

ALCO
HAZMAT

94 APR -6 PM 1:31

April 5, 1994
SCI 820.001

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

**Quarterly Groundwater Monitoring
February 1994
6707 Bay Street
Emeryville, California**

Dear Ms. Hugo:

This letter records the results of a groundwater monitoring event performed by Subsurface Consultants, Inc. (SCI) at the referenced site in February 1994.

Three underground tanks which previously stored methyl isobutyl ketone and possibly methyl ethyl ketone were removed from the site in October 1989 by others. Studies conducted following tank removal indicated that soil and groundwater adjacent to the previous tanks had been impacted by past organic chemical releases. Soil vapor extraction and groundwater treatment systems were subsequently installed in 1990 to remediate contaminated soil and groundwater. The treatment systems were in operation until early 1991. Since 1991, no additional remediation has been performed. Treatment system and monitoring well locations are shown on the attached Site Plan, Plate 1.

Initially, groundwater levels in the four wells were measured. The groundwater level measurements are presented in Table 1. Groundwater surface contours for the February 1994 event are shown on Plate 1.

For this event, Wells 1, 3 and 8 were sampled. Prior to sampling, these wells were purged with a clean disposable bailer until measurements of water pH, conductivity and temperature stabilized. A minimum of 4 well volumes were removed from each well. The purged water was placed in 55 gallon drums and left on-site.

■ Subsurface Consultants, Inc.

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After the wells had recharged to within 80 percent of the initial volume they were sampled using a pre-cleaned sampling device. The water samples were retained in pre-cleaned containers, placed in an iced cooler, and kept refrigerated until delivery to the analytical laboratory. Chain-of-Custody documents accompanied the samples to the laboratory.

Analytical testing was performed by Curtis & Tompkins, Ltd., a California Department of Health Services certified analytical laboratory for the test performed. The samples were analytically tested for the following.

1. Volatile organic chemicals - EPA 8240, and
2. Oil & grease - SMWW 17:5520 E&F

A summary of the current and previous analytical test results are presented in Table 2. Analytical test reports and Chain-of-Custody documents are attached.

Conclusions

The groundwater level data indicate that groundwater flow direction is toward the northwest at a gradient of approximately 2 to 3 percent and the water level in the tank area is approximately 1.5 to 2.5 feet higher than levels recorded during the November 1993 monitoring event. This flow direction and gradient remain consistent with previous measurements.

Methyl isobutyl ketone, MIBK (4-methyl-2 pentanone) was detected in Well MW-8 at a concentration of 14,000 ug/l. No other volatile organic chemicals (EPA 8240) nor oil and grease were detected at concentrations in excess of the analytical detection limits in the wells being monitored. For this reason, it appears that the MIBK contaminant plume is limited to an area immediately adjacent to the previous tanks. The MIBK concentration detected in Well MW-8 is significantly higher than detected during the November 1993 monitoring event. This is likely due to the higher water levels.

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If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/96)

MK:RWR:clh

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

cc: Brian Berger, Pettit & Martin
Kirk Jamieson, Pettit & Martin
John R. Boos, Pettit & Martin
James McClay, Scenic Art - MRCP

Table 1.
Groundwater Elevation Data

Well	Date	TOC Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-1	05/20/93	99.99	10.25	89.74
	06/04/93		11.45	88.54
	08/25/93		11.20	88.79
	11/18/93		11.65	88.34
	02/25/94		10.04	89.95
MW-3	05/20/93	99.46	8.55	90.91
	06/04/93		9.36	90.10
	08/25/93		9.42	90.04
	11/18/93		10.03	89.43
	02/25/94		7.29	92.17
MW-7	06/04/93	99.74	12.67	87.07
	08/25/93		12.44	87.30
	11/18/93		13.13	86.61
	02/25/94		11.80	87.94
MW-8	05/20/93	100.10	9.55	90.55
	06/04/93		10.81	89.29
	08/25/93		10.93	89.17
	11/18/93		11.72	88.38
	02/25/94		9.05	91.05

¹ Elevation reference: Building corner is assumed to be at elevation 100.00 feet

Table 2.
Contaminant Concentrations in Groundwater

Well	Date	Oil & Grease (mg/l) ¹	^{418P} 4-Methyl-2 Pentanone (ug/l) ²	Vinyl Chloride (ug/l)	Acetone (ug/l)	^{MEK} 2-Butanone (ug/l)	4-Methyl-2 Pentanol (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Bis (2-Ethyl Hexyl) Phthalate (ug/l)	Other Organic Chemicals (ug/l)
MW1	07/06/89	-- ³	NR ⁴	<0.3	NR	NR	NR	<0.3	<0.3	-- ⁴	ND ⁵
	09/07/89	<10	<20	<4	<20	<20	NR	<2	<2	40	ND
	01/10/90	--	NR	<30	NR	NR	NR	<5	<5	<100	ND
	09/07/91	--	<10	<10	<20	<20	NR	7	8	--	ND
	05/20/93	<5	<10	<10	<20	<10	NR	<5	<5	--	ND
	08/25/93	<5	<10	<10	<20	<10	NR	<5	<5	--	ND
	11/18/93	<5	<10	<10	<40	<10	NR	<5	<5	--	ND
	02/25/94	<5	<10	<10	<10	<10	NR	<5	<5	--	ND
MW3	09/07/89	<10	<20	<4	<20	<20	NR	<2	<2	80	ND
	01/10/90	--	NR	<30	NR	NR	NR	<5	<5	<100	ND
	09/07/91	--	<10	<10	<20	<20	NR	<5	<5	--	ND
	05/20/93	<5	<10	<10	<20	<10	NR	<5	<5	--	ND
	08/25/93	<5	<10	<10	<20	<10	NR	<5	<5	--	ND
	11/18/93	<5	<10	<10	<20	<10	NR	<5	<5	--	ND
	02/25/94	<5	<10	<10	<10	<10	NR	<5	<5	--	ND
MW8	01/10/90	--	160,000	<6,000	NR	NR	NR	2,100	<1,000	<100	ND
	12/10/90	--	47,000 ⁶	<150	3,200 ⁶	10,000 ⁶	130,000 ⁶	160	<25	--	ND
	09/05/91	--	150,000	<10,000	<5,000	<20,000	NR	<10,000	<10,000	--	ND
	05/20/93	<5	100,000	<5,000	<10,000	<5,000	NR	<3,000	<3,000	--	ND
	08/25/93	<5	48,000	<3,000	<5,000	<3,000	NR	<1,000	<100	--	ND
	11/18/93	14	840	<50	<100	<50	NR	<25	<25	--	ND
	02/25/94	<5	14,000	<1,000	<2,000	<1,000	NR	<500	<500	--	ND

¹ Milligrams per liter

² Micrograms per liter

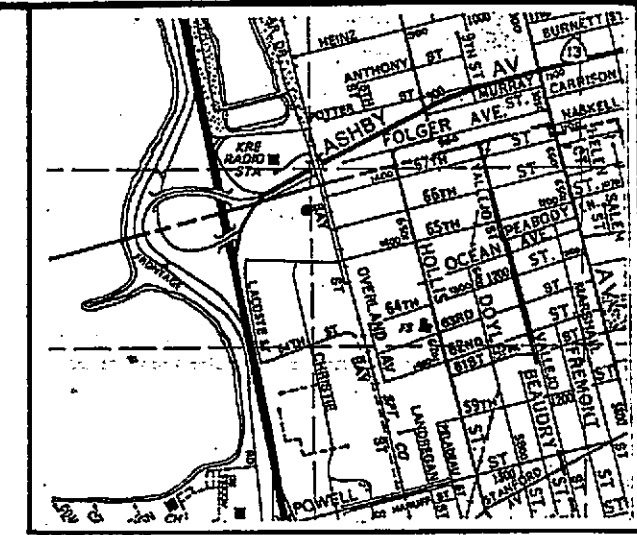
³ Test not requested

⁴ Not reported

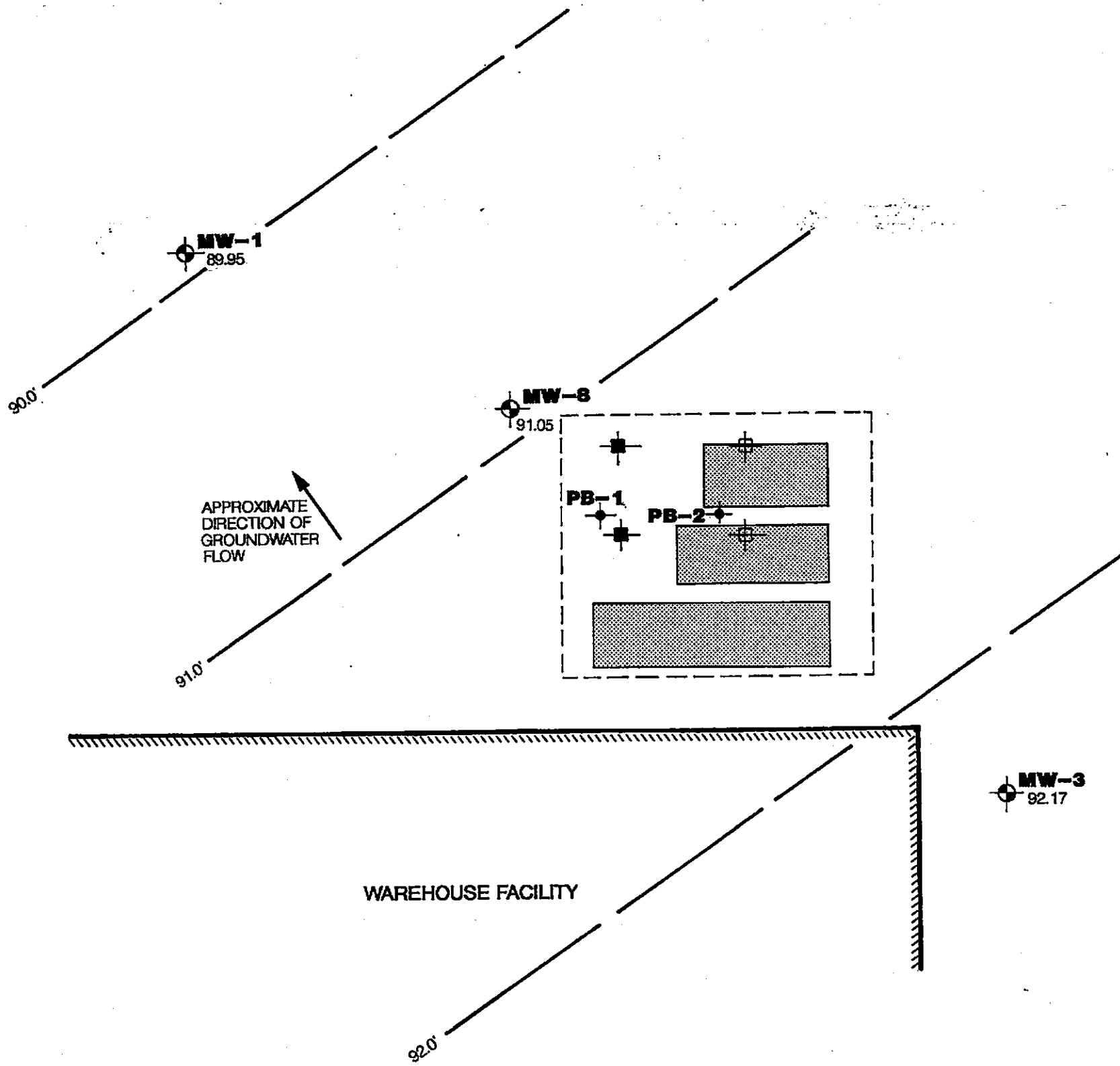
⁵ Not detected above reporting limits

⁶ Tentatively identified compound concentrations

data fr. other wells?



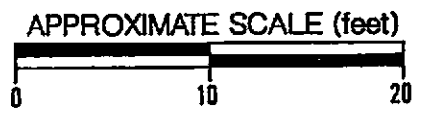
VICINITY MAP



APPROXIMATE DIRECTION OF GROUNDWATER FLOW

WAREHOUSE FACILITY

- MONITORING WELL
- TEST BORING
- VAPOR EXTRACTION WELL
- PASSIVE VAPOR RECHARGE WELL
- APPROXIMATE LOCATION OF PREVIOUS UNDERGROUND STORAGE TANK
- APPROXIMATE EXTENT OF TANK EXCAVATION
- PROPERTY LINE
- GROUNDWATER CONTOUR ELEVATION (feet) (2/25/94)



SITE PLAN

Subsurface Consultants

6707 BAY STREET - EMERYVILLE, CA			PLATE
JOB NUMBER	DATE	APPROVED	1
B20.001	3/9/94	<i>JK</i>	



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

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

A N A L Y T I C A L R E P O R T

Prepared for:

Subsurface Consultants
171 12th Street
Suite 201
Oakland, CA 94608

Date: 07-MAR-94
Lab Job Number: 114517
Project ID: 820.001
Location: 6707 Bay St.

Reviewed by:

Mary Plessner

Reviewed by:

Keith Br...

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LABORATORY NUMBER: 114517-001
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 820.001
LOCATION: 6707 BAY ST.
SAMPLE ID: MW-1

DATE SAMPLED: 02/25/94
DATE RECEIVED: 02/25/94
DATE ANALYZED: 02/28/94
DATE REPORTED: 03/07/94

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone (MEK)	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone (MIBK)	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	102 %
Toluene-d8	111 %
Bromofluorobenzene	90 %



LABORATORY NUMBER: 114517-002
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 820.001
LOCATION: 6707 BAY ST.
SAMPLE ID: MW-3

DATE SAMPLED: 02/25/94
DATE RECEIVED: 02/25/94
DATE ANALYZED: 02/28/94
DATE REPORTED: 03/07/94

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone (MEK)	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone (MIBK)	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit

QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	102 %
Toluene-d8	106 %
Bromofluorobenzene	98 %



LABORATORY NUMBER: 114517-003
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 820.001
 LOCATION: 6707 BAY ST.
 SAMPLE ID: MW-8

DATE SAMPLED: 02/25/94
 DATE RECEIVED: 02/25/94
 DATE ANALYZED: 02/28/94
 DATE REPORTED: 03/07/94

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	1,000
Bromomethane	ND	1,000
Vinyl chloride	ND	1,000
Chloroethane	ND	1,000
Methylene chloride	ND	2,000
Acetone	ND	2,000
Carbon disulfide	ND	500
Trichlorofluoromethane	ND	500
1,1-Dichloroethene	ND	500
1,1-Dichloroethane	ND	500
trans-1,2-Dichloroethene	ND	500
cis-1,2-Dichloroethene	ND	500
Chloroform	ND	500
Freon 113	ND	500
1,2-Dichloroethane	ND	500
2-Butanone (MEK)	ND	1,000
1,1,1-Trichloroethane	ND	500
Carbon tetrachloride	ND	500
Vinyl acetate	ND	5,000
Bromodichloromethane	ND	500
1,2-Dichloropropane	ND	500
cis-1,3-Dichloropropene	ND	500
Trichloroethene	ND	500
Dibromochloromethane	ND	500
1,1,2-Trichloroethane	ND	500
Benzene	ND	500
trans-1,3-Dichloropropene	ND	500
Bromoform	ND	500
2-Hexanone	ND	1,000
4-Methyl-2-pentanone (MIBK)	14,000	1,000
1,1,2,2-Tetrachloroethane	ND	500
Tetrachloroethene	ND	500
Toluene	ND	500
Chlorobenzene	ND	500
Ethyl benzene	ND	500
Styrene	ND	500
Total xylenes	ND	500

ND = Not detected at or above reporting limit
 QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	103 %
Toluene-d8	107 %
Bromofluorobenzene	98 %



LABORATORY NUMBER: 114517-METHOD BLANK
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 820.001
LOCATION: 6707 BAY ST.
SAMPLE ID: N/A

DATE SAMPLED: N/A
DATE RECEIVED: N/A
DATE ANALYZED: 02/28/94
DATE REPORTED: 03/07/94

EPA METHOD 8240: VOLATILE ORGANICS IN WATER

COMPOUND	Result ug/L	Reporting Limit (ug/L)
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Acetone	ND	20
Carbon disulfide	ND	5
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
trans-1,2-Dichloroethene	ND	5
cis-1,2-Dichloroethene	ND	5
Chloroform	ND	5
Freon 113	ND	5
1,2-Dichloroethane	ND	5
2-Butanone	ND	10
1,1,1-Trichloroethane	ND	5
Carbon tetrachloride	ND	5
Vinyl acetate	ND	50
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
2-Hexanone	ND	10
4-Methyl-2-pentanone	ND	10
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethyl benzene	ND	5
Styrene	ND	5
Total xylenes	ND	5

ND = Not detected at or above reporting limit
QA/QC SUMMARY: SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101 %
Toluene-d8	107 %
Bromofluorobenzene	96 %



MS/MSD Report

Matrix Sample Number: 114451-005
 Lab No: QC58211 QC58212
 Matrix: WATER
 Batch No: 12919 9412684 9412686 9412663

Date Analyzed: 28-FEB-94
 Spike File: >CBS17
 Spike Dup File: >CBS18
 Analyst: CW

	Instrdg	SpikeAmt	% Rec	Limits
<u>MS RESULTS</u>				
1,1-Dichloroethene	46.24	50	93 %	61-145%
Trichloroethene	51.36	50	103 %	71-120%
Benzene	47.36	50	95 %	76-127%
Toluene	45.27	50	91 %	76-125%
Chlorobenzene	51.27	50	103 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	48.61	50	97 %	76-114%
Toluene-d8	51.06	50	102 %	88-110%
Bromofluorobenzene	45.18	50	90 %	86-115%
<u>MSD RESULTS</u>				
1,1-Dichloroethene	45.58	50	91 %	61-145%
Trichloroethene	52.42	50	105 %	71-120%
Benzene	48.71	50	97 %	76-127%
Toluene	46.36	50	93 %	76-125%
Chlorobenzene	52.48	50	105 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	48.96	50	98 %	76-114%
Toluene-d8	50.83	50	102 %	88-110%
Bromofluorobenzene	47.35	50	95 %	86-115%
<u>MATRIX RESULTS</u>				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	0			
Toluene	0			
Chlorobenzene	0			
<u>RPD DATA</u>				
1,1-Dichloroethene	1 %			< 14%
Trichloroethene	2 %			< 14%
Benzene	3 %			< 11%
Toluene	2 %			< 13%
Chlorobenzene	2 %			< 13%

Results within Specifications - PASS

CW 3/1/94

Client: Subsurface Consultants

Laboratory Login Number: 114517

Project Name: 6707 Bay St.

Report Date: 07 March 94

Project Number: 820.001

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

METHOD: SMWW 17:5520BF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
114517-001	MW-1	Water	25-FEB-94	25-FEB-94	03-MAR-94	ND	mg/L	5	TR	13004
114517-002	MW-3	Water	25-FEB-94	25-FEB-94	03-MAR-94	ND	mg/L	5	TR	13004
114517-003	MW-8	Water	25-FEB-94	25-FEB-94	03-MAR-94	ND	mg/L	5	TR	13004

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



Q C B a t c h R e p o r t

Client: Subsurface Consultants
Project Name: 6707 Bay St.
Project Number: 820.001

Laboratory Login Number: 114517
Report Date: 07 March 94

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric)

QC Batch Number: 13004

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	03-MAR-94

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	84%	SMWW 17:5520BF	03-MAR-94
BSD	87%	SMWW 17:5520BF	03-MAR-94

Average Spike Recovery	86%	Control Limits	80% - 120%
Relative Percent Difference	3.2%		< 20%

CHAIN OF CUSTODY FORM

ANALYSIS REQUESTED									

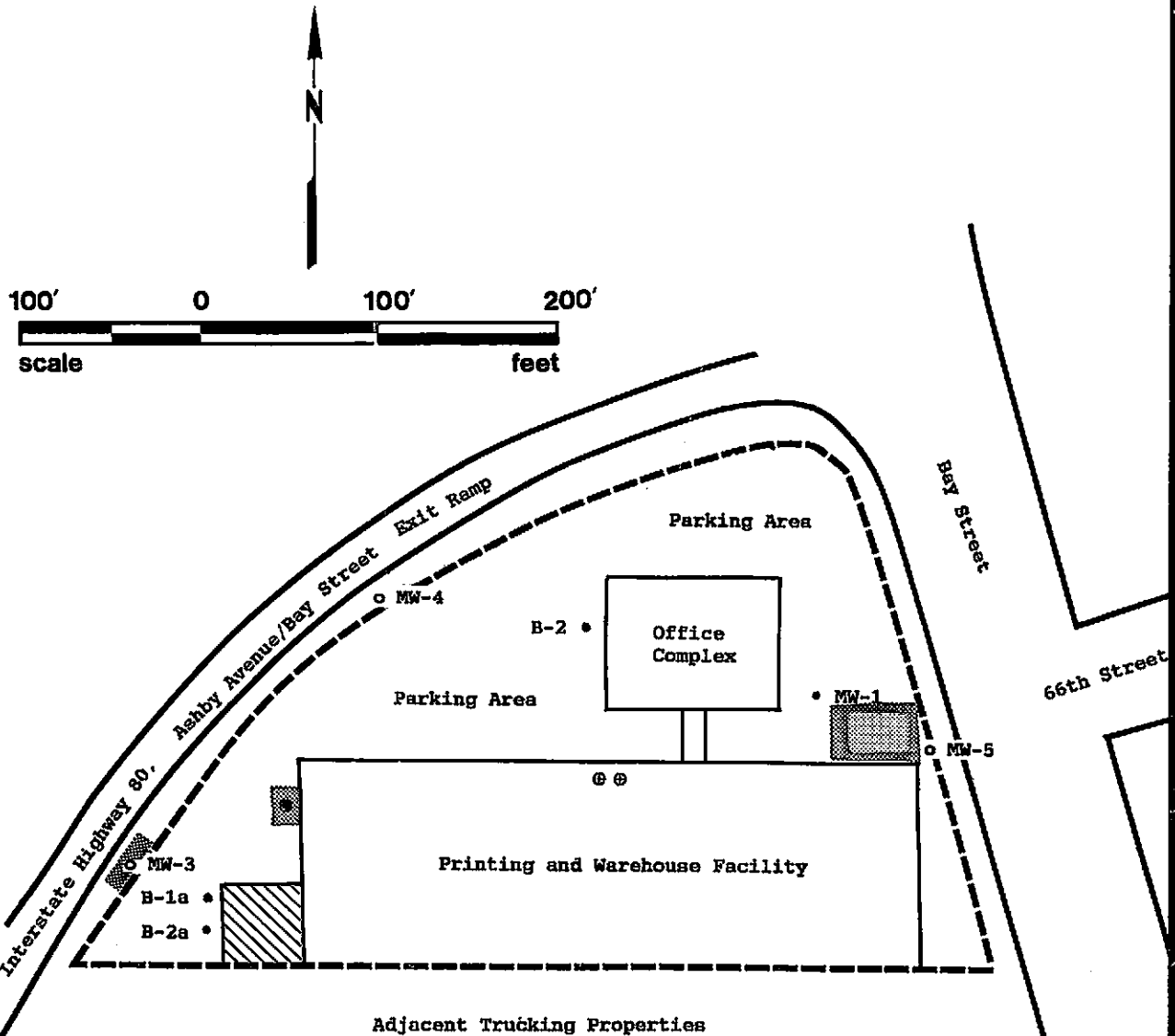
PROJECT NAME: Bay St.
 JOB NUMBER: 820.001 LAB: Curtis+Tompkins
 PROJECT CONTACT: Mark Kawakami TURNAROUND: Normal
 SAMPLED BY: Dennis Alexander REQUESTED BY: Mark Kawakami

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED					SAMPLING DATE				NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H ₂ SO ₄	HNO ₃	ICE	NONE	MONTH	DAY	YEAR	TIME			
	MW-1	X				3	1			X			X		02	25	94	1130	X	X	X
	MW-3	X				3	1			X			X		02	25	94	1220	X	X	X
	MW-8	X				3	1			X			X		02	25	94	1315	X	X	X




8240
04G

CHAIN OF CUSTODY RECORD				COMMENTS & NOTES:			
RELEASED BY: (Signature) <i>Dennis Alexander</i>	DATE / TIME 2/25/94 1:35 P.M.	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE / TIME 2/25/94 1:35	<p>Include Methyl Isobutyl Ketone and Methyl Ethyl Ketone in 8240 analysis</p> <p>Subsurface Consultants, Inc. 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607 (510) 268-0461 • FAX: 510-268-0137</p>			
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME				
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME				
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME				

ORIGINAL



EXPLANATION

- B-2 = Boring Location
- MW-1 = Monitoring Well Location
- Property Line
- MW-3 = Approximate Location of Proposed Monitoring Well
- ⊕ = Approximate Location of Sumps
-  Fenced Drum Storage Area
-  Approximate Location of Underground Chemical Storage Tanks
-  Approximate Location of Excavations



Environmental Services, Inc.
 2111 Jennings St., San Francisco, CA 94124-3224
 (415) 822-4555 FAX (415) 822-5290

SITE PLAN

Mike Roberts Color Productions
 6707 Bay Street
 Emeryville, California

PROJECT NUMBER: 9077

FIGURE 1