aqua science engineers inc.

September 27, 1999

REPORT
of
SOIL AND GROUNDWATER ASSESSMENT
at
Vacant Property
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 submittal outlines Aqua Science Engineers, Inc. (ASE's) soil and groundwater assessment at 2221 Union Street in Oakland, California (Figure 1). The site assessment activities were designed to delineate the extent of volatile organic compound (VOC) contamination in soil and groundwater previously identified in Geoprobe and hand auger borings drilled 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 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-foot sample.

2.2 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 Preliminary Groundwater Flow Direction Information

Local groundwater flow direction information was gathered by ASE from an adjacent site located at 2311 Magnolia Avenue. Based on historical data, it was determined that the shallow groundwater flows toward the east/southeast in the immediate vicinity.

3.0 SCOPE OF WORK (SOW)

ASE prepared the following scope of work (SOW) to assess the subsurface soil and groundwater near the outdoor drain, the oil/water separator, and inside the building where parts cleaning bins were used. This work was performed to satisfy the requirements detailed in a letter prepared for the site by Ms. Eva Chu of the ACHCSA on August 9, 1999, *Appendix A.*

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 three (3) soil borings to approximately 20-feet below ground surface (bgs) at the site.

4) Analyze one soil sample collected from each soil boring at a CAL-EPA certified environmental laboratory for halogenated volatile organic compounds (HVOCs) by EPA Method 8260.

5) Install 2-inch diameter groundwater monitoring wells in each boring described in task 3.

6) Develop the monitoring wells.

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

8) Analyze the groundwater samples at a CAL-EPA certified analytical laboratory for HVOCs by EPA Method 8010.

9) Survey the top of casing elevation of each 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 PREPARING A WORKPLAN AND HEALTH AND SAFETY PLAN

Based on the site history and the analytical results of the soil and groundwater samples collected during the previous assessment at the site, ASE prepared a workplan, as well as a site-specific health and safety plan. A nearby hospital was designated in the site safety plan as the emergency medical facility of first choice. A copy of the site specific Health and Safety Plan was present at the site at all times of during the soil and ground water investigation.

5.0 DRILLING SOIL BORINGS AND COLLECTING SAMPLES

5.1 Permits

Prior to drilling, ASE obtained a drilling permit from the Alameda County Public Works Agency (ACPWA). A copy of this permit is presented in *Appendix A*. ASE also notified Underground Service Alert (USA) to have underground utility lines marked in the site vicinity prior to drilling.

5.2 Drilling and Collection of Soil Samples

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 drilling was directed by ASE senior geologist Robert E. Kitay, R.G.

Undisturbed soil samples were collected from all soil borings 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 using a direct push method. 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. Steam cleaning rinsate and 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.

5.3 Site Specific Geology

Sediments encountered during drilling generally consisted of silty sand and/or sandy silt from beneath the surface to approximately 2-feet bgs, and a combination of clayey silt, clayey gravel and sandy silt from 2-feet bgs to the total depth explored of 20-feet bgs. The boring logs and well construction details are included as *Appendix B.*

6.0 ANALYTICAL RESULTS FOR SOIL

6.1 Soil Samples Analyzed

The soil sample collected from 5-feet bgs in soil boring MW-1, and the soil samples collected from 2.5-feet bgs in soil borings MW-2 and MW-3 were analyzed by Chromalab for HVOCs by modified EPA Method 8260A. There were no visible signs of contamination in any of the soil samples collected. The soil sample analyzed from soil boring MW-1 was the first sample collected from the boring and was from just below the water table (capillary zone). The soil samples analyzed from soil borings MW-2 and MW-3 were from just above the water table.

6.2 Soil Analytical Results

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 soil sample analytical results are tabulated in Table One, and copies of the certified analytical report and chain of custody form are included in *Appendix C.*

7.0 MONITORING WELL CONSTRUCTION, DEVELOPMENT AND SAMPLING

7.1 Monitoring Well Construction

Groundwater monitoring wells MW-1, MW-2, and MW-3 were constructed in their respective borings. The wells were constructed with 2-inch diameter, 0.010-inch slotted, flush-threaded, schedule 40 PVC well screen and blank casing. All three wells are screened between 2.5-feet bgs and 20-feet bgs to monitor the first water-bearing zone encountered. Lonestar #2/12 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.

7.2 Monitoring Well Development

On August 30, 1999, ASE associate geologist Ian Reed developed all three monitoring wells (MW-1, MW-2, and MW-3) using multiple episodes of surge-block agitation, submersible pumping, and bailing. Ten well casing volumes of water were removed from each well during development, until the water was clear. Well development purge water was contained in sealed and labeled 55-gallon steel drums and left on-site. No evidence of contamination was present in the purge water from each well.

7.3 Monitoring Well Sampling

On September 2, 1999, ASE associate geologist Ian Reed collected groundwater samples from monitoring wells MW-1, MW-2, and MW-3 for analysis. There was no visible evidence of contamination present in groundwater from any of the monitoring wells. Prior to sampling, each well was 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 a pre-cleaned polyethylene bailer. The groundwater samples were decanted from the bailers into 40-ml volatile organic analysis (VOA) vials, pre-preserved with hydrochloric acid, sealed without headspace, 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. See *Appendix D* for a copy of the Field Logs.

8.0 ANALYTICAL RESULTS FOR GROUNDWATER

8.1 Groundwater Samples Analyzed

The groundwater samples were analyzed by Chromalab for HVOCs by modified EPA Method 8010. The groundwater sample analytical results are tabulated in Table Two, and copies of the certified analytical report and chain of custody form are included in *Appendix E.*

8.2 Groundwater Analytical Results

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.

9.0 ELEVATION SURVEY

9.1 Monitoring Well Elevation Survey

The site monitoring wells were surveyed relative to a site datum on August 30, 1999. This data was used in conjunction with the depth to groundwater measurements from September 2, 1999 to prepare a groundwater elevation (potentiometric surface) contour map. On September 2, 1999, the groundwater flow direction was to the west. This was contrary to the position of the wells being east of the site's subsurface concerns. The easterly direction was derived using data from four monitoring wells at 2311 Magnolia Street, just across Union Street from the subject site. In order to further evaluate the area's groundwater flow direction, ASE re-surveyed the site monitoring wells utilizing monitoring well MW-1 from the Magnolia Street site on September 24, 1999. The potentiometric surface map from the data gathered on September 24, 1999 is included as Figure 3. The survey data is presented as Table Three.

9.2 Groundwater Gradient and Flow Direction

The groundwater flow direction at the site, as shown on Figure 3, varies from west, to south, to southeast at a gradient ranging from 0.06 to 0.014

feet per foot. The groundwater elevation within monitoring well MW-1 is approximately 2.8-feet lower than the groundwater elevation within monitoring well MW-2, only 30-feet away from monitoring well MW-1. This anomalous groundwater elevation indicates a western groundwater flow component that is possibly related to dewatering west of the site due to: (a) the widespread use of fill material in the western Oakland region, (b) the subsurface backfill material associated with the railroad tracks west of the property, or (c) the possible presence of an abandoned subsurface utility that may be dewatering the water-bearing zone. **Regardless of the reason for the groundwater elevation within monitoring well MW-1, ASE recommends the installation of a fourth monitoring well to be positioned west of the site as depicted on Figure 4.**

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Subsurface Soil

The soil sample collected from soil boring MW-1 contained 18 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.

None of the HVOC concentrations detected in the three soil samples exceed the United States Environmental Protection Agency (US EPA) Region IX preliminary remediation goals (PRGs) for industrial soil. Based on these results, it appears that the soil contamination identified in the soil sample collected from the hand-augered soil boring, BH-A, is limited to only a very small area.

10.2 Groundwater

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.

The concentrations of 1,1-DCA and PCE in the groundwater sample collected from monitoring well MW-1, PCE in MW-2, and cis-1,2-DCE, 1,2-

DCA, TCE and PCE in MW-3 exceeded California Department of Health Services (DHS) maximum contaminant levels (MCLs) for drinking water.

The groundwater flow direction at the site, as shown on Figure 3, varies from west, to south, to southeast at a gradient ranging from 0.06 to 0.014 feet per foot. The groundwater elevation within monitoring well MW-1 is approximately 2.8-feet lower than the groundwater elevations of the other site wells, including monitoring well MW-2 only 30-feet away from monitoring well MW-1. This anomalous groundwater elevation indicates a western groundwater flow component that is possibly related to dewatering west of the site due to: (a) the widespread use of fill material in the western Oakland region, (b) the subsurface backfill material associated with the railroad tracks west of the property, or (c) the possible presence of an abandoned subsurface utility that may be dewatering the water-bearing zone. **Regardless of the reason for the groundwater elevation within monitoring well MW-1, ASE recommends the installation of a fourth monitoring well to be positioned west of the site as depicted on Figure 4.**

A copy of this report should be sent to the following regulatory agencies for their review:

Ms. Eva Chu
Alameda County Health Care Services Agency
1311 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Mr. Chuck Headlee
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

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.

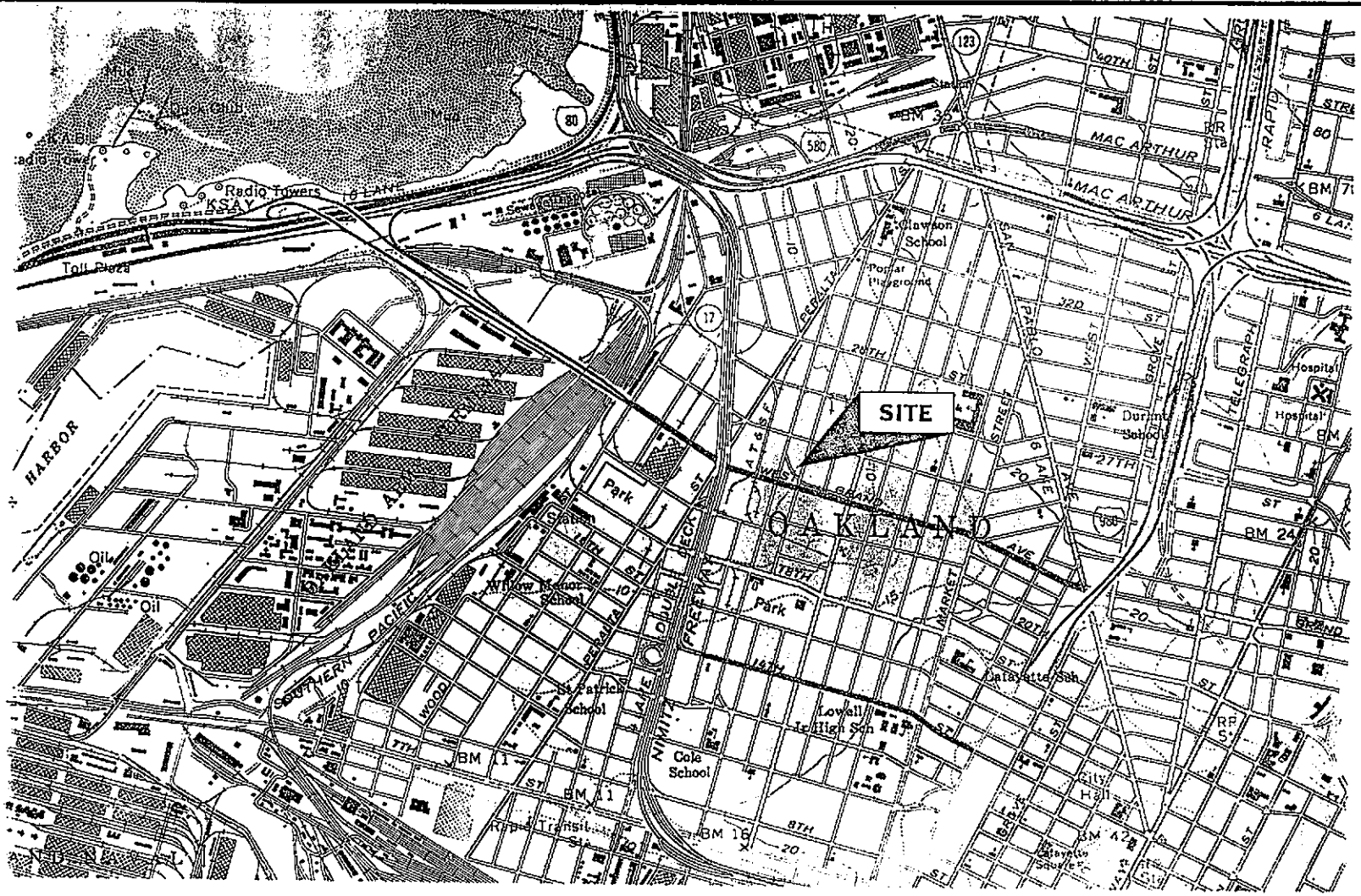
David Allen, R.E.A.
Senior Project Manager

REGISTERED GEOLOGIST
ROBERT E. KITAY
No. 6586
STATE OF CALIFORNIA

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

Attachments: Figures 1 through 4
Appendices A through E

cc: Mr. John Kendall, Trustee
Ms. Anne Bruff, Wells & Bennett Realtors



NORTH

LOCATION MAP

Vacant Property
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-2

BUILDING

SIDEWALK

FENCE

BH-D

MEZZANINE

BUILDING

SIDEWALK

BH-F MW-3 BH-E

PARTS CLEANING BINS

UNION STREET

NEIGHBORING PROPERTY

SIDEWALK

PACIFIC CRYOGENIC COMPANY PROPERTY

PCCMW-1

LEGEND

BH-G — ASE Soil Boring

MW-3 — ASE Monitoring Well

PCCMW-1 — Pacific Cryogenic Company Monitoring Well

0 30 60 90

SCALE IN FEET

NORTH

SITE PLAN

VACANT PROPERTY
2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 2

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1
(6.19')

OUTDOOR DRAIN

MW-2
(9.00')

BUILDING

SIDEWALK

FENCE

UNION STREET

SIDEWALK

BUILDING

MEZZANINE

9.0'

MW-3
(8.89')

PARTS CLEANING BINS

NEIGHBORING PROPERTY

8.0'

7.0'

SIDEWALK

PACIFIC CRYOGENIC COMPANY PROPERTY

PCCMW-1
(6.14')

LEGEND

MW-3
(8.89')

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

PCCMW-1
(6.14)

Pacific Cryogenic Company
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 - SEPTEMBER 24, 1999

VACANT PROPERTY
2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 3

NEIGHBORING PROPERTY

FENCED-IN,
DIRT SURFACE
YARD

FENCE

OIL / WATER SEPARATOR

MW-1

OUTDOOR DRAIN

MW-2

BUILDING

SIDEWALK

FENCE

UNION STREET

BUILDING

MEZZANINE

MW-3

PARTS CLEANING BINS

SIDEWALK

NEIGHBORING PROPERTY

SIDEWALK

PACIFIC CRYOGENIC COMPANY PROPERTY

PCCMW-1

LEGEND

MW-3 — ASE Monitoring Well

PCCMW-1 — Pacific Cryogenic Company Monitoring Well

— Proposed Monitoring Well

0 30 60 90

SCALE IN FEET

NORTH

PROPOSED MONITORING WELL LOCATION MAP

VACANT PROPERTY
2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 4

TABLE ONE

Summary of Chemical Analysis for ~~Soil~~ Samples Collected 8/27/99
Halogenated Volatile Organic Compounds (HVOCs) by EPA Method 8260A
2221 Union Street, Oakland, California
All results are in parts per billion (ppb)

SAMPLE ID	Sample Depth (ft)	cis-1,2-Dichloroethene	1,1-Dichloroethane	Trichloroethene	Tetrachloroethene	Other VOCs
MW-1	5.0'	< 5.0	< 5.0	18	180	< 5.0 - < 10
MW-2	2.5'	< 5.0	< 5.0	< 5.0	31	< 5.0 - < 10
MW-3	2.5'	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 - < 10
*PRGs**		*150,000*	*2,000,000*	*61,000*	*16,000*	*varies*

Notes:
*PRGs = United States Environmental Protection Agency Region IX Preliminary Remedial Goals for industrial soil
Non-Detectable concentrations are denoted by a less than symbol (<) followed by the laboratory reporting limit

TABLE TWO

Summary of Chemical Analysis for Groundwater Samples Collected 9/2/99
Halogenated Volatile Organic Compounds (HVOCs) by EPA Method 8010
Union Street, Oakland, California
All results are in parts per billion (ppb)

SAMPLE ID	cis-1,2-Dichloroethene	1,1-Dichloroethane	Trichloroethene	Tetrachloroethene	Other VOCs
MW-1	3.9	58	3.2	9.9	< 1.0 - < 10.0
MW-2	1.7	< 1.0	4.5	48	< 1.0 - < 10.0
MW-3	34	22	21	38	< 0.5 - < 5.0
*DHS MCLs**	*6*	*5*	*5*	*5*	*varies*

Notes:
* DHS MCLs = California Department of Health Services maximum contaminant levels for drinking water
Non-Detectable concentrations are denoted by a less than symbol (<) followed by the laboratory reporting limit

TABLE THREE

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
MW-2	9/2/99	15.29	6.29	9.00
MW-3	9/2/99	15.15	6.26	8.89
PCCMW-1	9/2/99	14.09	7.95	6.14

APPENDIX A

Permits

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

StID 6416

August 9, 1999

Mr. John Kendall, Trustee
California Brake and Clutch
2411 Santa Clara Avenue
Alameda, CA 94501

RE: **Soil/Groundwater Investigation Workplan for 2221 Union Street, Oakland, CA**

Dear Mr. Kendall:

I have completed review of Aqua Science Engineers Inc.'s July 28, 1999 *Report of Soil and Groundwater Assessment* prepared for the above referenced site. On July 12, 1999, a total of six borings (BH-B through BH-G) were advanced in the vicinity of the surface water drain and inside the building where parts-cleaning bins were used. Soil and groundwater samples were collected and analyzed for TPHg, TPHd, TOG, BTEX, MTBE, 5 LUFT metals, and HVOCs. Only soil collected from the drain area contained analytes sought (up to 0.53ppm PCE, 0.23ppm TCE, and 0.017ppm cis-1,2-DCE). HVOCs were also detected in groundwater from Boring BH-B, BH-C, BH-E and BH-F.

At this time, additional investigations are required to determine the extent and severity of soil and groundwater contamination due to chlorinated solvents at the site. A workplan for the next phase of investigation should include at the minimum:

1. Locate the drain line and collected soil samples beneath the pipe at every 20 linear feet and at elbows/connectors.
2. Based on analytical results of soil samples collected along the piping, install groundwater monitoring wells to evaluate groundwater quality at the site.

A workplan for the above investigation is due within 60 days of the date of this letter, or **by October 12, 1999.** If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

c: Mr. David Allen, Aqua Science, 208 West El Pintado, Danville, CA 94526
ca brake & clutch-1

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

StID 6416

August 24, 1999

Mr. John Kendall, Trustee
California Brake and Clutch
2411 Santa Clara Avenue
Alameda, CA 94501

RE: Workplan Approval for 2221 Union Street, Oakland, CA

Dear Mr. Kendall:

I have completed review of Aqua Science Engineers Inc.'s August 19, 1999 *Workplan for a Soil and Groundwater Assessment* prepared for the above referenced site. The proposal to install three groundwater monitoring wells to delineated the extent and severity of chlorinated solvents in groundwater is acceptable.

It is my understanding that the wells will be installed this Friday. A report summarizing field activities and findings is due within 60 days upon completion of field work. If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

c: Mr. David Allen, Aqua Science, 208 West El Pintado, Danville, CA 94526

ca brake & clutch-2

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-3651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5143 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2221 UNION ST. OAKLAND CA

California Coordinate Source ____ Zone ____ Accuracy ± ____ ft.
CCN ____ / ____ / ____ CCE ____ / ____ / ____ ft.
APN ____ / ____ / ____

CLIENT
Name JOHN KENDALL, TRUSTEE
Address 2411 SANTA CLARA Phone 510. 523. 9421
City ALAMEDA CA Zip 94501

APPLICANT
Name Aqua Science Engineers
Attn: Robert Kitay Fax 925-837-4853
Address 208 West 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 485165

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 30 ft.
Surface Seal Depth 10 ft. Number 3

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

ESTIMATED STARTING DATE 8-27-99
ESTIMATED COMPLETION DATE 8-27-99

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

APPLICANT'S SIGNATURE Robert C. Kitay DATE 8-24-99

FOR OFFICE USE
PERMIT NUMBER 99WR511
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 Carla A. Schultz DATE 8-24-99

** TOTAL PAGE.02 **

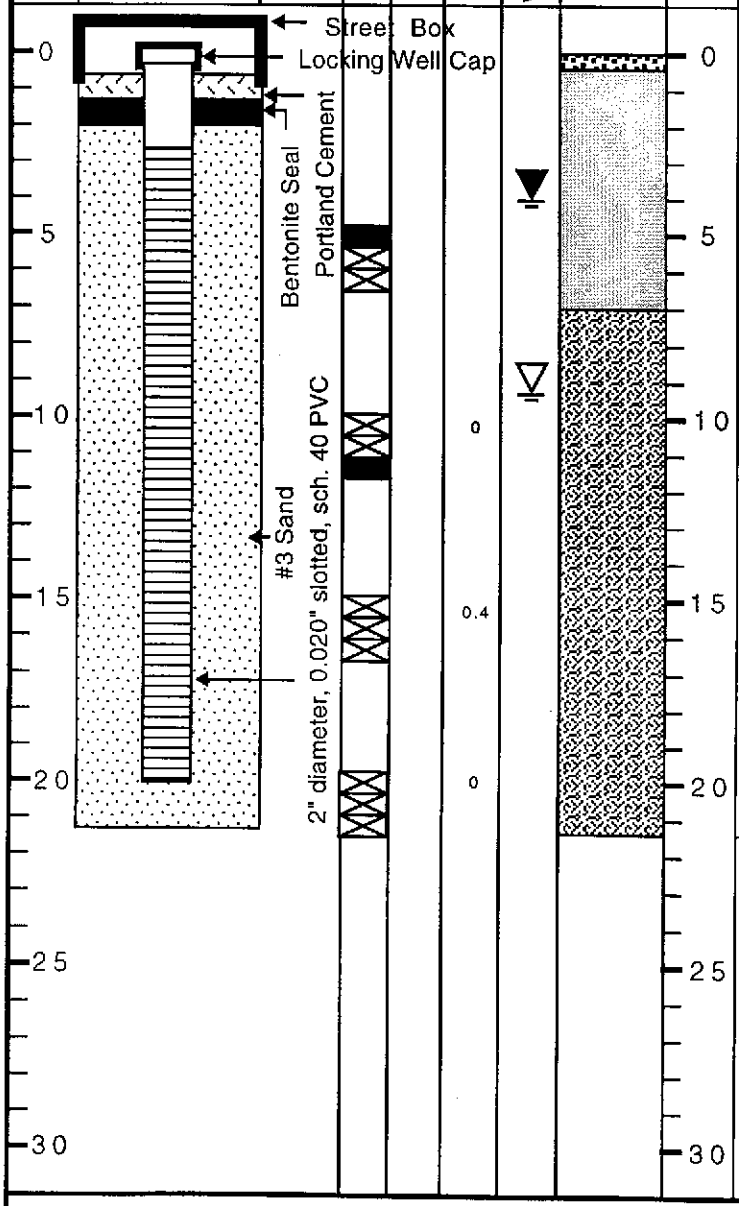
APPENDIX B

Boring Log and Well Construction Details

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

WATER AND WELL DATA

Depth of Water First Encountered: 4.0'	Total Depth of Well Completed: 20.0'
Static Depth of Water in Well: 9.42'	Well Screen Type and Diameter: 2" diameter sch. 40 PVC
Total Depth of Boring: 21.5'	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
Sandy SILT (ML); black; soft; wet; 65% silt; 20% fine sand; 10% subangular gravel to 1.5" diameter; 5% clay; low plasticity; low estimated K; sewage-like odor
Clayey SILT (MH); gray; medium stiff; wet; 65% silt; 20% clay; 10% fine sand; 5% subangular gravel to 1.5" diameter; medium plasticity; low estimated K; sewage odor
Occasional sand stringers
End of boring at 21.5'

AQUA SCIENCE ENGINEERS, INC.

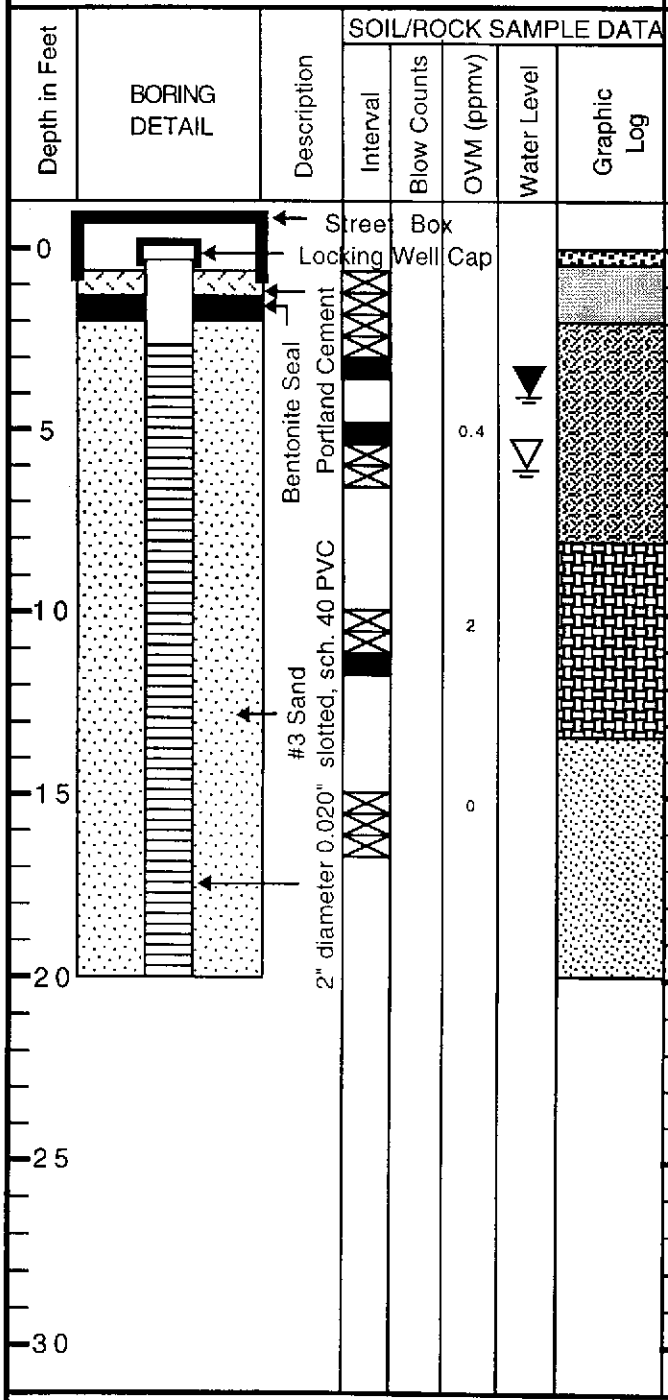
SOIL BORING LOG AND MONITORING WELL COMPLETION DETAILS

Monitoring Well: MW-2

Project Name: Kendall	Project Location: 2221 Union Street, Oakland CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Hollow-Stem Auger	Size of Drill: 8.0" Diameter
Logged By: Robert E. Kitay, R.G.	Date Drilled: August 27, 1999	Checked By: Robert E. Kitay, R.G.

WATER AND WELL DATA

Depth of Water First Encountered: 4.0'	Total Depth of Well Completed: 20.0'
Static Depth of Water in Well: 6.08'	Well Screen Type and Diameter: 2" diameter sch. 40 PVC
Total Depth of Boring: 20.0'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2.0" I.D. Split-barrel

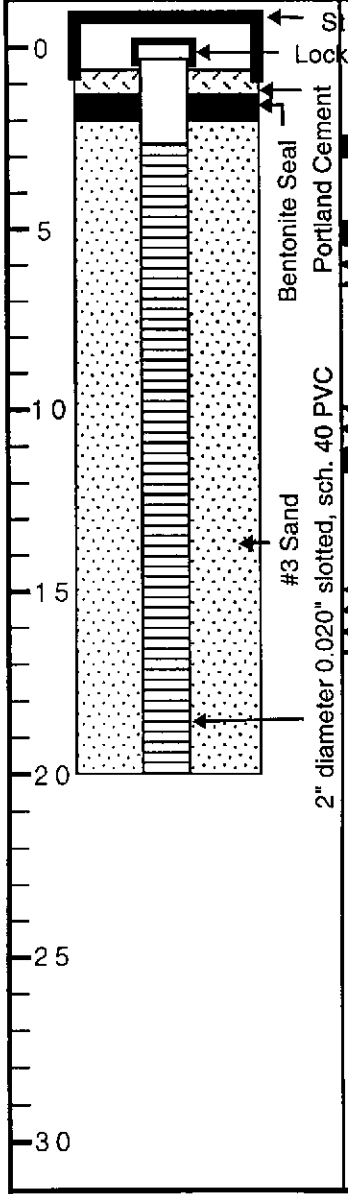


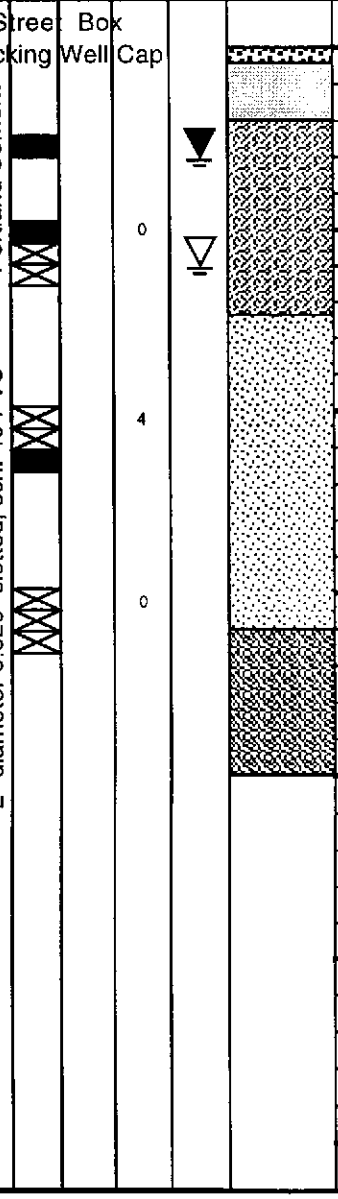
Depth in Feet	DESCRIPTION OF LITHOLOGY standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.
0	Concrete
	Silty SAND (SM); yellow brown; medium dense; damp; 85-90% fine to medium sand; 10-15% silt; non-plastic; high estimated K; no odor
5	Clayey SILT (MH); black; soft; wet; 80-85% silt; 15-20% clay; high plasticity; low estimated; no odor
10	Clayey GRAVEL (GC); very dark brown; dense; wet; 65% angular to subangular gravel to 2"diameter; 25% clay; 10% silt; medium plasticity; low estimated K; no odor
15	Sandy SILT (ML); black; stiff; wet; 60% silt; 30% fine to medium sand; 10% clay; medium plasticity; low estimated K; no odor
20	End of boring at 20.0'
25	
30	

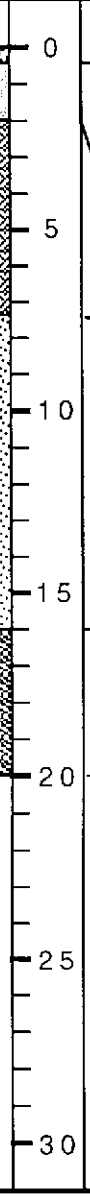
AQUA SCIENCE ENGINEERS, INC.

SOIL BORING LOG AND MONITORING WELL COMPLETION DETAILS		Monitoring Well: MW-3
Project Name: Kendall	Project Location: 2221 Union Street, Oakland CA	Page 1 of 1
Driller: Gregg Drilling	Type of Rig: Hollow-Stem Auger	Size of Drill: 8.0" Diameter
Logged By: Robert E. Kitay, R.G.	Date Drilled: August 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: 20.0'
	Well Screen Type and Diameter: 2" diameter sch. 40 PVC
Static Depth of Water in Well: 6.08'	Well Screen Slot Size: 0.020"
Total Depth of Boring: 20.0'	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
Silty SAND (SM); yellow brown; medium dense; damp; 85% fine to medium sand; 15% silt; non-plastic; high estimated K; no odor
Clayey SILT (MH); black; soft; wet; 80-85% silt; 10-15% clay; 5% fine sand; high plasticity; low estimated; no odor
Sandy SILT (ML); black; stiff; wet; 55% silt; 40% fine sand; 5% clay; low plasticity; low estimated K; no odor
Silty CLAY (CH); olive; stiff; wet; 65% clay; 35% silt; high plasticity; very low estimated K; no odor
End of boring at 20.0'

AQUA SCIENCE ENGINEERS, INC.

APPENDIX C

Analytical Report and Chain of Custody Form
For Soil Samples

Halogenated Volatile Organics Compounds

Aqua Science Engineers, Inc.

208 West El Pintado Road
Danville, CA 94526

Attn: Robert Kitay

Phone: (925) 820-9310 Fax: (925) 837-4853

Project #: 3515

Project: Kendall

Site: 2221 Union St.

Oakland, Ca.

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-1 5.0	Soil	08/27/1999 08:53	1
MW-2 2.5	Soil	08/27/1999 10:44	3
MW-3 2.5	Soil	08/27/1999 13:12	5

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-1 5.0**	Lab Sample ID:	**1999-08-0496-001**
Project:	3515 Kendall	Received:	08/30/1999 16:24
Site:	2221 Union St. Oakland, Ca.	Extracted:	09/09/1999 18:08
Sampled:	08/27/1999 08:53	QC-Batch:	1999/09/09-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	10	ug/Kg	1.00	09/09/1999 18:08	
Vinyl chloride	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Chloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Trichlorofluoromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,1-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Methylene chloride	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,1-Dichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Chloroform	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Carbon tetrachloride	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,2-Dichloroethane	ND	5.0	mg/Kg	1.00	09/09/1999 18:08	
Trichloroethene	18	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,2-Dichloropropane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Bromodichloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
2-Chloroethylvinyl ether	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Tetrachloroethene	180	5.0	ug/Kg	1.00	09/09/1999 18:08	
Dibromochloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Chlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Bromoform	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,1,2,2-Tetrachloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Chloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Bromomethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:08	
Surrogate(s)						
4-Bromofluorobenzene	100.0	74-121	%	1.00	09/09/1999 18:08	
1,2-Dichloroethane-d4	97.8	70-121	%	1.00	09/09/1999 18:08	

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-1 5.0**	Lab Sample ID:	**1999-08-0496-001**
Project:	3515 Kendall	Received:	08/30/1999 16:24
Site:	2221 Union St. Oakland, Ca.	Extracted:	09/09/1999 18:08
Sampled:	08/27/1999 08:53	QC-Batch:	1999/09/09-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Surrogate(s)						
Toluene-d8	98.5	81-117	%	1.00	09/09/1999 18:08	

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 1999-08-0496

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-2 2.5**	Lab Sample ID:	**1999-08-0496-003**
Project:	3515 Kendall	Received:	08/30/1999 16:24
Site:	2221 Union St. Oakland, Ca.	Extracted:	09/09/1999 18:46
Sampled:	08/27/1999 10:44	QC-Batch:	1999/09/09-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	10	ug/Kg	1.00	09/09/1999 18:46	
Vinyl chloride	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Chloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Trichlorofluoromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,1-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Methylene chloride	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,1-Dichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Chloroform	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Carbon tetrachloride	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,2-Dichloroethane	ND	5.0	mg/Kg	1.00	09/09/1999 18:46	
Trichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,2-Dichloropropane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Bromodichloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
2-Chloroethylvinyl ether	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Tetrachloroethene	31	5.0	ug/Kg	1.00	09/09/1999 18:46	
Dibromochloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Chlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Bromoform	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,1,2,2-Tetrachloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Chloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Bromomethane	ND	5.0	ug/Kg	1.00	09/09/1999 18:46	
Surrogate(s)						
4-Bromofluorobenzene	98.6	74-121	%	1.00	09/09/1999 18:46	
1,2-Dichloroethane-d4	92.9	70-121	%	1.00	09/09/1999 18:46	

1220 Quarry Lane * Pleasanton, CA 94566-4756
Telephone: (925) 484-1919 * Facsimile: (925) 484-1096

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-2 2.5**	Lab Sample ID:	**1999-08-0496-003**
Project:	3515 Kendall	Received:	08/30/1999 16:24
Site:	2221 Union St. Oakland, Ca.	Extracted:	09/09/1999 18:46
Sampled:	08/27/1999 10:44	QC-Batch:	1999/09/09-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Surrogate(s)						
Toluene-d8	101.9	81-117	%	1.00	09/09/1999 18:46	

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-3 2.5**	Lab Sample ID:	**1999-08-0496-005**
Project:	3515 Kendall	Received:	08/30/1999 16:24
Site:	2221 Union St. Oakland, Ca.	Extracted:	09/09/1999 20:43
Sampled:	08/27/1999 13:12	QC-Batch:	1999/09/09-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	10	ug/Kg	1.00	09/09/1999 20:43	
Vinyl chloride	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Chloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Trichlorofluoromethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,1-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Methylene chloride	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,1-Dichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Chloroform	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Carbon tetrachloride	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,2-Dichloroethane	ND	5.0	mg/Kg	1.00	09/09/1999 20:43	
Trichloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,2-Dichloropropane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Bromodichloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
2-Chloroethylvinyl ether	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Tetrachloroethene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Dibromochloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Chlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Bromoform	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,1,2,2-Tetrachloroethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Trichlorotrifluoroethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Chloromethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Bromomethane	ND	5.0	ug/Kg	1.00	09/09/1999 20:43	
Surrogate(s)						
4-Bromofluorobenzene	99.5	74-121	%	1.00	09/09/1999 20:43	
1,2-Dichloroethane-d4	96.9	70-121	%	1.00	09/09/1999 20:43	

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Halogenated Volatile Organics Compounds

Sample ID:	**MW-3 2.5**	Lab Sample ID:	**1999-08-0496-005**
Project:	3515 Kendall	Received:	08/30/1999 16:24
Site:	2221 Union St. Oakland, Ca.	Extracted:	09/09/1999 20:43
Sampled:	08/27/1999 13:12	QC-Batch:	1999/09/09-01.07
Matrix:	Soil		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Surrogate(s) Toluene-d8	102.9	81-117	%	1.00	09/09/1999 20:43	

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Batch QC Report

Halogenated Volatile Organics Compounds

Method Blank | **Soil** | **QC Batch # 1999/09/09-01.07**

MB: 1999/09/09-01.07-001 | Date Extracted: 09/09/1999 12:16

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Bromodichloromethane	ND	5.0	ug/Kg	09/09/1999 12:16	
Bromoform	ND	5.0	ug/Kg	09/09/1999 12:16	
Bromomethane	ND	10.0	ug/Kg	09/09/1999 12:16	
Carbon tetrachloride	ND	5.0	ug/Kg	09/09/1999 12:16	
Chlorobenzene	ND	5.0	ug/Kg	09/09/1999 12:16	
Chloroethane	ND	10	ug/Kg	09/09/1999 12:16	
2-Chloroethylvinyl ether	ND	50	ug/Kg	09/09/1999 12:16	
Chloroform	ND	5.0	ug/Kg	09/09/1999 12:16	
Chloromethane	ND	10	ug/Kg	09/09/1999 12:16	
Dibromochloromethane	ND	5.0	ug/Kg	09/09/1999 12:16	
1,2-Dichlorobenzene	ND	5.0	ug/Kg	09/09/1999 12:16	
1,3-Dichlorobenzene	ND	5.0	ug/Kg	09/09/1999 12:16	
1,4-Dichlorobenzene	ND	5.0	ug/Kg	09/09/1999 12:16	
Dichlorodifluoromethane	ND	10	ug/Kg	09/09/1999 12:16	
1,1-Dichloroethane	ND	5.0	ug/Kg	09/09/1999 12:16	
1,2-Dichloroethane	ND	5.0	ug/Kg	09/09/1999 12:16	
1,1-Dichloroethene	ND	5.0	ug/Kg	09/09/1999 12:16	
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	09/09/1999 12:16	
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	09/09/1999 12:16	
1,2-Dichloropropane	ND	5.0	ug/Kg	09/09/1999 12:16	
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	09/09/1999 12:16	
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	09/09/1999 12:16	
Methylene chloride	ND	5.0	ug/Kg	09/09/1999 12:16	
1,1,2,2-Tetrachloroethane	ND	5.0	ug/Kg	09/09/1999 12:16	
Tetrachloroethene	ND	5.0	ug/Kg	09/09/1999 12:16	
1,1,1-Trichloroethane	ND	5.0	ug/Kg	09/09/1999 12:16	
1,1,2-Trichloroethane	ND	5.0	ug/Kg	09/09/1999 12:16	
Trichloroethene	ND	5.0	ug/Kg	09/09/1999 12:16	
Vinyl chloride	ND	5.0	ug/Kg	09/09/1999 12:16	
Trichlorotrifluoroethane	ND	5.0	ug/Kg	09/09/1999 12:16	
Trichlorofluoromethane	ND	5.0	ug/Kg	09/09/1999 12:16	
Surrogate(s)					
4-Bromofluorobenzene	97.4	74-121	%	09/09/1999 12:16	
1,2-Dichloroethane-d4	96.0	70-121	%	09/09/1999 12:16	
Toluene-d8	101.4	81-117	%	09/09/1999 12:16	

To: **Aqua Science Engineers, Inc.**

Attn: Robert Kitay

Test Method: 8260A

Prep Method: 5030

Batch QC Report

Halogenated Volatile Organics Compounds

Laboratory Control Spike (LCS/LCSD) **Soil** **QC Batch # 1999/09/09-01.07**

LCS: 1999/09/09-01.07-002 Extracted: 09/09/1999 12:55 Analyzed: 09/09/1999 12:55

LCSD: 1999/09/09-01.07-003 Extracted: 09/10/1999 11:37 Analyzed: 09/10/1999 11:37

Compound	Conc. [ug/Kg]		Exp.Conc. [ug/Kg]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Chlorobenzene	98.7	98.6	100.0	100.0	98.7	98.6	0.1	61-121	20		
1,1-Dichloroethene	86.4	101	100.0	100.0	86.4	101.0	15.6	65-125	20		
Trichloroethene	93.7	101	100.0	100.0	93.7	101.0	7.5	74-134	20		
Surrogate(s)											
4-Bromofluorobenzene	491	490	500	500	98.2	98.0		74-121			
1,2-Dichloroethane-d4	427	458	500	500	85.4	91.6		70-121			
Toluene-d8	521	498	500	500	104.2	99.6		81-117			

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 1999-08-0496

To: **Aqua Science Engineers, Inc.**
Attn.: Robert Kitay

Test Method: 8260A
Prep Method: 5030

Batch QC Report

Halogenated Volatile Organics Compounds

Matrix Spike (MS / MSD) **Soil** **QC Batch # 1999/09/09-01.07**

Sample ID: **MW-2 2.5** Lab Sample ID: 1999-08-0496-003

MS: 1999/09/09-01.07-004 Extracted: 09/09/1999 19:25 Analyzed: 09/09/1999 19:25 Dilution: 1.0

MSD: 1999/09/09-01.07-005 Extracted: 09/09/1999 20:04 Analyzed: 09/09/1999 20:04 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
1,1-Dichloroethene	93.4	94.1	ND	100.0	94.9	93.4	99.2	6.0	65-125	20		
Trichloroethene	95.3	95.6	ND	100.0	94.9	95.3	100.7	5.5	74-134	20		
Chlorobenzene	91.7	91.4	ND	100.0	94.9	91.7	96.3	4.9	61-121	20		
Surrogate(s)												
4-Bromofluorobenzene	498	498		500	500	99.6	99.6		74-121			
1,2-Dichloroethane-d4	447	451		500	500	89.4	90.2		70-121			
Toluene-d8	495	493		500	500	99.0	98.6		81-117			

99-08-0496 47731

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) Robert E. Kitay (PHONE NO.) (925)820-9391

PROJECT NAME Kendall JOB NO. 3515

ADDRESS 2221 Union Street, Oakland, CA DATE 8-27-99

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-GASOLINE (EPA 5030/8015)	TPH-DIESEL (EPA 3510/8015)	PURGEABLE HALOCARBONS (EPA 601/8010)	PURGEABLE AROMATICS (EPA 602/8020)	VOLATILE ORGANICS (EPA 624/8240)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	OIL & GREASE (EPA 5520)	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)	HOLD			COMPOSITE
MW-1 5.0'	8/27	8:53	soil	1			x	✓														
MW-1 4.0'	↓	9:00	↓	↓															x			
MW-2 2.5'	↓	10:44	↓	↓			x	✓														
MW-2 5.0'	↓	11:30	↓	↓															x			
MW-3 2.5'	↓	13:12	↓	↓			x	✓														
MW-3 5.0'	↓	13:24	↓	↓															x			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
(signature) Robert E. Kitay (time) 15:20	(signature) B. Marco (time) 1520	(signature) B. Marco (time) 1624	(signature) Ken Wright (time) 1624	5-DAY TAT
(printed name) Robert E. Kitay (date) 8-30-99	(printed name) B. Marco (date) 8-30-99	(printed name) B. Marco (date) 8-30-99	(printed name) Ken Wright (date) 8-30-99	3.3
Company- ASE	Company- Chromalab	Company- Chromalab	Company- CL	

5-day TAT
9/7/99

APPENDIX D

Well Sampling Field Logs

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Union ST, 2221 Union St.
Job #: _____ Date of sampling: 9-2-99
Well Name: MW-1 Sampled by: ITR
Total depth of well (feet): 19.5' Well diameter (inches): 2"
Depth to water before sampling (feet): 9.42
Thickness of floating product if any: -
Depth of well casing in water (feet): 10.08
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): 7
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 1010 Time Evacuation Finished: 1020
Approximate volume of groundwater purged: 7
Did the well go dry?: No After how many gallons: -
Time samples were collected: 1025
Depth to water at time of sampling: 9.54
Percent recovery at time of sampling: 90%
Samples collected with: dedicated bailer
Sample color: clear Odor: None
Description of sediment in sample: -

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	70.0	5.78	574
2	68.9	5.68	604
3	71.0	5.71	597
4	71.1	5.64	582

SAMPLES COLLECTED

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

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Union ST.
Job #: _____ Date of sampling: 9-2-99
Well Name: MW-2 Sampled by: TTR
Total depth of well (feet): 19.8 Well diameter (inches): 2
Depth to water before sampling (feet): 6.08
Thickness of floating product if any: —
Depth of well casing in water (feet): 13.72
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): 9.3
Equipment used to purge the well: sub. pump
Time Evacuation Began: 1030 Time Evacuation Finished: 1040
Approximate volume of groundwater purged: 9.5
Did the well go dry?: NO After how many gallons: _____
Time samples were collected: 1045
Depth to water at time of sampling: 6.27
Percent recovery at time of sampling: 97%
Samples collected with: dedicated bailer
Sample color: orange clear Odor: None
Description of sediment in sample: -

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	71.0	6.72	673
2	70.9	6.84	704
3	71.4	7.05	778
4	71.0	6.57	805

SAMPLES COLLECTED

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

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: Union St
Job #: _____ Date of sampling: 9-2-99
Well Name: MW-3 Sampled by: ITR
Total depth of well (feet): 19.5 Well diameter (inches): 2
Depth to water before sampling (feet): 6.44
Thickness of floating product if any: -
Depth of well casing in water (feet): 13.06
Number of gallons per well casing volume (gallons): 2.2
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 8.8
Equipment used to purge the well: dedicated bailer
Time Evacuation Began: 1055 Time Evacuation Finished: 1105
Approximate volume of groundwater purged: 9.0
Did the well go dry?: No After how many gallons: _____
Time samples were collected: 1110
Depth to water at time of sampling: 7.28
Percent recovery at time of sampling: 83%
Samples collected with: dedicated bailer
Sample color: yellow clear Odor: None
Description of sediment in sample: -

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	69.9	7.42	787
2	70.1	7.07	645
3	70.5	6.47	578
4	69.8	6.97	594

SAMPLES COLLECTED

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

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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: Union Street, Kendall

Site: 2221 Union Street
Oakland, CA

Dear Mr. Reed,

Attached is our report for your samples received on Friday September 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 October 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,

Pierre Monette

Halogenated Volatile Organic 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 #:

Project: Union Street, Kendall

Site: 2221 Union Street
Oakland, CA

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-1	Water	09/02/1999 10:25	1
MW-2	Water	09/02/1999 10:45	2
MW-3	Water	09/02/1999 11:10	3

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:	**1999-09-0064-001**
Project:	Union Street, Kendall	Received:	09/03/1999 14:30
Site:	2221 Union Street Oakland, CA	Extracted:	09/13/1999 14:24
Sampled:	09/02/1999 10:25	QC-Batch:	1999/09/13-01.25
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	09/13/1999 14:24	
Vinyl chloride	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Chloroethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Trichlorofluoromethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
1,1-Dichloroethene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Methylene chloride	ND	10	ug/L	2.00	09/13/1999 14:24	
trans-1,2-Dichloroethene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
cis-1,2-Dichloroethene	3.9	1.0	ug/L	2.00	09/13/1999 14:24	
1,1-Dichloroethane	58	1.0	ug/L	2.00	09/13/1999 14:24	
Chloroform	ND	6.0	ug/L	2.00	09/13/1999 14:24	
1,1,1-Trichloroethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Carbon tetrachloride	ND	1.0	ug/L	2.00	09/13/1999 14:24	
1,2-Dichloroethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Trichloroethene	3.2	1.0	ug/L	2.00	09/13/1999 14:24	
1,2-Dichloropropane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Bromodichloromethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
2-Chloroethylvinyl ether	ND	1.0	ug/L	2.00	09/13/1999 14:24	
trans-1,3-Dichloropropene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
cis-1,3-Dichloropropene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
1,1,2-Trichloroethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Tetrachloroethene	9.9	1.0	ug/L	2.00	09/13/1999 14:24	
Dibromochloromethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Chlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Bromoform	ND	4.0	ug/L	2.00	09/13/1999 14:24	
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	2.00	09/13/1999 14:24	
1,3-Dichlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
1,4-Dichlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
1,2-Dichlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 14:24	
Trichlorotrifluoroethane	ND	4.0	ug/L	2.00	09/13/1999 14:24	
Chloromethane	ND	2.0	ug/L	2.00	09/13/1999 14:24	
Bromomethane	ND	2.0	ug/L	2.00	09/13/1999 14:24	
Surrogate(s)						
1-Chloro-2-fluorobenzene	118.6	50-150	%	1.00	09/13/1999 14:24	

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:	**1999-09-0064-002**
Project:	Union Street, Kendall	Received:	09/03/1999 14:30
Site:	2221 Union Street Oakland, CA	Extracted:	09/13/1999 13:28
Sampled:	09/02/1999 10:45	QC-Batch:	1999/09/13-01.25
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	09/13/1999 13:28	
Vinyl chloride	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Chloroethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Trichlorofluoromethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
1,1-Dichloroethene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Methylene chloride	ND	10	ug/L	2.00	09/13/1999 13:28	
trans-1,2-Dichloroethene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
cis-1,2-Dichloroethene	1.7	1.0	ug/L	2.00	09/13/1999 13:28	
1,1-Dichloroethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Chloroform	ND	6.0	ug/L	2.00	09/13/1999 13:28	
1,1,1-Trichloroethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Carbon tetrachloride	ND	1.0	ug/L	2.00	09/13/1999 13:28	
1,2-Dichloroethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Trichloroethene	4.5	1.0	ug/L	2.00	09/13/1999 13:28	
1,2-Dichloropropane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Bromodichloromethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
2-Chloroethylvinyl ether	ND	1.0	ug/L	2.00	09/13/1999 13:28	
trans-1,3-Dichloropropene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
cis-1,3-Dichloropropene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
1,1,2-Trichloroethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Tetrachloroethene	48	1.0	ug/L	2.00	09/13/1999 13:28	
Dibromochloromethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Chlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Bromoform	ND	4.0	ug/L	2.00	09/13/1999 13:28	
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	2.00	09/13/1999 13:28	
1,3-Dichlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
1,4-Dichlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
1,2-Dichlorobenzene	ND	1.0	ug/L	2.00	09/13/1999 13:28	
Trichlorotrifluoroethane	ND	4.0	ug/L	2.00	09/13/1999 13:28	
Chloromethane	ND	2.0	ug/L	2.00	09/13/1999 13:28	
Bromomethane	ND	2.0	ug/L	2.00	09/13/1999 13:28	
Surrogate(s)						
1-Chloro-2-fluorobenzene	125.5	50-150	%	1.00	09/13/1999 13:28	

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:	**1999-09-0064-003**
Project:	Union Street, Kendall	Received:	09/03/1999 14:30
Site:	2221 Union Street Oakland, CA	Extracted:	09/13/1999 12:33
Sampled:	09/02/1999 11:10	QC-Batch:	1999/09/13-01.25
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Dichlorodifluoromethane	ND	1.0	ug/L	1.00	09/13/1999 12:33	
Vinyl chloride	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Chloroethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Trichlorofluoromethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
1,1-Dichloroethene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Methylene chloride	ND	5.0	ug/L	1.00	09/13/1999 12:33	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
cis-1,2-Dichloroethene	34	0.50	ug/L	1.00	09/13/1999 12:33	
1,1-Dichloroethane	22	0.50	ug/L	1.00	09/13/1999 12:33	
Chloroform	ND	3.0	ug/L	1.00	09/13/1999 12:33	
1,1,1-Trichloroethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Carbon tetrachloride	ND	0.50	ug/L	1.00	09/13/1999 12:33	
1,2-Dichloroethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Trichloroethene	21	0.50	ug/L	1.00	09/13/1999 12:33	
1,2-Dichloropropane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Bromodichloromethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
2-Chloroethylvinyl ether	ND	0.50	ug/L	1.00	09/13/1999 12:33	
trans-1,3-Dichloropropene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
cis-1,3-Dichloropropene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
1,1,2-Trichloroethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Tetrachloroethene	38	0.50	ug/L	1.00	09/13/1999 12:33	
Dibromochloromethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Chlorobenzene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Bromoform	ND	2.0	ug/L	1.00	09/13/1999 12:33	
1,1,2,2-Tetrachloroethane	ND	0.50	ug/L	1.00	09/13/1999 12:33	
1,3-Dichlorobenzene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
1,4-Dichlorobenzene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
1,2-Dichlorobenzene	ND	0.50	ug/L	1.00	09/13/1999 12:33	
Trichlorotrifluoroethane	ND	2.0	ug/L	1.00	09/13/1999 12:33	
Chloromethane	ND	1.0	ug/L	1.00	09/13/1999 12:33	
Bromomethane	ND	1.0	ug/L	1.00	09/13/1999 12:33	
Surrogate(s)						
1-Chloro-2-fluorobenzene	116.5	50-150	%	1.00	09/13/1999 12:33	

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 # 1999/09/13-01.25**

MB: 1999/09/13-01.25-001 | Date Extracted: 09/13/1999 08:15

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Dichlorodifluoromethane	ND	1.0	ug/L	09/13/1999 08:15	
Vinyl chloride	ND	0.5	ug/L	09/13/1999 08:15	
Chloroethane	ND	0.5	ug/L	09/13/1999 08:15	
Trichlorofluoromethane	ND	0.5	ug/L	09/13/1999 08:15	
1,1-Dichloroethene	ND	0.5	ug/L	09/13/1999 08:15	
Methylene chloride	ND	5.0	ug/L	09/13/1999 08:15	
trans-1,2-Dichloroethene	ND	0.5	ug/L	09/13/1999 08:15	
cis-1,2-Dichloroethene	ND	0.5	ug/L	09/13/1999 08:15	
1,1-Dichloroethane	ND	0.5	ug/L	09/13/1999 08:15	
Chloroform	ND	3.0	ug/L	09/13/1999 08:15	
1,1,1-Trichloroethane	ND	0.5	ug/L	09/13/1999 08:15	
Carbon tetrachloride	ND	0.5	ug/L	09/13/1999 08:15	
1,2-Dichloroethane	ND	0.5	ug/L	09/13/1999 08:15	
Trichloroethene	ND	0.5	ug/L	09/13/1999 08:15	
1,2-Dichloropropane	ND	0.5	ug/L	09/13/1999 08:15	
Bromodichloromethane	ND	0.5	ug/L	09/13/1999 08:15	
2-Chloroethylvinyl ether	ND	0.5	ug/L	09/13/1999 08:15	
trans-1,3-Dichloropropene	ND	0.5	ug/L	09/13/1999 08:15	
cis-1,3-Dichloropropene	ND	0.5	ug/L	09/13/1999 08:15	
1,1,2-Trichloroethane	ND	0.5	ug/L	09/13/1999 08:15	
Tetrachloroethene	ND	0.5	ug/L	09/13/1999 08:15	
Dibromochloromethane	ND	0.5	ug/L	09/13/1999 08:15	
Chlorobenzene	ND	0.5	ug/L	09/13/1999 08:15	
Bromoform	ND	2.0	ug/L	09/13/1999 08:15	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	09/13/1999 08:15	
1,3-Dichlorobenzene	ND	0.5	ug/L	09/13/1999 08:15	
1,4-Dichlorobenzene	ND	0.5	ug/L	09/13/1999 08:15	
1,2-Dichlorobenzene	ND	0.5	ug/L	09/13/1999 08:15	
Trichlorotrifluoroethane	ND	2.0	ug/L	09/13/1999 08:15	
Chloromethane	ND	1.0	ug/L	09/13/1999 08:15	

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 # 1999/09/13-01.25**

MB: 1999/09/13-01.25-001

Date Extracted: 09/13/1999 08:15

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Bromomethane	ND	1.0	ug/L	09/13/1999 08:15	
Surrogate(s)					
1-Chloro-2-fluorobenzene	112.0	50-150	%	09/13/1999 08:15	

To: **Aqua Science Engineers, Inc.** Test Method: 8010

Attn: Ian T. Reed Prep Method: 5030

Batch QC Report

Halogenated Volatile Organic Compounds

Laboratory Control Spike (LCS/LCSD) **Water** **QC Batch # 1999/09/13-01.25**

LCS: 1999/09/13-01.25-002 Extracted: 09/13/1999 09:05 Analyzed: 09/13/1999 09:05

LCSD: 1999/09/13-01.25-003 Extracted: 09/13/1999 09:55 Analyzed: 09/13/1999 09:55

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	22.9	23.5	20.0	20.0	114.5	117.5	2.6	50-140	20		
Trichloroethene	22.5	23.5	20.0	20.0	112.5	117.5	4.3	50-150	20		
Chlorobenzene	25.6	26.5	20.0	20.0	128.0	132.5	3.5	50-150	20		
Surrogate(s)											
1-Chloro-2-fluorobenzen	23.9	26.3	20	20	119.5	131.5		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

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

99-09-0064

47808

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) Ian T Reed (PHONE NO.) 925-820-9391

PROJECT NAME Union Street, Kendall JOB NO.

ADDRESS 2221 Union Street, Oakland, CA DATE 9-2-99

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-GASOLINE (EPA 5030/8015)	TPH-DIESEL (EPA 3510/8015)	PURGEABLE HALOCARBONS (EPA 601/8010)	PURGEABLE AROMATICS (EPA 602/8020)	VOLATILE ORGANICS (EPA 624/8240)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	OIL & GREASE (EPA 5520)	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	9-2-99	1025	water	3				X														
MW-2	9-2-99	1045	water	3				X														
MW-3	9-2-99	1110	water	3				X														

RELINQUISHED BY: (signature) (time)	RECEIVED BY: (signature) 0958 (time)	RELINQUISHED BY: (signature) 1430 (time)	RECEIVED BY LABORATORY: (signature) (time)	COMMENTS:
Ian T Reed 9-2-99 (printed name) (date)	B Morrow 9-3-99 (printed name) (date)	Brett Morrow 9-3-99 (printed name) (date)	D. Harrington (printed name) (date)	5-day TAT
Company- ASE	Company- Cronalt	Company- CL	Company- CL 9/3/99 @ 1430	