aqua science engineers inc.

November 22, 1999

REPORT
of
ADDITIONAL WELL INSTALLATION
AND
QUARTERLY GROUNDWATER SAMPLING
ASE JOB NO. 3515
at
2221 Union Street
Oakland, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
208 West El Pintado Road
Danville, CA 94526
(925) 820-9391

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1.0 INTRODUCTION

This report presents the methods and findings of Aqua Science Engineers, Inc. (ASE)'s installation of an additional monitoring well and the results of the quarterly groundwater monitoring at 2221 Union Street in Oakland, California (Figure 1). The additional monitoring well is to assist in delineating the extent of volatile organic compound (VOC) contamination in soil and groundwater previously identified in borings and existing monitoring wells installed at the site.

2.0 SITE HISTORY

The site is currently vacant and for sale by a Trustee of the property. The site houses two buildings, a concrete-surfaced yard and a dirt lot. Most recently, the site was the home of California Brake and Clutch. A recent Phase I Environmental Site Assessment prepared for the site identified a surface water drain located in the exterior yard area (Figure 2). The Phase I suggested drilling a soil boring near the drain for the collection of soil samples.

2.1 June 1999 Hand Auger Drilling

On June 22, 1999, ASE removed the dirt and debris from the bottom of the drain, cored through the concrete bottom of the drain, and using a hand auger, drilled soil boring BH-A to a depth of 3-feet below the bottom of the drain (Figure 2). Soil samples BH-A @ 1' and BH-A @ 3' were collected from the boring. Soil sample BH-A @ 1' was analyzed by Chromalab, Inc. of Pleasanton, California (ELAP #1094) for total petroleum hydrocarbons as gasoline (TPH-G) and diesel (TPH-D) by EPA Method 8015M, benzene, toluene, ethylbenzene, and total xylenes (collectively known as BTEX) by EPA Method 8020, methyl tertiary butyl ether (MTBE) by EPA Method 8020, oil and grease by Standard Method 5520E, halogenated volatile organic compounds (HVOCs) by EPA Method 8010, and the LUFT five metals by EPA Method 6010. The only compound identified in the soil above action levels was tetrachloroethene (PCE) at 390 parts per million (ppm). Soil sample BH-A @ 3' was placed on hold at the laboratory. It was not subsequently analyzed because it was saturated, and had the same appearance and odor as the 1' sample.

2.2 July 1999 Geoprobe Assessment

On July 12, 1999, ASE drilled six (6) soil borings at the site using a Geoprobe in an effort to delineate the extent of VOCs in soil and groundwater. Four of the borings were placed near the outdoor drain. Two of the borings were drilled inside one of the buildings at the location of two former parts cleaning bins that used methyl-ethyl-ketone (MEK) as a cleaning solvent (Figure 2). Detectable concentrations of PCE, up to 53 parts per billion (ppb), were identified in soil samples collected from borings BH-B and BH-C, near the former outdoor drain. Up to 230 ppb trichloroethene (TCE) and 17 ppb cis-1,2-dichloroethene (cis-1,2-DCE) were identified in soil samples collected from boring BH-C. None of the samples collected from the remaining soil borings contained detectable concentrations of any of the VOCs analyzed.

Grab water samples were collected from all seven of the borings. Detectable concentrations of VOCs were identified in all water samples except from borehole BH-G. Water samples from borehole BH-A had the most significant concentrations: 1,300 ppb PCE, 1,500 ppb TCE, and 190 ppb cis-1,2-DCE. The remaining compounds and concentrations were as follows: 42 ppb PCE in borehole BH-E; 170 ppb TCE in borehole BH-B; 130 ppb cis-1,2-DCE in borehole BH-B; 21 ppb trans-1,2-DCE in borehole BH-B; and 11 ppb 1,1-DCE in borehole BH-F. For complete details regarding the Geoprobe assessment activities, see the ASE report dated July 28, 1999.

2.3 Oil/Water Separator Identification

An unidentified underground pipe was noted exiting the outdoor drain. A request was made by Ms. Eva Chu of the Alameda County Health Care Services Agency (ACHCSA) to identify the endpoint of this pipe. On August 13, 1999, ASE subcontracted Subtronic Corporation to identify the pipe's path underground. An oil/water separator was identified approximately 15-feet northwest of the outdoor drain. The separator measured 4-feet square and approximately 3-feet deep. The underground piping connected the two units. An exit pipe was noted leaving the separator to the west and exiting the property underground, likely into a storm sewer pipe.

2.4 August 1999 Soil Borings and Well Installation

On August 27, 1999, Gregg Drilling of Martinez, California, drilled soil borings MW-1, MW-2, and MW-3 at the site using a Rhino drill rig equipped with 8-inch diameter hollow-stem augers (Figure 2). Groundwater monitoring wells MW-1, MW-2, and MW-3 were subsequently constructed in their respective borings.

The soil sample collected from soil boring MW-1 contained 53 ppb TCE and 180 ppb PCE. The soil sample collected from soil boring MW-2 contained 31 ppb PCE. The soil sample collected from soil boring MW-3 contained no HVOCs above the laboratory reporting limits.

The groundwater sample collected from monitoring well MW-1 contained 3.9 ppb cis-1,2-DCE, 58 ppb 1,1-DCA, 3.2 ppb TCE and 9.9 ppb PCE. The groundwater sample collected from monitoring well MW-2 contained 1.7 ppb cis-1,2-DCE, 4.5 ppb TCE and 48 ppb PCE. The groundwater sample collected from monitoring well MW-3 contained 34 ppb cis-1,2-DCE, 22 ppb 1,2-DCA, 21 ppb TCE and 38 ppb PCE. There were no other HVOCs detected in any of the groundwater samples analyzed above the laboratory reporting limits.

3.0 SCOPE OF WORK

ASE prepared the following scope of work (SOW) to further assess the subsurface soil and groundwater near the outdoor drain.

1) Prepare a workplan and site specific health and safety plan for approval by Ms. Eva Chu of the ACHCSA.

2) Obtain a subsurface drilling permit from the Alameda County Public Works Agency (ACPWA). Call Underground Service Alert (USA) to have all public utilities in the area marked prior to drilling.

3) Drill one soil boring to approximately 20-feet below ground surface (bgs) at the site.

4) Analyze one soil sample collected from the soil boring at a CAL-EPA certified environmental laboratory for HVOCs by EPA Method 8260.

5) Install a 2-inch diameter groundwater monitoring well in the boring described in task 3.

6) Develop the monitoring well.

7) Collect groundwater samples from each monitoring well for analyses.

8) Analyze the groundwater sample at a CAL-EPA certified analytical laboratory for HVOCs by EPA Method 8260.

9) Survey the top of casing elevation of the well, and determine the groundwater flow direction and gradient beneath the site.

10) Prepare a report detailing the methods and findings of this assessment.

Details of the assessment are presented below.

4.0 DRILLING SOIL BORING AND COLLECTING SAMPLES

4.1 Drilling and Collection of Soil Samples

Prior to drilling, ASE obtained an Alameda County Public Works Agency (ACPWA) drilling permit (Appendix A). ASE also notified Underground Service Alert (USA) to have underground public utilities in the vicinity of the site marked prior to drilling.

On October 27, 1999, HEW Drilling Company of Palo Alto, California drilled soil boring MW-4 at the site using a mobile B-45 drill rig equipped with 8-inch diameter hollow-stem augers (Figure 2). Groundwater monitoring well MW-4 was subsequently constructed in this boring. The drilling was directed by ASE associate geologist Ian Reed.

Undisturbed soil samples were collected at 5-foot intervals as drilling progressed for lithologic and hydrogeologic description and for possible chemical analyses. The samples were collected by driving a split-barrel drive sampler lined with 2-inch diameter brass tubes ahead of the auger tip with successive blows from a 140-lb. hammer dropped 30-inches. One tube from each sampling interval was immediately trimmed, sealed with Teflon tape, plastic end caps and duct tape, labeled, sealed in a plastic bag and stored on ice for transport to Chromalab, Inc. of Pleasanton, California (ELAP #1094) under chain of custody. Soil from the remaining tubes was described by an ASE geologist using the Unified Soil Classification System and was screened for volatile compounds with an Organic Vapor Meter (OVM). The soil was screened by emptying soil from one of the sample tubes into a plastic bag. The bag was then sealed and placed in the sun for

approximately 10 minutes. After the hydrocarbons were allowed to volatilize, the OVM measured the vapor in the bag through a small hole punched in the bag. OVM readings are used as a screening tool only, since the procedures are not as rigorous as those used in the laboratory.

Drilling equipment was steam-cleaned prior to use and sampling equipment was washed with a TSP solution between sampling intervals to prevent cross-contamination. Drill cuttings were contained in sealed and labeled 55-gallon steel drums and left on-site for temporary storage until off-site disposal can be arranged.

4.2 Site Specific Geology

Sediments encountered during drilling generally consisted of clayey silt from 1-foot bgs to 9-feet bgs, gravelly silt from 9-feet bgs to 14.5-feet bgs, and sandy silt from 14.5-feet bgs to the total depth explored of 19.5-feet bgs. The boring log and well construction details are included as Appendix B.

5.0 ANALYTICAL RESULTS FOR SOIL

The soil sample collected from 4.5-feet bgs in boring MW-4 was submitted to Chromalab, Inc. for analysis. The sample was analyzed for HVOCs by modified EPA Method 8260A. The analytical results for soil are included in Table One and a copy of the certified analytical report and chain of custody form are included in Appendix C.

There were no HVOCs detected above the laboratory reporting limits.

6.0 MONITORING WELL CONSTRUCTION AND DEVELOPMENT

6.1 Monitoring Well Construction

Groundwater monitoring well MW-4 was constructed in boring MW-4 with 2-inch diameter, 0.020-inch factory slotted, flush-threaded, schedule 40 PVC well screen and blank casing. The well is screened between 2.5-feet bgs and 19.5-feet bgs to monitor the first water bearing zone encountered. Lonestar #3 Monterey sand occupies the annular space between the borehole and the casing from the bottom of the boring to approximately 0.5-feet above the well screen. A 0.5-foot thick hydrated bentonite layer separates the sand from the overlying cement surface seal. The wellhead is secured with a locking wellplug beneath an at-grade, traffic-rated vault.

6.2 Monitoring Well Development

Monitoring well MW-4 was developed at the time of well installation prior to placing the bentonite seal. The well was developed using multiple episodes of surge-block agitation and submersible pumping. Well development purge water was contained in sealed and labeled 55-gallon steel drums and left on-site for temporary storage until off-site disposal can be arranged.

7.0 QUARTERLY MONITORING WELL SAMPLING

On November 2, 1999, ASE associate geologist Ian Reed collected groundwater samples from all four site monitoring wells for analysis. Prior to sampling, the wells were purged of four well casing volumes of groundwater. The pH, temperature and conductivity of the purge water were monitored during evacuation, and samples were not collected until these parameters stabilized. Samples were collected from each well using dedicated polyethylene bailers. The groundwater samples were decanted from the bailers into 40-ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid, labeled, placed in protective foam sleeves, and stored on ice for transport to Chromalab, Inc. of Pleasanton, California under chain of custody. Well sampling purge water was contained in sealed and labeled 55-gallon steel drums and left on-site for temporary storage until off-site disposal can be arranged. See Appendix D for a copy of the Field Logs.

8.0 GROUNDWATER ELEVATIONS

On November 2, 1999, ASE re-surveyed the top of casing elevation of all four site wells relative to a site datum. ASE measured the depth to water in all site wells on November 2, November 4 and November 9, 1999 using an electric water level sounder. Top of casing elevations, depths to groundwater and groundwater elevations are presented below in Table Two.

Groundwater elevation (potentiometric surface) maps for these dates are shown as Figures 3, 4 and 5. The groundwater flow direction on these dates were generally to the north, east or northeast. Previous data for the site showed groundwater flow to the west. A property across Union Street has generally shown groundwater flow to the east. Based on this information, it appears that the groundwater flow direction and gradient beneath the site are highly variable and may be tidally influenced. It is

also likely that the groundwater flow direction and gradient are affected by the low permeability fill material in the site vicinity.

9.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed by Chromalab for HVOCs by EPA Method 8260A. The analytical results are tabulated in Table Three, and copies of the certified analytical report and chain of custody form are included in Appendix E.

The groundwater sample collected from monitoring well MW-1 contained 17 ppb cis-1,2-DCE, 1.7 ppb 1,1-DCA, 15 ppb TCE and 100 ppb PCE. The groundwater sample collected from monitoring well MW-2 contained 1.4 ppb cis-1,2-DCE, 9.5 ppb TCE and 110 ppb PCE. The groundwater sample collected from monitoring well MW-3 contained 35 ppb cis-1,2-DCE, 22 ppb 1,1-DCA, 21 ppb TCE and 59 ppb PCE. The groundwater sample collected from monitoring well MW-4 contained 21 ppb cis-1,2-DCE, 14 ppb 1,1-DCA, 0.74 ppb TCE, 0.68 ppb PCE, 2.7 ppb 1,1-DCE, 2.1 ppb 1,2-DCA, 12 ppb chloroethane, and 6.3 ppb vinyl chloride. There were no other HVOCs detected in any of the groundwater samples analyzed above the laboratory reporting limits.

10.0 CONCLUSIONS AND RECOMMENDATIONS

There were no HVOCs detected above the laboratory reporting limit in the soil sample collected from 4.5-feet bgs in boring MW-4.

The groundwater sample collected from monitoring well MW-1 contained 17 ppb cis-1,2-DCE, 1.7 ppb 1,1-DCA, 15 ppb TCE and 100 ppb PCE. The groundwater sample collected from monitoring well MW-2 contained 1.4 ppb cis-1,2-DCE, 9.5 ppb TCE and 110 ppb PCE. The groundwater sample collected from monitoring well MW-3 contained 35 ppb cis-1,2-DCE, 22 ppb 1,1-DCA, 21 ppb TCE and 59 ppb PCE. The groundwater samples collected from monitoring well MW-4 contained 21 ppb cis-1,2-DCE, 14 ppb 1,1-DCA, 0.74 ppb TCE, 0.68 ppb PCE, 2.7 ppb 1,1-DCE, 2.1 ppb 1,2-DCA, 12 ppb chloroethane, and 6.3 ppb vinyl chloride. There were no other HVOCs detected in any of the groundwater samples analyzed above the laboratory reporting limits.

The PCE, TCE, and cis-1,2-DCE concentrations in groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3 generally increased, but still remain well below the Oakland Risk Based Corrective

Action (RBCA) levels for vapor intrusion from groundwater to an indoor air scenario.

ASE is scheduled to perform soil remedation activities in the form of soil over-excavation and off-site disposal in the area surrounding the outdoor drain. Groundwater monitoring will be conducted one additional time after soil remediation, in the month of February 2000.

11.0 REPORT LIMITATIONS

The results of this assessment represent conditions at the time of the soil and 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 CAL-EPA 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 provide environmental consulting services for this project. Should you have any questions or comments, please feel free to call us at (925) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

for

Ian T. Reed
Associate Geologist

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

cc: Mr. John Kendall, Trustee for California Brake and Clutch
Ms. Anne Bruff, Wells & Bennett Realtors

TABLE ONE

Summary of Chemical Analysis of **Soil Samples**

Volatile Organic Compounds

All results are in **parts per billion**

SAMPLE NAME	DATE COLLECTED	PCE	TCE	CIS-1,2-DCE	1,1-DCA	REMAINING VOCs
GEOPROBES						
BH-A, 1.0'	6/22/99	**390,000**	< 11,000	< 11,000	< 11,000	< 11,000 - < 22,000
BH-B, 2.5'	7/12/99	53	< 5	< 5	< 5	< 5 - < 10
BH-C, 2.5'	7/12/99	41	230	17	< 5	< 5 - < 25
BH-D, 2.5'	7/12/99	< 5	< 5	< 5	< 5	< 5 - < 10
BH-E, 2.5'	7/12/99	< 5	< 5	< 5	< 5	< 5 - < 10
BH-F, 2.5'	7/12/99	< 5	< 5	< 5	< 5	< 5 - < 10
BH-G, 2.5'	7/12/99	< 5	< 5	< 5	< 5	< 5 - < 10
MONITORING WELLS						
MW-1, 5.0'	8/27/99	180	18	< 5	< 5	< 5 - < 10
MW-2, 2.5'	8/27/99	31	< 5	< 5	< 5	< 5 - < 10
MW-3, 2.5'	8/27/99	< 5	< 5	< 5	< 5	< 5 - < 10
MW-4, 4.5'	10/27/99	< 5	< 5	< 5	< 5	< 5 - < 10
OAKLAND RBCA		92,000	330,000	840,000	280,000	VARIES

NOTES:

Concentrations that exceed the Oakland RBCA for and Indoor Air Scenario are **BOLD**.

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

Oakland Risk Based Corrective Action (RBCA) cleanup goal for vapor intrusion from subsurface soil to an INDOOR AIR Scenario.

TABLE TWO

Groundwater Elevation Data

2221 Union Street, Oakland, California

WELL ID	DATE OF MEASUREMENT	TOP OF CASING ELEVATION IN FEET (MSL)	DEPTH TO WATER (feet)	GROUNDWATER ELEVATION IN FEET (MSL)
MW-1	9/2/99	15.00	8.81	6.19
	11/2/99		5.94	9.06
	11/4/99		7.15	7.85
	11/9/99		4.72	10.28
MW-2	9/2/99	15.29	6.29	9.00
	11/2/99	15.24	6.01	9.23
	11/4/99		5.94	9.30
	11/9/99		5.28	9.96
MW-3	9/2/99	15.15	6.26	8.89
	11/2/99	15.17	5.74	9.43
	11/4/99		6.09	9.08
	11/9/99		5.64	9.53
MW-4	11/2/99	15.21	5.86	9.35
	11/4/99		5.85	9.36
	11/9/99		4.56	10.65
PCCMW-1	9/2/99	14.09	7.95	6.14

TABLE THREE

Summary of Chemical Analysis of **Water Samples**

Volatile Organic Compounds

All results are in **parts per billion**

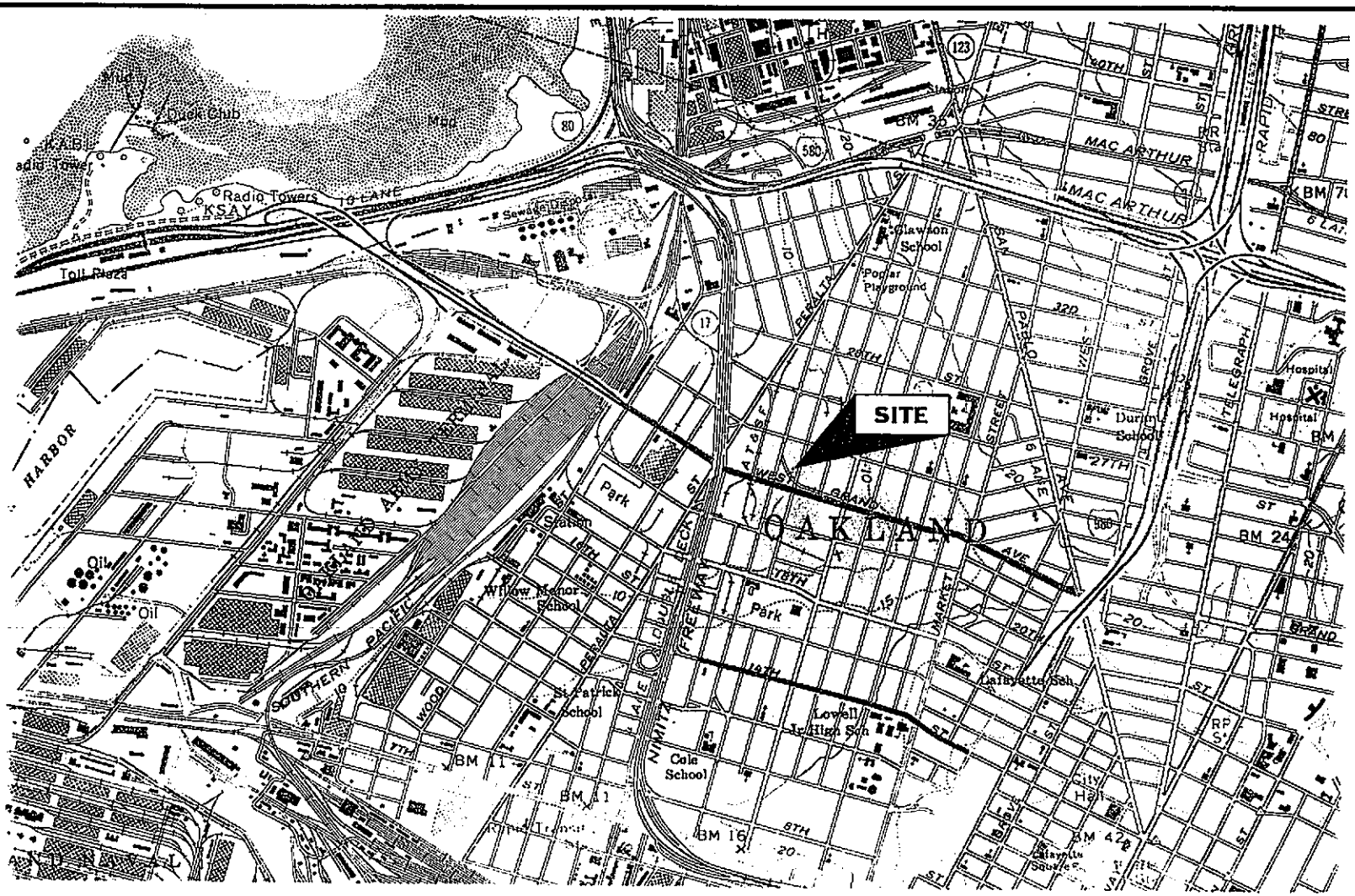
SAMPLE NAME	DATE	PCE	TCE	CIS 1,2-DCE	TRANS 1,2-DCE	1,1-DCA	1,1-DCE	1,2-DCA	CHLORO-ETHANE	VC	REMAINING VOCs
GEOPROBES											
BH-A, WATER	7/12/99	1300	1500	190	< 25	< 25	< 25	< 25	< 25	< 25	< 25 - < 250
BH-B, WATER	7/12/99	33	170	130	21	< 5	< 5	< 5	< 5	< 5	< 5 - < 30
BH-C, WATER	7/12/99	35	21	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
BH-D, WATER	7/12/99	< 0.5	< 0.5	11	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 - < 5
BH-E, WATER	7/12/99	42	33	46	< 25	< 25	< 25	< 25	< 25	< 25	< 25 - < 250
BH-F, WATER	7/12/99	9.2	6.4	8.8	< 0.5	11	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 - < 5
BH-G, WATER	7/12/99	< 5	< 5	< 5	< 5	< 5	< 5	< 12	< 5	< 5	< 5
MONITORING WELLS											
MW-1	9/2/99	9.9	3.2	3.9	< 1	58	< 1	< 1	< 1	< 1	< 1 - < 10
MW-1	11/2/99	100	15	17	3.4	1.7	< 1	< 1	< 1	< 1	< 1 - < 10
MW-2	9/2/99	48	4.5	1.7	< 1	< 1	< 1	< 1	< 1	< 1	< 1 - < 10
MW-2	11/2/99	110	9.5	1.4	< 1	< 1	< 1	< 1	< 1	< 1	< 1 - < 10
MW-3	9/2/99	38	21	34	< 0.5	22	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 - < 5
MW-3	11/2/99	59	21	35	< 0.5	22	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 - < 5
MW-4	11/2/99	0.68	0.74	21	< 0.5	14	2.7	2.1	12	6.3	< 0.5 - < 5
OAKLAND RBCA		200,000	460,000	2,100,000	3,000,000	940,000	16,000	170,000	NA	4,400	VARIES

NOTES:

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

The Oakland risk based corrective action (RBCA) number is the cleanup goal for vapor intrusion from groundwater to an INDOOR AIR Scenario modified for groundwater at depths of 6-feet below ground surface.

PCE is Tetrachloroethene
TCE is Trichloroethene
DCE is Dichloroethene
DCA is Dichloroethane
VC is Vinyl Chloride



NORTH

LOCATION MAP

2221 Union Street
Oakland, California

AQUA SCIENCE ENGINEERS, INC. | Figure 1

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1 BH-B

OUTDOOR DRAIN

BH-G BH-A BH-C

MW-4 MW-2

BUILDING

SIDEWALK

FENCE

BH-D

MEZZANINE

BUILDING

SIDEWALK

BH-F MW-3 BH-E

PARTS CLEANING BINS

NEIGHBORING PROPERTY

UNION STREET

SIDEWALK

PACIFIC CRYOGENIC COMPANY PROPERTY

PCCMW-1

LEGEND

BH-G ● ASE Soil Boring

MW-4 ⊕ ASE Monitoring Well

PCCMW-1 ⊕ Pacific Cryogenic Company Monitoring Well

0 30 60 90

SCALE IN FEET

NORTH

SITE PLAN

2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 2

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1
(9.06')

9.1'

OUTDOOR DRAIN

9.2'

MW-2
(9.23')

MW-4
(9.35')

9.3'

MEZZANINE

BUILDING

9.4'

MW-3
(9.43')

PARTS CLEANING BINS

BUILDING

FENCE

SIDEWALK

SIDEWALK

UNION STREET

SIDEWALK

NEIGHBORING PROPERTY

LEGEND

MW-4
(9.35')

ASE Monitoring Well
with groundwater elevation
in feet based on site datum
referenced to regional
topographic map

9.4'

Potentiometric Surface
Elevation of Groundwater

Groundwater Flow Direction

0 30 60 90

SCALE IN FEET

NORTH

POTENTIOMETRIC SURFACE MAP - NOVEMBER 2, 1999

2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 3

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1
(7.85')

OUTDOOR DRAIN

8.0'

9.0'

MW-4
(9.36')

MW-2
(9.30')

BUILDING

SIDEWALK

UNION STREET

SIDEWALK

FENCE

MEZZANINE

BUILDING

SIDEWALK

MW-3
(9.08')

PARTS CLEANING BINS

NEIGHBORING PROPERTY

SIDEWALK

LEGEND

MW-4
(9.08')
ASE Monitoring Well with groundwater elevation in feet based on site datum referenced to regional topographic map

9.0'
Potentiometric Surface Elevation of Groundwater

Groundwater Flow Direction

0 30 60 90

SCALE IN FEET

NORTH

POTENTIOMETRIC SURFACE MAP - NOVEMBER 4, 1999

2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 4

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1
(10.28')

OUTDOOR DRAIN

MW-4
(10.65')

MW-2
(9.96')

10.5'

10.0'

MEZZANINE

BUILDING

MW-3
(9.53')

PARTS CLEANING BINS

BUILDING

SIDEWALK

FENCE

SIDEWALK

UNION STREET

SIDEWALK

NEIGHBORING PROPERTY

LEGEND

MW-4
(10.65')
ASE Monitoring Well with groundwater elevation in feet based on site datum referenced to regional topographic map

10.5'
Potentiometric Surface Elevation of Groundwater

Groundwater Flow Direction

0 30 60 90

SCALE IN FEET

NORTH

POTENTIOMETRIC SURFACE MAP - NOVEMBER 9, 1999

2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 5

APPENDIX A

Drilling Permit

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-6575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2224 Union Street Oakland

California Coordinates Source ____ ft. Accuracy ____ ft.
CCN ____ ft. CCB ____ ft.
APN ____

CLIENT
Name John Kendall, Trustee
Address 2441 Santa Clara Ave. Phone 510, 523, 9821
City Alameda Zip 94501

APPLICANT
Name Aqua Science Engineers, Inc.
Attn: Robert Kitay Fax 925-827-4853
Address 208 W. El Pintado Phone 925-820-9391
City Danville, CA Zip 94526

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other ____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S LICENSE NO. C-57 487000

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 22 ft.
Surface Seal Depth 3 ft. Number 4

GEOTECHNICAL PROJECTS
Number of Borings ____ Maximum
Hole Diameter ____ in. Depth ____ ft.

ESTIMATED STARTING DATE 10-25-99
ESTIMATED COMPLETION DATE 10-29-99

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Robert L. Kitay DATE 10-18-99

FOR OFFICE USE
PERMIT NUMBER 99WR613
WELL NUMBER ____
APN ____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A) GENERAL
(1) A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
(2) Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
(3) Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

(C) GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC
Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
See attached.

G. SPECIAL CONDITIONS

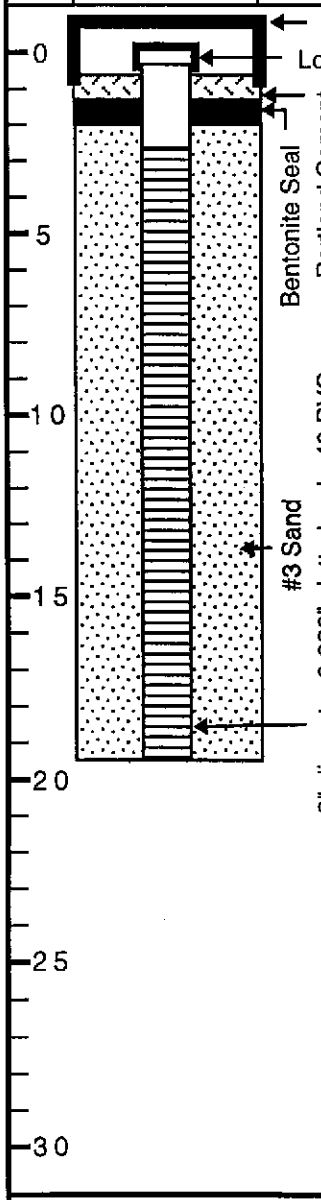
APPROVED Frank L. Cadd DATE 10-20-99

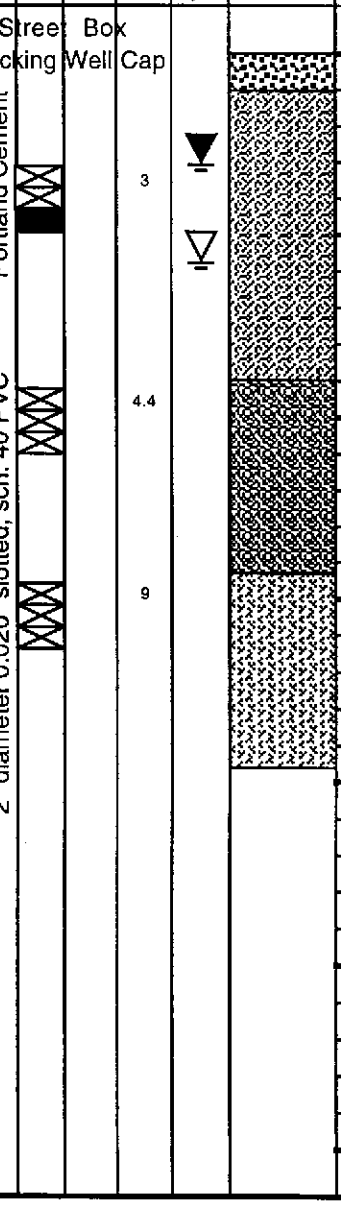
APPENDIX B

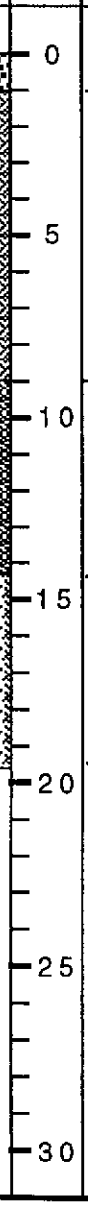
Boring Log and Well Construction Details

SOIL BORING LOG AND MONITORING WELL COMPLETION DETAILS		Monitoring Well: MW-4
Project Name: Kendall	Project Location: 2221 Union Street, Oakland CA	Page 1 of 1
Driller: HEW Drilling	Type of Rig: Hollow-Stem Auger	Size of Drill: 8.0" Diameter
Logged By: Ian T. Reed.	Date Drilled: October 27, 1999	Checked By: Robert E. Kitay, R.G.

WATER AND WELL DATA	
Depth of Water First Encountered: 3.0'	Total Depth of Well Completed: 19.5'
Static Depth of Water in Well: 5.86'	Well Screen Type and Diameter: 2" diameter sch. 40 PVC
Total Depth of Boring: 19.5'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2.0" I.D. Split-barrel







DESCRIPTION OF LITHOLOGY

standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.

Concrete

Clayey SILT (MH); olive; soft; wet; 75% silt; 25% clay; medium plasticity; low estimated K; no odor

Gravelly SILT (ML); orange brown to olive; stiff; wet; 70% silt; 20% gravel to 2" diameter; 5% fine to coarse sand; 5% clay; low plasticity; low estimated K; no odor

Sandy SILT (ML); orange brown with olive vains; damp; stiff; 70% silt; 20% fine sand; 10% clay; low plasticity; very low estimated K; no odor

End of boring at 19.5'

AQUA SCIENCE ENGINEERS, INC.

APPENDIX C

Analytical Report and Chain of Custody Form
For Soil Samples

Aqua Science Engineers, Inc.
208 West El Pintado Road
Danville, CA 94526

Attn.: Mr. Ian T. Reed

Project: 3515
Kendall

Site: 2221 Union Sreet
Oakland Ca.

Dear Mr. Reed,

Attached is our report for your samples received on Thursday October 28, 1999. This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after November 27, 1999 unless you have requested otherwise. We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.

Sincerely,

Pierre Monette

Halogenated Volatile Organics Compounds

Aqua Science Engineers, Inc.

208 West El Pintado Road
Danville, CA 94526

Attn: Ian T. Reed

Phone: (925) 820-9391 Fax: (925) 837-4853

Project #: 3515

Project: Kendall

Site: 2221 Union Sreet

Oakland Ca.

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-4-4.5	Soil	10/27/1999 09:40	1

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-4-4.5**	Lab Sample ID:	**1999-10-0514-001**
Project:	3515 Kendall	Received:	10/28/1999 12:21
Site:	2221 Union Sreet Oakland Ca.	Extracted:	11/03/1999 15:00
Sampled:	10/27/1999 09:40	QC-Batch:	1999/11/03-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	10	ug/Kg	1.00	11/03/1999 15:00	
Vinyl chloride	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Chloroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Trichlorofluoromethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,1-Dichloroethene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Methylene chloride	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,1-Dichloroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Chloroform	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Carbon tetrachloride	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,2-Dichloroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Trichloroethene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,2-Dichloropropane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Bromodichloromethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
2-Chloroethylvinyl ether	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Tetrachloroethene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Dibromochloromethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Chlorobenzene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Bromoform	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,1,2,2-Tetrachloroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Chloromethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Bromomethane	ND	5.0	ug/Kg	1.00	11/03/1999 15:00	
Surrogate(s)						
4-Bromofluorobenzene	113.6	74-121	%	1.00	11/03/1999 15:00	
1,2-Dichloroethane-d4	82.4	70-121	%	1.00	11/03/1999 15:00	

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-4-4.5**	Lab Sample ID:	**1999-10-0514-001**
Project:	3515 Kendall	Received:	10/28/1999 12:21
Site:	2221 Union Sreet Oakland Ca.	Extracted:	11/03/1999 15:00
Sampled:	10/27/1999 09:40	QC-Batch:	1999/11/03-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Surrogate(s)						
Toluene-d8	106.1	81-117	%	1.00	11/03/1999 15:00	

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8260A
Prep Method: 5030

Batch QC Report
Halogenated Volatile Organics Compounds

Method Blank | **Soil** | **QC Batch # 1999/11/03-01.07**

MB: 1999/11/03-01.07-001 | Date Extracted: 11/03/1999 11:59

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Bromodichloromethane	ND	5.0	ug/Kg	11/03/1999 11:59	
Bromoform	ND	5.0	ug/Kg	11/03/1999 11:59	
Bromomethane	ND	10.0	ug/Kg	11/03/1999 11:59	
Carbon tetrachloride	ND	5.0	ug/Kg	11/03/1999 11:59	
Chlorobenzene	ND	5.0	ug/Kg	11/03/1999 11:59	
Chloroethane	ND	10	ug/Kg	11/03/1999 11:59	
2-Chloroethylvinyl ether	ND	50	ug/Kg	11/03/1999 11:59	
Chloroform	ND	5.0	ug/Kg	11/03/1999 11:59	
Chloromethane	ND	10	ug/Kg	11/03/1999 11:59	
Dibromochloromethane	ND	5.0	ug/Kg	11/03/1999 11:59	
1,2-Dichlorobenzene	ND	5.0	ug/Kg	11/03/1999 11:59	
1,3-Dichlorobenzene	ND	5.0	ug/Kg	11/03/1999 11:59	
1,4-Dichlorobenzene	ND	5.0	ug/Kg	11/03/1999 11:59	
Dichlorodifluoromethane	ND	10	ug/Kg	11/03/1999 11:59	
1,1-Dichloroethane	ND	5.0	ug/Kg	11/03/1999 11:59	
1,2-Dichloroethane	ND	5.0	ug/Kg	11/03/1999 11:59	
1,1-Dichloroethene	ND	5.0	ug/Kg	11/03/1999 11:59	
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	11/03/1999 11:59	
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	11/03/1999 11:59	
1,2-Dichloropropane	ND	5.0	ug/Kg	11/03/1999 11:59	
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	11/03/1999 11:59	
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	11/03/1999 11:59	
Methylene chloride	ND	5.0	ug/Kg	11/03/1999 11:59	
1,1,2,2-Tetrachloroethane	ND	5.0	ug/Kg	11/03/1999 11:59	
Tetrachloroethene	ND	5.0	ug/Kg	11/03/1999 11:59	
1,1,1-Trichloroethane	ND	5.0	ug/Kg	11/03/1999 11:59	
1,1,2-Trichloroethane	ND	5.0	ug/Kg	11/03/1999 11:59	
Trichloroethene	ND	5.0	ug/Kg	11/03/1999 11:59	
Vinyl chloride	ND	5.0	ug/Kg	11/03/1999 11:59	
Trichlorotrifluoroethane	ND	5.0	ug/Kg	11/03/1999 11:59	
Trichlorofluoromethane	ND	5.0	ug/Kg	11/03/1999 11:59	
Surrogate(s)					
4-Bromofluorobenzene	111.6	74-121	%	11/03/1999 11:59	
1,2-Dichloroethane-d4	95.0	70-121	%	11/03/1999 11:59	
Toluene-d8	95.6	81-117	%	11/03/1999 11:59	

To: **Aqua Science Engineers, Inc.**
Attn: Ian T. Reed

Test Method: 8260A
Prep Method: 5030

Batch QC Report

Halogenated Volatile Organics Compounds

Laboratory Control Spike (LCS/LCSD) **Soil** **QC Batch # 1999/11/03-01.07**

LCS: 1999/11/03-01.07-002 Extracted: 11/03/1999 10:42 Analyzed: 11/03/1999 10:42
LCSD: 1999/11/03-01.07-003 Extracted: 11/03/1999 11:20 Analyzed: 11/03/1999 11:20

Compound	Conc. [ug/Kg]		Exp.Conc. [ug/Kg]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Chlorobenzene	99.7	97.3	100.0	100.0	99.7	97.3	2.4	61-121	20		
1,1-Dichloroethene	122	123	100.0	100.0	122.0	123.0	0.8	65-125	20		
Trichloroethene	105	104	100.0	100.0	105.0	104.0	1.0	74-134	20		
Surrogate(s)											
4-Bromofluorobenzene	550	565	500	500	110.0	113.0		74-121			
1,2-Dichloroethane-d4	445	466	500	500	89.0	93.2		70-121			
Toluene-d8	470	472	500	500	94.0	94.4		81-117			

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8260A
Prep Method: 5030

Batch QC Report

Halogenated Volatile Organics Compounds

Matrix Spike (MS / MSD) Soil **QC Batch # 1999/11/03-01.07**

Sample ID: **W2-5** Lab Sample ID: 1999-11-0045-002

MS: 1999/11/03-01.07-004 Extracted: 11/03/1999 18:55 Analyzed: 11/03/1999 18:55 Dilution: 1.0

MSD: 1999/11/03-01.07-005 Extracted: 11/03/1999 19:34 Analyzed: 11/03/1999 19:34 Dilution: 1.0

Compound	Conc. [ug/Kg]			Exp.Conc. [ug/Kg]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	MS	MSD	Sample	MS	MSD	MS	MSD	[%]	Recovery	RPD	MS	MSD
Chlorobenzene	81.9	96.7	ND	83.3	97.7	98.3	99.0	0.7	61-121	20		
1,1-Dichloroethene	102	98.0	ND	83.3	97.7	122.4	100.3	19.8	65-125	20		
Trichloroethene	88.5	101	ND	83.3	97.7	106.2	103.4	2.7	74-134	20		
Surrogate(s)												
4-Bromofluorobenzene	587	570		500	500	117.4	114.0		74-121			
1,2-Dichloroethane-d4	467	410		500	500	93.4	82.0		70-121			
Toluene-d8	503	576		500	500	100.6	115.2		81-117			

99-10 0514

Aqua Science Engineers, Inc.
208 W. El Pintado Road
Danville, CA 94526
(925) 820-9391
FAX (925) 837-4853

Chain of Custody

PAGE 1 OF 1

SAMPLER (SIGNATURE) (PHONE NO.)
Clat Reed (925)820-9391

PROJECT NAME Kendall JOB NO. 3515
ADDRESS 2221 Union Street, Oakland, CA DATE 10-27-99

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:
5-day TAT

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)	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140) (EPA 608/8080)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)				COMPOSITE
MW-4-4.5'	10-27-99	0940	Soil	1				X														

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
(signature) Clat Reed (time)	(signature) Surinder Sidhu (time) 12:21	(signature) Surinder Sidhu (time) 10/28/99	(signature) Ken Wright (time) 0650	5-day TAT
(printed name) Clat Reed (date) 10/28/99	(printed name) SURINDER SIDHU (date)	(printed name) SURINDER SIDHU (date) 6:50	(printed name) Ken WRIGHT (date) 10/29/99	
Company- ASE	Company- CL 10/28/99	Company- CL	Company- ChromaLab	

APPENDIX D

Well Sampling Field Logs

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Kendall, 2721 Union Street
Job #: _____ Date of sampling: 11-2-99
Well Name: MW-1 Sampled by: ITR
Total depth of well (feet): 20 Well diameter (inches): 2"
Depth to water before sampling (feet): 5.94
Thickness of floating product if any: _____
Depth of well casing in water (feet): 14.06
Number of gallons per well casing volume (gallons): 2.4
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 9.6
Equipment used to purge the well: disposable bailer
Time Evacuation Began: 0930 Time Evacuation Finished: 0945
Approximate volume of groundwater purged: 9.6
Did the well go dry?: No After how many gallons: --
Time samples were collected: 0945
Depth to water at time of sampling: 6.00
Percent recovery at time of sampling: 98%
Samples collected with: disposable bailer
Sample color: clear Odor: None
Description of sediment in sample: --

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	70.1	5.67	529
2	69.7	6.04	642
3	69.2	6.23	659
4	69.2	6.21	631

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-1	3	40ml VOAs	✓	✓	8010

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Kendall, Union Street
Job #: ______ Date of sampling: 4-2-99
Well Name: MW-2 Sampled by: ______
Total depth of well (feet): 20 Well diameter (inches): 2"
Depth to water before sampling (feet): 6.01
Thickness of floating product if any: —
Depth of well casing in water (feet): 13.99
Number of gallons per well casing volume (gallons): 2.37
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 9.5
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 0930 Time Evacuation Finished: 1000
Approximate volume of groundwater purged: dedicated bailer
Did the well go dry?: NO After how many gallons: —
Time samples were collected: 1005
Depth to water at time of sampling: [illegible]
Percent recovery at time of sampling: [illegible]
Samples collected with: dedicated bailer
Sample color: clear - yellow Odor: none
Description of sediment in sample: —

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	71.4	6.74	691
2	71.7	6.63	654
3	71.0	[illegible]	691
4	71.8	6.69	692

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-2	3	40ml VOA's	✓	✓	8010

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Kendall, 2271 Union Street
Job #: ____________ Date of sampling: 11-2-99
Well Name: MW-3 Sampled by:
Total depth of well (feet): 20.0' Well diameter (inches): 2"
Depth to water before sampling (feet): 5.34
Thickness of floating product if any: ____________
Depth of well casing in water (feet):
Number of gallons per well casing volume (gallons): 2.4
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 9.6
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 1030 Time Evacuation Finished: 1040
Approximate volume of groundwater purged:
Did the well go dry?: NO After how many gallons: --
Time samples were collected: dedicated bailer
Depth to water at time of sampling:
Percent recovery at time of sampling:
Samples collected with:
Sample color: ____________ Odor:
Description of sediment in sample: ____________

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	[illegible]	6.38	[illegible]
2	[illegible]	6.80	[illegible]
3	[illegible]	6.79	[illegible]
4	[illegible]	6.73	[illegible]

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-3	3	40-ml VOAs	✓	✓	8020

2411 Old Crow Canyon Road #4, San Ramon, CA 94583 • 510-820-9391 • Fax 510-837-4853

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Kendall, 2221 Union St.

Job #: ______ Date of sampling: 11-2-97

Well Name: MW-4 Sampled by: TTC

Total depth of well (feet): [illegible] Well diameter (inches): 2"

Depth to water before sampling (feet): 5.86'

Thickness of floating product if any: ______

Depth of well casing in water (feet): 13.64

Number of gallons per well casing volume (gallons): 2.3

Number of well casing volumes to be removed: 4

Req'd volume of groundwater to be purged before sampling (gallons): 9.2

Equipment used to purge the well: dedicated bailer

Time Evacuation Began: [illegible] Time Evacuation Finished: [illegible]

Approximate volume of groundwater purged: 9.5

Did the well go dry?: [illegible] After how many gallons: ______

Time samples were collected: 1025

Depth to water at time of sampling: 5.98

Percent recovery at time of sampling: 98%

Samples collected with: dedicated bailer

Sample color: clear [illegible] Odor: -

Description of sediment in sample: -

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	[illegible]	6.69	741
2	[illegible]	[illegible]	804
3	[illegible]	[illegible]	871
4	[illegible]	[illegible]	924

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-4	3	40 ml VOA	✓	✓	8010

APPENDIX E

Analytical Report and Chain of Custody Form
For Groundwater Samples

Aqua Science Engineers, Inc.
208 West El Pintado Road
Danville, CA 94526

Attn.: Mr. Ian T. Reed

Project: 3515
Kendall

Site: 2221 Union St., Oakland, CA

Dear Mr. Reed,

Attached is our report for your samples received on Wednesday November 3, 1999. This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after December 3, 1999 unless you have requested otherwise. We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.

Sincerely,

Vincent Vancil

Halogenated Volatile Organic Compounds

Aqua Science Engineers, Inc.

Attn: Ian T. Reed

Project #: 3515

Site: 2221 Union St., Oakland, CA

208 West El Pintado Road
Danville, CA 94526

Phone: (925) 820-9391 Fax: (925) 837-4853

Project: Kendall

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-4	Water	11/02/1999 10:25	1

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Halogenated Volatile Organic Compounds

Sample ID:	**MW-4**	Lab Sample ID:	**1999-11-0071-001**
Project:	3515 Kendall	Received:	11/03/1999 17:56
Site:	2221 Union St., Oakland, CA	Extracted:	11/04/1999 14:03
Sampled:	11/02/1999 10:25	QC-Batch:	1999/11/04-01.25
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	1.0	ug/L	1.00	11/04/1999 14:03	
Vinyl chloride	6.3	0.50	ug/L	1.00	11/04/1999 14:03	
Chloroethane	12	0.50	ug/L	1.00	11/04/1999 14:03	
Trichlorofluoromethane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
1,1-Dichloroethene	2.7	0.50	ug/L	1.00	11/04/1999 14:03	
Methylene chloride	ND	5.0	ug/L	1.00	11/04/1999 14:03	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
cis-1,2-Dichloroethene	21	0.50	ug/L	1.00	11/04/1999 14:03	
1,1-Dichloroethane	14	0.50	ug/L	1.00	11/04/1999 14:03	
Chloroform	ND	3.0	ug/L	1.00	11/04/1999 14:03	
1,1,1-Trichloroethane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
Carbon tetrachloride	ND	0.50	ug/L	1.00	11/04/1999 14:03	
1,2-Dichloroethane	2.1	0.50	ug/L	1.00	11/04/1999 14:03	
Trichloroethene	0.74	0.50	ug/L	1.00	11/04/1999 14:03	
1,2-Dichloropropane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
Bromodichloromethane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
2-Chloroethylvinyl ether	ND	0.50	ug/L	1.00	11/04/1999 14:03	
trans-1,3-Dichloropropene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
cis-1,3-Dichloropropene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
1,1,2-Trichloroethane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
Tetrachloroethene	0.68	0.50	ug/L	1.00	11/04/1999 14:03	
Dibromochloromethane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
Chlorobenzene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
Bromoform	ND	2.0	ug/L	1.00	11/04/1999 14:03	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1.00	11/04/1999 14:03	
1,3-Dichlorobenzene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
1,4-Dichlorobenzene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
1,2-Dichlorobenzene	ND	0.50	ug/L	1.00	11/04/1999 14:03	
Trichlorotrifluoroethane	ND	2.0	ug/L	1.00	11/04/1999 14:03	
Chloromethane	ND	1.0	ug/L	1.00	11/04/1999 14:03	
Bromomethane	ND	1.0	ug/L	1.00	11/04/1999 14:03	
Surrogate(s)						
1-Chloro-2-fluorobenzene	81.4	50-150	%	1.00	11/04/1999 14:03	

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Batch QC Report
Halogenated Volatile Organic Compounds

Method Blank | **Water** | **QC Batch # 1999/11/04-01.25**

MB: 1999/11/04-01.25-001 | Date Extracted: 11/04/1999 10:38

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Dichlorodifluoromethane	ND	1.0	ug/L	11/04/1999 10:38	
Vinyl chloride	ND	0.5	ug/L	11/04/1999 10:38	
Chloroethane	ND	0.5	ug/L	11/04/1999 10:38	
Trichlorofluoromethane	ND	0.5	ug/L	11/04/1999 10:38	
1,1-Dichloroethene	ND	0.5	ug/L	11/04/1999 10:38	
Methylene chloride	ND	5.0	ug/L	11/04/1999 10:38	
trans-1,2-Dichloroethene	ND	0.5	ug/L	11/04/1999 10:38	
cis-1,2-Dichloroethene	ND	0.5	ug/L	11/04/1999 10:38	
1,1-Dichloroethane	ND	0.5	ug/L	11/04/1999 10:38	
Chloroform	ND	3.0	ug/L	11/04/1999 10:38	
1,1,1-Trichloroethane	ND	0.5	ug/L	11/04/1999 10:38	
Carbon tetrachloride	ND	0.5	ug/L	11/04/1999 10:38	
1,2-Dichloroethane	ND	0.5	ug/L	11/04/1999 10:38	
Trichloroethene	ND	0.5	ug/L	11/04/1999 10:38	
1,2-Dichloropropane	ND	0.5	ug/L	11/04/1999 10:38	
Bromodichloromethane	ND	0.5	ug/L	11/04/1999 10:38	
2-Chloroethylvinyl ether	ND	0.5	ug/L	11/04/1999 10:38	
trans-1,3-Dichloropropene	ND	0.5	ug/L	11/04/1999 10:38	
cis-1,3-Dichloropropene	ND	0.5	ug/L	11/04/1999 10:38	
1,1,2-Trichloroethane	ND	0.5	ug/L	11/04/1999 10:38	
Tetrachloroethene	ND	0.5	ug/L	11/04/1999 10:38	
Dibromochloromethane	ND	0.5	ug/L	11/04/1999 10:38	
Chlorobenzene	ND	0.5	ug/L	11/04/1999 10:38	
Bromoform	ND	2.0	ug/L	11/04/1999 10:38	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	11/04/1999 10:38	
1,3-Dichlorobenzene	ND	0.5	ug/L	11/04/1999 10:38	
1,4-Dichlorobenzene	ND	0.5	ug/L	11/04/1999 10:38	
1,2-Dichlorobenzene	ND	0.5	ug/L	11/04/1999 10:38	
Trichlorotrifluoroethane	ND	2.0	ug/L	11/04/1999 10:38	
Chloromethane	ND	1.0	ug/L	11/04/1999 10:38	
Bromomethane	ND	1.0	ug/L	11/04/1999 10:38	
Surrogate(s)					
1-Chloro-2-fluorobenzene	70.0	50-150	%	11/04/1999 10:38	

To: **Aqua Science Engineers, Inc.**
Attn: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Batch QC Report

Halogenated Volatile Organic Compounds

Laboratory Control Spike (LCS/LCSD) **Water** **QC Batch # 1999/11/04-01.25**

LCS: 1999/11/04-01.25-002 Extracted: 11/04/1999 11:29 Analyzed: 11/04/1999 11:29
LCSD: 1999/11/04-01.25-003 Extracted: 11/04/1999 12:20 Analyzed: 11/04/1999 12:20

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
1,1-Dichloroethene	18.5	18.4	20.0	20.0	92.5	92.0	0.5	50-140	20		
Trichloroethene	17.7	17.7	20.0	20.0	88.5	88.5	0.0	50-150	20		
Chlorobenzene	17.7	17.8	20.0	20.0	88.5	89.0	0.6	50-150	20		
Surrogate(s)											
1-Chloro-2-fluorobenzene	16.6	15.5	20	20	83.0	77.5		50-150			

Halogenated Volatile Organic Compounds

Aqua Science Engineers, Inc.

Attn: Ian T. Reed

Project #: 3515

Site: 2221 Union St., Oakland, CA

208 West El Pintado Road
Danville, CA 94526

Phone: (925) 820-9391 Fax: (925) 837-4853

Project: Kendall

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-1	Water	11/02/1999 09:45	2
MW-2	Water	11/02/1999 10:05	3
MW-3	Water	11/02/1999 10:45	4

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Halogenated Volatile Organic Compounds

Sample ID:	**MW-1**	Lab Sample ID:	**1999-11-0071-002**
Project:	3515 Kendall	Received:	11/03/1999 17:56
Site:	2221 Union St., Oakland, CA	Extracted:	11/08/1999 14:33
Sampled:	11/02/1999 09:45	QC-Batch:	1999/11/08-01.26
Matrix:	Water		

Sample/Analysis Flag: o (See Legend & Note section)

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	2.0	ug/L	2.00	11/08/1999 14:33	
Vinyl chloride	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Chloroethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Trichlorofluoromethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
1,1-Dichloroethene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Methylene chloride	ND	10	ug/L	2.00	11/08/1999 14:33	
trans-1,2-Dichloroethene	3.4	1.0	ug/L	2.00	11/08/1999 14:33	
cis-1,2-Dichloroethene	17	1.0	ug/L	2.00	11/08/1999 14:33	
1,1-Dichloroethane	1.7	1.0	ug/L	2.00	11/08/1999 14:33	
Chloroform	ND	6.0	ug/L	2.00	11/08/1999 14:33	
1,1,1-Trichloroethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Carbon tetrachloride	ND	1.0	ug/L	2.00	11/08/1999 14:33	
1,2-Dichloroethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Trichloroethene	15	1.0	ug/L	2.00	11/08/1999 14:33	
1,2-Dichloropropane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Bromodichloromethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
2-Chloroethylvinyl ether	ND	1.0	ug/L	2.00	11/08/1999 14:33	
trans-1,3-Dichloropropene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
cis-1,3-Dichloropropene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
1,1,2-Trichloroethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Tetrachloroethene	100	1.0	ug/L	2.00	11/08/1999 14:33	
Dibromochloromethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Chlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Bromoform	ND	4.0	ug/L	2.00	11/08/1999 14:33	
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	2.00	11/08/1999 14:33	
1,3-Dichlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
1,4-Dichlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
1,2-Dichlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 14:33	
Trichlorotrifluoroethane	ND	4.0	ug/L	2.00	11/08/1999 14:33	
Chloromethane	ND	2.0	ug/L	2.00	11/08/1999 14:33	
Bromomethane	ND	2.0	ug/L	2.00	11/08/1999 14:33	
Surrogate(s)						
1-Chloro-2-fluorobenzene	103.8	50-150	%	1.00	11/08/1999 14:33	

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Halogenated Volatile Organic Compounds

Sample ID:	**MW-2**	Lab Sample ID:	**1999-11-0071-003**
Project:	3515 Kendall	Received:	11/03/1999 17:56
Site:	2221 Union St., Oakland, CA	Extracted:	11/08/1999 15:23
Sampled:	11/02/1999 10:05	QC-Batch:	1999/11/08-01.26
Matrix:	Water		

Sample/Analysis Flag: o (See Legend & Note section)

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	2.0	ug/L	2.00	11/08/1999 15:23	
Vinyl chloride	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Chloroethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Trichlorofluoromethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
1,1-Dichloroethene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Methylene chloride	ND	10	ug/L	2.00	11/08/1999 15:23	
trans-1,2-Dichloroethene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
cis-1,2-Dichloroethene	1.4	1.0	ug/L	2.00	11/08/1999 15:23	
1,1-Dichloroethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Chloroform	ND	6.0	ug/L	2.00	11/08/1999 15:23	
1,1,1-Trichloroethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Carbon tetrachloride	ND	1.0	ug/L	2.00	11/08/1999 15:23	
1,2-Dichloroethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Trichloroethene	9.5	1.0	ug/L	2.00	11/08/1999 15:23	
1,2-Dichloropropane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Bromodichloromethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
2-Chloroethylvinyl ether	ND	1.0	ug/L	2.00	11/08/1999 15:23	
trans-1,3-Dichloropropene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
cis-1,3-Dichloropropene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
1,1,2-Trichloroethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Tetrachloroethene	110	1.0	ug/L	2.00	11/08/1999 15:23	
Dibromochloromethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Chlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Bromoform	ND	4.0	ug/L	2.00	11/08/1999 15:23	
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	2.00	11/08/1999 15:23	
1,3-Dichlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
1,4-Dichlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
1,2-Dichlorobenzene	ND	1.0	ug/L	2.00	11/08/1999 15:23	
Trichlorotrifluoroethane	ND	4.0	ug/L	2.00	11/08/1999 15:23	
Chloromethane	ND	2.0	ug/L	2.00	11/08/1999 15:23	
Bromomethane	ND	2.0	ug/L	2.00	11/08/1999 15:23	
Surrogate(s)						
1-Chloro-2-fluorobenzene	104.4	50-150	%	1.00	11/08/1999 15:23	

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Halogenated Volatile Organic Compounds

Sample ID:	**MW-3**	Lab Sample ID:	**1999-11-0071-004**
Project:	3515 Kendall	Received:	11/03/1999 17:56
Site:	2221 Union St., Oakland, CA	Extracted:	11/08/1999 16:13
Sampled:	11/02/1999 10:45	QC-Batch:	1999/11/08-01.26
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	1.0	ug/L	1.00	11/08/1999 16:13	
Vinyl chloride	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Chloroethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Trichlorofluoromethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
1,1-Dichloroethene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Methylene chloride	ND	5.0	ug/L	1.00	11/08/1999 16:13	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
cis-1,2-Dichloroethene	35	0.50	ug/L	1.00	11/08/1999 16:13	
1,1-Dichloroethane	22	0.50	ug/L	1.00	11/08/1999 16:13	
Chloroform	ND	3.0	ug/L	1.00	11/08/1999 16:13	
1,1,1-Trichloroethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Carbon tetrachloride	ND	0.50	ug/L	1.00	11/08/1999 16:13	
1,2-Dichloroethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Trichloroethene	21	0.50	ug/L	1.00	11/08/1999 16:13	
1,2-Dichloropropane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Bromodichloromethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
2-Chloroethylvinyl ether	ND	0.50	ug/L	1.00	11/08/1999 16:13	
trans-1,3-Dichloropropene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
cis-1,3-Dichloropropene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
1,1,2-Trichloroethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Tetrachloroethene	59	0.50	ug/L	1.00	11/08/1999 16:13	
Dibromochloromethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Chlorobenzene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Bromoform	ND	2.0	ug/L	1.00	11/08/1999 16:13	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1.00	11/08/1999 16:13	
1,3-Dichlorobenzene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
1,4-Dichlorobenzene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
1,2-Dichlorobenzene	ND	0.50	ug/L	1.00	11/08/1999 16:13	
Trichlorotrifluoroethane	ND	2.0	ug/L	1.00	11/08/1999 16:13	
Chloromethane	ND	1.0	ug/L	1.00	11/08/1999 16:13	
Bromomethane	ND	1.0	ug/L	1.00	11/08/1999 16:13	
Surrogate(s)						
1-Chloro-2-fluorobenzene	113.0	50-150	%	1.00	11/08/1999 16:13	

To: **Aqua Science Engineers, Inc.**
Attn.: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Batch QC Report
Halogenated Volatile Organic Compounds

Method Blank | **Water** | **QC Batch # 1999/11/08-01.26**

MB: 1999/11/08-01.26-001 | Date Extracted: 11/08/1999 11:55

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Dichlorodifluoromethane	ND	1.0	ug/L	11/08/1999 11:55	
Vinyl chloride	ND	0.5	ug/L	11/08/1999 11:55	
Chloroethane	ND	0.5	ug/L	11/08/1999 11:55	
Trichlorofluoromethane	ND	0.5	ug/L	11/08/1999 11:55	
1,1-Dichloroethene	ND	0.5	ug/L	11/08/1999 11:55	
Methylene chloride	ND	5.0	ug/L	11/08/1999 11:55	
trans-1,2-Dichloroethene	ND	0.5	ug/L	11/08/1999 11:55	
cis-1,2-Dichloroethene	ND	0.5	ug/L	11/08/1999 11:55	
1,1-Dichloroethane	ND	0.5	ug/L	11/08/1999 11:55	
Chloroform	ND	0.5	ug/L	11/08/1999 11:55	
1,1,1-Trichloroethane	ND	0.5	ug/L	11/08/1999 11:55	
Carbon tetrachloride	ND	0.5	ug/L	11/08/1999 11:55	
1,2-Dichloroethane	ND	0.5	ug/L	11/08/1999 11:55	
Trichloroethene	ND	0.5	ug/L	11/08/1999 11:55	
1,2-Dichloropropane	ND	0.5	ug/L	11/08/1999 11:55	
Bromodichloromethane	ND	0.5	ug/L	11/08/1999 11:55	
2-Chloroethylvinyl ether	ND	0.5	ug/L	11/08/1999 11:55	
trans-1,3-Dichloropropene	ND	0.5	ug/L	11/08/1999 11:55	
cis-1,3-Dichloropropene	ND	0.5	ug/L	11/08/1999 11:55	
1,1,2-Trichloroethane	ND	0.5	ug/L	11/08/1999 11:55	
Tetrachloroethene	ND	0.5	ug/L	11/08/1999 11:55	
Dibromochloromethane	ND	0.5	ug/L	11/08/1999 11:55	
Chlorobenzene	ND	0.5	ug/L	11/08/1999 11:55	
Bromoform	ND	2.0	ug/L	11/08/1999 11:55	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	11/08/1999 11:55	
1,3-Dichlorobenzene	ND	0.5	ug/L	11/08/1999 11:55	
1,4-Dichlorobenzene	ND	0.5	ug/L	11/08/1999 11:55	
1,2-Dichlorobenzene	ND	0.5	ug/L	11/08/1999 11:55	
Trichlorotrifluoroethane	ND	2.0	ug/L	11/08/1999 11:55	
Chloromethane	ND	1.0	ug/L	11/08/1999 11:55	
Bromomethane	ND	1.0	ug/L	11/08/1999 11:55	
Surrogate(s)					
1-Chloro-2-fluorobenzene	100.0	50-150	%	11/08/1999 11:55	

To: **Aqua Science Engineers, Inc.**
Attn: Ian T. Reed

Test Method: 8010
Prep Method: 5030

Batch QC Report

Halogenated Volatile Organic Compounds

Laboratory Control Spike (LCS/LCSD) **Water** **QC Batch # 1999/11/08-01.26**

LCS: 1999/11/08-01.26-002 Extracted: 11/08/1999 12:53 Analyzed: 11/08/1999 12:53
LCSD: 1999/11/08-01.26-003 Extracted: 11/08/1999 13:43 Analyzed: 11/08/1999 13:43

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
1,1-Dichloroethene	20.3	20.6	20.0	20.0	101.5	103.0	1.5	50-140	20		
Trichloroethene	18.9	19.1	20.0	20.0	94.5	95.5	1.1	50-150	20		
Chlorobenzene	21.7	23.0	20.0	20.0	108.5	115.0	5.8	50-150	20		
Surrogate(s)											
1-Chloro-2-fluorobenzene	20.5	22.3	20	20	102.5	111.5		50-150			

To: **Aqua Science Engineers, Inc.**
Attn:Ian T. Reed

Test Method: 8010
Prep Method: 5030

Legend & Notes

Halogenated Volatile Organic Compounds

Analysis Flags

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Reporting limits were raised due to high level of analyte present in the sample.

99-11-0071

48882

Aqua Science Engineers, Inc.
208 W. El Pintado Road
Danville, CA 94526
(925) 820-9391
FAX (925) 837-4853

Chain of Custody

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SAMPLER (SIGNATURE) Ian Reed (PHONE NO.) (925) 820-9391

PROJECT NAME Kendall JOB NO. 3515

ADDRESS 2221 Union Street Oakland CA DATE 11-2-99

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

Rush

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)	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140) (EPA 608/8080)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)				COMPOSITE
MW-4	11-2-99	1625	water	3				X														

RUSH

RELINQUISHED BY: (signature)	(time)	RECEIVED BY: (signature)	(time)	RELINQUISHED BY: (signature)	(time)	RECEIVED BY LABORATORY: (signature)	(time)	COMMENTS:
Ian Reed	1700		1700	B Morrow	1756	Denise Harrington	1756	Rush 48 hrs
Ian T Reed (printed name)	11-3-99 (date)	B Morrow (printed name)	11/3/99 (date)	B Morrow (printed name)	11/3/99 (date)	D. Harrington (printed name)	1756 (date)	
Company- ASE		Company-		Company-		Company- Chromalab	11/3/99	

99-11-0071

48882

Aqua Science Engineers, Inc.
208 W. El Pintado Road
Danville, CA 94526
(925) 820-9391
FAX (925) 837-4853

Chain of Custody

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SAMPLER (SIGNATURE) Ian Reed (PHONE NO.) (925) 820-9391

PROJECT NAME Kendall JOB NO. 3515

ADDRESS 2221 Union Street Oakland CA DATE 11-2-99

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

5 day TAT

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)	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140) (EPA 608/8080)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)					COMPOSITE
MW-1	11-2-99	~~1045~~ 0945	water	3				X															X
MW-2	11-2-99	1005	water	3				X															X
MW-3	11-2-99	1045	water	3				X															X

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
Ian Reed 1700 (signature) (time)	(signature) (time) 1700	(signature) (time) 1756	Denise Harrington (signature) (time)	5-day TAT
Ian Reed 11-3-99 (printed name) (date)	(printed name) (date) 11/3/99	(printed name) (date) 11/3/99	D. Harrington 1756 (printed name) (date)	
Company- ASE	Company-	Company-	Company- Chromalab 11/3/99	