



August 7, 1995

1585

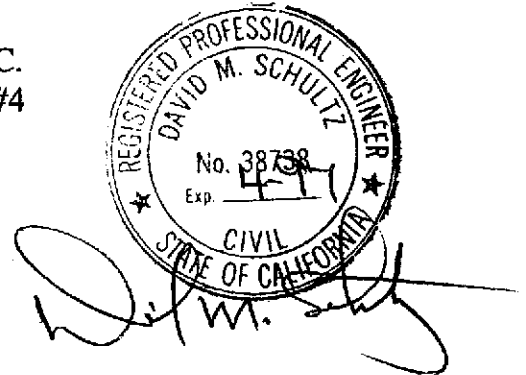
QUARTERLY GROUNDWATER MONITORING REPORT
JULY 14, 1995 GROUNDWATER SAMPLING

at

Lim Family Property
250 8th Street
Oakland, California

ENVIRONMENTAL
REGISTRATION
50 AUG - 8 PM 1:50

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) quarterly 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 quarterly groundwater monitoring program. Analytical results for these sampling periods are presented in Tables One and Two.

3.0 MONITORING WELL SAMPLING

On July 14, 1995, 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 water level measured prior to purging water from the well, groundwater samples were collected from the wells with dedicated polyethylene bailers. The groundwater samples from each well were decanted from the bailer into five (5) 40-ml volatile organic analysis (VOA) vials and three (3) 1-liter amber glass bottles. All of the samples were preserved with hydrochloric acid, labeled, placed in protective foam sleeves, and stored on ice for transport to American Environmental Network (AEN) of Pleasant Hill, California (DOHS #1172) under chain of custody. No hydrocarbon odor was present in groundwater from monitoring well MW-1 during the purging, but a strong hydrocarbon odor was present in groundwater from monitoring well MW-2 at the time of the sampling. A hydrocarbon sheen was present on the surface of the groundwater in monitoring well MW-2.

Well sampling purge water was contained in a DOT 17H 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.

4.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed by AEN for TPH-G by modified EPA Method 5030/8015, TPH-D by modified EPA Method 3510/8015, benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Method 8020, volatile organic compounds (VOCs) by EPA Method 8010 and oil and grease (O&G) by Standard Method 5520 C&F. The analytical results are tabulated below in Tables One and Two, and the certified analytical report and chain of custody record are included in Appendix B.

TABLE ONE
Summary of Chemical Analysis of GROUNDWATER Samples
TPH-G, TPH-D and BTEX
All results are in parts per billion

Boring	Date Sampled	TPH Gasoline	TPH Diesel	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW-1	1-30-95	740	200	3	5	1	4
	4-12-95	400	500	<0.5	<0.5	3	2
	7-14-95	520 ✓	400 ✓	1 ✓	<0.5	2	3
MW-2	1-30-95	88,000	800	19,000	18,000	2,400	10,000
	4-12-95	110,000	990	21,000	28,000	2,800	14,000
	7-14-95	120,000 ✓	5,000 ✓	20,000 ✓	25,000	3,200	15,000
EPA METHOD		5030/ 8015	3550/ 8015	8020	8020	8020	8020

TABLE TWO
Summary of Chemical Analysis of GROUNDWATER Samples
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

5.0 CONCLUSIONS AND RECOMMENDATION

Very high hydrocarbon concentrations were detected in monitoring well MW-2, downgradient of the site. Only low hydrocarbon concentrations were detected in on-site monitoring well MW-1. These concentrations are consistent with previous findings.

It appears that further assessment of the extent of contamination as well as soil and groundwater remediation will be required at the site in the future. ASE recommends at this time that groundwater monitoring be continued at the site on a quarterly basis.

6.0 REPORT LIMITATIONS


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

It does not fully characterize the site for contamination resulting from unknown sources, or for parameters not analyzed for by the laboratory. All of the laboratory work cited in this report was prepared under the direction of an independent CSDHS 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 you with your environmental needs. Should you have any questions or comments, please feel free to call us at (510) 820-9391.

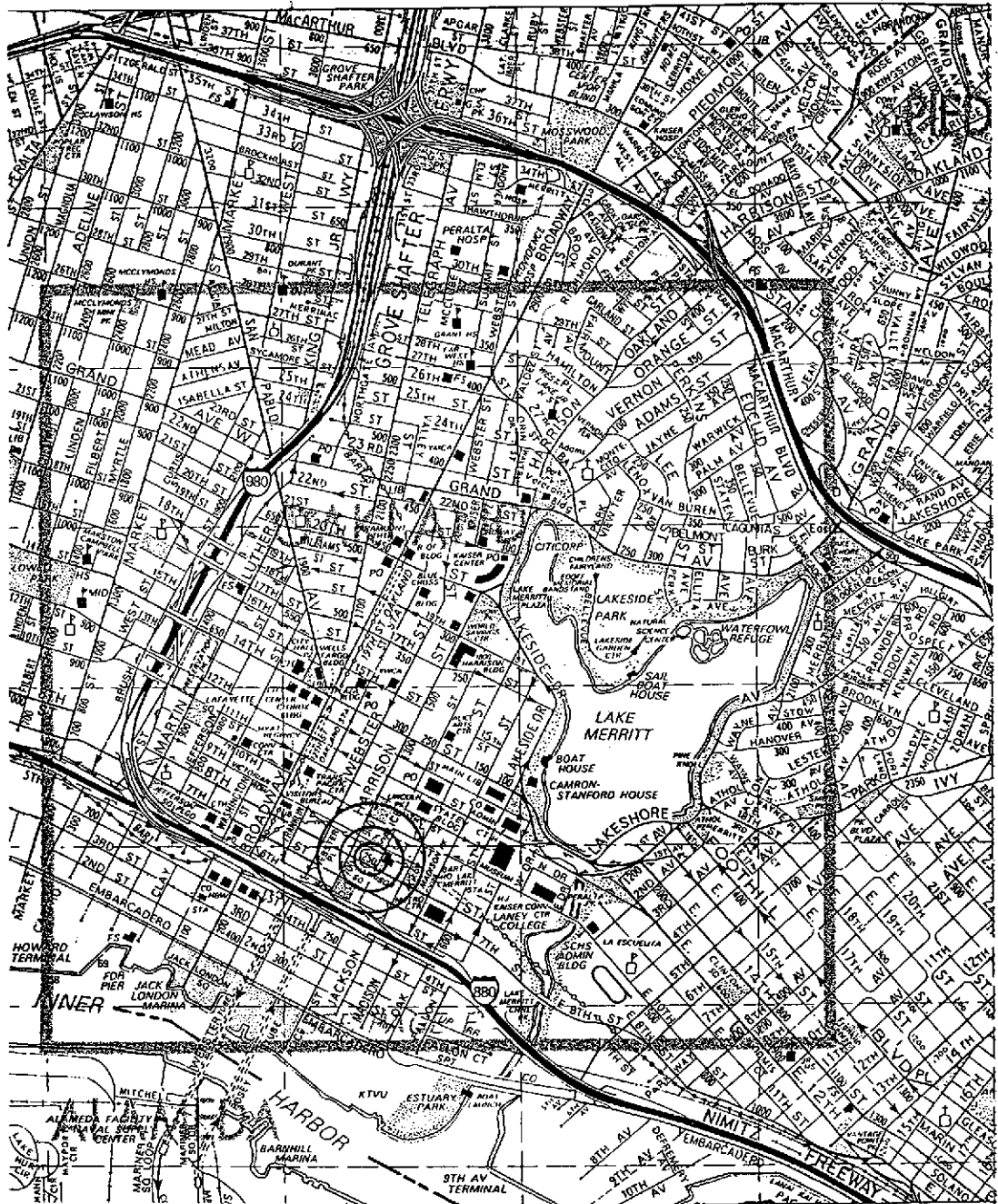
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.


Robert E. Kitay, R.E.A.
Project Geologist



Attachments: Figures 1 and 2
Appendices A and B



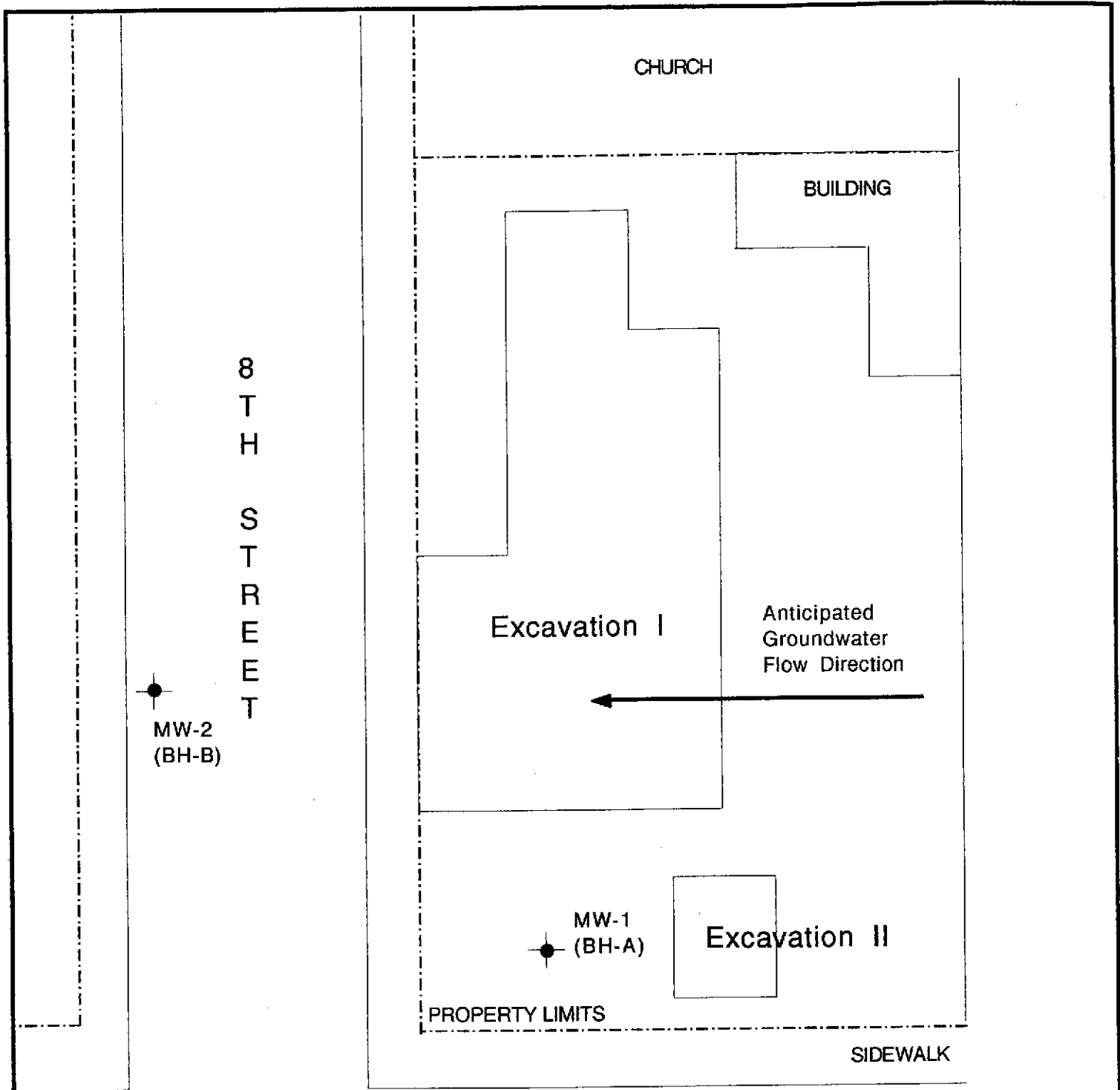
SITE LOCATION MAP

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



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CHURCH

BUILDING

Excavation I

Anticipated
Groundwater
Flow Direction

MW-2
(BH-B)

MW-1
(BH-A)

Excavation II

PROPERTY LIMITS

SIDEWALK

Alice Street

SITE PLAN

LIM PROPERTY
250 8th Street
Oakland, California

AQUA SCIENCE ENGINEERS, INC. Figure 2

LEGEND

Monitoring Well Location
With Boring I.D.

NORTH

SCALE
1" = 30'

APPENDIX A

Well Sampling Field Log



WELL SAMPLING FIELD LOG

Project Name and Address: Lim, 250-8th Street, Oakland, CA
 Job #: 2808 Date of sampling: 7-14-95
 Well Name: MW-2 Sampled by: BK
 Total depth of well (feet): 25.82 Well diameter (inches): 2
 Depth to water before sampling (feet): 16.02
 Thickness of floating product if any: stream
 Depth of well casing in water (feet): 9.80
 Number of gallons per well casing volume (gallons): 1.7
 Number of well casing volumes to be removed: 4
 Req'd volume of groundwater to be purged before sampling (gallons): 6.8
 Equipment used to purge the well: 12 volt PVC pump
 Time Evacuation Began: 12:30 Time Evacuation Finished: 12:45
 Approximate volume of groundwater purged: 8 gallons
 Did the well go dry?: No After how many gallons: —
 Time samples were collected: 12:50
 Depth to water at time of sampling: 15.98
 Percent recovery at time of sampling: 77%
 Samples collected with: Dedicated polyethylene bailer
 Sample color: None Odor: strong heador
 Description of sediment in sample: None

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
<u>Initial</u>	<u>79.5</u>	<u>7.67</u>	<u>812</u>
<u>2 gals</u>	<u>76.3</u>	<u>7.39</u>	<u>764</u>
<u>4 gals</u>	<u>73.1</u>	<u>7.02</u>	<u>730</u>
<u>6 gals</u>	<u>73.0</u>	<u>7.01</u>	<u>722</u>
<u>8 gals</u>	<u>73.0</u>	<u>7.03</u>	<u>720</u>

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
<u>MW-2</u>	<u>3</u>	<u>40-ml vials</u>	<u>NA</u>	<u>Yes</u>	<u>TPH-G/BTEX</u>
<u>↓</u>	<u>2</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>EPA 8010</u>
<u>↓</u>	<u>2</u>	<u>1-liter glass</u>	<u>↓</u>	<u>↓</u>	<u>TPH-D</u>
<u>↓</u>	<u>1</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>0.6</u>

APPENDIX B

**Analytical Report and Chain of Custody Forms
For Groundwater Samples**

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

AQUA SCIENCE ENGINEERS, INC
2411 OLD CROW CANYON RD. #4
SAN RAMON, CA 94583

ATTN: ROBERT KITAY
CLIENT PROJ. ID: 2808
CLIENT PROJ. NAME: LIM PROPERTY

REPORT DATE: 08/04/95

DATE(S) SAMPLED: 07/14/95 ✓

DATE RECEIVED: 07/17/95

AEN WORK ORDER: 9507163

PROJECT SUMMARY:

On July 17, 1995, this laboratory received 2 water sample(s).

Client requested sample(s) be analyzed for organic parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Director

AQUA SCIENCE ENGINEERS, INC.

AEN JOB NO: 9507163
 DATE SAMPLED: 07/14/95
 DATE RECEIVED: 07/17/95
 CLIENT PROJ. ID: 2808

Client Sample Id	AEN Lab Id	Purgeable Hydrocarbons as Gasoline (ug/L)	Extractable Hydrocarbons as Diesel (ug/L)	Oil & Grease (ug/L)	Hydrocarbons (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
MW-1	01	520 ✓	400 ✓	ND ✓	ND ✓	1 ✓	ND	2	3
MW-2	02	120,000 ✓	5,000 ✓	25,000 ✓	23,000 ✓	20,000 (200)* ✓	25,000 (200)*	3,200 (200)*	15,000 (800)*
Reporting Limit		50	50	500	500	0.5	0.5	0.5	2
EPA Method:		5030 GCFID	3510 GCFID	5520C	5520F	8020	8020	8020	8020
Date Extracted:		NA	07/21/95	07/23/95	07/23/95	NA	NA	NA	NA
Date(s) Analyzed:		07/19/95	07/22/95	07/24/95	07/24/95	07/19/95	07/19/95	07/19/95	07/19/95

NA = Not Applicable
 ND = Not Detected

* Reporting limits elevated for BTEX due to high levels of target compounds. Sample run at dilution.

AQUA SCIENCE ENGINEERS, INC

SAMPLE ID: MW-1
 AEN LAB NO: 9507163-01
 AEN WORK ORDER: 9507163
 CLIENT PROJ. ID: 2808

DATE SAMPLED: 07/14/95
 DATE RECEIVED: 07/17/95
 REPORT DATE: 08/04/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	07/19/95
Bromoform	75-25-2	ND	0.5	ug/L	07/19/95
Bromomethane	74-83-9	ND	2	ug/L	07/19/95
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	07/19/95
Chlorobenzene	108-90-7	ND	0.5	ug/L	07/19/95
Chloroethane	75-00-3	ND	2	ug/L	07/19/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	07/19/95
Chloroform	67-66-3	ND	0.5	ug/L	07/19/95
Chloromethane	74-87-3	ND	2	ug/L	07/19/95
Dibromochloromethane	124-48-1	ND	0.5	ug/L	07/19/95
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	07/19/95
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	07/19/95
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	07/19/95
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	07/19/95
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	07/19/95
1,2-Dichloroethane	107-06-2	ND	0.5	ug/L	07/19/95
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	07/19/95
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	07/19/95
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	07/19/95
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	07/19/95
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	07/19/95
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	07/19/95
Methylene Chloride	75-09-2	ND	2	ug/L	07/19/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	07/19/95
Tetrachloroethene	127-18-4	4 *	0.5	ug/L	07/19/95
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	07/19/95
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	07/19/95
Trichloroethene	79-01-6	ND	0.5	ug/L	07/19/95
Trichlorofluoromethane	75-69-4	ND	2	ug/L	07/19/95
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	07/19/95
Vinyl Chloride	75-01-4	ND	2	ug/L	07/19/95

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

AQUA SCIENCE ENGINEERS, INC

SAMPLE ID: MW-2
 AEN LAB NO: 9507163-02
 AEN WORK ORDER: 9507163
 CLIENT PROJ. ID: 2808

DATE SAMPLED: 07/14/95
 DATE RECEIVED: 07/17/95
 REPORT DATE: 08/04/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	5	ug/L	07/25/95
Bromoform	75-25-2	ND	5	ug/L	07/25/95
Bromomethane	74-83-9	ND	20	ug/L	07/25/95
Carbon Tetrachloride	56-23-5	ND	5	ug/L	07/25/95
Chlorobenzene	108-90-7	ND	5	ug/L	07/25/95
Chloroethane	75-00-3	ND	20	ug/L	07/25/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	5	ug/L	07/25/95
Chloroform	67-66-3	ND	5	ug/L	07/25/95
Chloromethane	74-87-3	ND	20	ug/L	07/25/95
Dibromochloromethane	124-48-1	ND	5	ug/L	07/25/95
1,2-Dichlorobenzene	95-50-1	ND	5	ug/L	07/25/95
1,3-Dichlorobenzene	541-73-1	ND	5	ug/L	07/25/95
1,4-Dichlorobenzene	106-46-7	ND	5	ug/L	07/25/95
Dichlorodifluoromethane	75-71-8	ND	20	ug/L	07/25/95
1,1-Dichloroethane	75-34-3	ND	5	ug/L	07/25/95
1,2-Dichloroethane	107-06-2	35*	5	ug/L	07/25/95
1,1-Dichloroethene	75-35-4	ND	5	ug/L	07/25/95
cis-1,2-Dichloroethene	156-59-2	ND	5	ug/L	07/25/95
trans-1,2-Dichloroethene	156-60-5	ND	5	ug/L	07/25/95
1,2-Dichloropropane	78-87-5	ND	5	ug/L	07/25/95
cis-1,3-Dichloropropene	10061-01-5	ND	5	ug/L	07/25/95
trans-1,3-Dichloropropene	10061-02-6	ND	5	ug/L	07/25/95
Methylene Chloride	75-09-2	ND	20	ug/L	07/25/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	5	ug/L	07/25/95
Tetrachloroethene	127-18-4	ND	5	ug/L	07/25/95
1,1,1-Trichloroethane	71-55-6	ND	5	ug/L	07/25/95
1,1,2-Trichloroethane	79-00-5	ND	5	ug/L	07/25/95
Trichloroethene	79-01-6	ND	5	ug/L	07/25/95
Trichlorofluoromethane	75-69-4	ND	20	ug/L	07/25/95
1,1,2Trichlorotrifluoroethane	76-13-1	ND	5	ug/L	07/25/95
Vinyl Chloride	75-01-4	ND	20	ug/L	07/25/95

Reporting limits elevated due to high levels of non-target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9507163

CLIENT PROJECT ID: 2808

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 3510 GCFID

AEN JOB NO: 9507163
 DATE EXTRACTED: 07/21/95
 INSTRUMENT: C
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery n-Pentacosane
07/22/95	MW-1	01	97
07/22/95	MW-2	02	I
QC Limits:			59-118
I: Matrix interference			

DATE EXTRACTED: 07/21/95
 DATE ANALYZED: 07/21/95
 SAMPLE SPIKED: DI WATER
 INSTRUMENT: C

Method Spike Recovery Summary

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Diesel	1.82	85	1	65-103	12

Daily method blanks for all associated analytical runs showed no contamination over the reporting limit.

QUALITY CONTROL DATA

METHOD: SM 5520

AEN JOB NO: 9507163
 DATE EXTRACTED: 07/14/95
 DATE ANALYZED: 07/17/95
 SAMPLE SPIKED: DI WATER
 INSTRUMENT: IR
 MATRIX: WATER

Method Spike Recovery Summary

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Oil	6.78	97	2	80-109	5

Daily method blanks for all associated analytical runs showed no contamination over the reporting limit.

QUALITY CONTROL DATA

METHOD: EPA 8010

AEN JOB NO: 9507163
 INSTRUMENT: I
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery	
			Bromochloro-methane	1-Bromo-3-chloro-propane
07/19/95	MW-1	01	97	99
07/25/95	MW-2	02	99	107
QC Limits:			70-130	70-130

DATE ANALYZED: 07/20/95
 SAMPLE SPIKED: 9507122-02
 INSTRUMENT: I

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
1,1-Dichloroethene	50	102	14	37-156	20
Trichloroethene	50	106	8	54-122	20
Chlorobenzene	50	94	6	54-141	20

Daily method blanks for all associated analytical runs showed no contamination over the reporting limit.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9507163
 INSTRUMENT: H
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery	
			Fluorobenzene	
07/19/95	MW-1	01	97	
07/19/95	MW-2	02	100	
QC Limits:			92-109	

DATE ANALYZED: 07/19/95
 SAMPLE SPIKED: LCS
 INSTRUMENT: H

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	36.1	100	4	60-120	20
Toluene	99.3	109	4	60-120	20
Hydrocarbons as Gasoline	1000	107	6	60-120	20

Daily method blanks for all associated analytical runs showed no contamination over the reporting limit.

*** END OF REPORT ***

