT-7											1	
		DT-8											1	
		CN-5											1	
		CN-6											1	
		CN-7											1	
		CN-8											1	
		CN-9											1	
		CN-10											1	
		CN-11											1	
		CN-12											1	
		CN-13	↓					↓	↓				1	

Cancelled 4/27

5 day turnaround

48 hour turnaround

Questions & Results to George Ford 874-3203

					TOTAL NUMBER OF CONTAINERS	14	Soil

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	4/24/90				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[signature] 4-25-90	16:20

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm B Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH gas/BTEX						Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
5/8		OT 18	S					X						1	
		OT 19						X						1	
		OT 20						X						1	
		OT 21						X						1	
		OT 22						X						1	
		OT 23						X						1	
		OT 24						X						1	
		OT 25	↓					X						1	

5 day turnaround

Questions & Results to George Ford 874-3203

						TOTAL NUMBER OF CONTAINERS	8

SOIL

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Wm B Copeland	5/8 2:40				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 10GC028 [illegible]

SAMPLERS: (Signature) [signature]

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH as gas/BTEX	org Pb-	STLC [illegible]	Total Pb	WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
5/4	NA	DT12	S					X	X							
		DT13						X	X	+ 1 only						
		DT14						X	X							
		DT15						X	X							
		DT16						X	X							
		FL9			O						X	X				
		FL10									X					
		FL11								X	X					
		FL12								X	X					
		FL13								X	X					
		FL14								X	X	X				
		FL15								X	X	X				
		FL16								X	X	X				
		[illegible]						X								
		[illegible]						X								
		[illegible]						X								
		[illegible]														* 24 hour turn around
		[illegible]														
		SS161														
		[illegible]														
		[illegible]														rest of 5 day turn around
		[illegible]														
		[illegible]														
		[illegible]														
		[illegible]														questions & results to George Ford 874-3203
		[illegible]														
		WALL1						X								
		WALL2						X								
↓		WALL3	↓					X								

TOTAL NUMBER OF CONTAINERS: 27 — SOIL

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5/4 [illegible]	[signature]			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Blefeld

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BETX	Pb Total					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
		SC-1	S					X	X					1	
		SC-2	↓					X	X					1	
		SC-3						X	X					1	
		SC-4						X	X					1	
		SC-5						X	X					1	

24 hour turnaround (Monday morning if possible)

Verbal results to George Ford 874-3203 or Bill Copeland 874-3192 please

TOTAL NUMBER OF CONTAINERS: 5

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Wm Blefeld	5/18 12:30				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			Steve Woods	5-18-90 14:00

CHROMALAB, INC.

Analytical Laboratory
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- Drinking Water (#955)
- Waste Water
- Consultation

May 29, 1990 ChromaLab File No.: 0590191

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Five rush composited soil samples for Gasoline/BTEX, Diesel, and Oil & Grease analyses

Project Number: 90C0028A
Date Sampled: May 24, 1990 Date Submitted: May 24, 1990
Date Extracted: May 24-29, 1990 Date Analyzed: May 24-29, 1990

RESULTS

Sample No.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)
G1-1,2,3,4	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
G2-1,2,3,4	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
G3-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
G4-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
G5-1,2,3,4	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	93.5%	98.3%	101.0%	97.0%	98.9%	----
SPIKE RECOVERY	91.4%	86.4%	91.4%	88.2%	99.6%	109.5%	----
DETECTION LIMIT	2.5	5	5	5	5	5	5
METHOD OF ANALYSIS	5030/ 8015	3500/ 8015	8020	8020	8020	8020	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road #1, San Ramon, California 94583
415/831-1709 Fax: 415/831-8708

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

June 6, 1990

ChromaLab File No.: 0590217

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Five rush composited soil samples for Gasoline/BTEX and TTLC Lead analyses

Project Number: 90C0028A
Date Sampled: May 30, 1990
Date Extracted: June 1-4, 1990

Date Submitted: May 30, 1990
Date Analyzed: June 1-4, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)
G6-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
G7-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	----
G8-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	----
G9-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	----
G10-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	----
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%	99.1%
DUP. SPIKED RECOVERY	90.4%	96.7%	88.2%	98.5%	98.7%	102.4%
DETECTION LIMIT	2.5	5	5	5	5	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	7420

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

June 11, 1990 ChromaLab File No.: 0690034

Woodward-Clyde Consultants, Inc.

Attn: Bill Copeland

RE: Two composite soil samples for Gasoline/BTEX analyses

Project Number: 90C0028A
Date Sampled: June 4, 1990 Date Submitted: June 4, 1990
Date Extracted: N/A Date Analyzed: June 9, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
G 11-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G 12-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%
DUP. SPIKE RECOVERY	95.2%	91.4%	88.2%	99.6%	109.5%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

June 15, 1990 ChromaLab File No.: 0690080-81

Woodward-Clyde Consultants, Inc.

Attn: George Ford

RE: Eight composited soil samples for Gasoline/BTEX analysis

Project Number: 90C0028A
Date Sampled: June 8, 1990 Date Submitted: June 8, 1990
Date Extracted: June 12-14, 1990 Date Analyzed: June 12-14,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
G13-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G14-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G15-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G16-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G17-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G18-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G19-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G20-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%
DUP. SPIKE REC.	95.2%	91.4%	97.6%	88.2%	109.5%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

ChromaLab, Inc.

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- Drinking Water (#955)
- Waste Water
- Consultation

June 21, 1990 ChromaLab File No.: 0690125

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Seven composited soil samples for Gasoline/BTEX, TTLC Lead, and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: June 13, 1990 Date Submitted: June 13, 1990
Date Extracted: June 14-20, 1990 Date Analyzed: June 14-20,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
G21-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.46	N.D.
G22-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.77	N.D.
G23-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	11.8	N.D.
G24-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.77	N.D.
G25-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.51	N.D.
G26-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.67	N.D.
G27-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.08	0.27
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%	101.2%	99.4%
DUP SPIKE RECOVERY	95.2%	91.4%	97.6%	88.2%	109.5%	98.1%	101.3%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted as per Title 22 WET procedures.

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- Drinking Water (#955)
- Waste Water
- Consultation

June 21, 1990 ChromaLab File No.: 0690123

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Three composited soil samples for Gasoline/BTEX, TTLC Lead, and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: June 13, 1990 Date Submitted: June 13, 1990
Date Extracted: June 14-20, 1990 Date Analyzed: June 14-20,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
G28-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.44	0.20
G29-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.47	N.D.
G30-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.24	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%	101.2%	99.4%
DUP SPIKE RECOVERY	95.2%	91.4%	97.6%	88.2%	109.5%	98.1%	101.3%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted as per Title 22 WET procedures.

ChromaLab, Inc.

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- Drinking Water (#955)
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ChromaLab File No.: 0690162

June 25, 1990

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Four composited soil samples for Gasoline/BTEX analysis

Project Number: 90C0028A
Date Sampled: June 18, 1990
Date Extracted: June 20-22, 1990
Date Submitted: June 18, 1990
Date Analyzed: June 20-22,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
G31-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G32-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G33-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
G34-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%
DUP SPIKE REC	95.2%	91.4%	97.6%	88.2%	109.5%
DETECTION LIMIT	2.5	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

ChromaLab, Inc.

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- Drinking Water (#955)
- Waste Water
- Consultation

July 3, 1990 ChromaLab File No.: 0690225
0690226

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Eleven composited soil samples for Gasoline/BTEX, TTLC Lead and STLC Lead analyses.

Project Number: 90C0028A
Date Sampled: June 26, 1990 Date Submitted: June 26, 1990
Date Extracted: June 26 - July 03, 1990
Date Analyzed: June 26 - July 03, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
G35-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.06	N.D.
G36-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.33	N.D.
G37-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.47	N.D.
G38-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.60	N.D.
G39-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.35	N.D.
G40-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.16	N.D.
G41-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.03	N.D.
G42-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.19	N.D.
G43-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.19	N.D.
G44-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.70	N.D.
G45-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.21	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	94.1%	98.3%	101.0%	97.0%	98.9%	97.8%	98.1%
DUP. SPIKE RECOVERY	95.2%	91.4%	97.6%	88.2%	109.5%	98.5%	102.9%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per Title 22 WET procedures

ChromaLab, Inc.

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Senior Chemist

Eric Tam
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- Drinking Water (#955)
- Waste Water
- Consultation

July 13, 1990 ChromaLab File No.: 0790021

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Four composited soil samples for Gasoline/BTEX, TTLC Lead, and STLC Lead analyses

Project Number: 90C00 28A
Date Sampled: July 3, 1990 Date Submitted: July 3, 1990
Date Extracted: July 5-11, 1990 Date Analyzed: July 5-11,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/Kg)
G46-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.67	N.D.
G47-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.62	N.D.
G48-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.19	N.D.
G49-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.85	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	101.7%	83.2%	86.5%	103.2%	96.7%	98.6%	99.4%
DUP SPIKE RECOVERY	97.1%	91.6%	102.3%	111.0%	106.1%	111.7%	98.5%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per Title 22 WET procedure

ChromaLab, Inc.

David Duong
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- Drinking Water (#955)
- Waste Water
- Consultation

July 16, 1990 ChromaLab File No.: 0790034

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Seven composited soil samples for Gasoline/BTEX, TTLC Lead and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: July 6, 1990 Date Submitted: July 6, 1990
Date Extracted: July 6-14, 1990 Date Analyzed: July 6-14, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (mg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/Kg)
G50-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.45	0.51
G51-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.81	N.D.
G52-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.42	N.D.
G53-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.72	0.64
G54-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.57	0.51
G55-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.36	1.30
G56-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.87	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	97.1%	91.6%	102.3%	111.0%	106.7%	99.4%	98.5%
DUP SPIKE RECOVERY	101.7%	83.2%	86.5%	103.2%	93.1%	97.8%	102.9%
DET. LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per TITLE 22 WET procedure

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

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CHROMALAB, INC.

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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 16, 1990 ChromaLab File No.: 0790033

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Five composited soil samples for Gasoline/BTEX, TTLC Lead and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: July 6, 1990 Date Submitted: July 6, 1990
Date Extracted: July 6-14, 1990 Date Analyzed: July 6-14, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (mg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/Kg)
G57-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.12	N.D.
G58-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.42	N.D.
G59-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.22	0.78
G60-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.98	0.40
G61-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	12.85	0.63
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE REC.	97.1%	91.6%	102.3%	111.0%	106.7%	99.4%	98.5%
DUP SPIKE RECOVERY	101.7%	83.2%	86.5%	103.2%	93.1%	97.8%	102.9%
DET. LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per TITLE 22 WET procedure

ChromaLab, Inc.

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- Drinking Water (#955)
- Waste Water
- Consultation

September 17, 1990 ChromaLab File No.: 0990020

WOODWARD - CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Re: Eight composited soil samples for Gasoline/BTEX, TTLC Lead, and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Sept. 6, 1990 Date Submitted: Sept. 6, 1990
Date Extracted: Sept. 7-13, 1990 Date Analyzed: Sept.7-13, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	CAM WET Lead (mg/L)
G62-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.48	0.86
G63-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.06	0.72
G64-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.3	1.56
G65-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.40	0.42
G66-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.19	1.88
G67-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.16	0.68
G68-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.47	0.57
G69-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.79	0.29
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	98.7%	86.1%	92.5%	94.4%	93.5%	96.8%	101.5%
DUP SPIKE RECOVERY	91.9%	89.3%	89.7%	90.0%	107.6%	94.1%	99.3%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	1310/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
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Eric Tam
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- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

September 14, 1990 ChromaLab File No.: 0990029

WOODWARD - CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Re: Three composited soil samples for Gasoline/BTEX, TTLC Lead, and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Sept. 7, 1990 Date Submitted: Sept. 7, 1990
Date Extracted: Sept. 10-14, 1990 Date Analyzed: Sept.10-14,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	CAM WET Lead (mg/L)
G[illegible]-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.99	0.46
G[illegible]-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.23	0.31
G[illegible]-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	[illegible]4	1.34
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	96.4%	86.1%	92.5%	94.4%	93.5%	94.3%	1.5%
DUP SPIKE RECOVERY	91.1%	89.3%	89.7%	90.0%	107.5%	98.1%	99.7%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	1310/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

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[illegible]orat[illegible] / Director

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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

September 20, 1990

ChromaLab File No.: 0990060
0990061

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Eleven composite samples for Gasoline/BTEX TTLC Lead, and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: Sept. 13, 1990 Date Submitted: Sept.13-20,1990
Date Extracted: Sept.14-20,1990 Date Analyzed: Sept.14-20,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
73-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.01	1.02
74-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	2.01	1.17
75-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.88	0.88
76-1,2	N.D.	N.D.	N.D.	N.D.	N.D.	6.71	1.00
77-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.94	0.77
78-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.01	0.64
79-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.83	0.89
80-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.38	0.77
81-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.27	1.23
82-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.00	0.90
83-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.86	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	91.1%	86.1%	92.5%	90.0%	107.6%	101.9%	99.2%
DUP SPIKE RECOVERY	98.7%	89.3%	89.7%	94.4%	93.5%	98.7%	101.5%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

Eric Tam
Laboratory Director

David Duong
Senior Chemist

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415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

September 28, 1990 ChromaLab File No.: 0990104
0990105
0990106

WOODWARD - CLYDE CONSULTANTS, INC.

Attn: Bill Copeland
Re: Twenty-one composited soil samples for Gasoline/BTEX, TTLC Lead, and CAM WET Lead analyses
Project Number: 90C0028A
Date Sampled: Sept. 20, 1990 Date Submitted: Sept. 21, 1990
Date Analyzed: Sept. 21-28, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	CAM WET Lead (mg/L)
G84-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.22	N.D.
G85-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.2	N.D.
G86-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.72	N.D.
G87-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.19	N.D.
G88-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.6	N.D.
G89-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.4	N.D.
G90-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.16	N.D.
G91-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.50	N.D.
G92-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.3	N.D.
G93-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.19	N.D.
G94-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.45	N.D.
G95-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.55	N.D.
G96-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.46	N.D.
G97-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.95	N.D.
G98-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.54	N.D.
G99-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.95	N.D.
G100-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.19	N.D.
G101-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.48	N.D.
G102-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.05	N.D.
G103-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.38	N.D.
G104-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.10	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	91.1%	89.3%	89.7%	90.0%	107.5%	96.4%	99.3%
DUPLICATED SPIKE RECOVERY	96.4%	86.1%	92.5%	94.4%	93.5%	96.5%	91.1%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/* 7420

* EXTRACTED PER TITLE 22 WET PROCEDURE.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

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Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 5, 1990

ChromaLab File No.: 0990154
0990155

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Ten composited soil samples for Gasoline/BTEX, TTLC Lead, and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Sept. 27, 1990 Date Submitted: Sept. 28, 1990
Date Extracted: Oct. 1-4, 1990 Date Analyzed: Oct. 1-4, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	TTLC Lead (mg/Kg)	CAM WET Lead (mg/L)
G105-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.15	N.D.
G105-5,6,7,8	N.D.	N.D.	N.D.	N.D.	N.D.	6.08	N.D.
G105-9,10,11,12	N.D.	N.D.	N.D.	N.D.	N.D.	6.98	N.D.
G105-13,14,15,16	N.D.	N.D.	N.D.	N.D.	N.D.	7.96	N.D.
G105-17,18,19,20	N.D.	N.D.	N.D.	N.D.	N.D.	6.99	N.D.
G105-21,22,23,24	N.D.	N.D.	N.D.	N.D.	N.D.	10.9	N.D.
G105-25,26,27,28	N.D.	N.D.	N.D.	N.D.	N.D.	6.61	N.D.
G105-29,30,31,32	N.D.	N.D.	N.D.	N.D.	N.D.	7.36	N.D.
G105-33,34,35,36	N.D.	N.D.	N.D.	N.D.	N.D.	7.97	N.D.
G105-37,38,39,40	N.D.	N.D.	N.D.	N.D.	N.D.	7.99	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	98.5%	96.5%
DUP SPIKED REC	96.4%	86.1%	92.5%	94.4%	93.5%	103.6%	96.4%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 8, 1990 ChromaLab File No.: 0990168

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Ten composited soil samples for Gasoline/BTEX, total Lead, and CAM WET Lead analyses

Project Number: 90C0028A/AER C
Date Sampled: Sept. 28, 1990 Date Submitted: Oct. 1, 1990
Date Extracted: Oct. 1-8, 1990 Date Analyzed: Oct. 1-8, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G106-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.45	N.D.
G107-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.52	N.D.
G108-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.46	N.D.
G109-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.75	N.D.
G110-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.92	N.D.
G111-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.41	N.D.
G112-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.12	N.D.
G113-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.20	N.D.
G114-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.05	N.D.
G115-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.86	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	105.3%	98.1%
DUP SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%	96.4%	97.9%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam (by pp)

Eric Tam
Laboratory Director

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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 15, 1990

ChromaLab File No.: 1090035
1090036

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Twelve composited soil samples for Gasoline/BTEX, Total Lead, and CAM WET Lead analysses

Project Number: 90C0028A
Date Sampled: Oct. 4, 1990 Date Submitted: Oct. 5, 1990
Date Extracted: Oct. 6-13, 1990 Date Analyzed: Oct.6-13, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G126-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.18	N.D.
G127-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.16	N.D.
G128-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.21	N.D.
G129-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	6.18	N.D.
G130-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.3	N.D.
G131-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.11	N.D.
G132-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.60	N.D.
G133-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	41.0	0.36
G134-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.2	N.D.
G135-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.3	N.D.
G136-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	12.2	N.D.
G137-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.2	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	94.5%	100.0%
DUP SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%	106.3%	105.3%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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- Environmental Analysis
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- Drinking Water (#955)
- Waste Water
- Consultation

October 15, 1990 ChromaLab File No.: 1090037

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Six composited soil samples for Gasoline/BTEX, Total Lead, and CAM WET Lead analysses

Project Number: 90C0028A
Date Sampled: Oct. 5, 1990 Date Submitted: Oct. 5, 1990
Date Extracted: Oct. 6-13, 1990 Date Analyzed: Oct.6-13, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G138-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.31	N.D.
G139-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.3	N.D.
G140-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	14.4	N.D.
G141-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.36	N.D.
G142-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	11.6	N.D.
G143-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.6	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	94.5%	100.0%
DUP SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%	106.3%	105.3%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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- Environmental Analysis
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- Drinking Water (#955)
- Waste Water
- Consultation

October 22, 1990 ChromaLab File No.: 1090099

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland

RE: Eighteen composited soil samples for Gasoline/BTEX, Total Lead and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Oct. 10, 1990 Date Submitted: Oct. 15, 1990
Date Extracted: Oct. 16-19, 1990 Date Analyzed: Oct. 16-19,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G144-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	11.4	1.26
G145-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	14.3	1.23
G146-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.4	1.35
G147-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	12.1	1.98
G148-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	12.0	1.13
G149-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.70	1.06
G150-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.63	0.94
G151-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	11.7	0.84
G152-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	11.3	0.66
G153-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.6	0.32
G154-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	15.6	0.44
G155-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	13.4	0.67
G156-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	33.6	1.22
G157-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	12.2	1.00
G158-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.6	0.86
G159-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.8	1.31
G160-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.70	1.18
G161-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	9.25	0.66
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	99.2%	98.6%
DUP SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%	100.7%	104.1%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

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CHROMALAB, INC.

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- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 22, 1990 ChromaLab File No.: 1090099

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland

RE: Three composited soil samples for Gasoline/BTEX, Total Lead and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Oct. 10, 1990 Date Submitted: Oct. 15, 1990
Date Extracted: Oct. 16-19, 1990 Date Analyzed: Oct. 16-19,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G162-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	3.95	N.D.
G163-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.69	0.44
G164-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	12.2	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	99.2%	98.6%
DUP SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%	100.7%	104.1%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 25, 1990 ChromaLab File No.: 1090132

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Nine composited soil samples for Gasoline/BTEX, total Lead, and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Oct. 17, 1990 Date Submitted: Oct. 18, 1990
Date Extracted: Oct. 19-25,1990 Date Analyzed: Oct. 19-25,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G165-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	22.9	0.12
G166-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	19.3	0.18
G167-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	14.8	0.12
G168-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	14.5	0.11
G169-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	14.6	0.10
G170-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	10.5	0.27
G171-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	15.1	0.12
G172-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	27.9	0.14
G173-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	15.9	0.14
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%	99.1%	89.7%
DUP SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%	102.4%	95.2%
DETECTION LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 29, 1990 ChromaLab File No.: 1050150
1090151

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Eleven composited soil samples for Gasoline/BTEX, total Lead, and CAM WET Lead analyses

Project Number: 90C0028A
Date Sampled: Oct. 19, 1990 Date Submitted: Oct. 22, 1990
Date Extracted: Oct. 23-29,1990 Date Analyzed: Oct. 23-29,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Total Lead (mg/Kg)	CAM WET Lead (mg/L)
G174-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	15.0	0.39
G175-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	14.6	0.39
G176-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.57	0.19
G177-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.04	0.16
G178-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.63	0.19
G179-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.47	0.16
G180-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.39	0.13
G181-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	4.77	0.16
G182-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	7.14	0.19
G183-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	5.04	0.13
G184-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.	8.96	0.30
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	93.8%	105.5%	98.6%	91.0%	93.0%	99.1%	105.7%
DUP SPIKE REC	96.4%	86.1%	91.5%	94.4%	93.5%	102.4%	96.6%
DET. LIMIT	2.5	5	5	5	5	0.05	0.10
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020	3050/ 7420	3010/ 7420*

*Extracted per title 22 WET procedure.

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX						Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
5/24		G1-1						↓							composite
		-2													
		-3													
		-4													
		G2-1													composite
		-2													
		-3													
		-4													
		G3-1													48 hour turnaround
		-2													
		-3													
		-4													
		G4-1													
		-2													
		-3													
		-4													
		G5-1													results to B Copeland 874-3192
		-2													
		-3													
		-4													

TOTAL NUMBER OF CONTAINERS:

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	5/24 4:15				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[signature] 5/24	4:15

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Chain of Custody Record

PROJECT NO. 90C 0028 A

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/Gas/BTEX	total Pb	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
5/23		G6-1	S					X	X		composite
		-2	↓					↓	X		
		-3	↓					↓	X		
		-4	↓					↓	X		
		G7-1	↓					↓			Composite each set of 4
		-2	↓					↓			
		-3	↓					↓			
		-4	↓					↓			
		G8-1	↓					↓			
		-2	↓					↓			
		-3	↓					↓			
		-4	↓					↓			
		G9-1	↓					↓			One Pb analysis from this group.
		-2	↓					↓			
		-3	↓					↓			
		-4	↓					↓			
		G10-1	↓					↓			
		-2	↓					↓			
		-3	↓					↓			
		-4	↓					↓			72 hour TAT results to G. Ford or B. Copeland

TOTAL NUMBER OF CONTAINERS: 20

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	5/23	5/30/90 1:20pm Madeleine Minetti			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BETX					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/4		G11-1	S					X						COMPOSITE
		-2												
		-3												
		-4												
		G12-1						X						COMPOSITE
		-2												
		-3												
		-4												

5 day TAT

Results to G. Fordor B. Copeland

TOTAL NUMBER OF CONTAINERS: 8

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W. Copeland	6/4 3:30				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			6-4-90	3:30

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W. Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/8		G13-1						X						composite each set of 4
		-2												
		-3												
		-4												
		G14-1						X						
		-2												
		-3												
		-4												
		G15-1						X						
		-2												
		-3												
		-4												
		G16-1						X						5 day TAT
		-2												
		-3												
		-4												
		G17-1						X						
		-2												
		-3												
		-4												
		G18-1						X						results to G. Ford or B. Copeland
		-2												
		-3												
		-4												
		G19-1						X						
		-2												
		-3												
		-4												

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	6/8 11:00	Madeleine Thurston 6-8-90 3:30pm			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm [signature]

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX						Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/8		620-1						X							} Composite
		-2													
		-3													
		-4													
															5 day TAT

TOTAL NUMBER OF CONTAINERS:

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	6/8 11:00	6-8-90 3:30pm Madeline [signature]			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Blake

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX			TRC Pb	STLC Pb		Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/12		G21-1	S					X							Composite each set of 4
		-2													
		-3													
		-4													
		G22-1						X			X	X			
		-2													
		-3													
		-4													
		G23-1						X							
		-2													
		-3													
		-4													5 day TAT
		G24-1						X			X	X			
		-2													
		-3													
		-4													
		G25-1						X							
		-2													
		-3													
		-4													
		G26-1						X			XX				results to g. Ford
		-2													
		-3													
		-4													
		G27-1						X							
		-2													
		-3													
		-4													
													TOTAL NUMBER OF CONTAINERS	28	

requested 4/4

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
W Blake	6/13 12:30				

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature)

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BETX			TTLC Pb	STLC Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/12		G28-1	S					X			X	X				Composite each set of 4
		-2														
		-3														
		-4														
		G29-1						X								
		-2														
		-3														
		-4														
		G30-1						X			X	X				
		-2														
		-3														
		-4														

requested 6/14

5 day TAT

results to G. Ford or W. Copeland

TOTAL NUMBER OF CONTAINERS: 12

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	6/13 12:3				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[signature]	6-13-90 12:30

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/18		G31-1	S					X						
		-2												
		-3												
		-4												
		G32-1						X						
		-2												
		-3												
		-4												
		G33-1						X						
		-2												
		-3												
		-4												
		G34-1						X						
		-2												
		-3												
		-4	V											

Composite each set of 4

5 day TAT

results to B. Copeland

TOTAL NUMBER OF CONTAINERS: 16

Soil

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	6/18 1200	Marc Monsalve 6/18/90 1:15			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) [signature]

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/Fuels/BTEX	Total Pb	CAM WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/26		G35-1	S					X	X	X				
		-2												
		-3												
		-4												
		G36-1						X	X	X				
		-2												
		-3												
		-4												
		G37-1						X	X	X				
		-2												
		-3												
		-4												
		G38-1						X	X	X				
		-2												
		-3												
		-4												
		G39-1						X	X	X				
		-2												
		-3												
		-4												
		G40-1						X	X	X				
		-2												
		-3												
		-4												
		G42-1						X	X	X				
		-2												
		-3												
		-4												

ANALYSES

Composite ea group of 4

5 day TAT

Results to B. Garland

TOTAL NUMBER OF CONTAINERS: 28

Soil

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	6/26 1:00	[signature] 6/26 3:00			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm BCopeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BETX	Total Pb	CAM/WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/26		G43-1	S					X	X	X				
		-2												
		-3												
		-4												Composite
		G44-1						X	X	X				
		-2												
		-3												
		-4												
		G45-1						X	X	X				5 day TAT
		-2												
		-3												
		-4												Results to B. Copeland

TOTAL NUMBER OF CONTAINERS: 12 — Soil

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
WCopeland	6/26 1:00	6/26 3:00 Marc Monette			

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 10C0025A

SAMPLERS: (Signature) B. Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX	total LEAD	CAM WET Lead				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/2/9		G46-1	S					X	X	X					
		-2													
		-3													
		-4													
		G47-1						X	X	X					
		-2													
		-3													
		-4													
		G48-1						X	X	X					
		-2													
		-3													
		-4													
		G49-1						X	X	X					
		-2													
		-3													
		-4													

Composite ea. set of 4

5 day TAT

results to B. Copeland

											TOTAL NUMBER OF CONTAINERS	16	Soil

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
	7/3 11:00				

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME
				7-3-90 13:30

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH gas/BTEX	Total Pb	CAM WET Pb				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/6		G50-1						X							Composite ea set of 4
		-2													
		-3													
		-4													
		G51-1						X	X	X					
		-2													
		-3													
		-4													
		G52-1						X							
		-2													Normal TAT
		-3													
		-4													
		G53-1						X	X	X					
		-2													
		-3													
		-4													
		G54-1						X							
		-2													
		-3													
		-4													
		G55-1						X	X	X					
		-2													Results to B. Copeland
		-3													
		-4													
		G56-1						X							
		-2													
		-3													
		-4													

TOTAL NUMBER OF CONTAINERS: 28 — Soil

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	7/6 1:00				Marc Monette

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
		7/6 3:00 Marc Monette	Marc Monette	

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(415) 893-3600

Chain of

CHROMALAB FILE # 990020

PROJECT NO. 90C0028A

SAMPLERS: (Signature) T. K. Kalbe

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas	BETX	Total Pb	CAM WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9/6/90		G62-1						X	X	X	X				
		-2													
		-3													
		-4													
		G63-1						X	X	X	X				
		-2													
		-3													
		-4													
		G64-1						X	X	X	X				
		-2													
		-3													
		-4													
		G65-1						X	X	X	X				
		-2													
		-3													
		-4													
		G66-1						X	X	X	X				
		-2													
		-3													
		-4													
		G67-1						X	X	X	X				
		-2													
		-3													
		-4													
		G68-1						X	X	X	X				
		-2													
		-3													
		-4													

Composite each set of 4

Normal TAT

Results to Bill Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
T. K. Kalbe	9/6/90 1500				

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME
				9/6/90 1500

Woodward-Clyde Consultants

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

Chain c

CHROMALAB FILE # 990021

PROJECT NO. 90C0028A

SAMPLERS: (Signature) T. K. Kallo

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas	BETX	Total Pb	CAM WET Pb	0&G 503 DHE			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9/6/90		G69-1						X	X	X	X					Composite
		-2														
		-3														
		-4														
		G70-1						X	X	X	X					Composite
		-2														
		-3														
		-4 CANCELLED														
		G71-1 ANALYSIS						X	X	X	X					Composite
		-2 W/Chromalab														
		-3 9/7/90														
		-4 8:25 am														
		P1-1										X				
		P1-2										X				
		P2-1										X				
		P2-2										X				

Normal TAT

Results to Bill Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T. K. Kallo	9/6/90 1500				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
				9/6/90 1500

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) T.R. Kallie

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/GAS BETX	Total Pb	CAM WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9/7/90	1:50Pm	G70-1												Composite G70-1 through 4
|	|	G70-2												
|	|	G70-3												
|	|	G70-4												
|	|	G71-1												Composite G71-1 through 4
|	|	G71-2												
|	|	G71-3												
|	|	G71-4												
|	|	G72-1												Composite G72-1 through 4
|	|	G72-2												
|	|	G72-3												
↓	↓	G72-4												

NORMAL TURNAROUND
RESULTS TO BILL COPELAND
FAX (415) 874-3268
PHONE (415) 874-3192

TOTAL NUMBER OF CONTAINERS: 12

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T.R. Kallie	9/7/90 1:50 PM				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain o

CHROMALAB FILE # 990060

PROJECT NO.: 90C0028A

SAMPLERS: (Signature) T. R. Kalbe

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH (GAS.)	BETX	TOTAL Pb	CAM WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9/13/90	2:80 PM	73-1						X	X	X	X			1	
		73-2												1	COMPOSITE 73-1 - 73-4
		73-3												1	
		73-4												1	
		74-1												1	
		74-2												1	COMPOSITE 74-1 - 74-4
		74-3												1	
		74-4												1	
		75-1												1	
		75-2												1	
		75-3												1	COMPOSITE 75-1 - 75-4
		75-4												1	
		76-1												1	COMPOSITE 76-1 - 76-2
		76-2												1	
		77-1												1	
		77-2												1	COMPOSITE 77-1 - 77-4
		77-3												1	
		77-4												1	
		78-1												1	
		78-2												1	
		78-3												1	COMPOSITE 78-1 - 78-4
		78-4												1	
		79-1												1	
		79-2												1	NORMAL TURNAROUND
		79-3												1	RESULTS TO: BILL COPELAND
		79-4												1	FAX (415) 874-3268
		80-1												1	PHONE (415) 874-3192
		80-2												1	

TOTAL NUMBER OF CONTAINERS: 28

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T. R. Kalbe	9/13/90 2:00 PM	Tina Donovan 3:20			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

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(415) 893-3600

Chain

CHROMALAB FILE # 990061

PROJECT NO.: 90C00 28 A

SAMPLERS: (Signature) T. R. Kalhe

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH (GAS)	BETX	Total Pb	CAM WET Pb	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9/13/90	2:00	80-3						X	X	X	X	1	COMPOSITE 80-1-80-4
		80-4										1	
		81-1										1	COMPOSITE 81-1 – 81-4
		81-2										1	
		81-3										1	
		81-4										1	
		82-1										1	COMPOSITE 82-1 – 82-4
		82-2										1	
		82-3										1	
9/13/90	↓	82-4										1	
		83-1											COMPOSITE 83-1 – 83-2
		83-2											
		83-3											
↓	↓	83-4						↓	↓	↓	↓		

NORMAL TURNAROUND
RESULTS TO:
BILL COPELAND
FAX (415) 874-3268
PHONE (415) 874-3192

TOTAL NUMBER OF CONTAINERS: 10

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T. R. Kalhe	9/13/90 2:00 PM	Tara Donovan 3:20			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C00284

SAMPLERS: (Signature) W. Copeland

CHROMALAB FILE # 990105

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas	BETX	total Pb	CAM METALS				
9/20		G84-1						X	X	X	X				
		-2													
		-3													
		-4													
		G85-1						X	X	X	X				
		-2													
		-3													
		-4													
		G86-1						X	X	X	X				
		-2													
		-3													
		-4													
		G87-1						X	X	X	X				
		-2													
		-3													
		-4													
		G88-1						X	X	X	X				
		-2													
		-3													
		-4													
		G89-1						X	X	X	X				
		-2													
		-3													
		-4													
		G90-1						X	X	X	X				
		-2													
		-3													
		-4													

ANALYSES

Composite each set of 4

Normal TAT

Results to B. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	9/20 3:10				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			9-21-90	10:30

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W. Copeland

CHROMALAB FILE # 990104

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	ANALYSES: TPH/Gas	BETX	Total Pb	CAM WET Pb				
9/20		G91-1						X	X	X	X				
		-2													
		-3													
		-4													
		G92-1						X	X	X	X				
		-2													
		-3													
		-4													
		G93-1						X	X	X	X				
		-2													
		-3													
		-4													
		G94-1						X	X	X	X				
		-2													
		-3													
		-4													
		G95-1						X	X	X	X				
		-2													
		-3													
		-4													
		G96-1						X	X	X	X				
		-2													
		-3													
		-4													
		G97-1						X	X	X	X				
		-2													
		-3													
		-4													

Composite each set of four

Normal TAT

Results to B. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W. Copeland	9/20 3:10				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			9-21-90	10 30

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W Copeland

CHROMALAB FILE # 990106

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas	BETX	total Pb	CAM VOCs	ers
9/20		G98 -1						X	X	X	X	
		-2										
		-3										
		-4										
		G99 -1						X	X	X	X	
		-2										
		-3										
		-4										
		G100 -1						X	X	X	X	
		-2										
		-3										
		-4										
		G101 -1						X	X	X	X	
		-2										
		-3										
		-4										
		G102 -1						X	X	X	X	
		-2										
		-3										
		-4										
		G103 -1						X	X	X	X	
		-2										
		-3										
		-4										
		G104 -1						X	X	X	X	
		-2										
		-3										
		-4										

Composite each set of 4

Normal TAT

Results to B. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
W Copeland	9/20 3:10				

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME
			9-21-90	10:30

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(415) 893-3600

Chain o

CHROMALAB FILE # 990155

PROJECT NO. 9CC0028A

SAMPLERS: (Signature) Dave Jumpe

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	ANALYSES: GAS/BTEX	ANALYSES: TTLC & STLC LEAD	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9-27		G105-1						X	X		COMPOSITE INTO 4
		2									
		3									
		4									
		5									
		6									
		7									
		8									
		9									
		10									
		11									
		12									
		13									
		14									
		15									
		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									
		26									
		27									
		28									
										TOTAL NUMBER OF CONTAINERS	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Dave Jumpe	9 | 27	4:30 9-27-90 Tom Jamison			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			Gene Mitchell	9.27 | 5:10

Woodward-Clyde Consultants

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(415) 893-3600

Chain o

CHROMALAB FILE # 990154

PROJECT NO. 90C0028A

SAMPLERS: (Signature)

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	GAS / BTEX	TTLC & STLC LEAD					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9-27		G105-29						X	X						COMPOSITE IN 4
		30													
		31													
		32													
		33													
		34													
		35													
		36													
		37													
		38													
		39													
		40													

TOTAL NUMBER OF CONTAINERS: 40

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	9 27	9-30 9-27-90			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
				9-27 5:10

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(415) 893-3600

Chain

CHROMALAB FILE # 990168

PROJECT NO. 90C0028A / AERC

SAMPLERS: (Signature) Dave Simpson

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	G/B	TTLC STLC	LEAD				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9-28	8:15	G106-1	S					X	X						Will FAX lab test instructions
		-2													
		-3													
		-4													
	8:40	G107-1						X	X						
		-2													
		-3													
		-4													
	9:05	G108-1						X	X						COMPOSITE
		-2													
		-3													
		-4													
	9:30	G109-1						X	X						
		-2													
		-3													
		-4													
	10:00	G110-1						X	X						
		-2													
		-3													
		-4													
	10:20	G111-1						X	X						
		-2													
		-3													
		-4													
	10:40	G112-1						X	X						
		-2													
		-3													
		-4													

TOTAL NUMBER OF CONTAINERS: 28

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
D Simpson	9 28	2:15 9-28 T. Donovan			

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME
			T. Donovan	9-28 5:30

Woodward-Clyde Consultants

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

Chain of

CHROMALAB FILE # 990169

PROJECT NO. 90C0028A / AERC

SAMPLERS: (Signature) Dave Simpson

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	ANALYSES: GAS/BTEX	ANALYSES: TPH/SILICA LAB	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9-28	11:00	G113-1	S					X	X		
		-2									
		-3									
		-4									
	11:20	G114-1						X	X		
		-2									
		-3									
		-4									
	11:40	G115-1						X	X		
		-2									
		-3									
		-4									

Will FAX Lab test instructions

TOTAL NUMBER OF CONTAINERS: 12

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
D Simpson	9 28	2:15 9-28-90 T. Donovan			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			T. Donovan	4-28 5.30

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Peter Solberg

CHROMALAB FILE # 1090035

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH / Gas	BETX	Total Pb	CAM WET Pb		Num
10-4-90	4:00PM	G126-1						X	X	X	X		
		-2											
		-3											
		-4											
		G127-1						X	X	X	X		
		-2											
		-3											
		-4											
		G128-1						X	X	X	X		
		-2											
		-3											
		-4											
		G129-1						X	X	X	X		
		-2											
		-3											
		-4											
		G130-1						X	X	X	X		
		-2											
		-3											
		-4											
		G131-1						X	X	X	X		
		-2											
		-3											
✓	✓	-4											

COMPOSITE EACH SET OF 4

NORMAL TAT

Results to W. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Peter Solberg	10-4-90 8PM	T. Donovan 10-5-90 2:00			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			T. Donovan	10-5 5:00

P. 2/2

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Peter Solberg

CHROMALAB FILE # 1090036

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/Gas	BETX	Total Pb	CAM WET Pb	Num
10-4-90	5:30 PM	G132-1						X	X	X	X	
		-2										
		-3										
		-4										
		G133-1						X	X	X	X	
		-2										
		-3										
		-4										
10-5-90		G134-1						X	X	X	X	
		-2										
		-3										
		-4										
		G135-1						X	X	X	X	
		-2										
		-3										
		-4										
		G136-1						X	X	X	X	
		-2										
		-3										
		-4										
		G137-1						X	X	X	X	
		-2										
		-3										
		-4										

COMPOSITE EACH SET OF FOUR

NORMAL TAT

RESULTS TO W. COPELAND 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Peter Solberg	10-4-90 8PM	T. Donovan 10-5-90 2:00			

METHOD OF SHIPMENT	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			T. Donovan	10-5 5:00

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W. Copeland

CHROMALAB FILE # 1090037

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	FPA Method	TPH/gas	BETX	Total Pb	CAM WET Pb			Nr
10/5		G138-1						X	X	X	X			
		-2												
		-3												
		-4												
		G139-1						X	X	X	X			
		-2												
		-3												
		-4												
		G140-1						X	X	X	X			
		-2												
		-3												
		-4												
		G141-1						X	X	X	X			
		-2												
		-3												
		-4												
		G142-1						X	X	X	X			
		-2												
		-3												
		-4												
		G143-1						X	X	X	X			
		-2												
		-3												
		-4												

ANALYSES

Composite ea. set of 4

Normal TAT

Results to B. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
W Copeland	10/5 2:00 pm	2:00 10-5-90 T. Donovan			

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME
			T. Donovan	10-5 5:00

Woodward-Clyde Consultants

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

Chain of

CHROMALAB FILE # 1090099

PROJECT NO. 90C0028A

SAMPLERS: (Signature) B. Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/Gas	BETX	total Pb	CAM wet Cr				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10/10		G144-1						X	X	X	X					
		-2														
		-3														
		-4														
		G145-1						X	X	X	X					Composite each set of 4
		-2														
		-3														
		-4														
		G146-1						X	X	X	X					
		-2														
		-3														
		-4														Normal TAT
		G147-1						X	X	X	X					
		-2														
		-3														
		-4														
		G148-1						X	X	X	X					
		-2														
		-3														
		-4														Results to B. Copeland 874-3192
		G149-1						X	X	X	X					
		-2														
		-3														
		-4														
		G150-1						X	X	X	X					
		-2														
		-3														
		-4														

TOTAL NUMBER OF CONTAINERS: 28

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
T. R. Kalbe	10/11 1:00 PM	10/11/90 1:55	10/11/90	4:35	

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME
			K. Walters	10/11 4:45P

T. Jones 10-12 5:00

1090099

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W. Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	ANALYSES: TPH/gas	ANALYSES: BETX	ANALYSES: total Pb	ANALYSES: CAM WET Pb	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10/10		G151 - 1						X	X	X	X		Composite each set of 4
		- 2											
		- 3											
		- 4											
10/11		G 152 - 1						X	X	X	X		Normal TAT
		- 2											
		- 3											
		- 4											
		G 153 - 1						X	X	X	X		
		- 2											
		- 3											
		- 4											
		G154 - 1						X	X	X	X		
		- 2											
		- 3											
		- 4											
		G155 - 1						X	X	X	X		
		- 2											
		- 3											
		- 4											
		G 156 - 1						X	X	X	X		
		- 2											
		- 3											
		- 4											
		G157 - 1						X	X	X	X		
		2											
		3											
		4											

Results to B. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS: 28

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
I. K. Kalbe	10/11 1:00 PM	10/11/90 1:53	10/11/90	4:35	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			K. Walters	10/11 4:45

T. Dominguez 10-12 5:00

1090099

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Chain of Custody Record

PROJECT NO.: 90C0028A

SAMPLERS: (Signature) T.R. Kalla

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/GAS BETX	TOTAL Pb	CAM WET Pb				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10/11		G158-1						X	X	X	X				Composite each set of 4
		-2													
		-3													
		-4													
		G159-1						X	X	X	X				
		-2													
		-3													
		-4													
		G160-1						X	X	X	X				
		-2													
		-3													
		-4													
		G161-1						X	X	X	X				Normal TAT
		-2													
		-3													
		-4													
		G162-1						X	X	X	X				
		-2													
		-3													
		-4													
		G163-1						X	X	X	X				
		-2													
		-3													
		-4													
		G164-1						X	X	X	X				Results to B. Copeland 874-3192
		-2													
		-3													
		-4													

TOTAL NUMBER OF CONTAINERS: 28

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T.R. Kalla	10/11 1:00 PM	10/11/90 1:55	10/11/90	4:35	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			K. Walker	10/11 4:45

T. Dawson 10-12 5:00

Chromalab

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Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W. Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas	BTEX	Total Pb	CAM WET Pb	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10/17		G165-1						X	X	X	X		
		-2											
		-3											
		-4											
		G166-1						X	X	X	X		
		-2											
		-3											
		-4											
		G167-1						X	X	X	X		
		-2											
		-3											
		-4											
		G168-1						X	X	X	X		
		-2											
		-3											
		-4											
		G169-1						X	X	X	X		
		-2											
		-3											
		-4											
		G170-1						X	X	X	X		
		-2											
		-3											
		-4											
		G171-1						X	X	X	X		
		-2											
		-3											
		-4											

Composite each set of 4

Normal TAT

Results to B. Copeland 874-3192

TOTAL NUMBER OF CONTAINERS: 28

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
I. Rzalka					

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

CHROMALAB.

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Chain of Custody Record

PROJECT NO.
9OC0028A

SAMPLERS: (Signature)
T. R. Kalke

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/GAS	BETX	TOTAL Pb	CAM WET Pb			Number of Containers
10/17		G172-1						X	X	X	X			
		-2												
		-3												
		-4												
		G173-1						X	X	X	X			
		-2												
		-3												
		-4												

REMARKS (Sample preservation, handling procedures, etc.)

COMPOSITE EACH SET OF FOUR

NORMAL TAT

RESULTS TO B. COPELAND 874-3192

TOTAL NUMBER OF CONTAINERS: 8

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
T. R. Kalke					

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME

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Chain of Custody Record

PROJECT NO. 9C00028A

SAMPLERS: (Signature) Dana Simpson

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH-gas	BETX	total Pb	CAM WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10-19	4:00 pm	G174-1	S					X	X	X	X				Composite
		-2													
		-3													
		-4													
		G175-1						X	X	X	X				Composite
		-2													
		-3													
		-4													
		G176-1						X	X	X					Composite
		-2													
		-3													
		-4													
		G177-1						X	X	X	X				Composite
		-2													
		-3													
		-4													

Normal TAT

Results to B. Copeland 874 3192

TOTAL NUMBER OF CONTAINERS: 16

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	10/22 10:20 am				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 9C0284

SAMPLERS: (Signature) T.R. Kalhe

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH (GAS)	BTEX	TOTAL Pb	CAM WET Pb	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10/22	12:30	G178-1						X	X	X	X		COMPOSITE FOUR DISCRETES OF EACH SAMPLE
		-2											
		-3											
		-4											
		G179-1						X	X	X	X		
		-2											
		-3											
		-4											
		G180-1						X	X	X	X		
		-2											
		-3											
		-4											
		G181-1						X	X	X	X		NORMAL TAT
		-2											
		-3											
		-4											
		G182-1						X	X	X	X		
		-2											
		-3											
		-4											
		G183-1						X	X	X	X		RESULTS TO BILL COPELAND 874-3192
		-2											
		-3											
		-4											
		G184-1						X	X	X	X		
		-2											
		-3											
		-4											

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T.R. Kalhe	10/22 12:30				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

April 20, 1990 ChromaLab File No.: 0490053

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Eight soil samples for Gasoline/BTEX and Oil & Grease analyses

Project Number: 90C0028A
Duration of Analysis: April 16-20, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)
FL-1	N.D.	N.D.	N.D.	N.D.	N.D.	65
FL-2	N.D.	N.D.	N.D.	N.D.	N.D.	52
FL-3	N.D.	N.D.	N.D.	N.D.	N.D.	66
FL-4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
FL-5	N.D.	N.D.	N.D.	N.D.	N.D.	55
FL-6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
FL-7	N.D.	N.D.	N.D.	N.D.	N.D.	56
FL-8	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	102.5%	92.8%	98.3%	99.6%	95.2%	----
DETECTION LIMIT	2.5	5	5	5	5	50
METHOD OF ANALYSIS	MOD 8015	8020	8020	8020	8020	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

Client Acct: 636
Client Name: Chromalab
NET Log No: 1589

Date: 04-26-90
Page: 5

Ref:

Parameter	Reporting Limit	Descriptor, Lab No. and Results FL-6 04-16-90 1230 50921	Units
17 CAM Metals, Total			
Antimony	20	ND	mg/Kg
Arsenic	0.5	7.9	mg/Kg
Barium	5	51	mg/Kg
Beryllium	5	ND	mg/Kg
Cadmium	5	ND	mg/Kg
Chromium (VI)	0.5	NA	mg/Kg
Chromium	5	30	mg/Kg
Cobalt	5	ND	mg/Kg
Copper	5	12	mg/Kg
Lead	20	46	mg/Kg
Mercury	0.05	0.08	mg/Kg
Molybdenum	10	ND	mg/Kg
Nickel	5	19	mg/Kg
Selenium	0.5	ND	mg/Kg
Silver	2	ND	mg/Kg
Thallium	30	ND	mg/Kg
Vanadium	5	23	mg/Kg
Zinc	5	52	mg/Kg

Client Acct: 636
Client Name: Chromalab
NET Log No: 1589

Date: 04-26-90
Page: 3

Ref:

Parameter	Reporting Limit	Descriptor, Lab No. and Results: FL-1 04-16-90 1230 50919	FL-4 04-16-90 1230 50920	Units
17 CAM Metals, Total				
Antimony	20	ND	ND	mg/Kg
Arsenic	0.5	11	8.1	mg/Kg
Barium	5	88	57	mg/Kg
Beryllium	5	ND	ND	mg/Kg
Cadmium	5	ND	ND	mg/Kg
Chromium (VI)	0.5	NA	NA	mg/Kg
Chromium	5	36	32	mg/Kg
Cobalt	5	10	11	mg/Kg
Copper	5	20	14	mg/Kg
Lead	20	96	77	mg/Kg
Mercury	0.05	0.11	0.40	mg/Kg
Molybdenum	10	ND	ND	mg/Kg
Nickel	5	22	17	mg/Kg
Selenium	0.5	ND	ND	mg/Kg
Silver	2	ND	ND	mg/Kg
Thallium	30	ND	ND	mg/Kg
Vanadium	5	29	22	mg/Kg
Zinc	5	110	64	mg/Kg

CHROMALAB, INC.

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- Drinking Water (#955)
- Waste Water
- Consultation

April 25, 1990
WOODWARD CLYDE CONSULTANTS, INC.
RE: 8080 analysis
Sample No.: FL-1

ChromaLab File No.: 0490053A-D
Attn: George Ford
Project No.: 90C0028A
Analysis Duration: 4/16-18/90

CHLORINATED PESTICIDE ANALYSIS

Compounds	Concentration (µg/Kg)	Detection Limit (µg/Kg)	Spike Recovery
ALDRIN	N.D.	10	103.9%
DIELDRIN	N.D.	10	----
ENDRIN ALDEHYDE	N.D.	50	----
ENDRIN	N.D.	10	----
HEPTACHLOR	N.D.	10	----
HEPTACHLOR EPOXIDE	N.D.	10	----
p,p' - DDT	N.D.	50	----
p,p' - DDE	N.D.	10	----
p,p' - DDD	N.D.	50	101.8%
ENDOSULFAN I	N.D.	50	----
ENDOSULFAN II	N.D.	50	----
α - BHC	N.D.	10	----
β - BHC	N.D.	10	----
γ - BHC (LINDANE)	N.D.	10	100.7%
δ - BHC	N.D.	10	----
ENDOSULFAN SULFATE	N.D.	100	----
p,p' - METHOXYCHLOR	N.D.	100	----
TOXAPHENE	N.D.	100	----
PCB's	N.D.	100	----
CHLORDANE	N.D.	100	----

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

ChromaLab File # 0490053 A-D

Project No: 90C0028A
Sample I.D.: FL-1,2,3,4 (composite)
Method of Analysis: EPA 8270 Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.5	-----
2,6-DINITROTOLUENE	N.D.	0.5	99.2%
DIETHYL PHTHALATE	N.D.	0.5	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.5	-----
FLUORENE	N.D.	0.5	-----
4-NITROANILINE	N.D.	2.5	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	2.5	-----
N-NITROSODIPHENYLAMINE	N.D.	0.5	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.5	-----
HEXACHLOROBENZENE	N.D.	0.5	-----
PENTACHLOROPHENOL	N.D.	2.5	-----
PHENANTHRENE	N.D.	0.5	93.0%
ANTHRACENE	N.D.	0.5	-----
DI-N-BUTYL PHTHALATE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BUTYLBENZYLPHTHALATE	N.D.	0.5	-----
3,3'-DICHLOROBENZIDINE	N.D.	1.0	-----
BENZO(A)ANTHRACENE	N.D.	0.5	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.5	-----
CHRYSENE	N.D.	0.5	105.4%
DI-N-OCTYLPHTHALATE	N.D.	0.5	-----
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

April 19, 1990

ChromaLab File # 0490053 A-D

Client: Woodward-Clyde Consult. Attn: George Ford
Date Submitted: Apr. 13, 1990
Date of Analysis: Apr. 19, 1990

Project No: 90C0028A
Sample I.D.: FL-1,2,3,4 (composite)
Method of Analysis: EPA 8270 Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.5	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.5	111.1%
2-CHLOROPHENOL	N.D.	0.5	-----
1,3-DICHLOROBENZENE	N.D.	0.5	-----
1,4-DICHLOROBENZENE	N.D.	0.5	-----
BENZYL ALCOHOL	N.D.	1.0	-----
1,2-DICHLOROBENZENE	N.D.	0.5	-----
2-METHYLPHENOL	N.D.	0.5	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.5	-----
4-METHYLPHENOL	N.D.	0.5	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.5	-----
HEXACHLOROETHANE	N.D.	0.5	-----
NITROBENZENE	N.D.	0.5	-----
ISOPHORONE	N.D.	0.5	-----
2-NITROPHENOL	N.D.	0.5	-----
2,4-DIMETHYLPHENOL	N.D.	0.5	-----
BENZOIC ACID	N.D.	2.5	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.5	99.7%
2,4-DICHLOROPHENOL	N.D.	0.5	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.5	-----
NAPHTHALENE	N.D.	0.5	-----
4-CHLOROANILINE	N.D.	1.0	-----
HEXACHLOROBUTADIENE	N.D.	0.5	-----
4-CHLORO-3-METHYLPHENOL	N.D.	1.0	-----
2-METHYLNAPHTHALENE	N.D.	0.5	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.5	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.5	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.5	-----
2-CHLORONAPHTHALENE	N.D.	0.5	-----
2-NITROANILINE	N.D.	2.5	-----
DIMETHYL PHTHALATE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
3-NITROANILINE	N.D.	2.5	-----
ACENAPHTHENE	N.D.	0.5	100.9%
2,4-DINITROPHENOL	N.D.	2.5	-----
4-NITROPHENOL	N.D.	2.5	-----
DIBENZOFURAN	N.D.	0.5	-----

(continued on next page)

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Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Kim Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method 503 only	TPH	BETX	Title 26 Metals	Cyanide	8270 +	Chlorinated pesticides & PCBs	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
4/9	NA	FL-1	S				X	X	X	X	X	X		1	
		FL-2					X	X	X			X		1	
		FL-3					X	X	X			X		1	
		FL-4					X	X	X	X	X	X		1	
		FL-5					X	X	X	X	X			1	
		FL-6					X	X	X	X	X			1	
		FL-7					X	X	X					1	
		FL-8					X	X	X					1	

CHROMALAB FILE # 490053

Composite these 4 samples for this analysis

FAX # 874-3268
Results & questions to
George Ford
874-3203

5 day turnaround

TOTAL NUMBER OF CONTAINERS: 8

SOIL

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	4/13 1:45				
METHOD OF SHIPMENT:		SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature) [signature]	DATE/TIME 4-13-90 13:

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

May 14, 1990

ChromaLab File No.: 0590040
Page 1 of 2

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Thirty soil samples for Gasoline/BTEX, Oil & Grease, Total Lead, and Wet Lead analyses

Project Number: 90C0028A
Date Sampled: May 4, 1990 Date Submitted: May 4, 1990
Duration of Analysis: May 4-12, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
DT 12	N.D.	19	15	N.D.	8.1	----	----	----
DT 13	71	34	150	170	800	----	----	----
DT 14	390	150	450	830	3100	----	----	----
DT 15	55	N.D.	N.D.	7.2	39	----	----	----
DT 16	1000	800	3200	4100	12000	----	----	----
DT 17	27	N.D.	N.D.	7.3	120	----	----	----
FL 9	----	----	----	----	----	N.D.	55	0.7
FL 10	----	----	----	----	----	N.D.	74	0.6
FL 11	----	----	----	----	----	N.D.	37	0.2
FL 12	----	----	----	----	----	N.D.	78	0.5
FL 13	----	----	----	----	----	N.D.	42	0.5
FL 14	----	----	----	----	----	N.D.	51	0.6
FL 15	----	----	----	----	----	100	47	0.6
FL 16	----	----	----	----	----	61	86	0.8
BTM 1	N.D.	5.4	N.D.	N.D.	N.D.	----	----	----
BTM 2	38	24	6.2	16	300	----	----	----
BTM 3	47	370	180	170	460	----	----	----
BTM 4	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
BTM 5	45	330	96	32	390	----	----	----
BTM 6	N.D.	75	40	N.D.	33	----	----	----
BTM 7	21	390	430	180	400	----	----	----
BTM 8	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	--
BTM 9	N.D.	32	5.1	N.D.	5.0	----	----	--

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0025A

SAMPLERS: (Signature) [signature]

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas/BTEX	org Pb	5103 Org	TOTAL Pb	WET Pb			Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
5/4	NA	DT12	S					X								
		DT13						X	X	← 1 only						21 22 TPH -5 17
		DT14						X								
		DT15						X								
		DT16						X								
	DT17 →	FL9								X	X	X				
		FL10								X	X	X				
		FL11								X	X	X				
		FL12								X	X	X				
		FL13								X	X	X				
		FL14								X	X	X				
		FL15								X	X	X				
		FL16								X	X	X				
		BTM1						X								* 16 ↓
		BTM2						X								
		BTM3						X								*
		BTM4						X								~~*5 da~~
		BTM5						X								* *24 hour turnaround
		BTM6						X								
		BTM7						X								*
		BTM8						X								rest for
		BTM9						X								* 5 day turn-around
		MLK1						X								
		MLK2						X								
		12TH1						X								questions & results
		12TH2						X								to George Ford
		WALL1						X								874-3203
		WALL2						X								
↓		WALL3	↓					X								

TOTAL NUMBER OF CONTAINERS: 29 — SOIL

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	3:00 pm 5/4				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

June 11, 1990

ChromaLab File No.: 0690015

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Eleven soil samples for Total Lead and Oil & Grease analyses

Project Number: 90C0028A
Date Sampled: June 1, 1990
Date Extracted: June 4-8, 1990
Date Submitted: June 1, 1990
Date Analyzed: June 4-8, 1990

RESULTS:

Sample No.	Oil & Grease (mg/Kg)	Total Lead (mg/Kg)
FL1-1	56	310
FL2-1	N.D.	2.28
FL3-1	N.D.	12.7
FL3-2	76	17.9
FL3-3	60	28.4
FL4-1	N.D.	2.49
FL5-1	N.D.	2.47
FL6-1	87	48.4
FL7-1	N.D.	2.56
FL8-1	N.D.	2.78
FL9-1	N.D.	2.90
BLANK	N.D.	N.D.
SPIKED RECOVERY	----	102.8%
DUPLICATED SPIKED RECOVERY	----	94.1%
DETECTION LIMIT	50	0.05
METHOD OF ANALYSIS	503 D&E	7420

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method 503	Oil & Grease	Total Pb				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/1		FL1-1					X		X					
		FL2-1					↓		↓					
		FL3-1												
		FL3-2												
		FL3-3												
		FL4-1												
		FL5-1												
		FL6-1												
		FL7-1												
		FL8-1												
		FL9-1												

no composites
pls hold all samples (including those not analyzed).

5 day TAT

Results to G. Ford or B Copeland

TOTAL NUMBER OF CONTAINERS: 11

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	6/1 2:30	Madeline Marotta 6-1-90 3:30pm			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

June 25, 1990

ChromaLab File No.: 0690124

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland
RE: Twenty-five soil samples for Total Lead and Oil & Grease analyses
Project Number: 90C0028A
Date Sampled: June 13, 1990 Date Submitted: June 13, 1990
Duration of Analysis: June 14-20, 1990

RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
F1-1	411	110
F1-2	36.6	N.D.
F2-1	837	N.D.
F2-2	43.9	N.D.
F2-3	3.00	N.D.
F3-1	3.05	N.D.
F3-2	2.77	N.D.
F4-1	51.1	55
F4-2	26.2	N.D.
F4-3	4.12	N.D.
F5-1	4.23	N.D.
F5-2	14.0	N.D.
F6-1	5.53	82
F6-2	10.9	N.D.
F6-3	13.4	N.D.
F12-1	16.7	100
F12-2	3.15	N.D.
F11-1	15.5	52
F11-2	3.41	N.D.
F11-3	3.14	N.D.
F10-1	24.2	N.D.
F10-2	2.81	N.D.
F9-1	5.60	N.D.
F9-2	12.5	N.D.
F9-3	2.48	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	99.3%	-----
DUPLICATED SPIKE RECOVERY	106.6%	-----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

June 25, 1990 ChromaLab File No.: 0690130

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland

RE: Twenty-two soil samples for Total Lead and Oil & Grease analyses
Project Number: 90C0028A
Date Sampled: June 13, 1990 Date Submitted: June 14, 1990
Duration of Analysis: June 16-20, 1990

RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
F7-1	149	110
F7-2	46.1	110
F7-3	142	69
F8-1	2630	120
F8-2	6.16	N.D.
F13-1	30.7	250
F13-2	35.9	65
F14-1	276	N.D.
F14-2	2.76	N.D.
F14-3	2.05	N.D.
F15-1	241	N.D.
F15-2	2.86	N.D.
F16-1	3.20	N.D.
F16-2	2.49	N.D.
F16-3	2.70	N.D.
F17-1	31.2	N.D.
F17-2	2.90	N.D.
F18-1	2.88	N.D.
F18-2	3.14	N.D.
F18-3	5.38	160
F24-1	3.02	N.D.
F24-2	3.20	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	92.4%	----
DUPLICATED SPIKE RECOVERY	93.3%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

June 25, 1990 ChromaLab File No.: 0690134

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland

RE: Twenty-eight soil samples for Total Lead and Oil & Grease analyses

Project Number: 90C0028A

Date Sampled: June 14, 1990 Date Submitted: June 14, 1990

Duration of Analysis: June 16-20, 1990

RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
F23-1	423	420
F23-2	4.17	N.D.
F23-3	3.16	N.D.
F22-1	3.58	N.D.
F22-2	3.02	N.D.
F21-1	2540	69
F21-2	4.34	N.D.
F21-3	2.53	N.D.
F20-1	212	N.D.
F20-2	3.12	N.D.
F19-1	62.2	59
F19-2	4.97	N.D.
F19-3	9.31	N.D.
F28-1	2.48	N.D.
F28-2	2.70	N.D.
F39-1	3.69	N.D.
F39-2	3.01	N.D.
F39-3	2.71	N.D.
F40-1	3.00	N.D.
F40-2	2.76	N.D.
F41-1	5.24	N.D.
F41-2	2.59	N.D.
F41-3	4.62	N.D.
F42-1	2.77	N.D.
F42-2	4.17	N.D.
F43-1	3.35	N.D.
F43-2	3.02	N.D.
F43-3	4.85	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	92.4%	----
DUPLICATED SPIKE RECOVERY	101.2%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

June 25, 1990 ChromaLab File No.: 0690143
WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland
RE: Twenty-seven soil samples for Total Lead and Oil & Grease analyses
Project Number: 90C0028A
Date Sampled: June 14, 1990 Date Submitted: June 14, 1990
Duration of Analysis: June 18-25, 1990

RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
F44-1	2.48	N.D.
F44-2	3.35	N.D.
F45-1	4.93	N.D.
F45-2	2.61	N.D.
F45-3	3.78	N.D.
F38-1	54.6	74
F38-2	2.70	N.D.
F27-1	56.4	N.D.
F27-2	2.76	N.D.
F27-3	3.28	N.D.
F36-1	10.0	N.D.
F36-2	4.24	N.D.
F35-1	84.3	4800
F35-2	811	N.D.
F35-3	3.13	N.D.
F34-1	3.56	N.D.
F34-2	4.49	N.D.
F26-1	3.41	N.D.
F26-2	3.80	N.D.
F25-1	3.46	N.D.
F25-2	2.65	N.D.
F25-3	3.97	N.D.
F33-1	2.50	N.D.
F33-2	2.74	N.D.
F33-3	4.36	N.D.
F30-1	3.81	N.D.
F30-2	2.59	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	96.3%	----
DUPLICATED SPIKE RECOVERY	94.9%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

June 25, 1990

ChromaLab File No.: 0690142

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland

RE: Eleven soil samples for Total Lead and Oil & Grease analyses

Project Number: 90C0028A
Date Sampled: June 14, 1990 Date Submitted: June 14, 1990
Duration of Analysis: June 18-25, 1990

RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
F32-1	50.4	N.D.
F32-2	3.49	N.D.
F31-1	5.69	N.D.
F31-2	2.76	N.D.
F31-3	2.47	N.D.
F29-1	91.5	N.D.
F29-2	3.02	N.D.
F29-3	3.11	N.D.
F37-1	147	N.D.
F37-2	2.94	N.D.
F37-3	3.08	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	94.9%	----
DUPLICATED SPIKE RECOVERY	108.2%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO: 90C0028A

SAMPLERS: (Signature) [signature]

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method 503	Oil & Grease	Total Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/13		F1-1	S				X	1	X						
		-2					X		X						
		F2-1					X		X						
		-2					X		X						
		-3					X		X						
		F3-1					X		X						
		-2					X		X						
		F4-1					X		X						
		-2					X		X						
		-3					X		X						
		F5-1					X		X						
		-2					X		X						
		F6-1					X		X						
		-2					X		X						
		-3					X		X						
		F12-1					X		X						
		F12-2					X		X						
		F11-1					X		X						
		-2					X		X						
		-3					X		X						
		F10-1					X		X						
		-2					X		X						
		F9-1					X		X						
		-2					X		X						
		-3					X		X						

5 day TAT

results to J. Ford or B. Copeland

TOTAL NUMBER OF CONTAINERS: 25

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	6/13 12:30				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[signature]	6-13-90 12:30

408 277 9585

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method 503 Oil + Grease	Total Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/13		F7-1	S				X	X						
		-2	↓				↓	↓						
		-3												no composites all discrete
		F8-1												
		-2												
		F13-1												
		-2												
		F14-1												
		-2												
		-3												
		F15-1												5 day TAT
		-2												
		F16-1												
		-2												
		-3												
		F17-1												
		-2												Results to G. Ford or B. Copeland
		F18-1												
		-2												
		-3												
		F24-1												
		-2												

TOTAL NUMBER OF CONTAINERS: 22

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	6/13 3:15				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[signature]	6-13-[illegible] 3:15

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Charles V. Kamber

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method 503	Oil & Grease	Total Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/14		F23-1					X	X	X					1	
		-2					X	X	X					1	
		-3					X	X	X					1	
		F-22-1					X	X	X					1	
		F-22-2					X		X					1	
		F-21-1					X		X					1	
		F-21-2					X		X					1	
		F-21-3					X		X					1	
		F-20-1					X		X					1	
		F-20-2					X		X					1	
		F-19-1					X		X					1	
		F-19-2					X		X					1	
		F-19-3					X		X					1	
		F-28-1					X		X					1	
		F-28-2					X		X					1	
		F-39-1					X		X					1	
		F-39-2					X		X					1	
		F-39-3					X		X					1	
		F-40-1					X		X					1	
		F-40-2					X		X					1	
		F41-1					X		X					1	
		F41-2					X		X					1	
		F41-3					X		X					1	
		F42-1					X		X					1	
		F42-2					X		X					1	
		F43-1					X		X					1	
		F43-2					X		X					1	
		F43-3					X		X					1	
													TOTAL NUMBER OF CONTAINERS	28	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Charles V. Kamber	6/14/90 12:15				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[illegible]	6/14/90 12:15

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Charles W. Rambo

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method 503	EPA Method Cl/F Boron	EPA Method Total Pb	EPA Method	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/14		F44-1		X		X		1	
		F44-2		↓		↓		1	
		F45-1						1	
		F45-2						1	
		F45-3						1	
		F38-1						1	
		F38-2						1	
		F27-1						1	
		F27-2						1	
		F27-3						1	
		F36-1						1	
		F36-2						1	
		F35-1						1	
		F35-2						1	
		F35-3						1	
		F34-1						1	
		F34-2						1	
		F26-1						1	
		F26-2						1	
		F25-1						1	
		F25-2						1	
		F25-3						1	
		F33-1						1	
		F33-2						1	
		F33-3						1	
		F30-1						1	
		F30-2						1	
							TOTAL NUMBER OF CONTAINERS	27	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Charles W. Rambo	6/14 5:05	Madeline Hayes			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 901-0028A

SAMPLERS: (Signature) Charles W. Rambo

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method 503	EPA Method Oil + Grease	EPA Method Total Pb							Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
6/14		F32-1			X		X							1	
		F32-2			↓		↓							1	
		F31-1												1	
		F31-2												1	
		F31-3												1	
		F29-1												1	
		F29-2												1	
		F29-3												1	
		F37-1												1	
		F37-2												1	
		F37-3												1	

TOTAL NUMBER OF CONTAINERS: 11

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Charles W. Rambo	6/14 5:03	[signature]			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 18, 1990 ChromaLab File No.: 0790089

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Fifteen rush soil samples for Oil & Grease, TTLC Lead and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: July 13, 1990 Date Submitted: July 13, 1990
Duration of Analysis: July 13-16, 1990

RESULTS:

Sample NO.	Oil & Grease (mg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
SP-1	N.D.	3.45	----
SP-2	N.D.	3.80	----
SP-3	N.D.	3.08	----
SP-4	N.D.	2.99	----
SP-5	N.D.	2.75	----
SP-6	N.D.	2.68	----
SP-7	N.D.	4.50	----
SP-8	N.D.	44.8	8.60
SP-9	N.D.	3.13	----
SP-10	N.D.	2.58	----
SP-11	N.D.	3.45	----
SP-12	N.D.	3.69	----
SP-13	230	30.0	3.50
SP-14	N.D.	393	----
SP-15	71	368	----
BLANK	N.D.	N.D.	N.D.
SPIKE RECOVERY	----	97.9%	98.6%
DUPLICATE SPIKE RECOVERY	----	93.4%	100.0%
DETECTION LIMIT	50	0.05	0.10
METHOD OF ANALYSIS	503 D&E	3050/7420	3010/7420*

*Extracted per Title 22 WET procedure

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road • San Ramon, California 94583
415/831-1700 • Facsimile 415/831-8798

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 19, 1990

ChromaLab File No.: 0790097

WOODWARD-CLYDE CONSULTANTS, INC. Attn: Bill Copeland

RE: Twenty-one rush soil samples for Oil & Grease, TTLC Lead and STLC Lead analyses

Project Number: 90C0028A
Date Sampled: July 13, 1990 Date Submitted: July 13, 1990
Duration of Analysis: July 13-16, 1990

RESULTS:

Sample No.	Oil & Grease (mg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
SF-[illegible]	53	600	----
SF-[illegible]7	N.D.	385	----
SF-[illegible]8	N.D.	3.36	----
SF-[illegible]9	N.D.	19.4	[illegible]
S[illegible]20	N.D.	3.08	[illegible]
SF-21	N.D.	3.37	----
SF-22	N.D.	2.79	----
SF-23	N.D.	16.2	N.D.
SF-24	N.D.	44.2	4.90
SF-25	N.D.	31.1	N.D.
SF-26	N.D.	22.4	0.28
SF-27	N.D.	52.9	3.69
SF-28	N.D.	49.6	3.29
SF-29	N.D.	70.8	11.0
SF-30	N.D.	42.1	1.22
SF-31	N.D.	48.6	4.03
SF-32	N.D.	15.4	8.34
SF-33	N.D.	5.70	----
SF-34	N.D.	2.64	----
SF-35	N.D.	9.47	----
SF-36	N.D.	72.5	12.8
BLANK	N.D.	N.D.	N.D.
SPIKED RECOVERY	----	93.4%	98.6%
DUPLICATED SPIKED RECOVERY	----	97.9%	100.0%
DETECTION LIMIT	50	0.05	0.10
METHOD OF ANALYSIS	503 D&E	3050/7420	3010/7420*

*Extracted per Title 22 WET procedure

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 18, 1990 ChromaLab File No.: 0790105

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Four rush soil samples for Oil & Grease and total Lead analyses

Project Number: 90C0028A
Date Sampled: July 16, 1990 Date Submitted: July 16, 1990
Date Extracted:July 16-17, 1990 Date Analyzed:July 16-17,1990
RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
SF-37	1.72	N.D.
SF-38	4.16	N.D.
SF-39	3.59	N.D.
SF-40	3.01	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	97.9%	----
DUP. SPIKE RECOVERY	100.0%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 9CC078A

SAMPLERS: (Signature) Tom Sawyer

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	8031 Oil & Grease	Total Pb	CAM Wet Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7-13		SF-1	S					X	X	X						24 hr TAT
		SF-2	S													
		SF-3	S													
		SF-4	S													
		SF-5	S													
		SF-6	S													
		SF-7	S													
		SF-8	S													
		SF-9	S													
		SF-10	S													
		SF-11	S													
		SF-12	S													
		SF-13	S													
		SF-14	S													
		SF-15	S													Results to G. Ford & B. Copeland

TOTAL NUMBER OF CONTAINERS: 15

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Tom Sawyer	7/13				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[illegible]	7/13. 10:30

Woodward-Clyde Consultants

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(415) 893-3600

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Marc Ubnette

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	503 Oil & Grease	total Pb	CAM WET Pb				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/13		SF 16	S					X	X	X					
		SF 17													
		SF 18													
		SF 19													
		SF 20													
		SF 21													
		SF 22													
		SF 23													
		SF 24													
		SF 25													
		SF 26													
		SF 27													
		SF 28													
		SF 29													
		SF 30													
		SF 31													
		SF 32													
		SF 33													
		SF 34													
		SF 35													
		SF 36													

~~5 day~~ 24 hr TAT

Results to B Copeland or G. Ford

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	7/13 3:35 PM	Marc Ubnette			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
	Chromalab Marc Ubnette			

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 70C0201

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	503 Oil/Grease	total Pb					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/16		SF-37	S					X	X						
		SF-38	↓					X	X						
		SF-39	↓					X	X						Do CAM WET Pb only if sample total Pb ≤ 100 ppm and ≥ 10 ppm
		SF-40	↓					X	X						24 hour TAT
															results to B. Copeland

TOTAL NUMBER OF CONTAINERS: 4

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
W Copeland	7/16 3:10	Maddeline [illegible] 1-16-90 4:30 pm			

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 5, 1990 ChromaLab File No.: 0790022

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Twelve rush soil samples for Total Lead and Oil & Grease analyses

Project Number: 90C0028A
Date Sampled: July 3, 1990 Date Submitted: July 3, 1990
Date Extracted: July 3-5, 1990 Date Analyzed: July 3-5, 1990

RESULTS:

Sample No.	Lead (mg/Kg)	Oil & Grease (mg/Kg)
TP1-1	2.37	N.D.
TP1-2	3.16	N.D.
TP1-3	2.33	N.D.
TP2-1	694	N.D.
TP2-2	2.43	N.D.
TP2-3	2.08	N.D.
TP2-4	4.05	N.D.
TP3-1	2.87	N.D.
TP3-2	1.99	N.D.
TP3-3	2.53	N.D.
TP4-1	169	N.D.
TP4-2	2.41	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	99.4%	----
DUP SPIKE RECOVERY	97.8%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 70C0028A

SAMPLERS: (Signature) B Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	total Pb	503 Oil+Grease					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/2		TP1-1	S					X	X						
		-2													
		-3													
		TP2-1													
		-2													
		-3													
		-4													
		TP3-1													
		-2													
		-3													
		TP4-1													
		-2	↓					↓	↓						

Results by FRIDAY

Results to B. Copeland

TOTAL NUMBER OF CONTAINERS: 12

Soil

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	7/3 11:00				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			[signature]	7/3 13:30

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- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 20, 1990 ChromaLab File No.: 0790138

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Three rush composited soil samples for Lead and Oil & Grease analyses

Project Number: 90C0028A
Date Sampled: July 19, 1990 Date Submitted: July 19, 1990
Date Extracted: July 20, 1990 Date Analyzed: July 20, 1990
RESULTS:

Sample No.	Total Lead (mg/Kg)	Oil & Grease (mg/Kg)
Z1-1,2,3,4	84.0	N.D.
Z2-1,2,3,4	94.8	N.D.
Z3-1,2,3,4	37.7	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	99.1%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
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CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 23, 1990 ChromaLab File No.: 0790146

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Two rush composited soil samples for Oil& Grease and Total Lead analyses

Project Number: 90c0028A
Date Sampled: July 20, 1990 Date Submitted: July 20, 1990
Date Extracted: July 20-23,1990 Date Analyzed: July 20-23,1990

RESULTS:

Sample No.	Lead (mg/Kg)	Oil & Grease (mg/Kg)
Z4-1,2,3,4	24.0	54
Z5-1,2,3,4	48.8	N.D.
BLANK	N.D.	N.D.
SPIKE RECOVERY	95.8%	----
DETECTION LIMIT	0.05	50
METHOD OF ANALYSIS	7420	503 D&E

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 23, 1990

ChromaLab File No.: 0790138 A

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Date Sampled: July 19, 1990
Date Extracted: July 20, 1990

Date Submitted: July 19, 1990
Date Analyzed: July 23, 1990

Project Number: 90C0028A
Sample I.D.: Z1-1,2,3,4
Method of Analysis: EPA 8270

Matrix: Soil

RESULTS:

POLYNUCLEAR AROMATIC HYDROCARBONS by GC/MS

Compound Name	Sample (mg/Kg)	MDL (mg/Kg)	Spike Recovery
NAPHTHALENE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
ACENAPHTHENE	N.D.	0.5	113.3%
FLUORENE	N.D.	0.5	-----
PHENANTHRENE	N.D.	0.5	108.2%
ANTHRACENE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BENZO(A)ANTHRACENE	N.D.	0.5	----
CHRYSENE	N.D.	0.5	113.5%
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
IDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

CHROMALAB, INC.

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- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 23, 1990

ChromaLab File No.: 0790138 B

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Date Sampled: July 19, 1990
Date Extracted: July 20, 1990

Date Submitted: July 19, 1990
Date Analyzed: July 23, 1990

Project Number: 90C0028A
Sample I.D.: Z2-1,2,3,4
Method of Analysis: EPA 8270

Matrix: Soil

RESULTS:

POLYNUCLEAR AROMATIC HYDROCARBONS by GC/MS

Compound Name	Sample (mg/Kg)	MDL (mg/Kg)	Spike Recovery
NAPHTHALENE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
ACENAPHTHENE	N.D.	0.5	113.3%
FLUORENE	N.D.	0.5	-----
PHENANTHRENE	N.D.	0.5	108.2%
ANTHRACENE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BENZO(A)ANTHRACENE	N.D.	0.5	----
CHRYSENE	N.D.	0.5	113.5%
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
IDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 23, 1990

ChromaLab File No.: 0790138 C

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Date Sampled: July 19, 1990
Date Extracted: July 20, 1990

Date Submitted: July 19, 1990
Date Analyzed: July 23, 1990

Project Number: 90C0028A
Sample I.D.: Z3-1,2,3,4
Method of Analysis: EPA 8270

Matrix: Soil

RESULTS:

POLYNUCLEAR AROMATIC HYDROCARBONS by GC/MS

Compound Name	Sample (mg/Kg)	MDL (mg/Kg)	Spike Recovery
NAPHTHALENE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
ACENAPHTHENE	N.D.	0.5	113.3%
FLUORENE	N.D.	0.5	-----
PHENANTHRENE	N.D.	0.5	108.2%
ANTHRACENE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BENZO(A)ANTHRACENE	N.D.	0.5	----
CHRYSENE	N.D.	0.5	113.5%
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
IDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

CHROMALAB, INC.

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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 23, 1990

ChromaLab File No.: 0790146 A

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Date Sampled: July 20, 1990
Date Extracted: July 20, 1990

Date Submitted: July 20, 1990
Date Analyzed: July 23, 1990

Project Number: 90C0028A
Sample I.D.: Z4-1,2,3,4
Method of Analysis: EPA 8270

Matrix: Soil

RESULTS:

POLYNUCLEAR AROMATIC HYDROCARBONS by GC/MS

Compound Name	Sample (mg/Kg)	MDL (mg/Kg)	Spike Recovery
NAPHTHALENE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
ACENAPHTHENE	N.D.	0.5	113.3%
FLUORENE	N.D.	0.5	-----
PHENANTHRENE	N.D.	0.5	108.2%
ANTHRACENE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BENZO(A)ANTHRACENE	N.D.	0.5	----
CHRYSENE	N.D.	0.5	113.5%
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
IDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

July 23, 1990

ChromaLab File No.: 0790146 B

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

Date Sampled: July 20, 1990
Date Extracted: July 20, 1990

Date Submitted: July 20, 1990
Date Analyzed: July 23, 1990

Project Number: 90C0028A
Sample I.D.: Z5-1,2,3,4
Method of Analysis: EPA 8270

Matrix: Soil

RESULTS:

POLYNUCLEAR AROMATIC HYDROCARBONS by GC/MS

Compound Name	Sample (mg/Kg)	MDL (mg/Kg)	Spike Recovery
NAPHTHALENE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
ACENAPHTHENE	N.D.	0.5	113.3%
FLUORENE	N.D.	0.5	-----
PHENANTHRENE	N.D.	0.5	108.2%
ANTHRACENE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BENZO(A)ANTHRACENE	N.D.	0.5	----
CHRYSENE	N.D.	0.5	113.5%
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
IDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	-----

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

Woodward-Clyde Consultants

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

Chain

CHROMALAB FILE # 790138

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Ann Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	ANALYSES: Sos Oil & Grease	ANALYSES: Total Pb	ANALYSES: PNAs - mod 8270	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/9		Z1-1	S					X	X	X		Composite
		-2										
		-3										
		-4										
		Z2-1						X	X	X		Composite
		-2										
		-3										
		-4										
		Z3-1						X	X	X		composite
		-2										
		-3										
		-4	↓									

ASAP TAT
24 hr

Call B. Copeland or G. Ford w/ verbal results ASAP. pls. 874-3192 874-3203

TOTAL NUMBER OF CONTAINERS: 12

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
A Copeland	7/9 400				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
			7/9	4 00

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	503 Oil & Grease	Total Pb	PNAs - mod. 8270				Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
7/20		Z4-1	S					X	X	X				1	Composite
		-2												1	
		-3												1	
		-4												1	
		Z5-1						X	X	X				1	Composite
		-2												1	
		-3												1	
		-4												1	

24 hr TAT

results to B. Copeland ASAP

Thanks

TOTAL NUMBER OF CONTAINERS: 8

RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)	RELINQUISHED BY : (Signature)	DATE/TIME	RECEIVED BY : (Signature)
W Copeland	7/20 3:30				

METHOD OF SHIPMENT :	SHIPPED BY : (Signature)	COURIER : (Signature)	RECEIVED FOR LAB BY : (Signature)	DATE/TIME

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
- Waste Water
- Consultation

May 14, 1990 ChromaLab File No.: 0590040

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Thirty soil samples for Gasoline/BTEX, Oil & Grease, Total Lead, and Wet Lead analyses

Project Number: 90C0028A
Date Sampled: May 4, 1990 Date Submitted: May 4, 1990
Duration of Analysis: May 4-12, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
DT 12	N.D.	19	15	N.D.	8.1	----	----	----
DT 13	71	34	150	170	800	----	----	----
DT 14	39	150	450	830	3100	----	----	----
DT 15	55	N.D.	N.D.	7.2	39	----	----	----
DT 16	1000	800	3200	4100	12000	----	----	----
DT 17	27	N.D.	N.D.	7.3	120	----	----	----
FL	----	----	----	----	----	N.D.	55	0.7
FL 10	----	----	----	----	----	N.D.	74	0.6
FL 11	----	----	----	----	----	N.D.	37	0.2
FL 12	----	----	----	----	----	N.D.	78	0.5
FL 13	----	----	----	----	----	N.D.	42	0.5
FL 14	----	----	----	----	----	N.D.	51	0.6
FL 15	----	----	----	----	----	100	47	0.6
FL 16	----	----	----	----	----	61	86	0.8
BTM 1	N.D.	5.4	N.D.	N.D.	N.D.	----	----	----
BTM 2	38	24	6.2	16	300	----	----	----
BTM 3	47	370	180	170	460	----	----	----
BTM 4	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
BTM 5	45	330	96	32	390	----	----	----
BTM 6	N.D.	75	40	N.D.	33	----	----	----
BTM 7	21	390	430	180	400	----	----	-
BTM 8	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	-
BTM 9	N.D.	32	5.1	N.D.	5.0	----	----	-

CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#238)
- Drinking Water (#955)
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May 14, 1990

ChromaLab File No.: 0590040
Page 2 of 2

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

RE: Thirty soil samples for Gasoline/BTEX, Oil & Grease, Total Lead, and Wet Lead analyses

Project Number: 90C0028A
Date Sampled: May 4, 1990 Date Submitted: May 4, 1990
Duration of Analysis: May 4-12, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)	TTLC Lead (mg/Kg)	STLC Lead (mg/L)
MLK 1	890	3500	10000	7500	14000	----	----	----
MLK 2	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
12 TH 1	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
12 TH 2	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
WALL 1	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
WALL 2	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	
WALL 3	N.D.	N.D.	N.D.	N.D.	N.D.	----	----	----
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	90.4%	91.4%	88.2%	98.5%	98.7%	----	101.3%	102.2%
DUP SP. RECOVERY	95.2%	96.7%	90.1%	99.6%	109.5%	----	101.2%	104.7%
DETECTION LIMIT	2.5	5	5	5	5	50	0.1	0.1
METHOD OF ANALYSIS	MOD. 8015	8020	8020	8020	8020	503 D&E	3050/ 7420	1310/3010 7420

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam (by DD)
Laboratory Director

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

George Ford
Woodward-Clyde Cons.
500 12th Street, Suite 100
Oakland, CA 94607-4014

Date: 08-23-90
NET Client Acct No: 120
NET Pacific Log No: 3298
Received: 08-10-90 2300

Client Reference Information

Project: 90C0028A

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3298

Date: 08-23-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results B-1 08-10-90 60269	B-2 08-10-90 60270	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			100	1	
DATE ANALYZED			08-21-90	08-22-90	
METHOD GC FID/5030			--	--	
as Gasoline		1	320	1.5	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			100	1	
DATE ANALYZED			08-21-90	08-22-90	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	4,900	15	ug/Kg

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3298

Date: 08-23-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results B-3 08-10-90 60271	B-4 08-10-90 60272	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	100	
DATE ANALYZED			08-21-90	08-21-90	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	1,800	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	100	
DATE ANALYZED			08-21-90	08-21-90	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	64,000	ug/Kg

Client No: 120 Date: 08-23-90
Client Name: Woodward-Clyde Cons.
NET Log No: 3298 Page: 4

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			B-5 08-10-90	B-6 08-10-90	
Parameter	Method	Reporting Limit	60273	60274	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			100	1	
DATE ANALYZED			08-21-90	08-21-90	
METHOD GC FID/5030			--	--	
as Gasoline		1	6,900	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			100	1	
DATE ANALYZED			08-21-90	08-21-90	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	19,000	ND	ug/Kg

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3298

Date: 08-23-90

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			B-7 08-10-90	B-8 08-10-90	
Parameter	Method	Reporting Limit	60275	60276	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-21-90	08-21-90	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-21-90	08-21-90	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3298

Date: 08-23-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results B-9 08-10-90 60277	F-1 08-10-90 60278	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-21-90	08-21-90	
METHOD GC FID/5030			--	--	
as Gasoline		1	11	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-21-90	08-21-90	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	17	ND	ug/Kg

Client No: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3298

Date: 08-23-90

Page: 7

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results F-2 08-10-90 60279	F-3 08-10-90 60280	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (SOIL)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-21-90	08-21-90	
METHOD GC FID/5030			--	--	
as Gasoline		1	ND	ND	mg/Kg
METHOD 8020			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-21-90	08-21-90	
Benzene		2.5	ND	ND	ug/Kg
Ethylbenzene		2.5	ND	ND	ug/Kg
Toluene		2.5	ND	ND	ug/Kg
Xylenes, total		2.5	ND	ND	ug/Kg

Client Acct: 120
Client Name: Woodward-Clyde Cons.
NET Log No: 3298

Date: 08-23-90
Page: 8

Ref: Project: 90C0028A

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1	mg/Kg	108	ND	93	92	1.1
Benzene	2.5	ug/Kg	99	ND	92	90	2.2
Toluene	2.5	ug/Kg	102	ND	94	92	2.2
Gasoline	1	mg/Kg	103	ND	80	77	3.4
Benzene	2.5	ug/Kg	105	2.7	89	85	4.2
Toluene	2.5	ug/Kg	110	2.8	93	90	3.3

COMMENT: Blank Results were ND on other analytes tested.

KEY TO ABBREVIATIONS and METHOD REFERENCES

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

Method References

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

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

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

(3298)

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO.: 9C0028A

SAMPLERS: (Signature)

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	ANALYSES: EPA Method	EPA Method	EPA Method	EPA Method	TPH/BETX (GAS)	Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
8/10/90	NA	B-1						X		
		B-2								
		B-3								
		B-4								
		B-5								
		B-6								
		B-7								
		B-8								
		B-9								
		F-1								
		F-2								
		F-3								

Normal Turnaround
Results to George Ford or Bill Copeland
FAX (415) 874-3268
Phone (415) 874-3203

TOTAL NUMBER OF CONTAINERS: 12

custody seal 8/10/90 @ 19:30
custody seal entry 8/10

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

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

Woodward-Clyde Consultants

Chain of Custody # 900197

September 20, 1990

George Ford
Woodward-Clyde Consultants
500 12th Street; Suite #100
Oakland, CA 94607-4014

Dear Mr. Ford:

Enclosed is the report for (Project ID 90C0028A) samples which were received at Woodward-Clyde Analytical Laboratory September 17, 1990. Faxed results for the organic analysis was sent to you on September 18, 1990.

The report consists of the following sections:

I Analysis Results

No problems were encountered with the analysis of your samples.

If you have any questions, please feel free to call.

Sincerely,

Edward R. Morales
Lab Manager

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 8015

PROJECT NAME: BRAMALEA PACIFIC
PROJECT NUMBER: 90C0028A
PROJECT MANAGER: GEORGE FORD

COC# 900197

WCC LAB ID	SAMPLE ID	MATRIX	COLLECTION DATE	EXTRACTION DATE	ANALYSIS DATE	DETECTION LIMIT (ug/L)	TPH (ug/L)
METHOD BLANK	-	WATER	-	09-17-90	09-17-90	50	ND
900197-01-02	GW1	WATER	09-[illegible]7-90	09-17-90	09-17-90	50	140
900197-02-02	GW2	WATER	09-[illegible]7-90	09-17-90	09-17-90	50	840

Quantitated as Leaded Gasoline.

REVIEWED BY:

Woodward-Clyde Consultants

CAM 17 METALS ANALYSES

PROJECT NAME: BRAMELEA PACIFIC
PROJECT NUMBER: 90C0028A
PROJECT MANAGER: GEORGE FORD

COC#: 900197
CONC UNITS: mg/L
METHOD: 6010 & 7000
MATRIX: WATER

WCC LAB ID:	METHOD	900197-01-05	900197-02-05		STLC	TTLC
SAMPLE ID:	BLANK	GW1	GW2	DETECTION	LIMITS	LIMITS
DATE ANALYZED	9-19-90	9-19-90	9-19-90	LIMIT	(mg/L)	(mg/kg)
ANTIMONY	ND	0.27	0.48	0.05	15	500
ARSENIC	ND	0.005	0.007	0.001	5.0	500
BARIUM	ND	0.22	0.66	0.05	100	10000
BERYLLIUM	ND	ND	ND	0.007	0.75	75
CADMIUM	ND	0.02	0.06	0.02	1.0	100
CHROMIUM	ND	0.17	0.49	0.02	560	2500
COBALT	ND	ND	0.18	0.05	80	8000
COPPER	ND	0.02	0.07	0.01	25	2500
LEAD*	ND	ND	0.07	0.05	5.0	1000
MERCURY	ND	0.0006	0.0004	0.0002	0.2	20
MOLYBDENUM*	ND	ND	ND	0.02	350	3500
NICKEL*	ND	0.12	0.26	0.03	20	2000
SELENIUM*	ND	ND	ND	0.05	1.0	100
SILVER	ND	ND	0.04	0.02	5	500
THALLIUM*	ND	ND	ND	0.08	7.0	700
VANADIUM*	ND	0.09	0.16	0.01	24	2400
ZINC	ND	0.14	0.27	0.05	250	5000

* - ANALYZED BY ETC SANTA ROSA

REVIEWED BY:

BENZENE, TOLUENE, ETHYLBENZENE, XYLENES DATA SHEET

CLIENT: BRAMALEA PACIFIC
PROJECT: 90C0028A
PROJ.MGR.: GEORGE FORD

DATE RECEIVED: 09-17-90
METHOD ID: Mod. 8020
UNITS: ug/L

WCC LAB ID:	METHOD	900197-01-02	900197-02-02
SAMPLE ID LINE 1:	BLANK	GW1	GW2
SAMPLE ID LINE 2:			
DATE SAMPLED:		09-17-90	09-17-90
DATE ANALYZED:	09-17-90	09-17-90	09-17-90
DETECTION LIMIT:		0.5	5
BENZENE	ND	0.7	8
TOLUENE	ND	5.4	110
ETHYLBENZENE	ND	2.9	46
XYLENES	ND	57	430

QUALITY ASSURANCE INFORMATION

AVG REC #1	AVG REC #2	AVG RPD
82	85	4

ND - NOT DETECTED: SAMPLE CONTAINED THE PARAMETER BELOW THE PRACTICAL QUANTITATION LIMIT.

REVIEWED BY:

VOLATILE ORGANICS ANALYSIS DATA SHEET

.IENT: BRAMELEA PACIFIC
PROJECT: 90C0028A
PROJ.MGR.: GEORGE FORD

DATE RECEIVED: 09-17-90
METHOD ID: 8010
UNITS: ug/L

WCC LAB ID: METHOD		900197-01-01	900197-02-01
SAMPLE ID LINE 1: BLANK		GW1	GW2
SAMPLE ID LINE 2:			
DATE SAMPLED:		09-17-90	09-17-90
DATE ANALYZED: 09-17-90		09-17-90	09-17-90
DETECTION LIMIT: 0.5		0.5	0.5
BROMODICHLOROMETHANE	ND	ND	ND
BROMOFORM	ND	ND	ND
ROMOMETHANE	ND	ND	ND
ARBON TETRACHLORIDE	ND	ND	ND
CHLOROBENZENE	ND	ND	ND
CHLOROETHANE	ND	ND	ND
-CHLOROETHYLVINYL ETHER	ND	ND	ND
HLOROFORM	ND	3.1	4.0
CHLOROMETHANE	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND
,2-DICHLOROBENZENE	ND	ND	ND
,3-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND
ICHLORODIFLUOROMETHANE	ND	ND	ND
,1-DICHLOROETHANE	ND	ND	ND
1,2-DICHLOROETHANE	ND	ND	ND
1,1-DICHLOROETHENE	ND	ND	ND
RANS-1,2-DICHLOROETHENE	ND	ND	ND
,2-DICHLOROPROPANE	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND
ETHYLENE CHLORIDE	ND	ND	ND
,1,2,2-TETRACHLOROETHANE	ND	ND	ND
TETRACHLOROETHENE	ND	5.5	9.9
,1,1-TRICHLOROETHANE	ND	ND	ND
,1,2-TRICHLOROETHANE	ND	ND	ND
RICHLOROETHENE	ND	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND
INYL CHLORIDE	ND	ND	ND

QUALITY ASSURANCE INFORMATION

AVG REC #1	AVG REC #2	AVG RPD
100	114	12

ND - NOT DETECTED: SAMPLE CONTAINED THE PARAMETER BELOW THE PRACTICAL QUANTITATION LIMIT.

REVIEWED BY:

Woodward-Clyde Consultants

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT: BRAMALEA PACIFIC
PROJECT: 90C0328A
PROJ.MGR.: GEORGE FORD

DATE RECEIVED: 09-17-90
METHOD ID: 602
UNITS: ug/L

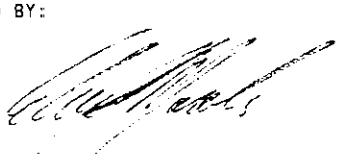
WCC LAB ID:	METHOD	900197-01-01	900197-02-01
SAMPLE ID LINE 1:	BLANK	GW1	GW2
SAMPLE ID LINE 2:			
DATE SAMPLED:		09-17-90	09-17-90
DATE ANALYZED:	09-17-90	09-17-90	09-17-90
DETECTION LIMIT:	0.5	0.5	0.5
BENZENE	ND	0.7	8
TOLUENE	ND	5.4	110
CHLOROBENZENE	ND	ND	ND
ETHYLBENZENE	ND	2.9	46
1,3-DICHLOROBENZENE	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND

QUALITY ASSURANCE INFORMATION

AVG REC #1	AVG REC #2	AVG RPD
82	85	4

ND - NOT DETECTED: SAMPLE CONTAINED THE PARAMETER BELOW THE PRACTICAL QUANTITATION LIMIT.

REVIEWED BY:



900197

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A/SAMP

SAMPLERS: (Signature) Wm Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method 602	EPA Method 601	TPH/BETX	CAM 17 Metals					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
9/17	11:00	GW1	W			X	X	X	X					5	
	11:45	GW2	W			X	X	X	X					5	
															24 hr. TAT
															Results to Bill Copeland 874-3192

TOTAL NUMBER OF CONTAINERS:

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Wm Copeland	12:35 9/17				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER. (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
	[signature]		[signature]	[illegible]

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

September 27, 1990 ChromaLab File No.: 0990088

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: George Ford

Re: Eight soil samples for Gasoline/BTEX analyses

Project Name:
Project Number: 90C0028A
Date Sampled: Sept. 19, 1990 Date Submitted: Sept. 20, 1990
Date Extracted: Sept, 21-27,1990 Date Analyzed: Sept.21-27,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
#1	N.D.	N.D.	N.D.	N.D.	N.D.
#2	6.8	25	12	N.D.	67
#3	N.D.	N.D.	N.D.	N.D.	N.D.
#4	N.D.	N.D.	N.D.	N.D.	N.D.
#5	N.D.	N.D.	N.D.	N.D.	N.D.
#6	N.D.	N.D.	N.D.	N.D.	N.D.
#7	N.D.	N.D.	N.D.	N.D.	N.D.
#8	N.D.	N.D.	N.D.	N.D.	N.D
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	96.4%	86.1%	92.5%	94.4%	93.5%
DUPLICATED SPIKE RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%
DETECTION LIMIT	2.5	5	5	5	5
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 19, 1990 ChromaLab File No.: 1090100

WOODWARD-CLYDE CONSULTANTS, INC.

Attn: Bill Copeland

RE: Two soil samples for Gasoline/BTEX analysis

Project Number: 90C0028A
Date Sampled: Oct. 10, 1990 Date Submitted: Oct. 15, 1990
Date Extracted: Oct. 16-18, 1990 Date Analyzed: Oct. 16-18,1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
#9	N.D.	N.D.	N.D.	N.D.	N.D.
#10	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.1%	89.3%	89.7%	90.0%	107.6%
DETECTION LIMIT	2.5	5	5	5	5
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A
8910155A

SAMPLERS: (Signature)
Peter Solberg

CHROMALAB FILE # 990088

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	ANALYSES: TPH - gas & BTEX				Nur
9/19/90	12:00	(1)						X				1
"	12:20	(2)						X				1
"	1PM	(3)						X				1
"	2PM	(4)						X				1
"	2:30PM	(5)						X				1
"	3PM	(6)						X				1
"	3:30PM	(7)						X				1
"	4PM	(8)						X				1

Normal turn-around

Call George Ford with questions

Report results to George Ford

TOTAL NUMBER OF CONTAINERS: 8

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Peter Solberg	9/19/90 5PM				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Hand-carried			Ellen Moffatt	9-20-90 10:40

Woodward-Clyde Consultants

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

Chain of Custody Record

PROJECT NO. 90C0028A

SAMPLERS: (Signature) W. Copeland

DATE	TIME	SAMPLE NUMBER	Sample Matrix (S)oil, (W)ater, (A)ir	EPA Method	EPA Method	EPA Method	EPA Method	TPH/gas	BETX					Number of Containers	REMARKS (Sample preservation, handling procedures, etc.)
10/10		#9	S					X	X					1	Normal TAT
"		#10	"					X	X					1	Results to B. Copeland 8743192

TOTAL NUMBER OF CONTAINERS: 2

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
T.K. Kalle	10/11 1:00 PM	1:55 [illegible] 10/11/90	[illegible] 10/11/90		

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME

NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

George Ford
Woodward-Clyde Cons.
500 12th Street, Suite 100
Oakland, CA 94607-4014

Date: 08-14-90
NET Client Acct No: 120
NET Pacific Log No: 3273A
Received: 08-10-90 0800

Client Reference Information

Project: 90C0028A

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

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

Date: 08-14-90

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			C-1a 08-09-90	C-2a 08-09-90	
Parameter	Method	Reporting Limit	59948	59949	Units
Oil & Grease(Total)	9071	50	ND	76	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	2.2	2.8	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			C-3a 08-09-90	C-4a 08-09-90	
Parameter	Method	Reporting Limit	59950	59951	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.3	1.8	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-6a 08-09-90 59952	C-7a 08-09-90 59953	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.5	2.3	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-8a 08-09-90 59954	C-9a 08-09-90 59955	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.7	2.5	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-10a 08-09-90 59956	C-11a 08-09-90 59957	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	2.6	4.7	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-12a 08-09-90 59958	C-17a 08-09-90 59959	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	2.4	1.8	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

			Descriptor, Lab No. and Results		
			C-18a 08-09-90	C-19a 08-09-90	
Parameter	Method	Reporting Limit	59960	59961	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.8	2.1	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-20a 08-09-90 59962	 C-1bc comp 08-09-90 59963	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	3.0	1.7	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-2bc comp 08-09-90 59964	 C-3bc comp 08-09-90 59965	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	2.0	2.5	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-4bc comp 08-09-90 59966	 C-6bc comp 08-09-90 59967	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	2.4	1.8	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-7bc comp 08-09-90 59968	 C-8bc comp 08-09-90 59969	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.8	1.4	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-9bc comp 08-09-90 59970	 C-10bc comp 08-09-90 59971	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.9	1.7	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-11bc comp 08-09-90 59972	 C-12bc comp 08-09-90 59973	Units
Oil & Grease(Total)	9071	50	ND	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.2	1.2	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-17bc comp 08-09-90 59974	 C-18bc comp 08-09-90 59975	Units
Oil & Grease(Total)	9071	50	ND	50	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.3	1.8	mg/Kg

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

Date: 08-14-90

Ref: Project: 90C0028A

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results C-19bc comp 08-09-90 59976	 C-20bc comp 08-09-90 59977	Units
Oil & Grease(Total)	9071	50	50	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	ND	mg/Kg
Lead (EPA 7421)	7421	0.2	1.6	1.5	mg/Kg

Ref: Project: 90C0028A

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Lead (EPA 7421)	0.2	mg/Kg	103	ND	103	102	<1
Oil & Grease(Total)	50	mg/Kg	98	ND	98	99	<1
Oil & Grease(Non-Polar)	100	mg/Kg	98	ND	N/A	N/A	N/A

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

George Ford
Woodward-Clyde Cons.
500 12th Street, Suite 100
Oakland, CA 94607-4014

Date: 08-14-90
NET Client Acct No: 120
NET Pacific Log No: 3297
Received: 08-10-90 2300

Client Reference Information

Project: 90C0028A

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)