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ENVIRONMENTAL
PROTECTION
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February 24, 1998

QUARTERLY GROUNDWATER MONITORING REPORT
JANUARY 26, 1998 GROUNDWATER SAMPLING

at
Lim Family Property
250 8th Street
Oakland, California

Former Exxon

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 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 January 26, 1998, ASE geologist Charlie Rous 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. Depth to groundwater measurements for the wells on the LUM property were measured by All Environmental on February 20, 1998. A groundwater gradient map was not prepared this quarter since water level measurements were not measured on the same day at the LIM and LUM properties. 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
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

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.

4.0 MONITORING WELL SAMPLING

On January 26, 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 slight hydrocarbon odor present in groundwater from monitoring well MW-1. A strong

hydrocarbon odor was present in groundwater from monitoring well MW-2.

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
<u>MW-1</u>							
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
██████████							
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
██████████	215,000	37,000	17,000	12,000	1,600	6,700	< 250
EPA METHOD	5030/ 8015M	3550/ 8015M	8020	8020	8020	8020	8020

Notes:

* = Hydrocarbons uncharacteristic of gasoline found in the gasoline range at 76 ppb.

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

<u>Compound</u>	<u>MW-1</u>	<u>MW-2</u>
<u>1-30-95</u>		
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
<u>4-12-95</u>		
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
<u>7-14-95</u>		
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
<u>10-17-95</u>		
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
<u>01-12-96</u>		
Hydrocarbon Oil and Grease	< 5,000	< 5,000

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

<u>Compound</u>	<u>MW-1</u>	<u>MW-2</u>
<u>07-08-96</u>		
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
<u>01-06-97</u>		
Hydrocarbon Oil and Grease	---	4,100
<u>07-08-97</u>		
Hydrocarbon Oil and Grease	---	< 1,000
Tetrachloroethane (PCE)	0.9	< 0.5
Other VOCs	< 0.5 - < 3	< 0.5 - < 3
<u>01-26-98</u>		
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

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, 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 toluene concentration in these samples exceeded the DTSC recommended action level (RAL) for drinking water. 11 parts per billion (ppb) 1,2-dichloroethane was detected in groundwater samples collected from well MW-2. 0.70 ppb PCE and 10 ppb TCE were detected in groundwater samples collected from monitoring well MW-1. TPH-G, BTEX and MTBE were not detected in groundwater samples collected from well MW-1.

The groundwater remediation project outlined in ASE's workplan dated June 5, 1997 is expected to proceed during the next quarter. The next semi-annual groundwater sampling is scheduled for early July 1998.

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 (510) 820-9391.

Respectfully submitted,

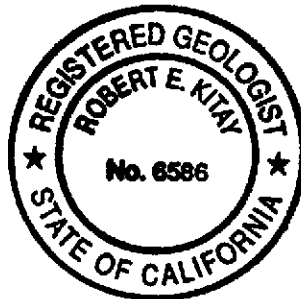
AQUA SCIENCE ENGINEERS, INC.



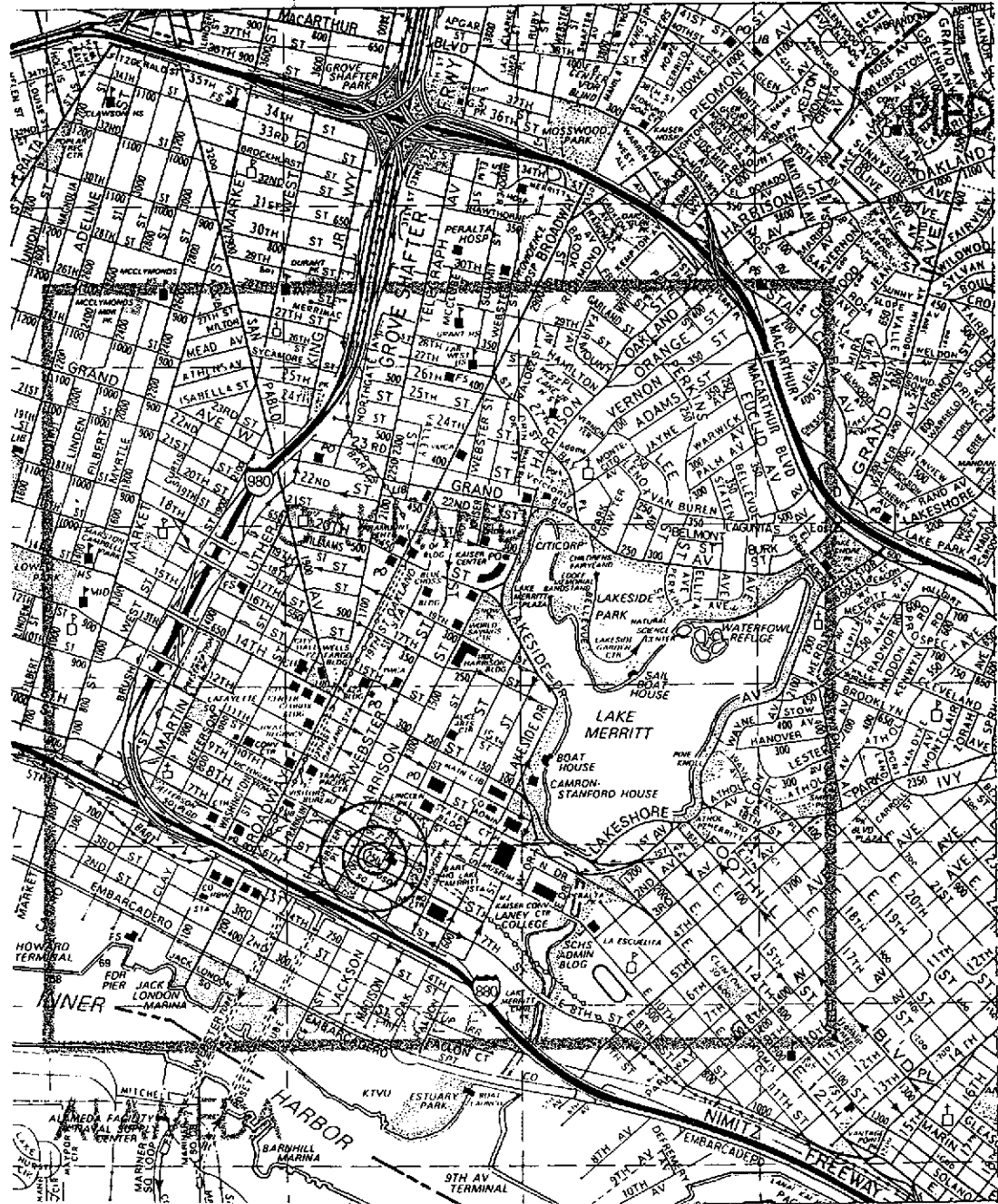
Charlie Rous
Staff Geologist



Robert E. Kitay, R.G.
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



ASE Monitoring Well



ALL Monitoring Well



NORTH

SCALE

1" = 30'

Buildings

SIDEWALK

8th Street

MW-2

CHURCH

PROPERTY LIMITS

BUILDING

LIM Property

Excavation I

Anticipated
Groundwater
Flow Direction



Excavation II

MW-1

SIDEWALK

Alice Street

SIDEWALK

LUM-1



LUM Property

LUM-2



SIDEWALK

**MONITORING WELL
LOCATION MAP**

LIM Property
250 8th Street
Oakland, California

AQUA SCIENCE ENGINEERS

Figure 2

APPENDIX A

Well Sampling Field Log



WELL SAMPLING FIELD LOG

Project Name and Address: Lim 250 8th St. Oakland
 Job #: 2808 Date of sampling: 1/26/98
 Well Name: MW-1 Sampled by: CR
 Total depth of well (feet): 28.01 Well diameter (inches): 2"
 Depth to water before sampling (feet): 15.21
 Thickness of floating product if any: N/A
 Depth of well casing in water (feet): 17.30
 Number of gallons per well casing volume (gallons): 2.1
 Number of well casing volumes to be removed: 0
 Req'd volume of groundwater to be purged before sampling (gallons): 0
 Equipment used to purge the well: Dedicated Bailer
 Time Evacuation Began: 12:29 Time Evacuation Finished: 12:42
 Approximate volume of groundwater purged: 8
 Did the well go dry?: NO After how many gallons: _____
 Time samples were collected: 13:00
 Depth to water at time of sampling: 15.22
 Percent recovery at time of sampling: _____
 Samples collected with: Dedicated Bailer
 Sample color: _____ Odor: _____
 Description of sediment in sample: None

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
<u>MW-1</u>	<u>3</u>	<u>1 L C VOA</u>	<u>U</u>	<u>Y</u>	<u>TPH & PCBs / 10450</u>
<u>MW-1</u>	<u>2</u>	<u>1 C A</u>	<u>-</u>	<u>Y</u>	<u>TPH d</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____



WELL SAMPLING FIELD LOG

Project Name and Address: Lim, 250 8th St, Oakland
 Job #: 2808 Date of sampling: 1/26/98
 Well Name: MW-2 Sampled by: CR
 Total depth of well (feet): 26.78 Well diameter (inches): 2
 Depth to water before sampling (feet): 14.10
 Thickness of floating product if any: HA Sheen
 Depth of well casing in water (feet): 12.68
 Number of gallons per well casing volume (gallons): 2.1
 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 Bailor
 Time Evacuation Began: 11:40 Time Evacuation Finished: 12:00
 Approximate volume of groundwater purged: 8
 Did the well go dry?: NO After how many gallons: _____
 Time samples were collected: 12:05
 Depth to water at time of sampling: 14.17
 Percent recovery at time of sampling: _____
 Samples collected with: Dedicated Bailor
 Sample color: Light Odor: no odor
 Description of sediment in sample: fine

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
2			
2			
2			
2			
2			

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-2	2	40ml VOA	Al	Y	TPH / BTEX / MTBE
MW-2	2	40ml VOA	Al	Y	8010
MW-2	2	1 l Amber	-	Y	TPH-d
MW-2	1	1 l Amber	-	Y	O/G P/E

APPENDIX B

Certified Analytical Report
and
Chain of Custody Documentation

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Client Sample ID: MW-1

Spl#: 167996

Matrix: WATER

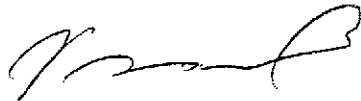
Sampled: January 26, 1998

Run#:10900

Analyzed: January 27, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	95	1
MTBE	N.D.	5.0	N.D.	103	1
BENZENE	N.D.	0.50	N.D.	104	1
TOLUENE	N.D.	0.50	N.D.	105	1
ETHYL BENZENE	N.D.	0.50	N.D.	99	1
XYLENES	N.D.	0.50	N.D.	100	1

Note: Hydrocarbon found in Gasoline Range is uncharacteristic of Gasoline Profile. If quantified using Gasoline's response factor, concentration would equal 76 ug/L.



Vincent Vancil
Chemist



Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SOB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Client Sample ID: MW-2

Spl#: 167997

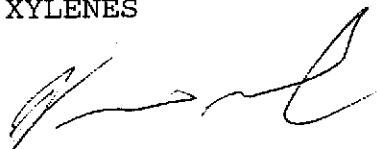
Matrix: WATER


Sampled: January 26, 1998

Run#: 10881

Analyzed: January 28, 1998

<u>ANALYTE</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u> <u>(ug/L)</u>	<u>BLANK</u> <u>RESULT</u> <u>(ug/L)</u>	<u>BLANK SPIKE</u> <u>(%)</u>	<u>DILUTION</u> <u>FACTOR</u>
GASOLINE	50000	2500	N.D.	97	50
MTBE	N.D.	250	N.D.	121	50
BENZENE	12000	25	N.D.	106	50
TOLUENE	12000	25	N.D.	106	50
ETHYL BENZENE	1600	25	N.D.	110	50
XYLENES	6700	25	N.D.	112	50


Vincent Vancil
Chemist


Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Sampled: January 26, 1998 Matrix: WATER Extracted: January 30, 1998
Run#: 10926 Analyzed: January 30, 1998

Spl#	CLIENT SPL ID	OIL & GREASE (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
167997	MW-2	N.D.	1.0	N.D.	96.5	1

Lulu Frazier
Lulu Frazier
Analyst

Michael Verona
Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998


Project#: 2808

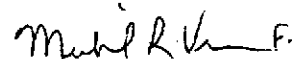
re: 2 samples for TPH - Diesel analysis.
Method: EPA 8015M

Matrix: WATER Extracted: January 28, 1998
Run#: 10887 Analyzed: January 29, 1998
Sampled: January 26, 1998

Spl#	CLIENT SPL ID	DIESEL (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
167996	MW-1	N.D.	50	N.D.	113	1
167997	MW-2	11000	50	N.D.	113	1

Note: Estimated contraction due to overlapping fuel patterns.


Bruce Havlik
Chemist


Alex Tam
Semivolatiles Supervisor

CHROMALAB, INC.

Environmental Services (SDB)

February 10, 1998

Submission #: 9802129

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Client Sample ID: MW-1

Spl#: 169999

Matrix: WATER

Sampled: January 26, 1998

Run#: 11115

Analyzed: February 9, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE SPIKE (%)	DILUTION FACTOR
VINYL CHLORIDE	N.D.	0.50	N.D.	--	1
CHLOROETHANE	N.D.	0.50	N.D.	--	1
TRICHLOROFLUOROMETHANE	N.D.	0.50	N.D.	--	1
1,1-DICHLOROETHENE	N.D.	0.50	N.D.	93.0	1
METHYLENE CHLORIDE	N.D.	5.0	N.D.	--	1
TRANS-1,2-DICHLOROETHENE	N.D.	0.50	N.D.	--	1
CIS-1,2-DICHLOROETHENE	N.D.	0.50	N.D.	--	1
1,1-DICHLOROETHANE	N.D.	0.50	N.D.	--	1
CHLOROFORM	N.D.	3.0	N.D.	--	1
1,1,1-TRICHLOROETHANE	N.D.	0.50	N.D.	--	1
CARBON TETRACHLORIDE	N.D.	0.50	N.D.	--	1
1,2-DICHLOROETHANE	N.D.	0.50	N.D.	--	1
TRICHLOROETHENE	0.70	0.50	N.D.	99.0	1
1,2-DICHLOROPROPANE	N.D.	0.50	N.D.	--	1
BROMODICHLOROMETHANE	N.D.	0.50	N.D.	--	1
2-CHLOROETHYL VINYL ETHER	N.D.	0.50	N.D.	--	1
TRANS-1,3-DICHLOROPROPENE	N.D.	0.50	N.D.	--	1
CIS-1,3-DICHLOROPROPENE	N.D.	0.50	N.D.	--	1
1,1,2-TRICHLOROETHANE	N.D.	0.50	N.D.	--	1
TETRACHLOROETHENE	10	0.50	N.D.	--	1
DIBROMOCHLOROMETHANE	N.D.	0.50	N.D.	--	1
CHLOROBENZENE	N.D.	0.50	N.D.	96.0	1
BROMOFORM	N.D.	2.0	N.D.	--	1
1,1,2,2-TETRACHLOROETHANE	N.D.	0.50	N.D.	--	1
1,3-DICHLOROBENZENE	N.D.	0.50	N.D.	--	1
1,4-DICHLOROBENZENE	N.D.	0.50	N.D.	--	1
1,2-DICHLOROBENZENE	N.D.	0.50	N.D.	--	1
CHLOROMETHANE	N.D.	1.0	N.D.	--	1
BROMOMETHANE	N.D.	1.0	N.D.	--	1

Note: SAMPLE WAS ANALYZED USING EPA METHOD 8260

Oleg Nemtsov

Oleg Nemtsov
Chemist

Michael Verona

Michael Verona
Operations Manager

for

CHROMALAB, INC.

Environmental Services (SDB)

February 3, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Client Sample ID: MW-2

Spl#: 167997

Matrix: WATER

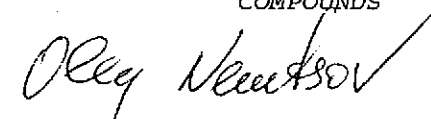
Sampled: January 26, 1998

Run#: 10989

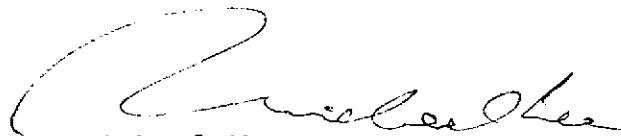
Analyzed: February 2, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
VINYL CHLORIDE	N.D.	5.0	N.D.	--	10
CHLOROETHANE	N.D.	5.0	N.D.	--	10
TRICHLOROFLUOROMETHANE	N.D.	5.0	N.D.	--	10
1,1-DICHLOROETHENE	N.D.	5.0	N.D.	132	10
METHYLENE CHLORIDE	N.D.	50	N.D.	--	10
TRANS-1,2-DICHLOROETHENE	N.D.	5.0	N.D.	--	10
CIS-1,2-DICHLOROETHENE	N.D.	5.0	N.D.	--	10
1,1-DICHLOROETHANE	N.D.	5.0	N.D.	--	10
CHLOROFORM	N.D.	30	N.D.	--	10
1,1,1-TRICHLOROETHANE	N.D.	5.0	N.D.	--	10
CARBON TETRACHLORIDE	N.D.	5.0	N.D.	--	10
1,2-DICHLOROETHANE	11	5.0	N.D.	--	10
Note: HIT WAS CONFIRMED BY SECOND COLUMN					
TRICHLOROETHENE	N.D.	5.0	N.D.	103	10
1,2-DICHLOROPROPANE	N.D.	5.0	N.D.	--	10
BROMODICHLOROMETHANE	N.D.	5.0	N.D.	--	10
2-CHLOROETHYL VINYL ETHER	N.D.	5.0	N.D.	--	10
TRANS-1,3-DICHLOROPROPENE	N.D.	5.0	N.D.	--	10
CIS-1,3-DICHLOROPROPENE	N.D.	5.0	N.D.	--	10
1,1,2-TRICHLOROETHANE	N.D.	5.0	N.D.	--	10
TETRACHLOROETHENE	N.D.	5.0	N.D.	--	10
DIBROMOCHLOROMETHANE	N.D.	5.0	N.D.	--	10
CHLOROBENZENE	N.D.	5.0	N.D.	99.0	10
BROMOFORM	N.D.	20	N.D.	--	10
1,1,2,2-TETRACHLOROETHANE	N.D.	5.0	N.D.	--	10
1,3-DICHLOROBENZENE	N.D.	5.0	N.D.	--	10
1,4-DICHLOROBENZENE	N.D.	5.0	N.D.	--	10
1,2-DICHLOROBENZENE	N.D.	5.0	N.D.	--	10
CHLOROMETHANE	N.D.	10	N.D.	--	10
BROMOMETHANE	N.D.	10	N.D.	--	10

Note: DETECTION LIMITS WERE RAISED DUE TO HIGH CONCENTRATION OF NON TARGET COMPOUNDS



Oleg Nemtsov
Chemist



Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Method: SW846 8020A Nov 1990 / 8015Mod

Matrix: WATER
Lab Run#: 10879

Analyzed: January 27, 1998

Analyte	Spike Amount		Spike Amount Found		Spike Recov		Control Limits	% RPD	% Li
	BSP (ug/L)	Dup	BSP (ug/L)	Dup	BSP (%)	Dup (%)			
GASOLINE	500	500	458	454	91.6	90.8	75-125	0.87	20
MTBE	100	100	102	99.5	102	99.5	75-125	2.48	20
BENZENE	100	100	93.0	96.0	93.0	96.0	77-123	3.17	20
TOLUENE	100	100	92.6	96.0	92.6	96.0	78-122	3.60	20
ETHYL BENZENE	100	100	105	109	105	109	70-130	3.74	20
XYLENES	300	300	291	300	97.0	100	75-125	3.04	20

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 9801303

February 2, 1998

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Method: SW846 8020A Nov 1990 / 8015Mod

Matrix: WATER
Lab Run#: 10900

Analyzed: January 28, 1998

Analyte	Spike Amount		Spike Amount Found		Spike Recov		Control Limits	% RPD	% Li
	BSP (ug/L)	Dup	BSP (ug/L)	Dup	BSP (%)	Dup (%)			
GASOLINE	500	500	477	459	95.4	91.8	75-125	3.85	20
MTBE	100	100	103	101	103	101	75-125	1.96	20
BENZENE	100	100	104	101	104	101	77-123	2.93	20
TOLUENE	100	100	105	101	105	101	78-122	3.88	20
ETHYL BENZENE	100	100	98.8	95.2	98.8	95.2	70-130	3.71	20
XYLENES	300	300	300	288	100	96.0	75-125	4.08	20

BS Smpl #: 168450
BSD Smpl #: 168451

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

OC_BSD1226 WANCE 17:21:58

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

re: **Surrogate** report for 1 sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod
Lab Run#: 10879
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
167996-1	MW-1	TRIFLUOROTOLUENE	94.1	65-13
167996-1	MW-1	4-BROMOFLUOROBENZENE	121	65-13

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
168171-1	Reagent blank (MDB)	TRIFLUOROTOLUENE	86.4	65-13
168171-1	Reagent blank (MDB)	4-BROMOFLUOROBENZENE	104	65-13
168172-1	Spiked blank (BSP)	TRIFLUOROTOLUENE	83.3	65-13
168172-1	Spiked blank (BSP)	4-BROMOFLUOROBENZENE	115	65-13
168173-1	Spiked blank duplicate (BSD)	TRIFLUOROTOLUENE	90.6	65-13
168173-1	Spiked blank duplicate (BSD)	4-BROMOFLUOROBENZENE	101	65-13
168174-1	Matrix spike (MS)	TRIFLUOROTOLUENE	89.7	65-13
168174-1	Matrix spike (MS)	4-BROMOFLUOROBENZENE	102	65-13
168175-1	Matrix spike duplicate (MSD)	TRIFLUOROTOLUENE	96.4	65-13
168175-1	Matrix spike duplicate (MSD)	4-BROMOFLUOROBENZENE	126	65-13

V132
QCSURR1229 VINCE 02-Feb-98

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

re: **Surrogate** report for 1 sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod
Lab Run#: 10881
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
167997-1	MW-2	TRIFLUOROTOLUENE	190	65-130
167997-1	MW-2	4-BROMOFLUOROBENZENE	121	65-130
167997-2	MW-2	TRIFLUOROTOLUENE	94.3	65-130
167997-2	MW-2	4-BROMOFLUOROBENZENE	89.5	65-130

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
168191-1	Reagent blank (MDB)	TRIFLUOROTOLUENE	110	65-130
168191-1	Reagent blank (MDB)	4-BROMOFLUOROBENZENE	114	65-130
168195-1	Spiked blank (BSP)	TRIFLUOROTOLUENE	108	65-130
168195-1	Spiked blank (BSP)	4-BROMOFLUOROBENZENE	108	65-130
168196-1	Spiked blank duplicate (BSD)	TRIFLUOROTOLUENE	100	65-130
168196-1	Spiked blank duplicate (BSD)	4-BROMOFLUOROBENZENE	109	65-130
168199-1	Matrix spike (MS)	TRIFLUOROTOLUENE	111	65-130
168199-1	Matrix spike (MS)	4-BROMOFLUOROBENZENE	90.8	65-130
168200-1	Matrix spike duplicate (MSD)	TRIFLUOROTOLUENE	102	65-130
168200-1	Matrix spike duplicate (MSD)	4-BROMOFLUOROBENZENE	97.5	65-130

V132
QCSURR1229 VINCE 02-Feb-98

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 9801303

February 2, 1998

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

re: **Surrogate** report for 1 sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod
Lab Run#: 10900
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
167996-2	MW-1	TRIFLUOROTOLUENE	93.3	65-13
167996-2	MW-1	4-BROMOFLUOROBENZENE	82.6	65-13

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
168449-1	Reagent blank (MDB)	TRIFLUOROTOLUENE	97.8	65-13
168449-1	Reagent blank (MDB)	4-BROMOFLUOROBENZENE	80.5	65-13
168450-1	Spiked blank (BSP)	TRIFLUOROTOLUENE	87.0	65-13
168450-1	Spiked blank (BSP)	4-BROMOFLUOROBENZENE	81.8	65-13
168451-1	Spiked blank duplicate (BSD)	TRIFLUOROTOLUENE	83.2	65-13
168451-1	Spiked blank duplicate (BSD)	4-BROMOFLUOROBENZENE	79.5	65-13

V132
QCSURR1229 VINCE 02-Feb-98

CHROMALAB, INC.

Environmental Services (SDB)

February 2, 1998

Submission #: 9801303

AQUA SCIENCE ENGINEERS INC

Atten: Charlie Rous

Project: LIM
Received: January 26, 1998

Project#: 2808

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

Method: SW846 8020A Nov 1990 / 8015Mod

Matrix: WATER
Lab Run#: 10881

Analyzed: January 29, 1998

Analyte	Spike Amount		Spike Amount Found		Spike Recov		Control Limits	% RPD	% RPD
	BSP (ug/L)	Dup	BSP (ug/L)	Dup	BSP (%)	Dup (%)			
GASOLINE	500	500	484	494	96.8	98.8	75-125	190	20
MTBE	100	100	121	97.4	121	97.4	75-125	200	20
BENZENE	100	100	106	99.9	106	99.9	77-123	200	20
TOLUENE	100	100	106	101	106	101	78-122	198	20
ETHYL BENZENE	100	100	110	104	110	104	70-130	200	20
XYLENES	300	300	336	324	112	108	75-125	200	20

0120/110/111e-141111

Aqua Science Engineers, Inc.
 2411 Old Crow Canyon Road, #4,
 San Ramon, CA 94583
 (510) 820-9391 - FAX (510) 837-4853

Chain of Custody

DATE 1/26/98 PAGE 1 OF 1

SAMPLER'S (SIGNATURE) [Signature] (PHONE NO.) 820-9391 PROJECT NAME LIM NO. 2808
 ADDRESS 250 8th St, Oakland

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

5 DAY TAT

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GASOLINE/BTEX/PAHs (EPA 5030/8015)	TPH-GASOLINE/BTEX/PAHs (EPA 5030/8015-8020)	TPH-DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/6020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NEUTRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	SUBM #: 9801303 REP: FM	CLIENT: ASE	DUE: 02/02/98	REF #: 37856
					MW-1	1/26/98	13:00	H ₂ O	3 VOA	X	X	X	X	X	X	X	X	X	X
MW-1	↓	13:00	↓	2 l	X	X	X	X	X	X	X	X	X	X					
MW-2	↓	12:15	↓	4 WA	X	X	X	X	X	X	X	X	X	X					
MW-2	↓	12:15	↓	3 l	X	X	X	X	X	X	X	X	X	X					

RELINQUISHED BY: <u>[Signature]</u> 15:45 (signature) (time) Charlie Rous 1/26/98 (printed name) (date) Company: ASE	RECEIVED BY: <u>[Signature]</u> 15:45 (signature) (time) MUSA AHER 15:45 (signature) (time) Company: Criminal Lab (printed name) (date)	RELINQUISHED BY: <u>[Signature]</u> 16:10 (signature) (time) Company: Criminal Lab (printed name) (date)	RECEIVED BY LABORATORY: <u>[Signature]</u> 14:11 (signature) (time) Chris Poulley 1/26/98 (signature) (time) Company: Criminal Lab (printed name) (date)	COMMENTS: <u>5 DAY TAT</u>
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CHROMALAB, INC.

Environmental Service (SDB)

Sample Receipt Checklist

Client Name: AQUA SCIENCE ENGINEERS INC

Date/Time Received: 01/26/98 | 1545

Reference/Submis: 37856 | 9801303

Received by: MA

Checklist completed by: [Signature]

1-27-98
Date

Reviewed by: OR 1/27/98
Initials | Date

Matrix: WATER

Carrier name: Client - C/L

- | | | | |
|---|---|------------------------------------|---|
| Shipping container/cooler in good condition? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Temp: <u>4.2</u> °C |
| Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | No VOA vials submitted <input type="checkbox"/> |
| Water - pH acceptable upon receipt: <u>ps</u> | Adjusted? <input type="checkbox"/> | Checked by <u>chemist for VOAs</u> | |

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: _____

