

R. William Rudolph, Jr., PE
Thomas E. Cundey, PE
Jeriann N. Alexander, PE

February 8, 1996
SCI 838.003

Ms. Eva Chu
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway #250
Alameda, California 94502-6577

Report Transmittal
2801 MacArthur Boulevard
Oakland, California

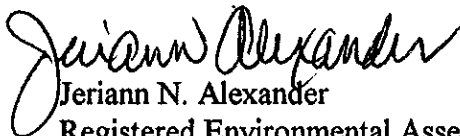
Dear Ms. Chu:

This letter transmits a report of the October 1995 and January 1996 groundwater monitoring events conducted at the referenced site. A preliminary risk assessment is being performed for the site based on the ASTM Risk Based Corrective Action guidelines which were recently updated. The results of the risk assessment will be presented under separate cover.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.


Jeriann N. Alexander

Registered Environmental Assessor 03130 (exp. 6/30/96)
Civil Engineer 40469 (exp. 3/31/99)

JNA:sld

Attachments: October 1995 and January 1996 Monitoring Reports

cc: APA Fund Ltd.
c/o Mr. Nicholas Molnar
1904 Franklin Street, Suite 501
Oakland, California 94612

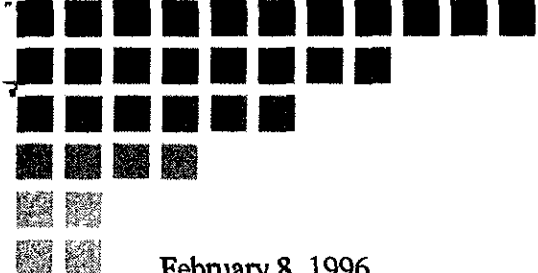
Aniko Molnar
Environmental Consultant
SP Lines, 1 Market Plaza
San Francisco, California 94105

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ENVIRONMENTAL
PROTECTION

Subsurface Consultants, Inc.

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1131 Harbor Bay Parkway #250
Alameda, California 94502-6577

Groundwater Monitoring Event
October 1995 and January 1996
2801 MacArthur Boulevard
Oakland, California

Dear Mr. Molnar:

This letter presents quarterly groundwater monitoring results for the referenced site. Monitoring services were provided by Subsurface Consultants, Inc. (SCI) on behalf of the APA Fund Limited. Groundwater monitoring has been performed in accordance with the revised program agreed upon at the October 17, 1995 meeting attended by Ms. Eva Chu of the Alameda County Health Care Services Agency (ACHCSA), Ms. Aniko Molnar of APA Fund, and SCI. The site has been impacted by a former underground gasoline tank release. The location of the site is shown on Plate 1.

Groundwater Sampling

October 1995 Event

On October 27, 30 and November 1, 1995, a groundwater monitoring event was performed. For this event wells M2, M4 through M6 and piezometers P2 and P3 were purged and sampled. The groundwater monitoring event consisted of (1) measuring groundwater levels in all the wells (M1-M6) & piezometers (P1-P3) using an electric well sounder, (2) checking for free product in the wells and piezometers to be sampled, (3) purging water from each well to be sampled until pH, conductivity and temperature had stabilized (approximately 3 well volumes), and (4) after the wells had recovered to at least 80 percent of their initial level, sampling the wells with new disposable bailers. Piezometer P3 and well M2 recharged very slowly, hence they were sampled the next business day. Samples were retained in containers

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pre-cleaned by the supplier in accordance with EPA protocol. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-Custody documents accompanied the samples to the laboratory. Purge water is stored on-site in 55-gallon steel drums. The groundwater level data generated to date are presented in Table 1.

Analytical Testing

Analytical testing was performed by Curtis & Tompkins, Ltd., a laboratory certified by the State of California Department of Health Services for hazardous waste and water testing. A sample from each well was analyzed for the following:

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

A summary of the current and previous analytical test results are presented in Table 2. Well sampling forms, analytical test reports, and Chain-of-Custody documents are attached. All sampling events prior to May 17, 1993 were conducted by Streamborn, the previous environmental consultant.

In addition to the analyses above, samples from well M4 and piezometer P2 were collected for analysis of nutrients, total dissolved solids, dissolved oxygen and bacterial plate count. These analyses are being performed to evaluate the biotreatability of the plume. Results of these analyses will be discussed in a separate report.

January 1996 Event

On January 22, 1996, a groundwater monitoring event was performed. For this event well M6 was purged and sampled. The groundwater monitoring event consisted of (1) measuring groundwater levels in all the wells (M1 through M6) & piezometers (P1 through P3) using an electric well sounder, (2) checking for free product in the wells and piezometers to be sampled, (3) purging water from Well M6 until pH, conductivity and temperature had stabilized (approximately 3 well volumes), and (4) obtaining a sample from Well M6 once it recovered to at least 80 percent of its initial level. Samples were retained in containers pre-cleaned by the supplier in accordance with EPA protocol. The containers were placed in an ice filled cooler and remained iced until delivery to the analytical laboratory. Chain-of-Custody documents accompanied the samples to the laboratory. Purge water is stored on-site in 55-gallon steel drums. The groundwater level data generated to date are presented in Table 1.

APA Fund Ltd.
c/o Mr. Nicholas Molnar
February 8, 1996
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Analytical Testing

Analytical testing was performed by Curtis & Tompkins, Ltd., a laboratory certified by the State of California Department of Health Services for hazardous waste and water testing. A sample from well M6 was analyzed for the following:

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

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

Conclusions

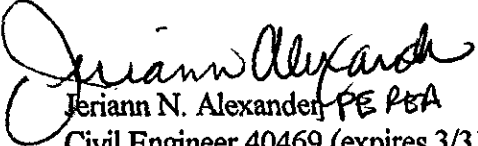
The groundwater level data indicates that the regional groundwater flow direction is toward the southwest at a gradient of approximately 4 to 8 percent. This groundwater flow direction and gradient has remained generally consistent during the monitoring program.

The relative distribution of dissolved petroleum hydrocarbon constituents remains the same as in previous events. No free product was measured in any of the wells. During the October 1995 event, a sheen was observed in piezometer P2 and well M2, and a petroleum hydrocarbon odor was observed in piezometers P2 and P3 and wells M2, M4 and M6. During the January 1996 event there was no observed hydrocarbon odor in Well M6, nor were any analytes of concern detected.

In accordance with our monitoring plan, the next monitoring event is scheduled for April 1996. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.


Jeriann N. Alexander PE PEA
Civil Engineer 40469 (expires 3/31/99)

APA Fund Ltd.
c/o Mr. Nicholas Molnar
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MM:JNA:sld

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

4 copies submitted

cc: Aniko Molnar
 Environmental Consultant
 SP Lines
 1 Market Plaza
 San Francisco, California 94105

APA Fund Ltd.
c/o Mr. Nicholas Molnar
1904 Franklin Street, Suite 501
Oakland, California 94612

Table 1
Groundwater Elevation Data

<u>Well</u>	<u>TOC¹ Elevation (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
M1	1000	10/24/90	36.1	963.9
		10/25/90	36.1	963.9
		11/2/90	36.4	963.6
		11/6/90	36.8	963.2
		11/16/90	36.8	963.2
		11/23/90	36.9	963.1
		11/28/90	37.0	963.0
		12/5/90	37.2	963.0
		3/18/91	35.8	964.2
		3/29/91	32.4	967.6
		4/3/91	31.9	968.1
		4/9/91	31.6	968.4
		4/16/91	31.2	968.8
		1/23/92	35.5	964.5
		3/9/93	29.1	970.9
		6/1/93	27.5	972.9
		12/13/93	33.9	966.1
		3/7/94	32.3	967.7
		8/23/94	32.3	967.7
		10/11/94	34.1	965.9
4/26/95	24.4	975.6		
10/27/95	31.3	968.7		
1/22/96	31.1	968.9		
M2	999.6	4/30/91	31.1	968.5
		5/7/91	31.3	968.3
		1/16/92	35.1	964.5
		3/9/93	33.6	966.0
		5/17/93	27.2	972.4
		6/1/93	27.6	972.0
		8/17/93	30.4	969.2
		12/13/93	34.0	965.6
		3/7/94	30.1	969.5
		8/23/94	32.3	967.3
		10/11/94	34.2	965.4
		4/26/95	24.4	975.2

Table 1
Groundwater Elevation Data

<u>Well</u>	<u>TOC¹ Elevation (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
M2		10/27/95	31.4	968.2
		1/22/96	31.2	968.4
M3	992.8	5/17/93	22.2	970.6
		6/1/93	23.3	969.5
		8/17/93	25.0	967.8
		12/13/93	25.8	967.0
		3/7/94	23.1	969.7
		8/23/94	25.8	967.0
		10/11/94	27.4	965.4
		4/26/95	19.6	973.2
		10/27/95	25.4	967.4
		1/22/96	24.2	968.6
M4	999.6	5/17/93	33.8	965.8
		6/1/93	32.5	965.7
		12/13/93	36.8	962.8
		3/7/94	33.0	966.6
		8/23/94	35.4	964.2
		10/11/94	37.1	962.5
		4/26/95	29.8	969.8
		10/27/95	34.2	965.4
M5	992.9	1/22/96	30.1	969.5
		8/23/94	31.8	961.1
		10/11/94	33.6	959.3
		4/26/95	20.5	972.4
		10/27/95	31.5	961.4
M6	997.7	1/22/96	25.6	967.3
		8/23/94	41.2	956.6
		10/11/94	38.2	959.5
		4/26/95	27.8	969.9
		10/27/95	34.9	962.8
		1/22/96	22.0	975.7

Table 1
Groundwater Elevation Data

<u>Well</u>	<u>TOC¹ Elevation (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
P1	999.6	10/24/90	37.9	961.7
		10/25/90	38.0	961.6
		11/2/90	38.4	961.2
		11/6/90	38.7	960.9
		11/16/90	38.3	961.3
		11/23/90	38.1	961.5
		11/28/90	38.3	961.3
		12/5/90	38.2	961.4
		3/18/91	37.8	961.8
		3/29/91	36.9	962.7
		4/3/91	36.8	962.8
		4/9/91	36.9	962.7
		4/16/91	36.7	962.9
		4/18/91	36.8	962.8
		4/30/91	36.3	963.3
		5/7/91	36.2	963.4
		1/16/92	36.6	963.0
		3/9/93	32.8	966.8
		6/1/93	30.0	969.6
		12/13/93	33.7	965.9
		3/7/94	32.6	967.0
		8/23/94	32.7	966.9
		10/11/94	33.5	966.1
4/26/95	27.6	972.0		
10/27/95	31.8	967.8		
1/22/96	33.3	966.3		
P2	997.8	10/24/90	41.1	956.7
		10/25/90	40.6	957.2
		11/2/90	38.4	959.4
		11/6/90	37.0	960.8
		11/16/90	37.4	960.4
		11/23/90	35.9	961.9
		11/28/90	35.4	962.4
		2/5/90	35.03	962.83
		3/18/91	31.43	966.43

Table 1
Groundwater Elevation Data

<u>Well</u>	<u>TOC¹ Elevation (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
P2		3/29/91	28.23	969.63
		4/3/91	26.83	971.03
		4/9/91	26.53	971.33
		4/16/91	26.53	971.33
		4/18/91	26.53	971.33
		4/30/91	26.73	971.13
		5/7/91	27.03	970.83
		1/16/92	33.73	964.13
		3/9/93	23.63	974.2
		5/17/93	23.73	974.1
		6/1/93	24.43	973.4
		8/17/93	28.33	969.5
		12/13/93	31.03	966.8
		3/7/94	25.43	972.4
		8/23/94	30.3	967.5
		10/11/94	32.3	965.5
		4/26/95	19.9	977.9
		10/27/95	29.6	968.2
		1/22/96	27.4	970.4
		P3	999.1	3/29/91
4/3/91	25.1			974
4/9/91	25.9			973.2
4/16/91	26.2			972.9
4/18/91	26.2			972.9
4/30/91	26.8			972.3
5/7/91	27.4			971.7
1/23/92	32.5			966.6
3/9/93	24.8			974.3
6/4/93	23.9			975.2
8/17/93	28.5			970.6
12/13/93	29.3			969.8
3/7/94	25.0			974.1
8/23/94	30.1			969
10/11/94	32.0			967.1
4/26/95	20.5	978.6		

Table 1
Groundwater Elevation Data

<u>Well</u>	<u>TOC¹ Elevation (feet)</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
P3		10/27/95	27.8	971.3
		1/22/96	26.7	972.4

Note 1 - Elevations relative to site-specific datum. Temporary Bench Mark No. 1, top of concrete at west corner of northernmost pump island. Assumed elevation = 1,000.0 feet.

Table 2
Hydrocarbon Concentrations in Groundwater

<u>Sample Location</u>	<u>Sample Date</u>	<u>TVH (ug/l)</u>	<u>Benzene (ug/l)</u>	<u>Toluene (ug/l)</u>	<u>Ethyl-benzene (ug/l)</u>	<u>Xylenes (ug/l)</u>
P-1	1/16/92	6,700	500	4.4	80	40
	3/9/93	5,600	1,100	29	63	120
P-2	11/6/90	33,000	4,700	2,100	380	630
	1/16/92	99,000	6,500	12,000	2,000	16,000
	3/9/93	70,000	5,900	11,000	2,100	12,000
	5/17/93	87,000	6,600	13,000	2,200	13,000
	8/17/93	80,000	5,800	12,000	2,000	12,000
	12/13/93	100,000	5,600	12,000	2,200	14,000
	3/7/94	77,000	5,100	11,000	2,000	12,000
	8/23/94	70,000	3,800	8,700	1,500	9,900
	4/27/95	44,000	3,600	8,500	1,500	9,300
	10/30/95	66,000	4,600	11,000	2,100	13,600
P-3	8/17/93	900	180	65	10	93
	10/30/95	2000	650	45	31	156
M-2	5/7/91	16,000	1,300	950	170	890
	1/16/92	22,000	960	570	370	1,800
	3/9/93	27,000	1,100	970	490	1,400
	5/17/93	17,000	1,200	770	480	1,300
	8/17/93	20,000	1,700	910	540	1,400
	12/13/93	51,000	2,200	1,400	700	2,600
	3/7/94	28,000	1,400	900	640	1,800
	8/23/94	21,000	1,600	540	520	1,100
	4/26/95	14,000	1,200	510	490	870
	10/30/95	16,000	1,700	830	470	1,120
M-3	5/17/93	<50	<0.5	<0.5	<0.5	<0.5
	8/17/93	<50	<0.5	<0.5	<0.5	<0.5
	12/13/93	<50	<0.5	<0.5	<0.5	<0.5
	3/7/94	<50	<0.5	<0.5	<0.5	<0.5
	8/23/94	<50	<0.5	<0.5	<0.5	<0.5
	4/27/95	<50	<0.5	<0.5	<0.5	<0.5

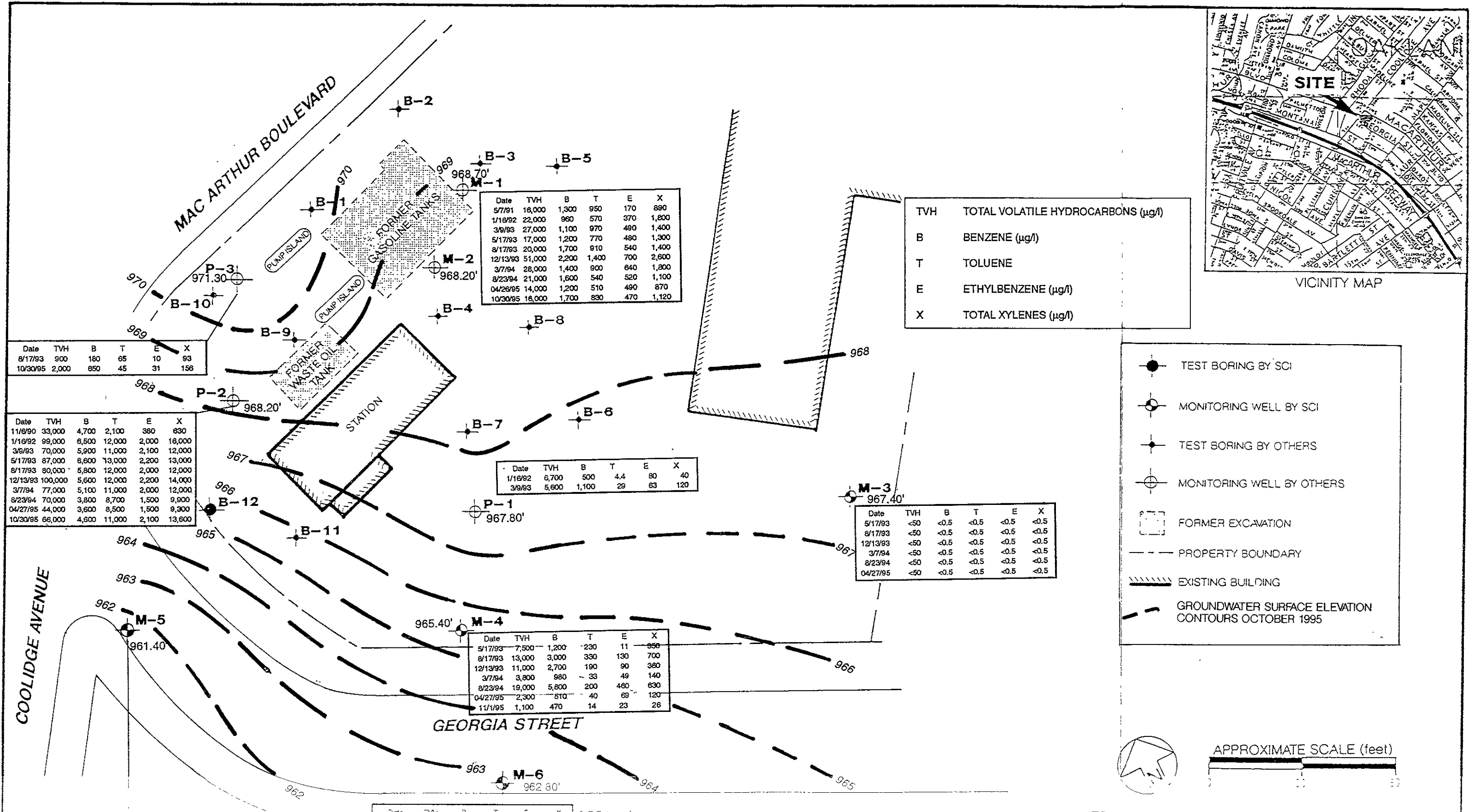
Table 2
Hydrocarbon Concentrations in Groundwater

<u>Sample Location</u>	<u>Sample Date</u>	<u>TVH (ug/l)</u>	<u>Benzene (ug/l)</u>	<u>Toluene (ug/l)</u>	<u>Ethyl-benzene (ug/l)</u>	<u>Xylenes (ug/l)</u>
M-4	5/17/93	7,500	1,200	230	11	350
	8/17/93	13,000	3,000	330	130	700
	12/13/93	11,000	2,700	190	90	360
	3/7/94	3,800	980	33	49	140
	8/23/94	19,000	5,800	200	460	630
	4/27/95	2,300	510	40	69	120
	11/1/95	1,100	470	14	23	26
M-5	8/23/94	<50	<0.5	<0.5	<0.5	<0.5
	4/27/95	<50	<0.5	<0.5	<0.5	<0.5
	11/1/95	<50	<0.5	<0.5	<0.5	<0.5
M-6	10/11/94	3,600	340	27	65	240
	4/26/95	150	9.3	<0.5	5.6	1.7
	11/1/95	170	0.6	<0.5	<0.5	0.6
	1/22/96	<50	<0.5	<0.5	<0.5	<0.5

TVH = Total volatile hydrocarbons, as gasoline

ug/l = Micrograms per liter = parts per billion

<50 = Analyte not present at a concentration above the stated detection limit.



Date	TVH	B	T	E	X
5/7/91	18,000	1,300	950	170	890
1/18/92	22,000	960	570	370	1,800
3/6/93	27,000	1,100	970	480	1,400
5/17/93	17,000	1,200	770	480	1,300
8/17/93	20,000	1,700	910	540	1,400
12/13/93	51,000	2,200	1,400	700	2,600
3/7/94	28,000	1,400	900	640	1,800
8/23/94	21,000	1,600	540	520	1,100
04/28/95	14,000	1,200	510	490	870
10/30/95	18,000	1,700	830	470	1,120

Date	TVH	B	T	E	X
8/17/93	900	180	65	10	93
10/30/95	2,000	650	45	31	156

Date	TVH	B	T	E	X
11/6/90	33,000	4,700	2,100	380	630
1/16/92	99,000	6,500	12,000	2,000	16,000
3/6/93	70,000	5,900	11,000	2,100	12,000
5/17/93	87,000	6,600	13,000	2,200	13,000
8/17/93	80,000	5,800	12,000	2,000	12,000
12/13/93	100,000	5,600	12,000	2,200	14,000
3/7/94	77,000	5,100	11,000	2,000	12,000
8/23/94	70,000	3,800	8,700	1,500	9,900
04/27/95	44,000	3,600	8,500	1,500	9,300
10/30/95	66,000	4,600	11,000	2,100	13,600

Date	TVH	B	T	E	X
1/16/92	6,700	500	4.4	80	40
3/6/93	5,600	1,100	29	63	120

Date	TVH	B	T	E	X
5/17/93	<50	<0.5	<0.5	<0.5	<0.5
8/17/93	<50	<0.5	<0.5	<0.5	<0.5
12/13/93	<50	<0.5	<0.5	<0.5	<0.5
3/7/94	<50	<0.5	<0.5	<0.5	<0.5
8/23/94	<50	<0.5	<0.5	<0.5	<0.5
04/27/95	<50	<0.5	<0.5	<0.5	<0.5

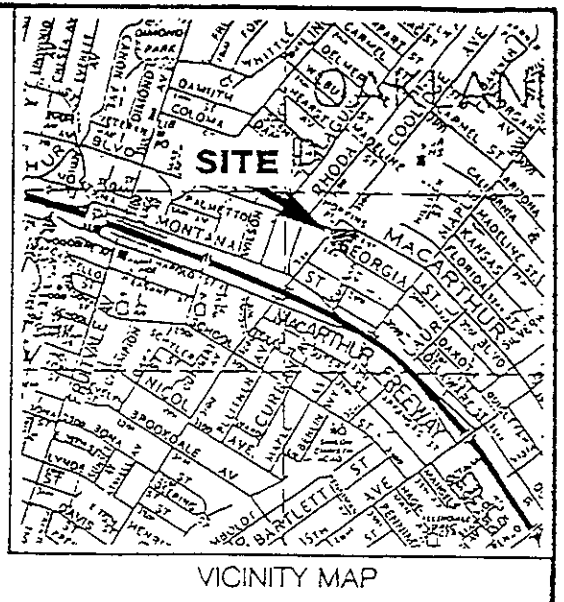
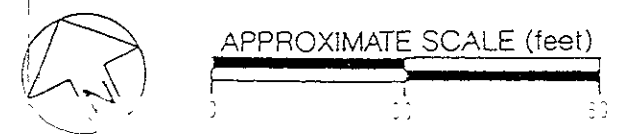
Date	TVH	B	T	E	X
5/17/93	7,500	1,200	230	11	956
8/17/93	13,000	3,000	330	130	700
12/13/93	11,000	2,700	190	90	360
3/7/94	3,800	980	33	49	140
8/23/94	19,000	5,800	200	460	630
04/27/95	2,300	510	40	69	120
11/1/95	1,100	470	14	23	26

Date	TVH	B	T	E	X
8/22/94	<50	<0.5	<0.5	<0.5	<0.5
04/27/95	<50	<0.5	<0.5	<0.5	<0.5
11/1/95	<50	<0.5	<0.5	<0.5	<0.5

Date	TVH	B	T	E	X
10/11/94	3600	340	27	65	240
04/26/96	150	93	<0.5	5.6	1.7
11/1/96	170	0.6	<0.5	<0.5	0.6
1/22/96	<50	<0.5	<0.5	<0.5	<0.5

TVH	TOTAL VOLATILE HYDROCARBONS (µg/l)
B	BENZENE (µg/l)
T	TOLUENE
E	ETHYLBENZENE (µg/l)
X	TOTAL XYLENES (µg/l)

- TEST BORING BY SCI
- MONITORING WELL BY SCI
- TEST BORING BY OTHERS
- MONITORING WELL BY OTHERS
- FORMER EXCAVATION
- PROPERTY BOUNDARY
- EXISTING BUILDING
- GROUNDWATER SURFACE ELEVATION CONTOURS OCTOBER 1995



SITE PLAN

101 MAC ARTHUR BLVD - CARLAND ST		PLATE
JOB NUMBER	DATE	APPROVED
838 003	1/29/96	
		1

Subsurface Consultants



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: 02-FEB-96
Lab Job Number: 124228
Project ID: 838.003
Location: APA Fund

Reviewed by:

Cynthia E. Sealey

Reviewed by:

Troy R. By

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TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.003
Location: APA Fund

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124228-001	M-6	25627	01/29/96	01/29/96	01/29/96	

Analyte	Units	124228-001
Diln Fac:		1
Gasoline	ug/L	<50
Surrogate		
Trifluorotoluene	%REC	89
Bromobenzene	%REC	86



BTXE

Client: Subsurface Consultants
Project#: 838.003
Location: APA Fund

Analysis Method: EPA 8020
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
124228-001	M-6	25627	01/29/96	01/29/96	01/29/96	

Analyte	Units	124228-001
Diln Fac:		1
Benzene	ug/L	<0.5
Toluene	ug/L	<0.5
Ethylbenzene	ug/L	<0.5
m,p-Xylenes	ug/L	<0.5
o-Xylene	ug/L	<0.5
Surrogate		
Trifluorotoluene	%REC	99
Bromobenzene	%REC	97



Lab #: 124228

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.003
Location: APA Fund

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 25627
Units: ug/L
Diln Fac: 1

Prep Date: 01/29/96
Analysis Date: 01/29/96

MB Lab ID: QC13944

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	90	69-120
Bromobenzene	87	70-122



Lab #: 124228

BATCH QC REPORT

BTXE

Client: Subsurface Consultants
Project#: 838.003
Location: APA Fund

Analysis Method: EPA 8020
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 25627
Units: ug/L
Diln Fac: 1

Prep Date: 01/29/96
Analysis Date: 01/29/96

MB Lab ID: QC13944

Analyte	Result		
Benzene	<0.5		
Toluene	<0.5		
Ethylbenzene	<0.5		
m,p-Xylenes	<0.5		
o-Xylene	<0.5		
Surrogate	%Rec		Recovery Limits
Trifluorotoluene	100		58-130
Bromobenzene	99		62-131



Lab #: 124228

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons	
Client: Subsurface Consultants	Analysis Method: CA LUFT (EPA 8015M)
Project#: 838.003	Prep Method: EPA 5030
Location: APA Fund	
LABORATORY CONTROL SAMPLE	
Matrix: Water	Prep Date: 01/29/96
Batch#: 25627	Analysis Date: 01/29/96
Units: ug/L	
Diln Fac: 1	

LCS Lab ID: QC13947

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline	2203	2000	110	80-120
Surrogate	%Rec	Limits		
Trifluorotoluene	80	69-120		
Bromobenzene	94	70-122		

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits

Lab #: 124228

BATCH QC REPORT

BTXE	
Client: Subsurface Consultants	Analysis Method: EPA 8020
Project#: 838.003	Prep Method: EPA 5030
Location: APA Fund	
BLANK SPIKE/BLANK SPIKE DUPLICATE	
Matrix: Water	Prep Date: 01/29/96
Batch#: 25627	Analysis Date: 01/29/96
Units: ug/L	
Diln Fac: 1	

BS Lab ID: QC13945

Analyte	Spike Added	BS	%Rec #	Limits
Benzene	20	20.6	103	80-120
Toluene	20	20.9	105	80-120
Ethylbenzene	20	20.6	103	80-120
m,p-Xylenes	40	41.6	104	80-120
o-Xylene	20	21	105	80-120
Surrogate	%Rec	Limits		
Trifluorotoluene	99	58-130		
Bromobenzene	98	62-131		

BSD Lab ID: QC13946

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Benzene	20	20.5	103	80-120	1	<20
Toluene	20	20.7	104	80-120	1	<20
Ethylbenzene	20	20.4	102	80-120	1	<20
m,p-Xylenes	40	41.2	103	80-120	1	<20
o-Xylene	20	20.8	104	80-120	1	<20
Surrogate	%Rec	Limits				
Trifluorotoluene	100	58-130				
Bromobenzene	99	62-131				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits



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

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 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-NOV-95
Lab Job Number: 123245
Project ID: 838.002
Location: A.P.A. Fund

Reviewed by: _____

Reviewed by: _____

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TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
123245-001	P-2	24181	10/30/95	11/03/95	11/03/95	
123245-002	P-3	24137	10/30/95	11/01/95	11/01/95	
123245-003	M-2	24181	10/30/95	11/03/95	11/03/95	
123245-004	M-4	24219	11/01/95	11/06/95	11/06/95	

Analyte	Units	123245-001	123245-002	123245-003	123245-004
Diln Fac:		100	1	10	4
Gasoline	ug/L	66000	2000	16000	1100
Surrogate					
Trifluorotoluene	%REC	105	104	105	104
Bromobenzene	%REC	101	106	107	99



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
123245-005	M-5	24137	11/01/95	11/02/95	11/02/95	
123245-006	M-6	24137	11/01/95	11/02/95	11/02/95	

Analyte	Units	123245-005	123245-006
Diln Fac:		1	1
Gasoline	ug/L	<50	170
Surrogate			
Trifluorotoluene	%REC	103	104
Bromobenzene	%REC	98	99



BTXE

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: BTXE
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
123245-001	P-2	24181	10/30/95	11/03/95	11/03/95	
123245-002	P-3	24219	10/30/95	11/06/95	11/06/95	
123245-003	M-2	24181	10/30/95	11/03/95	11/03/95	
123245-004	M-4	24219	11/01/95	11/06/95	11/06/95	

Analyte	Units	123245-001	123245-002	123245-003	123245-004
Diln Fac:		100	6	10	4
Benzene	ug/L	4600	650	1700	470
Toluene	ug/L	11000	45	830	14
Ethylbenzene	ug/L	2100	31	470	23
m,p-Xylenes	ug/L	9300	140	730	13
o-Xylene	ug/L	4300	16	390	13
Surrogate					
Trifluorotoluene	%REC	104	102	122	103
Bromobenzene	%REC	99	98	101	99



BTXE

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: BTXE
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
123245-005	M-5	24137	11/01/95	11/02/95	11/02/95	
123245-006	M-6	24137	11/01/95	11/02/95	11/02/95	

Analyte	Units	123245-005	123245-006
Diln Fac:		1	1
Benzene	ug/L	<0.5	0.6
Toluene	ug/L	<0.5	<0.5
Ethylbenzene	ug/L	<0.5	<0.5
m,p-Xylenes	ug/L	<0.5	<0.5
o-Xylene	ug/L	<0.5	0.6
Surrogate			
Trifluorotoluene	%REC	99	100
Bromobenzene	%REC	97	97



Lab #: 123245

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 24181
Units: ug/L
Diln Fac: 1

Prep Date: 11/03/95
Analysis Date: 11/03/95

MB Lab ID: QC08149

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	103	69-120
Bromobenzene	99	70-122

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE	
Client: Subsurface Consultants	Analysis Method: BTXE
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
METHOD BLANK	
Matrix: Water	Prep Date: 11/03/95
Batch#: 24181	Analysis Date: 11/03/95
Units: ug/L	
Diln Fac: 1	

MB Lab ID: QC08149

Analyte	Result	
Benzene	<0.5	
Toluene	<0.5	
Ethylbenzene	<0.5	
m,p-Xylenes	<0.5	
o-Xylene	<0.5	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	101	58-130
Bromobenzene	97	62-131



Lab #: 123245

BATCH QC REPORT

Page 1 of 1

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 24181
Units: ug/L
Diln Fac: 1

Prep Date: 11/03/95
Analysis Date: 11/03/95

LCS Lab ID: QC08148

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline	1900	2006	95	80-120
Surrogate	%Rec	Limits		
Trifluorotoluene	91	69-120		
Bromobenzene	102	70-122		

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE	
Client: Subsurface Consultants Project#: 838.002 Location: A.P.A. Fund	Analysis Method: BTXE Prep Method: EPA 5030
BLANK SPIKE/BLANK SPIKE DUPLICATE	
Matrix: Water Batch#: 24181 Units: ug/L dry weight Diln Fac: 1	Prep Date: 11/03/95 Analysis Date: 11/03/95 Moisture: 0%

BS Lab ID: QC08150

Analyte	Spike Added	BS	%Rec #	Limits
Benzene	20	20	100	80-120
Toluene	20	21	105	80-120
Ethylbenzene	20	21	105	80-120
m,p-Xylenes	40	40	100	80-120
o-Xylene	20	21	105	85-120
Surrogate	%Rec	Limits		
Trifluorotoluene	103	58-130		
Bromobenzene	98	62-131		

BSD Lab ID: QC08151

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Benzene	20	20	100	80-120	2	<11
Toluene	20	21	105	80-120	1	<13
Ethylbenzene	20	21	105	80-120	2	<25
m,p-Xylenes	40	40	100	80-120	2	<25
o-Xylene	20	21	105	85-120	2	<25
Surrogate	%Rec	Limits				
Trifluorotoluene	100	58-130				
Bromobenzene	96	62-131				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits



Lab #: 123245

BATCH QC REPORT

Page 1 of 1

TVH--Total Volatile Hydrocarbons	
Client: Subsurface Consultants	Analysis Method: CA LUFT (EPA 8015M)
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
METHOD BLANK	
Matrix: Water	Prep Date: 11/01/95
Batch#: 24137	Analysis Date: 11/01/95
Units: ug/L	
Diln Fac: 1	

MB Lab ID: QC07963

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	102	69-120
Bromobenzene	98	70-122

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE	
Client: Subsurface Consultants Project#: 838.002 Location: A.P.A. Fund	Analysis Method: BTXE Prep Method: EPA 5030
METHOD BLANK	
Matrix: Water Batch#: 24137 Units: ug/L Diln Fac: 1	Prep Date: 11/01/95 Analysis Date: 11/01/95

MB Lab ID: QC07963

Analyte	Result	
Benzene	<0.5	
Toluene	<0.5	
Ethylbenzene	<0.5	
m,p-Xylenes	<0.5	
o-Xylene	<0.5	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	99	58-130
Bromobenzene	95	62-131

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

TVH-Total Volatile Hydrocarbons	
Client: Subsurface Consultants	Analysis Method: CA LUFT (EPA 8015M)
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
LABORATORY CONTROL SAMPLE	
Matrix: Water	Prep Date: 11/01/95
Batch#: 24137	Analysis Date: 11/01/95
Units: ug/L	
Diln Fac: 1	

LCS Lab ID: QC07962

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline	1900	2006	95	80-120
Surrogate	%Rec	Limits		
Trifluorotoluene	89	69-120		
Bromobenzene	100	70-122		

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE	
Client: Subsurface Consultants	Analysis Method: BTXE
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
LABORATORY CONTROL SAMPLE	
Matrix: Water	Prep Date: 11/01/95
Batch#: 24137	Analysis Date: 11/01/95
Units: ug/L	
Diln Fac: 1	

LCS Lab ID: QC07962

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	19	20	95	80-120
Toluene	20	20	100	80-120
Ethylbenzene	21	20	105	80-120
m,p-Xylenes	39	40	98	80-120
o-Xylene	21	20	105	85-120
Surrogate	%Rec	Limits		
Trifluorotoluene	98	58-130		
Bromobenzene	95	62-131		

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE	
Client: Subsurface Consultants	Analysis Method: BTXE
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
BLANK SPIKE/BLANK SPIKE DUPLICATE	
Matrix: Water	Prep Date: 11/01/95
Batch#: 24137	Analysis Date: 11/01/95
Units: ug/L	
Diln Fac: 1	

BS Lab ID: QC07964

Analyte	Spike Added	BS	%Rec #	Limits
Benzene	20	20	100	80-120
Toluene	20	20	100	80-120
Ethylbenzene	20	21	105	80-120
m,p-Xylenes	40	39	98	80-120
o-Xylene	20	21	105	85-120
Surrogate	%Rec	Limits		
Trifluorotoluene	98	58-130		
Bromobenzene	95	62-131		

BSD Lab ID: QC07965

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Benzene	20	20	100	80-120	3	<11
Toluene	20	21	105	80-120	2	<13
Ethylbenzene	20	21	105	80-120	0	<25
m,p-Xylenes	40	41	103	80-120	4	<25
o-Xylene	20	21	105	85-120	1	<25
Surrogate	%Rec	Limits				
Trifluorotoluene	102	58-130				
Bromobenzene	98	62-131				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

TVH-Total Volatile Hydrocarbons	
Client: Subsurface Consultants	Analysis Method: CA LUFT (EPA 8015M)
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
METHOD BLANK	
Matrix: Water	Prep Date: 11/06/95
Batch#: 24219	Analysis Date: 11/06/95
Units: ug/L	
Diln Fac: 1	

MB Lab ID: QC08299

Analyte	Result	
Gasoline	<50	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	106	69-120
Bromobenzene	100	70-122

Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE	
Client: Subsurface Consultants	Analysis Method: BTXE
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
METHOD BLANK	
Matrix: Water	Prep Date: 11/06/95
Batch#: 24219	Analysis Date: 11/06/95
Units: ug/L	
Diln Fac: 1	

MB Lab ID: QC08299

Analyte	Result	
Benzene	<0.5	
Toluene	<0.5	
Ethylbenzene	<0.5	
m,p-Xylenes	<0.5	
o-Xylene	<0.5	
Surrogate	%Rec	Recovery Limits
Trifluorotoluene	102	58-130
Bromobenzene	99	62-131



Lab #: 123245

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons	
Client: Subsurface Consultants	Analysis Method: CA LUFT (EPA 8015M)
Project#: 838.002	Prep Method: EPA 5030
Location: A.P.A. Fund	
MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
Field ID: ZZZZZZ	Sample Date: 10/30/95
Lab ID: 123205-028	Received Date: 10/31/95
Matrix: Water	Prep Date: 11/06/95
Batch#: 24219	Analysis Date: 11/06/95
Units: ug/L	
Diln Fac: 1	

MS Lab ID: QC08300

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline	2006	<50.00	1900	95	75-125
Surrogate	%Rec	Limits			
Trifluorotoluene	90	69-120			
Bromobenzene	100	70-122			

MSD Lab ID: QC08301

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline	2006	1900	95	75-125	2	<35
Surrogate	%Rec	Limits				
Trifluorotoluene	90	69-120				
Bromobenzene	101	70-122				

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits



Lab #: 123245

BATCH QC REPORT

Page 1 of 1

BTXE

Client: Subsurface Consultants
Project#: 838.002
Location: A.P.A. Fund

Analysis Method: BTXE
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 24219
Units: ug/L
Diln Fac: 1

Prep Date: 11/06/95
Analysis Date: 11/06/95

LCS Lab ID: QC08298

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	19	20	95	80-120
Toluene	20	20	100	80-120
Ethylbenzene	20	20	100	80-120
m,p-Xylenes	39	40	98	80-120
o-Xylene	21	20	105	85-120
Surrogate	%Rec	Limits		
Trifluorotoluene	101	58-130		
Bromobenzene	98	62-131		

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

WELL SAMPLING FORM

Project Name: APA Fund Well Number: P-2
 Job No.: 838.002 Well Casing Diameter: 2 inch
 Sampled By: DWA Date: 10/30/95
 TOC Elevation: _____ Weather: Foggy

Depth to Casing Bottom (below TOC) 42.50 feet
 Depth to Groundwater (below TOC) 29.57 feet
 Feet of Water in Well 12.93 feet
 Depth to Groundwater When 80% Recovered 32.16 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 2.1 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other
 Free Product none
 Purge Method disposable bailer

slow recharge

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Dissolved oxygen Salinity %	Comments
<u>0</u>	<u>10.60</u>	<u>20.0</u>	<u>455</u>	<u>8.2 ppm</u>	<u>clean / strong odor seen</u>
<u>2</u>	<u>10.48</u>	<u>20.0</u>	<u>725</u>		↓
<u>4</u>	<u>9.87</u>	<u>20.0</u>	<u>850</u>		↓
<u>6</u>	<u>10.85</u>	<u>20.0</u>	<u>900</u>	<u>8.4 ppm</u>	↓

Total Gallons Purged 6 gallons
 Depth to Groundwater Before Sampling (below TOC) 32.16 feet
 Sampling Method disposable bailer
 Containers Used 3 40 ml 1 liter _____ pint

Subsurface Consultants

JOB NUMBER

DATE

APPROVED

PLATE

WELL SAMPLING FORM

Project Name: APA Fund Well Number: M-4
 Job No.: 838.002 Well Casing Diameter: 2 inch
 Sampled By: DWA Date: 10/30/95
 TOC Elevation: _____ Weather: foggy

Depth to Casing Bottom (below TOC) 45.00 feet
 Depth to Groundwater (below TOC) 34.22 feet
 Feet of Water in Well 10.78 feet
 Depth to Groundwater When 80% Recovered 36.38 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 1.8 gallons
 Depth Measurement Method Tape & Paste Electronic Sounder / Other _____
 Free Product none
 Purge Method disposable bailer

very slow recharge

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Dissolved oxygen Salinity %	Comments
<u>0</u>	<u>6.83</u>	<u>20.0</u>	<u>600</u>	<u>3.0 ppm</u>	<u>clear/slight odor</u> ↓
<u>2</u>	<u>6.92</u>	<u>20.0</u>	<u>625</u>	_____	
<u>4</u>	<u>6.97</u>	<u>20.0</u>	<u>650</u>	_____	
<u>6</u>	<u>7.09</u>	<u>20.0</u>	<u>750</u>	<u>4.0 ppm</u>	

Total Gallons Purged 6 gallons
 Depth to Groundwater Before Sampling (below TOC) 36.38' on 11/1/95 @ 10:00 feet
 Sampling Method disposable bailer
 Containers Used 3 40 ml 1 liter _____ pint

Subsurface Consultants			PLATE
	JOB NUMBER	DATE	APPROVED

