

The A.P.A. Fund, Ltd.
1904 Franklin Street
Suite 501
Oakland, CA 94612

93 SEP 24 PM 1:42

September 22, 1993

Mr. Thomas Peacock
Alameda County Health Care Services Agency
Department of Environmental Health
UST Local Oversight Group
80 Swan Way, Room 200
Oakland, CA 94621

RE: 2801 MacArthur Blvd., Oakland, CA
STID 23

Dear Mr. Peacock:

Enclosed are the following two letter reports prepared by Subsurface Consultants on behalf of the APA Fund, Ltd.:

1. Quarterly Groundwater Monitoring Sampling Event #1 - August 1993
2801 MacArthur Blvd., Oakland, CA.
2. Conceptual Approach to Soil and Groundwater Remediation
2801 MacArthur Blvd., Oakland, CA.

The second submittal concludes that based upon an evaluation of possible remedial alternatives for the property, soil vapor extraction and air sparging are the most appropriate options. With your approval, we would like to proceed with the detailed engineering evaluation and design of this recommended remedial alternative.

We have recently received a Letter of Commitment from the Underground Storage Tank Cleanup Fund for project costs incurred to date and are currently preparing the reimbursement package. Upon your approval to proceed with plans for remediation, we will be requesting a modification to the Letter of Commitment to cover required future remediation costs.

Please call Aniko Molnar at (714)476-6121 if you have any questions or concerns regarding the above.

Sincerely,

Aniko R. Molnar
for Nicholas D. Molnar

enclosures (2)

cc: Rich Hiett, RWQCB
Gil Jensen, Alameda County District Attorney's Office
Raymond W. Yu

September 10, 1993
SCI 838.001

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

**Quarterly Groundwater Monitoring
Sampling Event #1 - August 1993
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 A.P.A. Fund Limited. Groundwater monitoring has been performed in accordance with the workplan by Streamborn dated January 31, 1992. The monitoring was required by the Alameda County Health Care Services Agency (ACHCSA), due to an underground gasoline tank release. The location of the site is shown on Plate 1.

Groundwater Sampling

On August 17, 1993, Wells M2, M3 and M4 and Piezometers P2 and P3 were purged and sampled. Since piezometer P3 had previously been used only for groundwater level measurements, it was developed by bailing and surging prior to being sampled. In general, the groundwater monitoring event consisted of (1) measuring groundwater levels using an electric well sounder, (2) measuring free product thicknesses, (3) purging water from each well until pH, conductivity and temperature had stabilized (approximately 3 well volumes), and (4) after the wells had recovered to at least 50 percent of their initial level, sampling the wells with new disposable samplers. Those wells/piezometers that recharged very slowly (P2 and M4) were purged dry, allowed to recharge for four hours, purged dry again and sampled when the wells had recharged sufficiently to submerge the sampler. A summary of groundwater purging and sampling information is presented in Table 1. The 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.

■ Subsurface Consultants, Inc.

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Purge and development water are stored on-site in 55-gallon steel drums.

Analytical Testing

Analytical testing was performed by Curtis and 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 petroleum hydrocarbons, as gasoline (TPH-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. Aromatic hydrocarbons, 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. The groundwater level data generated to date are presented in Table 3. 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.

Conclusions

The groundwater level data indicates that the regional groundwater flow direction is toward the south-southeast at a gradient of approximately 2 to 4 percent. This groundwater flow direction and gradient generally remain consistent with previous measurements.

In general, the analytical results indicate that elevated concentrations of gasoline and BTXE are present in groundwater. The highest concentrations of gasoline/BTXE have been detected in P2 and M2. Gasoline was not detected at concentrations above laboratory reporting limits in Well M3. No free product was measured in any of the wells. However, a slight sheen was observed in Piezometer P2 and a petroleum hydrocarbon odor was observed in Piezometers P2 and P3, and Wells M2 and M4.

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c/o Mr. Nicholas Molnar
SCI 838.001
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■ Subsurface Consultants, Inc.

In accordance with our monitoring plan, the next monitoring event will occur during November 1993. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Marianne Watada

Marianne F. Watada
Project Engineer

James P. Bowers

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

MFW:JPB:egh

Attachments: Table 1 - Groundwater Purging and Sampling
Information
Table 2 - Hydrocarbon Concentrations in Groundwater
Table 3 - Groundwater Elevation Data
Plate 1 - Site Plan
Well Development/Sampling Forms
Analytical Test Reports
Chain-of-Custody Records

4 copies submitted

cc: Ms. Aniko Molnar
1920 Main Street, Suite 400
Irvine, California 92714

Table 1
Groundwater Purging and Sampling Information

<u>Location</u>	<u>Date</u>	<u>Conductivity (umho/cm)</u>	<u>pH</u>	<u>Temperature °C</u>	<u>Purge/ Sample Method</u>	<u>Volume Purged (gallons)</u>	<u>Static Casing Volumes Removed</u>	<u>Comments</u>
P2	8/17/93	1000	6.81	21.0	Bailer	14	6 ¹	Semi-clear with sheen and hydrocarbon odor
P3	8/17/93	1200	6.81	21.5	Bailer	20	7 ²	Semi-turbid with hydrocarbon odor
M2	8/17/93	1700	6.81	21.1	Bailer	8	3	Semi-clear with hydrocarbon odor
M3	8/17/93	340	6.77	20.8	Bailer	8	3	Semi-turbid
M4	8/17/93	2000	6.79	21.7	Bailer	11	6 ¹	Clear with hydrocarbon odor

-
- ¹ Slow recharge well - purged dry, allowed to recharge for 4 hours, purged dry again, sampled when the wells had recharged sufficiently to submerge the bailer.
- ² Developed and purged.

Table 2
Hydrocarbon Concentrations in Groundwater

<u>Sample Location</u>	<u>Sample Date</u>	<u>TPH¹</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>
P1	01/16/92	6700	500	4.4	80	40
	03/09/93	5600	1100	29	63	120
P2	11/06/90	33000 ²	4700	2100	380	630
	01/16/92	99000	6500	12000	2000	16000
	03/09/93	70000	5900	11000	2100	12000
	05/17/93	87000	6600	13000	2200	13000
	08/17/93	80000	5800	12000	2000	12000
P3	08/17/93	900	180	65	10	93
M2	05/07/91	16000	1300	950	170	890
	01/16/92	22000	960	570	370	1800
	03/09/93	27000	1100	970	490	1400
	05/17/93	17000	1200	770	480	1300
	08/17/93	20000	1700	910	540	1400
M3	05/17/93	<50	<0.5	<0.5	<0.5	<0.5
	08/17/93	<50	<0.5	<0.5	<0.5	<0.5
M4	05/17/93	7500	1200	230	11	350
	08/17/93	13000	3000	330	130	700

¹ TPH = Total petroleum hydrocarbons, as gasoline

² All concentrations are reported in micrograms per liter (ug/l)

TABLE 3
Groundwater Elevation Data

<u>Well</u>	<u>TOC¹ Elevation</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
M1	1000.00	10/24/90	36.1	963.9
		10/25/90	36.1	963.9
		11/02/90 ²	36.4	963.6
		11/06/90	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
		12/05/90	37.2	963.0
		03/18/91	35.8	964.2
		03/29/91	32.4	967.6
		04/03/91	31.9	968.1
		04/09/91	31.6	968.4
		04/16/91	31.2	968.8
		04/18/91	31.1	968.9
		04/30/91	31.1	968.9
		05/07/91	31.2	968.8
M2	999.6	01/23/92	35.5	964.5
		03/09/93	29.1	970.9
		06/01/93	27.5	972.9
		04/30/91	31.1 ³	968.5
		05/07/91	31.3 ³	968.3
		01/16/92	35.1 ³	964.5
		03/09/93	33.6 ³	966.0
		05/17/93	27.2 ³	972.4
M3	992.8	06/01/93	27.6 ³	972.0
		08/17/93	30.4 ³	969.2
		05/17/93	22.2	970.6
M4	999.6	06/01/93	23.3	969.5
		08/17/93	25.0	967.8
		05/17/93	33.8 ³	965.8
		06/01/93	32.5 ³	967.1
		08/17/93	33.9 ³	965.7

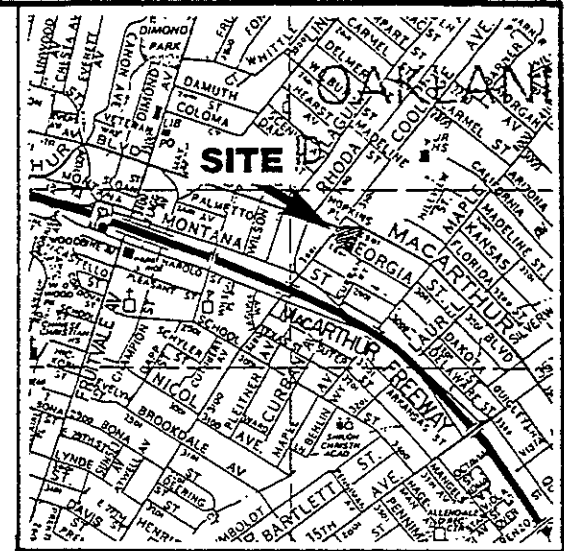
TABLE 3 Groundwater Elevation Data (continued)

<u>Well</u>	<u>TOC¹ Elevation</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
		11/02/90 ²	38.4	961.2
		11/06/90	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
		12/05/90	38.2	961.4
		03/18/91	37.8	961.8
		03/29/91	36.9	962.7
		04/03/91	36.8	962.8
		04/09/91	36.9	962.7
		04/16/91	36.7	962.9
		04/18/91	36.8	962.8
		04/30/91	36.3	963.3
		05/07/91	36.2	963.4
		01/16/92	36.6 ³	963.0
		03/09/93	32.8	966.8
		06/01/93	30.0 ³	969.6
P2	997.8	10/24/90	41.1	956.7
		10/25/90	40.6	957.2
		11/02/90 ²	38.4	959.4
		11/06/90	37.0	960.8
		11/16/90	37.4	960.4
		11/23/90	35.9	961.9
		11/28/90	35.4 ³	962.4
		12/05/90	35.0 ³	962.8
		03/18/91	31.4 ³	966.4
		03/29/91	28.2 ³	969.6
		04/03/91	26.8 ³	971.0
		04/09/91	26.5 ³	971.3
		04/16/91	26.5 ³	971.3
		04/18/91	26.5 ³	971.3
		04/30/91	26.7 ³	971.1
		05/07/91	27.0 ³	970.8
		01/16/92	33.7 ³	964.1
		03/09/93	23.6 ³	974.2
		05/17/93	23.7 ³	974.1
06/01/93	24.4 ³	973.4		
08/17/93	28.3 ³	969.5		

TABLE 3 Groundwater Elevation Data (continued)

<u>Well</u>	<u>TOC¹ Elevation</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
P3	999.1	03/29/91	24.7	974.4
		04/03/91	25.1	974.0
		04/09/91	25.9	973.2
		04/16/91	26.2	972.9
		04/18/91	26.2	972.9
		04/30/91	26.8	972.3
		05/07/91	27.4	971.7
		01/23/92	32.5	966.6
		03/09/93	24.8	974.3
		06/01/93	23.9	975.2
		08/17/93	28.5 ³	970.6

-
- ¹ Elevations relative to site-specific datum. Temporary Bench Mark No. 1, top of concrete at west corner of northernmost pump island. Assumed elevation = 1,000.00 feet.
 - ² An interface probe was used to discern whether free product was present - free product was not detected with the probe.
 - ³ A petroleum odor and/or coating was observed on the water level probe.



VICINITY MAP

MAC ARTHUR BOULEVARD

COOLIDGE AVENUE

GEORGIA STREET

FORMER GASOLINE TANKS

FORMER WASTE OIL TANK

M-1

M-2

P-1

M-3

M-4

P-3

P-2

Date	TPH	B	T	E	X
8/17/93	900	180	65	10	93

Date	TPH	B	T	E	X
8/17/93	80,000	5,800	12,000	2,000	12,000
5/17/93	87,000	6,600	13,000	2,200	13,000
3/9/93	70,000	5,900	11,000	2,100	12,000
1/16/92	99,000	6,500	12,000	2,000	16,000
11/6/90	33,000	4,700	2,100	380	630

Date	TPH	B	T	E	X
8/17/93	20,000	1,700	910	540	1,400
5/17/93	17,000	1,200	770	480	1,300
3/9/93	27,000	1,100	970	490	1,400
1/16/92	22,000	960	570	370	1,800
5/7/91	16,000	1,300	950	170	890

Date	TPH	B	T	E	X
3/9/93	5,600	1,100	29	63	120
1/16/92	6,700	500	4.4	80	40

Date	TPH	B	T	E	X
8/17/93	<50	<0.5	<0.5	<0.5	<0.5
5/17/93	<50	<0.5	<0.5	<0.5	<0.5

Date	TPH	B	T	E	X
8/17/93	13,000	3,000	330	130	700
5/17/93	7,500	1,200	230	11	350

970.6 GROUNDWATER ELEVATION 8/17/93

MONITORING WELL BY SCI

MONITORING WELL BY OTHERS

FORMER EXCAVATION

PROPERTY BOUNDARY

EXISTING BUILDING

GROUNDWATER LEVEL CONTOURS (feet) 8/17/93

TPH TOTAL PETROLEUM HYDROCARBONS

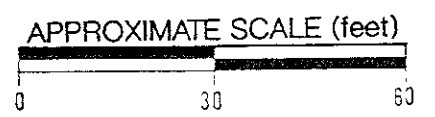
B BENZENE

T TOLUENE

E ETHYLBENZENE

X XYLENES

ALL CONCENTRATIONS IN ug/l



HYDROCARBON CONCENTRATIONS IN GROUNDWATER

2801 MacARTHUR BLVD - OAKLAND, CA

PLATE 1

JOB NUMBER 838 001 DATE 9/7/93 APPROVED *nm*

Subsurface Consultants

WELL SAMPLING FORM

Project Name: 2801 MACARTHUR BOULEVARD Well Number: P-2
Job No.: 838.001 Well Casing Diameter: 2 inch
Sampled By: M. WATADA Date: 8/17/93
TOC Elevation: 927.8 Weather: Sunny

Depth to Casing Bottom (below TOC) 42.20 feet
Depth to Groundwater (below TOC) 28.29 feet
Feet of Water in Well 13.91 feet
Depth to Groundwater When 80% Recovered 31.07 feet
Casing Volume (feet of water x Casing DIA² x 0.0408) 2.27 gallons
Depth Measurement Method Tape & Paste / Electronic Sounder / Other
Free Product _____
Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.78</u>	<u>21.9</u>	<u>70 x 10</u>		<u>semi clear</u>
<u>3</u>	<u>6.79</u>	<u>21.5</u>	<u>70 x 10</u>		<u>or oily green</u>
<u>6</u>	<u>6.8</u>	<u>21.8</u>	<u>80 x 10</u>		<u>and HC odor</u>
<u>8</u>	<u>6.81</u>	<u>21.5</u>	<u>100 x 10</u>		<u> </u>
<u>10</u>	<u>6.81</u>	<u>20.8</u>	<u>100 x 10</u>		<u> </u>

DRY
Total Gallons Purged 10 - 4; recharge; sample. gallons
Depth to Groundwater Before Sampling (below TOC) 37.96 feet
Sampling Method disposable bailer
Containers Used 3 40 ml _____ liter _____ pint

Subsurface Consultants

2801 MACARTHUR BLVD - OAKLAND, CA			PLATE
JOB NUMBER	DATE	APPROVED	
838.001	8/17/93		

WELL SAMPLING FORM

Project Name: 2801 MACARTHUR BOULEVARD Well Number: P-3
 Job No.: 838.001 Well Casing Diameter: 2 inch
 Sampled By: M. WATADA Date: 8/17/93
 TOC Elevation: 29.99 Weather: Sunny

Depth to Casing Bottom (below TOC) 44.9 feet
 Depth to Groundwater (below TOC) 28.46 feet
 Feet of Water in Well 16.44 feet
 Depth to Groundwater When 80% Recovered 31.75 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 2.68 gallons
 Depth Measurement Method Tape & Paste Electronic Sounder Other
 Free Product _____
 Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.76</u>	<u>22.0</u>	<u>120 x 10</u>		<u>Black Turbid</u>
<u>3</u>	<u>6.8</u>	<u>22.0</u>	<u>120 x 10</u>		<u>with red color</u>
<u>6</u>	<u>6.83</u>	<u>22</u>	<u>120 x 10</u>		
<u>7</u>	<u>6.81</u>	<u>21.5</u>	<u>120 x 10</u>		
<u>12</u>	<u>6.81</u>	<u>21.6</u>	<u>120 x 10</u>		
<u>16</u>	<u>6.80</u>	<u>21.4</u>	<u>120 x 10</u>		<u>semi-turbid</u>
Total Gallons Purged	<u>6.81</u>	<u>21.5</u>	<u>120 x 10</u>	<u>20</u>	<u>gallons</u>

Depth to Groundwater Before Sampling (below TOC) 30.31 feet
 Sampling Method disposable bailer
 Containers Used 3 40 ml liter pint

Subsurface Consultants

2801 MACARTHUR BLVD - OAKLAND, CA

PLATE

JOB NUMBER
838.001

DATE
8/17/93

APPROVED

WELL SAMPLING FORM

Project Name: 2801 MACARTHUR BOULEVARD Well Number: M-2
 Job No.: 838.001 Well Casing Diameter: 2 inch
 Sampled By: M. WATADA Date: 8/17/93
 TOC Elevation: 999.6 Weather: Sunny

Depth to Casing Bottom (below TOC) 44.90 feet
 Depth to Groundwater (below TOC) 30.37 feet
 Feet of Water in Well 14.53 feet
 Depth to Groundwater When 80% Recovered 33.28 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 2.37 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other
 Free Product _____
 Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.73</u>	<u>22.7</u>	<u>170 x 10</u>	_____	<u>semi clear</u>
<u>3</u>	<u>6.78</u>	<u>22.5</u>	<u>180 x 10</u>	_____	<u>H2O odor</u>
<u>6</u>	<u>6.81</u>	<u>21.1</u>	<u>170 x 10</u>	_____	_____
<u>8</u>	<u>6.81</u>	<u>21.1</u>	<u>170 x 10</u>	_____	_____
_____	_____	_____	_____	_____	_____

Total Gallons Purged 8 gallons
 Depth to Groundwater Before Sampling (below TOC) 34.19 feet
 Sampling Method disposable bailer
 Containers Used 3 _____
 40 ml liter pint

<h2 style="margin: 0;">Subsurface Consultants</h2>	2801 MACARTHUR BLVD - OAKLAND, CA		PLATE
	JOB NUMBER 838.001	DATE 8/17/93	APPROVED

WELL SAMPLING FORM

Project Name: 2801 MACARTHUR BOULEVARD Well Number: M-4
 Job No.: 838.001 Well Casing Diameter: 2 inch
 Sampled By: M. WATADA Date: 8/17/93
 TOC Elevation: 999.6 Weather: Sunny

Depth to Casing Bottom (below TOC) 45.20 feet
 Depth to Groundwater (below TOC) 33.94 feet
 Feet of Water in Well 11.26 feet
 Depth to Groundwater When 80% Recovered 6.19 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 84 gallons
 Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
 Free Product _____
 Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.74</u>	<u>22.7</u>	<u>200x10</u>		<u>clear slight HC odor</u>
<u>3</u>	<u>6.78</u>	<u>21.8</u>	<u>210x10</u>		<u>"</u>
<u>6</u>	<u>6.75</u>	<u>21.6</u>	<u>200x10</u>		<u>"</u>
<u>7</u>	<u>6.79</u>	<u>21.7</u>	<u>200x10</u>		<u>"</u>
<u>DRY</u>					

Total Gallons Purged 7 + 4; recharge; sample gallons
 Depth to Groundwater Before Sampling (below TOC) 41.73 feet
 Sampling Method disposable bailer
 Containers Used 3 40 ml liter pint

Subsurface Consultants	2801 MACARTHUR BLVD - OAKLAND, CA	PLATE
	JOB NUMBER 838.001	DATE 8/17/93

WELL DEVELOPMENT FORM

Project Name: 2801 MACARTHUR BOULEVARD Well Number: P3
 Job No.: 838.001 Well Casing Diameter: 2 inches
 Developed By: M.WATADA Date: 8/17/93
 TOC Elevation: 79.71 Weather: Sunny

Depth to Casing Bottom (below TOC) 14.9 feet
 Depth to Groundwater (below TOC) 28.46 feet
 Feet of Water in Well 16.44 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 2.68 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other
 Development Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.76</u>	<u>22.0</u>	<u>120 x 10</u>		<u>Black Turbid Slight HCl odor</u>
<u>3</u>	<u>6.80</u>	<u>22.0</u>	<u>120 x 10</u>		
<u>6</u>	<u>6.83</u>	<u>22.0</u>	<u>120 x 10</u>		
<u>Surge</u>					
<u>9</u>	<u>6.81</u>	<u>21.5</u>	<u>170 x 10</u>		
<u>12</u>	<u>6.81</u>	<u>21.6</u>	<u>120 x 10</u>		
<u>16</u>	<u>6.80</u>	<u>21.4</u>	<u>120 x 10</u>		<u>semi-turbid</u>
<u>20</u>	<u>6.81</u>	<u>21.5</u>	<u>120 x 10</u>		

Total Gallons Removed 20 gallons
 Depth to Groundwater After Development (below TOC) 30.31 feet

Subsurface Consultants	2801 MACARTHUR BLVD-OAKLAND, CA		PLATE
	JOB NUMBER 838.001	DATE 8/17/93	



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

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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: 25-AUG-93
Lab Job Number: 111933
Project ID: 838.001
Location: A.P.A. Fund



Reviewed by: Teresa K. Morris

Reviewed by: Kelley B.

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LABORATORY NUMBER: 111933
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 838.001
LOCATION: A.P.A. FUND

DATE SAMPLED: 08/17/93
DATE RECEIVED: 08/17/93
DATE ANALYZED: 08/23/93
DATE REPORTED: 08/25/93

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)
111933-1	P-2	80,000	5,800	12,000	2,000	12,000
111933-2	P-3	900	180	65	10	93
111933-3	M-2	20,000	1,700	910	540	1,400
111933-5	M-4	13,000	3,000	330	130	700

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

QA/QC SUMMARY

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RPD, %                                     <1
RECOVERY, %                               100
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LABORATORY NUMBER: 111933
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 838.001
 LOCATION: A.P.A. FUND

DATE SAMPLED: 08/17/93
 DATE RECEIVED: 08/17/93
 DATE ANALYZED: 08/20/93
 DATE REPORTED: 08/25/93

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)
111933-4	M-3	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, %	98



LABORATORY NUMBER: 111933
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 838.001
LOCATION: A.P.A. FUND

DATE SAMPLED: 08/17/93
DATE RECEIVED: 08/17/93
DATE ANALYZED: 08/19/93
DATE REPORTED: 08/25/93

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)
111933-6	TRAVEL BLANK	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, %	97

