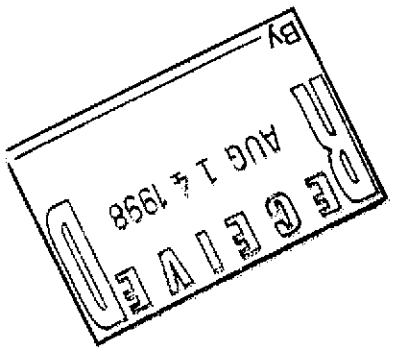
aqua science engineers inc.

August 11, 1998

SEMI-ANNUAL GROUNDWATER MONITORING REPORT
JULY 23, 1998 GROUNDWATER SAMPLING
at
Lim Family Property
250 8th Street
Oakland, California



Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(925) 820-9391

1.0 INTRODUCTION

This report outlines the methods and findings of Aqua Science Engineer's, Inc. (ASE) semi-annual groundwater monitoring at the property located at 250 8th Street in Oakland, California *(Figures 1 and 2).*

2.0 SITE HISTORY

A gasoline service station previously occupied the site. In May 1992, ASE removed ten underground fuel storage tanks from the site. The tanks consisted of one (1) 10,000-gallon gasoline tank, one (1) 5,000-gallon diesel tank, three (3) 2,000-gallon gasoline tanks, one (1) 2,000-gallon diesel tank, three (3) 500-gallon gasoline tanks and one (1) 250-gallon waste oil tank. Up to 10,000 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G) and 5,900 ppm total petroleum hydrocarbons as diesel (TPH-D) were detected in soil samples collected during the tank removal.

Between December 1992 and March 1993, All Environmental of San Ramon, California overexcavated 1,762 cubic yards of soil from the site and off-hauled the soil to the BFI Landfill in Livermore, California. Analytical results show that all on-site soil with hydrocarbon concentrations greater than 10 ppm was removed from the site with the exception of soil along the 8th Street shoring. Up to 1,800 ppm TPH-G and 120 ppm TPH-D were detected in soil samples collected along the shoring indicating that contamination likely extends below 8th Street. This contamination left in place may still be a source for groundwater contamination.

In January 1995, ASE installed monitoring wells MW-1 and MW-2 at the site. High hydrocarbon concentrations were detected in monitoring well MW-2, downgradient of the site. Moderate hydrocarbon concentrations were detected in on-site monitoring well MW-1.

Since April 1995, the site has been on a groundwater monitoring program. Analytical results for these sampling periods are presented in Tables Two and Three.

3.0 GROUNDWATER FLOW DIRECTION AND GRADIENT

On July 23, 1998, ASE project manager David Allen measured the depth to water in each site well using an electric water level sounder. The surface of the groundwater was also checked for the presence of free-floating hydrocarbons or sheen. A sheen was present on the surface of the groundwater in monitoring well MW-2. No free-floating hydrocarbons or sheen was present on the surface of water in monitoring well MW-1.

ASE usually samples the monitoring wells at this site, or at least collects depth to groundwater measurements, on the same day that this is done on the LUM property, across the 8th Street/Alice Street intersection from the site. After repeated attempts, ASE was unable to contact the proper personnel at LUM's consultant, All Environmental, to schedule coordinated sampling events. For this reason, ASE was unable to prepare a groundwater gradient map this quarter. Groundwater elevation data is presented below in Table One.

TABLE ONE
Groundwater Elevation Data

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)
MW-1	01-30-95	25.51	16.21		9.30
	04-12-95		15.71		9.80
	07-14-95		16.71		8.80
	10-17-95		17.72		7.79
	01-12-96		18.03		7.48
	07-25-96		16.82		8.69
	01-06-97		15.60		9.91
	07-08-97		17.31		8.20
	01-26-98		15.21		10.30
	07-23-98		**15.38**		**10.13**
MW-2	01-30-95	23.99	15.02		8.97
	04-12-95		14.75		9.24
	07-14-95		16.02		7.97
	10-17-95		16.94		7.05
	01-12-96		17.05		6.94
	07-25-96		16.02		7.97
	01-06-97		14.34		9.65
	07-08-97		16.52		7.47
	01-26-98		14.10		9.89
	07-23-98		**14.70**		**9.29**

TABLE ONE
(continued)
Groundwater Elevation Data

Well I.D.	Date of Measurement	Top of Casing Elevation (msl)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (msl)
LUM-1	07-14-95	23.42	Unknown		Unknown
	10-17-95		18.21	1.53	6.43*
	01-12-96		18.15	1.35	6.35*
	07-25-96		18.08	2.36	7.23*
	01-06-97		Unknown		Unknown
	07-08-97		Unknown		Unknown
	02-20-98		10.03	2.19	15.13*
LUM-2	07-14-95	23.98	17.21		6.77
	10-17-95		17.67		6.31
	01-12-96		17.89	0.01	6.10*
	07-25-96		16.94		7.04
	01-06-97		14.35		9.63
	07-08-97		17.32		6.66
	02-20-98		10.84		13.14

* = Adjusted for the presence of free-floating oil by the equation: Adjusted Groundwater Elevation = Top of Casing Elevation - Depth to Groundwater + (0.8 x Floating Hydrocarbon Thickness)

The groundwater flow direction has consistently been to the south beneath the site at an approximate gradient of 0.001-feet/foot.

4.0 MONITORING WELL SAMPLING

On July 23, 1998, ASE sampled monitoring wells MW-1 and MW-2 at the site. Prior to sampling, four well casing volumes of water were removed from each well. The pH, temperature and conductivity were monitored during the purging, and samples were not collected until these parameters stabilized. After the water level in each well recovered to at least 80% of the static pre-purge level, groundwater samples were collected with a dedicated polyethylene bailer. The groundwater samples from each well were decanted from the bailer into 40-ml volatile organic analysis (VOA) vials, pre-preserved with hydrochloric acid, and 1-liter amber glass bottles. The samples were labeled, placed in protective foam sleeves, and stored in coolers with wet ice for transport to Chromalab of Pleasanton, California (ELAP #1094) under appropriate chain of custody documentation. During sampling there was a strong hydrocarbon odor present in groundwater from monitoring well MW-2. No odors were noted during the sampling of monitoring well MW-1.

Well sampling purge water was contained in a 55-gallon steel drum and stored on-site for handling by the client at a later date. See Appendix A for a copy of the well sampling field logs.

5.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed for TPH-G by EPA Method 5030/8015M, TPH-D by EPA Method 3510/8015M, benzene, toluene, ethylbenzene, and total xylenes (collectively known as BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8020 and halogenated volatile organic compounds (HVOCs) by EPA Method 8010. The groundwater sample from monitoring well MW-2 was also analyzed for oil and grease (O&G) by Standard Method 5520BF. The analytical results are presented in Tables Two and Three, and the certified analytical report and chain of custody documentation are included in Appendix B.

TABLE TWO
Groundwater Analytical Results
TPH-G, TPH-D, BTEX and MTBE
All results are in **parts per billion**

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
MW-1							
01-30-95	740	200	3	5	1	4	--
04-12-95	400	500	<0.5	<0.5	3	<2	--
07-14-95	520	400	1	<0.5	2	3	--
10-17-95	400	200	0.5	1	3	<2	--
01-12-96	120	890	<0.5	<0.5	<0.5	<1.0	<2
07-08-96	320	300	0.52	2.7	1.2	2.3	<5
01-06-97	110	75	<0.5	0.68	<0.5	<0.5	<5
07-08-97	380	290	<0.5	1.5	1.4	1.9	<5
01-26-98	<50	<50	<0.5	<0.5	<0.5	<0.5	<5
07-23-98	**190**	**< 50**	**0.54**	**2.8**	**2.0**	**1.8**	**< 5**

TABLE TWO
Groundwater Analytical Results
TPH-G, TPH-D, BTEX and MTBE
All results are in **parts per billion**

Well/ Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
MW-2							
01-30-95	88,000	800	19,000	18,000	2,400	10,000	--
04-12-95	110,000	990	21,000	28,000	2,800	14,000	--
07-14-95	120,000	5,000	20,000	25,000	3,200	15,000	--
10-17-95	190,000	4,000	15,000	26,000	4,900	23,000	--
01-12-96	32,000	2,600	10,000	8,000	1,100	4,800	<2
07-08-96	110,000	2,500	20,000	18,000	2,500	12,000	< 500
01-06-97	230,000	37,000	11,000	19,000	4,300	20,000	< 1,200
07-08-97	91,000	35,000	16,000	20,000	2,700	13,000	< 1,000
01-26-98	50,000	11,000	12,000	12,000	1,600	6,700	< 250
07-23-98	**50,000**	**8,100#**	**11,000**	**8,300**	**1,800**	**7,000**	**1,100**
EPA METHOD	5030/ 8015M	3550/ 8015M	8020	8020	8020	8020	8020

Notes:
* = Hydrocarbons uncharacteristic of gasoline found in the gasoline range at 76 ppb.
# = Estimated concentration reported due to overlapping fuel patterns.

Non-detectable concentrations noted by the less than sign (<) followed by the detection limit.

Most recent data in **bold**.

TABLE THREE
Groundwater Analytical Results
Lead, Oil & Grease and Volatile Organic Compounds
All results are in **parts per billion**

Compound	MW-1	MW-2
1-30-95		
Dissolved Lead	< 0.04	< 0.04
Total Oil and Grease	< 500	19,000
Hydrocarbon Oil and Grease	< 500	17,000
Chloroform	0.5	< 30
Tetrachloroethene (PCE)	8	< 30
Other VOCs	< 0.5 - < 2	< 30 - < 100

TABLE THREE (Continued)

Groundwater Analytical Results
Lead, Oil & Grease and Volatile Organic Compounds
All results are in **parts per billion**

Compound	MW-1	MW-2
4-12-95		
Dissolved Lead	< 0.04	< 0.04
Hydrocarbon Oil and Grease	< 500	22,000
Tetrachloroethene (PCE)	6	0.9
1,2-Dichloroethane	< 0.5	43
Other VOCs	< 0.5 - < 2	< 30 - < 100
7-14-95		
Total Oil and Grease	< 500	**25,000**
Hydrocarbon Oil and Grease	< 500	**23,000**
1,2-Dichloroethane	< 0.5	35
Tetrachloroethene (PCE)	4	<5
Other VOCs	< 0.5 - < 2	< 5 - < 20
10-17-95		
Total Oil and Grease	< 1,000	15,000
Hydrocarbon Oil and Grease	< 1,000	13,000
Tetrachloroethene (PCE)	5	< 0.5
Trichloroethene (TCE)	< 0.5	1
Other VOCs	< 0.5 - < 2	< 0.5 - < 2
01-12-96		
Hydrocarbon Oil and Grease	< 5,000	< 5,000
07-08-96		
Hydrocarbon Oil and Grease	---	< 1,000
Chloroform	0.8	< 0.5
Tetrachloroethane (PCE)	6.4	< 0.5
Other VOCs	< 0.5 - < 3	< 0.5 - < 3
01-06-97		
Hydrocarbon Oil and Grease	---	4,100
07-08-97		
Hydrocarbon Oil and Grease	---	< 1,000
Tetrachloroethane (PCE)	0.9	< 0.5
Other VOCs	< 0.5 - < 3	< 0.5 - < 3
01-26-98		
Hydrocarbon Oil and Grease	---	< 1,000
Trichloroethene	0.70	< 5.0
Tetrachloroethene	10	< 5.0
1,2-Dichloroethane	< 0.5	11
Other VOCs	< 0.5 - < 50	< 0.5 - < 50

TABLE THREE (Continued)
Groundwater Analytical Results
Lead, Oil & Grease and Volatile Organic Compounds
All results are in **parts per billion**

Compound	MW-1	MW-2
07-23-98		
Hydrocarbon Oil and Grease	- - -	**< 1,000**
Tetrachloroethene	**4.0**	**4.6**
1,2-Dichloroethane	**< 2**	**9.9**
Other VOCs	**< 2 - < 10**	**< 0.5 - < 5.0**

6.0 CONCLUSIONS AND RECOMMENDATION

Elevated petroleum hydrocarbon concentrations were detected in groundwater samples collected from monitoring well MW-2, downgradient of the site. The benzene, toluene, ethylbenzene and total xylenes concentrations in these samples exceeded the California Department of Toxic Substances Control (DTSC) maximum contaminant levels (MCLs) for drinking water. In addition, the MTBE concentration in these samples exceeded the DTSC interim action level for drinking water. 9.9 parts per billion (ppb) 1,2-dichloroethane and 4.6 ppb tetrachloroethene (PCE) were detected in groundwater samples collected from well MW-2. 4.0 ppb PCE were detected in groundwater samples collected from monitoring well MW-1. Only very low concentrations of petroleum hydrocarbons, below DTSC MCLs, were detected in groundwater samples collected from monitoring well MW-1.

The groundwater remediation project outlined in ASE's workplan dated June 5, 1997 has been placed on hold by our client. ASE is uncertain as to when this project will be proceeding. The next semi-annual groundwater sampling is scheduled for January 1999.

7.0 REPORT LIMITATIONS

The results of this investigation represent conditions at the time of the groundwater sampling, at the specific locations where the samples were collected, and for the specific parameters analyzed by the laboratory.

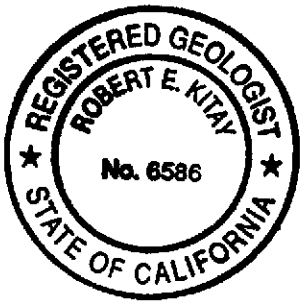
It does not fully characterize the site for contamination resulting from unknown sources, or for parameters not analyzed by the laboratory. All of the laboratory work cited in this report was prepared under the direction

of an independent CA-DHS certified laboratory. The independent laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Aqua Science Engineers appreciates the opportunity to assist The Lim Family with their environmental needs. Should you have any questions or comments, please feel free to call us at (925) 820-9391.

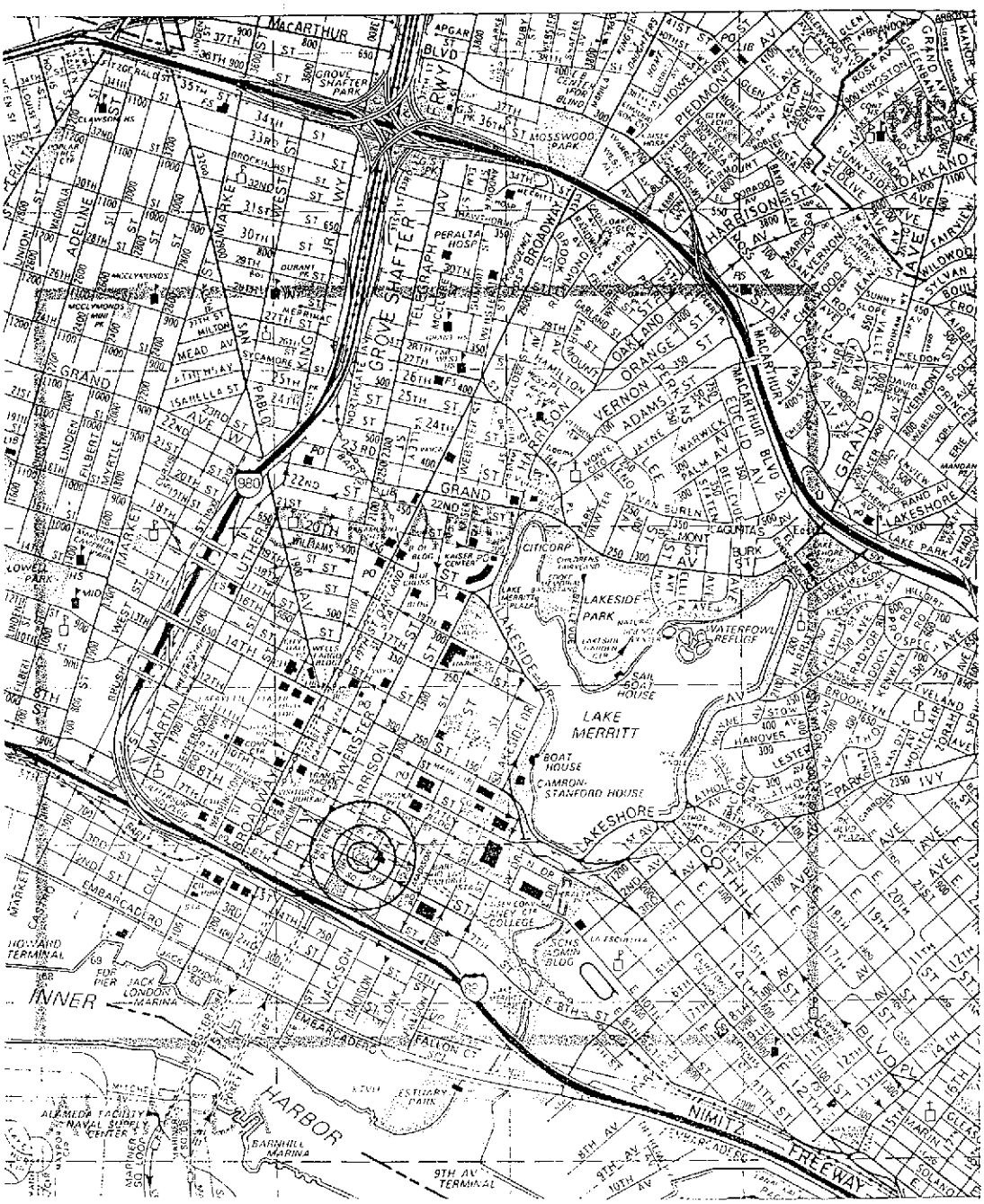
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.



Robert E. Kitay, R.G., R.E.A.
Senior Geologist

Attachments: Figures 1 and 2
Appendices A and B

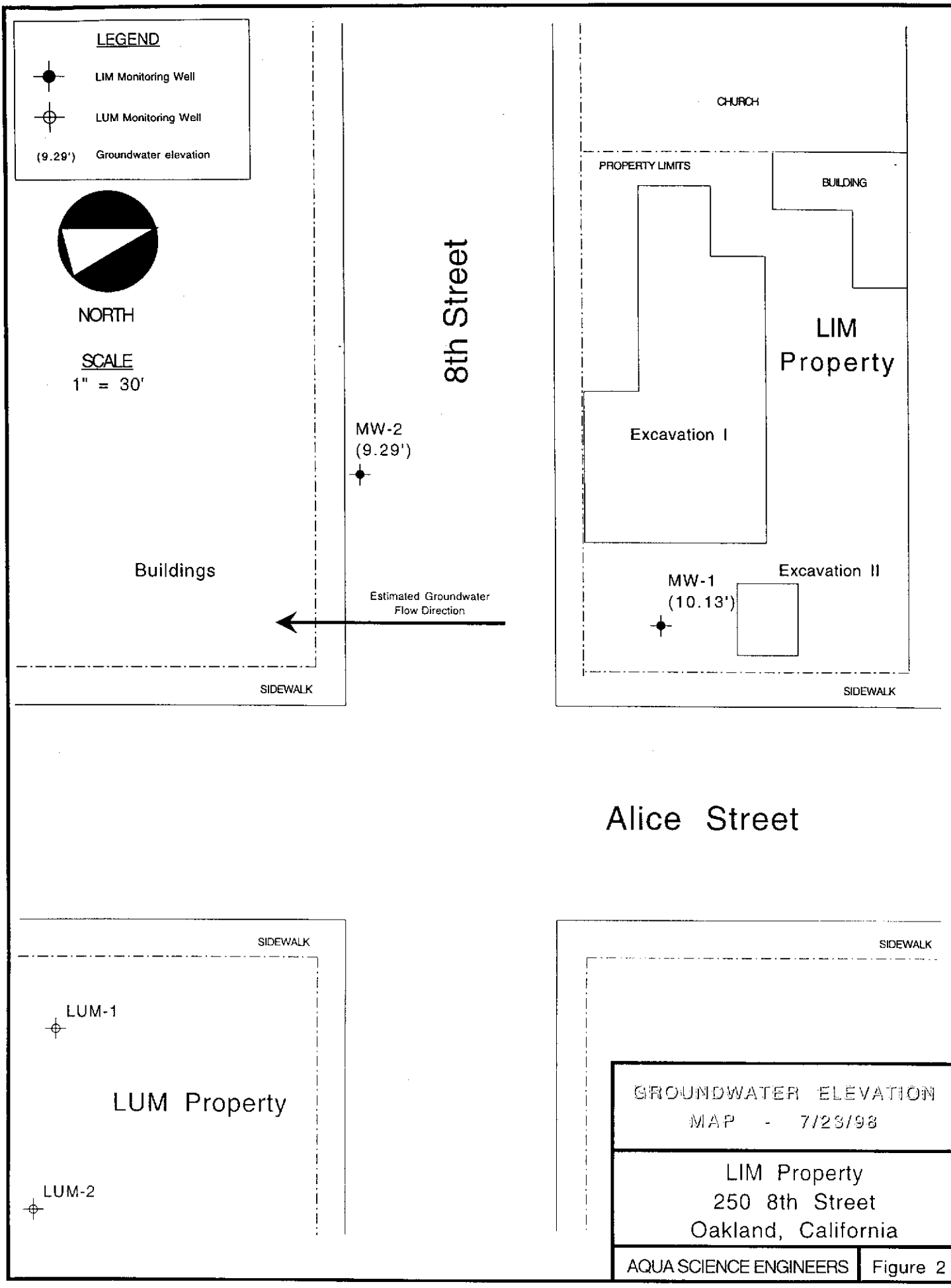


SITE LOCATION MAP

Lim Property
250 8th Street
Oakland, California

Aqua Science Engineers | Figure 1

BASE: The Thomas Guide, Alameda and Contra Costa Counties Street Guide & Directory, 1990


LEGEND
LIM Monitoring Well
LUM Monitoring Well
(9.29') Groundwater elevation
NORTH
SCALE
1" = 30'
8th Street
MW-2
(9.29')
Buildings
Estimated Groundwater
Flow Direction
SIDEWALK
CHURCH
PROPERTY LIMITS
BUILDING
LIM
Property
Excavation I
Excavation II
MW-1
(10.13')
SIDEWALK
Alice Street
SIDEWALK
LUM-1
LUM Property
LUM-2
SIDEWALK
GROUNDWATER ELEVATION
MAP - 7/23/98
LIM Property
250 8th Street
Oakland, California
AQUA SCIENCE ENGINEERS
Figure 2

APPENDIX A

Well Sampling Field Log

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: LLM
Job #: 2108 Date of sampling: 7-23-98
Well Name: MW-1 Sampled by: DK
Total depth of well (feet): 28.01 Well diameter (inches): 2
Depth to water before sampling (feet): 15.38
Thickness of floating product if any: 0
Depth of well casing in water (feet): 12.63
Number of gallons per well casing volume (gallons): 2.11
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 8.5
Equipment used to purge the well: Dedicated Bailer
Time Evacuation Began: 14:50 Time Evacuation Finished: 15:00
Approximate volume of groundwater purged: 9 gals.
Did the well go dry?: No After how many gallons: —
Time samples were collected: 15:20
Depth to water at time of sampling: 15.46
Percent recovery at time of sampling: 99
Samples collected with: Dedicated Bailer
Sample color: clear Odor: None
Description of sediment in sample: None

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
2	70.1	7.66	1020
4	71.0	7.68	1040
6	70.8	7.46	1100
8	70.6	7.75	1080

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-1	3	40 ml VOA's	✓	✓	TPH-G, MTBE, BTEX
"	2	1-liter Amber		✓	TPH-D

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: LIM
Job #: 2808 Date of sampling: 7.23.98
Well Name: MW-2 Sampled by: DA
Total depth of well (feet): 26.78 Well diameter (inches): 2
Depth to water before sampling (feet): 14.70
Thickness of floating product if any: sheen
Depth of well casing in water (feet): 12.08
Number of gallons per well casing volume (gallons): 2
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 8
Equipment used to purge the well: Dedicated Bailer
Time Evacuation Began: 14:30 Time Evacuation Finished: 14:40
Approximate volume of groundwater purged: 8 gals.
Did the well go dry?: No After how many gallons: —
Time samples were collected: 15:40
Depth to water at time of sampling: 14.81
Percent recovery at time of sampling: 99
Samples collected with: Dedicated Bailer
Sample color: turbid gray Odor: strong hc
Description of sediment in sample: gray silt

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
2	72.8	7.84	1100
4	72.4	7.76	1120
6	72.6	7.68	1205
8	72.2	7.72	1185

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-2	2	40ml VOA	✓	✓	TPH-G/BTEX/MTBE
"	2	" "	✓	✓	8010
"	2	1-liter Amber		✓	TPH-D
"	2	" "		✓	O&G

APPENDIX B

Certified Analytical Report
and
Chain of Custody Documentation

CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: 2 samples for TPH - Diesel analysis.
Method: *EPA 8015M*

Sampled: July 23, 1998 *Matrix:* WATER *Run#:* 13981 *Extracted:* July 29, 1998 *Analyzed:* July 30, 1998

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
197149	MW-1	N.D.	50	N.D.	102	1
197150	MW-2	8100	50	N.D.	102	1

Note: Estimated concentration reported due to overlapping fuel patterns. Surrogate high due to matrix interference.

Carolyn House
Analyst

Bruce Havlik
Analyst

925-837-4853 PM 07/31

1220 Quarry Lane • Pleasanton, California 94566-4756
(925) 484-1919 • Facsimile (925) 484-1096

CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: **Blank spike and duplicate** report for TPH - Diesel analysis.

Method: EPA 8015M

Matrix: WATER
Lab Run#: 13981 *Analyzed:* July 29, 1998

Analyte	Spike Amount BSP (ug/L)	Spike Amount Dup	Spike Found BSP (ug/L)	Spike Found Dup	Spike Recov BSP (%)	Spike Recov Dup (%)	Control Limits	% RPD	% RP Li
DIESEL	2500	2500	2560	2460	102	98.4	60-130	3.59	25

BS Smpl #: 197648
BSD Smpl #: 197649

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CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: **Surrogate** report for 2 samples for TPH - Diesel analysis.

Method: EPA 8015M
Lab Run#: 13981
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
197149-1	MW-1	O-TERPHENYL	104	60-13
197150-1	MW-2	O-TERPHENYL	147	60-13

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
197647-1	*Reagent blank (MDB)*	O-TERPHENYL	91.2	60-13
197648-1	*Spiked blank (BSP)*	O-TERPHENYL	111	60-13
197649-1	*Spiked blank duplicate (BSD)*	O-TERPHENYL	107	60-13

SOC5
QCSURR1209 Chk: 31 Jul 98

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CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-1**
Spl#: 197149 *Matrix:* WATER
Sampled: July 23, 1998 *Run#:*14026 *Analyzed:* July 30, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	190	50	N.D.	86	1
MTBE	N.D.	5.0	N.D.	84	1
BENZENE	0.54	0.50	N.D.	89	1
TOLUENE	2.8	0.50	N.D.	90	1
ETHYL BENZENE	2.0	0.50	N.D.	91	1
XYLENES	1.8	0.50	N.D.	92	1

Vincent Vancil
Analyst

Michael Verona
Operations Manager

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(925) 484-1919 • Facsimile (925) 484-1096

CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-2**
Spl#: 197150 *Matrix:* WATER
Sampled: July 23, 1998 *Run#:*14026 *Analyzed:* July 30, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	50000	5000	N.D.	86	100
MTBE	1100	500	N.D.	84	100
BENZENE	11000	50	N.D.	89	100
TOLUENE	8300	50	N.D.	90	100
ETHYL BENZENE	1800	50	N.D.	91	100
XYLENES	7000	50	N.D.	92	100

Vincent Vancil
Analyst

Michael Verona
Operations Manager

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CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: **Blank spike and duplicate** report for Gasoline BTEX MTBE analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Matrix: WATER
Lab Run#: 14026 *Analyzed:* July 31, 1998

Analyte	Spike Amount BSP (ug/L)	Spike Amount Dup	Found BSP (ug/L)	Found Dup	Recov BSP (%)	Recov Dup (%)	Control Limits	% RPD	% RI Li
GASOLINE	500	500	432	433	86.4	86.6	75-125	0.23	2(
MTBE	100	100	83.6	81.2	83.6	81.2	75-125	2.91	2(
BENZENE	100	100	88.8	90.9	88.8	90.9	77-123	2.34	2(
TOLUENE	100	100	89.6	91.8	89.6	91.8	78-122	2.42	2(
ETHYL BENZENE	100	100	90.6	95.9	90.6	95.9	70-130	5.68	2(
XYLENES	300	300	277	286	92.3	95.3	75-125	3.20	2(

BS Smpl #: 198139
BSD Smpl #: 198140

1220 Quarry Lane • Pleasanton, California 94566-4756
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CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: **Surrogate** report for 2 samples for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod
Lab Run#: 14026
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
197149-2	MW-1	TRIFLUOROTOLUENE	88.6	58-12
197149-2	MW-1	4-BROMOFLUOROBENZENE	145	50-15
197150-2	MW-2	TRIFLUOROTOLUENE	83.6	58-12
197150-2	MW-2	4-BROMOFLUOROBENZENE	126	50-15

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
198138-1	*Reagent blank (MDB)*	TRIFLUOROTOLUENE	85.2	58-12
198138-1	*Reagent blank (MDB)*	4-BROMOFLUOROBENZENE	124	50-15
198139-1	*Spiked blank (BSP)*	TRIFLUOROTOLUENE	84.6	58-12
198139-1	*Spiked blank (BSP)*	4-BROMOFLUOROBENZENE	118	50-15
198140-1	*Spiked blank duplicate (BSD)*	TRIFLUOROTOLUENE	82.5	58-12
198140-1	*Spiked blank duplicate (BSD)*	4-BROMOFLUOROBENZENE	128	50-15

V132
QCSUBR1729 VINCE 31-Jul-98

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CHROMALAB, INC.

Environmental Services (SDB)

July 29, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: 1 sample for Oil and Grease analysis.
Method: *5520 B&F*

Matrix: WATER *Extracted:* July 28, 1998
Sampled: July 23, 1998 *Run#:* 13953 *Analyzed:* July 28, 1998

Spl# CLIENT SPL ID	OIL & GREASE (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
197150 MW-2	N.D.	1.0	N.D.	97.5	1

Lulu Frazier
Analyst

Michael Verona
Operations Manager

925-837-4853 PM 07/31

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CHROMALAB, INC.

Environmental Services (SDB)

August 7, 1998 *Submission #:* 9808084

AQUA SCIENCE ENGINEERS INC
Attn: Robert Kitay
Project: LIM *Project#:* 2808
Received: July 24, 1998
re: One sample for Halogenated Volatile Organics by GC/MS analysis.
Method: *8010 Compounds by Method 8240A Nov 1990*

Client Sample ID: MW-1
Spl#: 199500 *Matrix:* WATER
Sampled: July 23, 1998 *Run#:* 14151 *Analyzed:* August 6, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
BROMODICHLOROMETHANE	N.D.	2.0	N.D.	--	1
BROMOFORM	N.D.	2.0	N.D.	--	1
BROMOMETHANE	N.D.	5.0	N.D.	--	1
CARBON TETRACHLORIDE	N.D.	2.0	N.D.	--	1
CHLOROBENZENE	N.D.	2.0	N.D.	94.1	1
CHLOROETHANE	N.D.	2.0	N.D.	--	1
2-CHLOROETHYLVINYLETHER	N.D.	10	N.D.	--	1
CHLOROFORM	N.D.	3.0	N.D.	--	1
CHLOROMETHANE	N.D.	5.0	N.D.	--	1
DIBROMOCHLOROMETHANE	N.D.	2.0	N.D.	--	1
1,2-DICHLOROBENZENE	N.D.	2.0	N.D.	--	1
1,3-DICHLOROBENZENE	N.D.	2.0	N.D.	--	1
1,4-DICHLOROBENZENE	N.D.	2.0	N.D.	--	1
1,1-DICHLOROETHANE	N.D.	2.0	N.D.	--	1
1,2-DICHLOROETHANE	N.D.	2.0	N.D.	--	1
1,1-DICHLOROETHENE	N.D.	2.0	N.D.	88.0	1
1,2-DICHLOROETHENE (CIS)	N.D.	2.0	N.D.	--	1
1,2-DICHLOROETHENE (TRANS)	N.D.	2.0	N.D.	--	1
1,2-DICHLOROPROPANE	N.D.	2.0	N.D.	--	1
CIS-1,3-DICHLOROPROPENE	N.D.	2.0	N.D.	--	1
TRANS-1,3-DICHLOROPROPENE	N.D.	2.0	N.D.	--	1
METHYLENE CHLORIDE	N.D.	3.0	N.D.	--	1
1,1,2,2-TETRACHLOROETHANE	N.D.	2.0	N.D.	--	1
TETRACHLOROETHENE	4.0	2.0	N.D.	--	1
1,1,1-TRICHLOROETHANE	N.D.	2.0	N.D.	--	1
1,1,2-TRICHLOROETHANE	N.D.	2.0	N.D.	--	1
TRICHLOROETHENE	N.D.	3.0	N.D.	93.6	1
VINYL CHLORIDE	N.D.	2.0	N.D.	--	1
TRICHLOROTRIFLUOROETHANE	N.D.	2.0	N.D.	--	1
TRICHLOROFLUOROMETHANE	N.D.	2.0	N.D.	--	1

Oleg Nemtsov
Analyst

Michael Veronda
Operations Manager

925-837-4853 9M 08/07

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CHROMALAB, INC.

Environmental Services (SDB)

July 31, 1998 *Submission #:* 9807374

AQUA SCIENCE ENGINEERS INC

Atten: Dave Allen

Project: LIM *Project#:* 2808
Received: July 24, 1998

re: One sample for Volatile Halogenated Organics analysis.
Method: *SW846 Method 8010A July 1992*

Client Sample ID: **MW-2**
Spl#: 197150 *Matrix:* WATER
Sampled: July 23, 1998 *Run#:* 13960 *Analyzed:* July 27, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
VINYL CHLORIDE	N.D.	0.50	N.D.	--	
CHLOROETHANE	N.D.	0.50	N.D.	--	
TRICHLOROFLUOROMETHANE	N.D.	0.50	N.D.	--	
1,1-DICHLOROETHENE	N.D.	0.50	N.D.	110	
METHYLENE CHLORIDE	N.D.	5.0	N.D.	--	
TRANS-1,2-DICHLOROETHENE	N.D.	0.50	N.D.	--	
CIS-1,2-DICHLOROETHENE	N.D.	0.50	N.D.	--	
1,1-DICHLOROETHANE	N.D.	0.50	N.D.	--	
CHLOROFORM	N.D.	3.0	N.D.	--	
1,1,1-TRICHLOROETHANE	N.D.	0.50	N.D.	--	
CARBON TETRACHLORIDE	N.D.	0.50	N.D.	--	
1,2-DICHLOROETHANE	9.9	0.50	N.D.	--	
TRICHLOROETHENE	N.D.	0.50	N.D.	112	
1,2-DICHLOROPROPANE	N.D.	0.50	N.D.	--	
BROMODICHLOROMETHANE	N.D.	0.50	N.D.	--	
2-CHLOROETHYL VINYL ETHER	N.D.	0.50	N.D.	--	
TRANS-1,3-DICHLOROPROPENE	N.D.	0.50	N.D.	--	
CIS-1,3-DICHLOROPROPENE	N.D.	0.50	N.D.	--	
1,1,2-TRICHLOROETHANE	N.D.	0.50	N.D.	--	
TETRACHLOROETHENE	4.6	0.50	N.D.	--	
DIBROMOCHLOROMETHANE	N.D.	0.50	N.D.	--	
CHLOROBENZENE	N.D.	0.50	N.D.	108	
BROMOFORM	N.D.	2.0	N.D.	--	
1,1,2,2-TETRACHLOROETHANE	N.D.	0.50	N.D.	--	
1,3-DICHLOROBENZENE	N.D.	0.50	N.D.	--	
1,4-DICHLOROBENZENE	N.D.	0.50	N.D.	--	
1,2-DICHLOROBENZENE	N.D.	0.50	N.D.	--	
TRICHLOROTRIFLUOROETHANE	N.D.	2.0	N.D.	--	
CHLOROMETHANE	N.D.	1.0	N.D.	--	
BROMOMETHANE	N.D.	1.0	N.D.	--	

Oleg Nemtsov
Analyst

Michael Verona
Operations Manager

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Federal ID #68-0140157

MTBE 9709-197150

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(925) 820-9391
FAX (925) 837-4853

Chain of Custody

SUB#: 9807374 REP: PM
CLIENT: ASE
DUE: 07/31/98
REF #: 41068

41068

PAGE 1 OF 1

SAMPLER (SIGNATURE) (PHONE NO.) 820-9391

PROJECT NAME Lim JOB NO. 2808

ADDRESS OAKLAND DATE 7-23-98

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-GASOLINE (EPA 5030/8015)	TPH-DIESEL (EPA 3510/8015)	PURGEABLE HALOCARBONS (EPA 601/8010)	PURGEABLE AROMATICS (EPA 602/8020)	VOLATILE ORGANICS (EPA 624/8240)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	OIL & GREASE (EPA 5520) B+F	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)				COMPOSITE
MW-1	7/23	15[illegible]	[illegible]	5	X		X															
MW-2	7/23	15[illegible]	[illegible]	6	X		X	X				X										

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
(signature) (time)	(signature) (time)	(signature) (time)	(signature) (time)	
[illegible] 7:24	7-24-98	7-24-98	C. Cassidy 10:02	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE	Company- Cascade	Company- Chromalab	Company- 7-24-98	

aqua science engineers inc.

FAX BEING SENT BY:

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
Phone (925) 820-9391
Fax (925) 837-4853

DATE: 8-6-98

TO: Chromalab, Inc.

FROM: Robert Kitay

NUMBER OF PAGES TO FOLLOW: 0

**********Please Phone If This Fax Is Received Incomplete**********

MESSAGE:

Please analyze the sample labeled MW-1 from the Lim project submission # 9807-374, for EPA Method 8010. The holding time expires today!

CHROMALAB, INC.

Environmental Service (SDB)

Sample Receipt Checklist

Client Name: **AQUA SCIENCE ENGINEERS INC** Date/Time Received: 07/24/98 | 1044

Reference/Submis: 41068 | 9807374 Received by: BM

Checklist completed by: Chris Donley 7/27/98 Reviewed by: CMC 7/27/98

Signature | Date Initials | Date

Matrix: H2O Carrier name: Client + C/L

Shipping container/cooler in good condition?	Yes ✓	No	Not Present
Custody seals intact on shipping container/cooler?	Yes	No	Not Present ✓
Custody seals intact on sample bottles?	Yes	No	Not Present ✓
Chain of custody present?	Yes ✓	No	
Chain of custody signed when relinquished and received?	Yes ✓	No	
Chain of custody agrees with sample labels?	Yes ✓	No	
Samples in proper container/bottle?	Yes ✓	No	
Sample containers intact?	Yes ✓	No	
Sufficient sample volume for indicated test?	Yes ✓	No	
All samples received within holding time?	Yes ✓	No	
Container/Temp Blank temperature in compliance?	Temp: 2.8 °C Yes ✓	No	
Water - VOA vials have zero headspace?	No VOA vials submitted	Yes ✓	No
Water - pH acceptable upon receipt? N/A	Adjusted?	Checked by: chemist for VOAs	

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____