aqua science engineers inc.

99 OCT 26 PM 4:18

October 25, 1999

Alameda County Health Care Services Agency
3111 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

ATTENTION: Ms. Eva Chu

SUBJECT: WORKPLAN FOR A SUBSURFACE INVESTIGATION
Former California Brake & Clutch Property
2221 Union Street
Oakland, CA

Dear Ms. Chu:

On Wednesday, October 27, 1999, Aqua Science Engineers, Inc. (ASE) will install a fourth groundwater monitoring well at the subject site as we discussed in our meeting on October 18, 1999. This fourth well will be installed in the location depicted on the enclosed drawing, Figure 4, and will be constructed, sampled and analyzed, and reported in the manner detailed in ASE's workplan dated August 19, 1999. This fourth well will provide information of groundwater parameters west of the subsurface concerns at the subject site.

Enclosed is a check in the amount of $1,500.00 for deposit funds for your agency's time spent on this project. Should you have any questions or comments, please feel free to call us at (925) 820-9391.

Respectfully submitted,

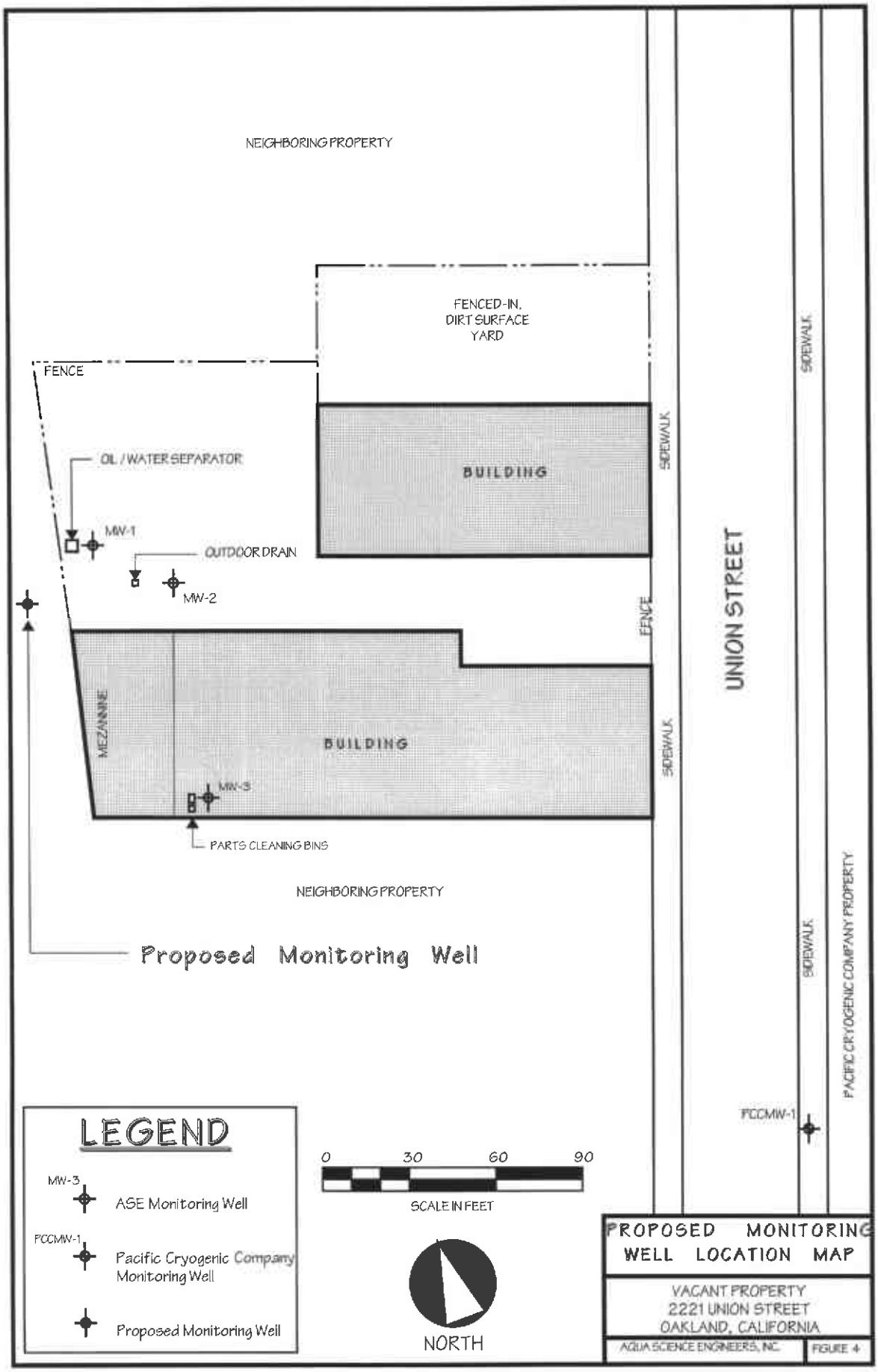
AQUA SCIENCE ENGINEERS, INC.

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

REGISTERED ENVIRONMENTAL ASSESSOR
DAVID ALLEN
No. REA-06211
Expires: 6-00
STATE OF CALIFORNIA

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

208 W. El Pintado, Danville, California 94526 • 925-820-9391 • Fax 925-837-4853


NEIGHBORING PROPERTY
FENCED-IN, DIRT SURFACE YARD
FENCE
OIL / WATER SEPARATOR
MW-1
OUTDOOR DRAIN
MW-2
BUILDING
SIDEWALK
SIDEWALK
UNION STREET
SIDEWALK
FENCE
MEZZANINE
BUILDING
MW-3
PARTS CLEANING BINS
NEIGHBORING PROPERTY
Proposed Monitoring Well
PCCMW-1
PACIFIC CRYOGENIC COMPANY PROPERTY
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

aqua science engineers inc

ENTAL
PROTECTION

99 AUG 23 PM 3:27

August 19, 1999

WORKPLAN
for a
SOIL AND GROUNDWATER ASSESSMENT
at
Vacant Property
2221 Union Street
Oakland, California

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

1.0 INTRODUCTION

This submittal outlines Aqua Science Engineers, Inc. (ASE's) workplan for a soil and groundwater assessment at 2221 Union Street in Oakland, California (Figure 1). The proposed site assessment activities have been designed to delineate the area of volatile organic compound (VOC) contamination in soil and groundwater previously identified in Geoprobe and hand auger borings drilled at the site (Figure 2).

2.0 BACKGROUND INFORMATION

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 (see Figure 2). The Phase I suggested drilling a soil boring 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 (see 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, volatile organic compounds (VOCs) 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

tetrachloroethene (PCE), up to 53 ppb, were identified in two soil borings (BH-B and BH-C), near the former outdoor drain. Trichloroethene (TCE) up to 230 ppb and cis 1,2-dichloroethene (cis-1,2-DCE) up to 17 ppb were identified in soil boring BH-C. None of the samples collected from the remaining soil borings contained detectable concentration of any of the VOCs analyzed.

Grab water samples were collected from the six new borings (BH-B WATER through BH-G WATER) and from the open borehole of the hand auger (BH-A WATER). 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: up to 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 to 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 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 has been determined that the shallow groundwater flows toward the east/southeast in the immediate vicinity.

3.0 PROPOSED SCOPE OF WORK (SOW)

ASE has 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 is being performed to satisfy the requirements detailed in a letter prepared for the site by Ms. Eva Chu of the ACHCSA on August 9, 1999 (see Appendix A).

1) Prepare this workplan and site specific health and safety plan for approval by Ms. Eva Chu of the Alameda County Health Care Services Agency (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 bgs at the site.

4) Analyze one soil sample collected from each soil boring at a CAL-EPA certified environmental laboratory for volatile organic compounds (VOCs) by EPA Method 8010.

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 VOCs 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.

TASK 1 - PREPARE 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 has prepared this workplan as well as a site-specific health and safety plan. A nearby hospital is designated in the site safety plan as the emergency medical facility of first choice. A copy of the site specific Health and Safety Plan will be present at the site at all times.

TASK 2 - OBTAIN NECESSARY PERMITS

ASE will obtain a drilling permit from the Alameda County Public Works Agency (ACPWA). ASE will also notify Underground Service Alert (USA) to have underground utility lines marked in the site vicinity.

TASK 3 - DRILL THREE SOIL BORINGS AT THE SITE

ASE will drill three soil borings at the locations shown on Figure 3. The borings will be drilled using a drill rig equipped with 8-inch diameter hollow-stem augers. The drilling will be directed by a qualified ASE geologist. Undisturbed soil samples will be collected at least every 5-feet, at lithographic changes, and from just above the water table for subsurface hydrogeologic description and possible chemical analysis. The samples will be described by the ASE geologist according to the Unified Soil Classification System. The samples will be collected in brass tubes using a split-barrel drive sampler advanced ahead of the auger tip by successive blows from a 140-lb. hammer dropped 30-inches. Each sample will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps, secured with duct tape, labeled with the site location, sample designation, date and time the sample was collected, and the initials of the person collecting the sample. The samples will be placed into an ice chest containing wet ice for delivery under chain of custody to a CAL-EPA certified analytical laboratory.

Soil from the remaining tubes not sealed for analysis will be removed for hydrogeologic description and will be screened for volatile compounds with an organic vapor meter (OVM). The soil will be screened by emptying soil from one of the tubes into a plastic bag. The bag will be sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole punched in the bag. These OVM readings will be used as a screening tool only since these procedures are not as rigorous as those used in an analytical laboratory.

All sampling equipment will be cleaned in buckets with brushes and a trisodium phosphate (TSP) or Alconox solution, then rinsed twice with tap water. Rinsates will be contained on-site in 55-gallon steel drums until off-site disposal can be arranged.

TASK 4 - ANALYZE AT LEAST ONE SOIL SAMPLE FROM EACH BORING

At least one soil sample from each boring will be analyzed at a CAL-EPA certified environmental laboratory for VOCs by EPA Method 8010.

TASK 5 - COMPLETE THE BORINGS AS MONITORING WELLS

ASE will complete the borings described in task 3 as 2-inch diameter groundwater monitoring wells. The wells will be constructed with 2-inch diameter, flush-threaded, schedule 40, 0.010-inch slotted PVC well screen and blank casing. The well casing will be lowered through the augers and #2/12 Monterey sand will be placed in the annular space between the well casing and the borehole to approximately 1-foot above the screened interval. Approximately 0.5-foot of bentonite pellets will be placed on top of the sand pack and hydrated with deionized water. This bentonite layer will prevent the cement sanitary seal from infiltrating into the sand pack. Portland cement will be used to fill the annular space between the bentonite layer and the surface to prevent surface water from infiltrating into the well. The well head will be protected by a locking well plug and an at-grade, traffic-rated well box (See Figure 4 - Typical Monitoring Well).

The well will be screened to monitor the first water-bearing zone encountered. Wells are typically screened with 5-feet of screen above the water table and 10 to 15-feet of screen below the water table. Since groundwater is expected at a very shallow depth, the screen will be placed as high as possible while still maintaining an adequate sanitary seal.

TASK 6 - DEVELOP THE MONITORING WELLS

The monitoring wells will be developed after waiting at least 72 hours after well construction. The wells will be developed using at least two episodes of surge block agitation and bailer or pump evacuation. At least ten well casing volumes of water will be removed during the development, and development will continue until the water appears to be reasonably clear. The well development purge water will be stored temporarily on-site in sealed and labeled 55-gallon steel drums until off-site disposal can be arranged.

TASK 7 - SAMPLE THE MONITORING WELLS

After waiting 72 hours after the well development, ASE will sample the monitoring wells. Prior to purging and sampling, the groundwater surface in each well will be checked for sheen or free-floating hydrocarbons. The thickness of any free-floating hydrocarbons will be measured with an acrylic bailer which will be lowered slowly to the groundwater surface and filled approximately half full for direct observation. ASE will also measure the depth to groundwater in all site wells prior to purging water from any well. Prior to sampling, each well will be purged of at least four well casing volumes of groundwater. The temperature, pH and electrical conductivity of evacuated water will be monitored during the well purging, and purging will continue beyond four well casing volumes if these parameters have not stabilized. Groundwater samples will be collected from each well using disposable polyethylene bailers. Groundwater will be decanted from the bailers into 40-ml glass volatile organic analysis (VOA) vials, preserved with hydrochloric acid, sealed without headspace and labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples. The samples will then be placed into an ice chest with wet ice for transport to the analytical laboratory under chain of custody. Purged groundwater will be stored temporarily on-site in sealed and labeled 55-gallon steel drums until off-site disposal can be arranged.

TASK 8 - ANALYZE THE GROUNDWATER SAMPLES

The groundwater samples will be analyzed by a CAL-EPA certified analytical laboratory for VOCs by EPA Method 8010.

TASK 9 - SURVEY THE TOP OF CASING ELEVATION OF EACH WELL

ASE will survey the top of casing elevation of each well relative to a site datum. These elevations will be used with the depth to groundwater measurements to determine the groundwater flow direction and gradient beneath the site.

TASK 10 - PREPARE A SUBSURFACE ASSESSMENT REPORT

ASE will prepare a subsurface assessment report outlining the methods and findings of this assessment. This report will include a summary of the results, the site background and history, description of the well construction, development and sampling, tabulated soil and groundwater analytical results, conclusions and recommendations. Formal boring logs,

analytical reports, and chain of custody documents will be included as appendices. This report will be submitted under the seal of a California registered civil engineer or geologist.

4.0 SCHEDULE

The property is currently in the process of being sold. Due to the impending property transfer, ASE has been asked to perform this assessment as quickly as possible. Drilling is tentatively scheduled for August 27, 1999.

We appreciate your time and effort in approving this workplan in such a short time. Should you have any questions or comments, please call us at (925) 820-9391.

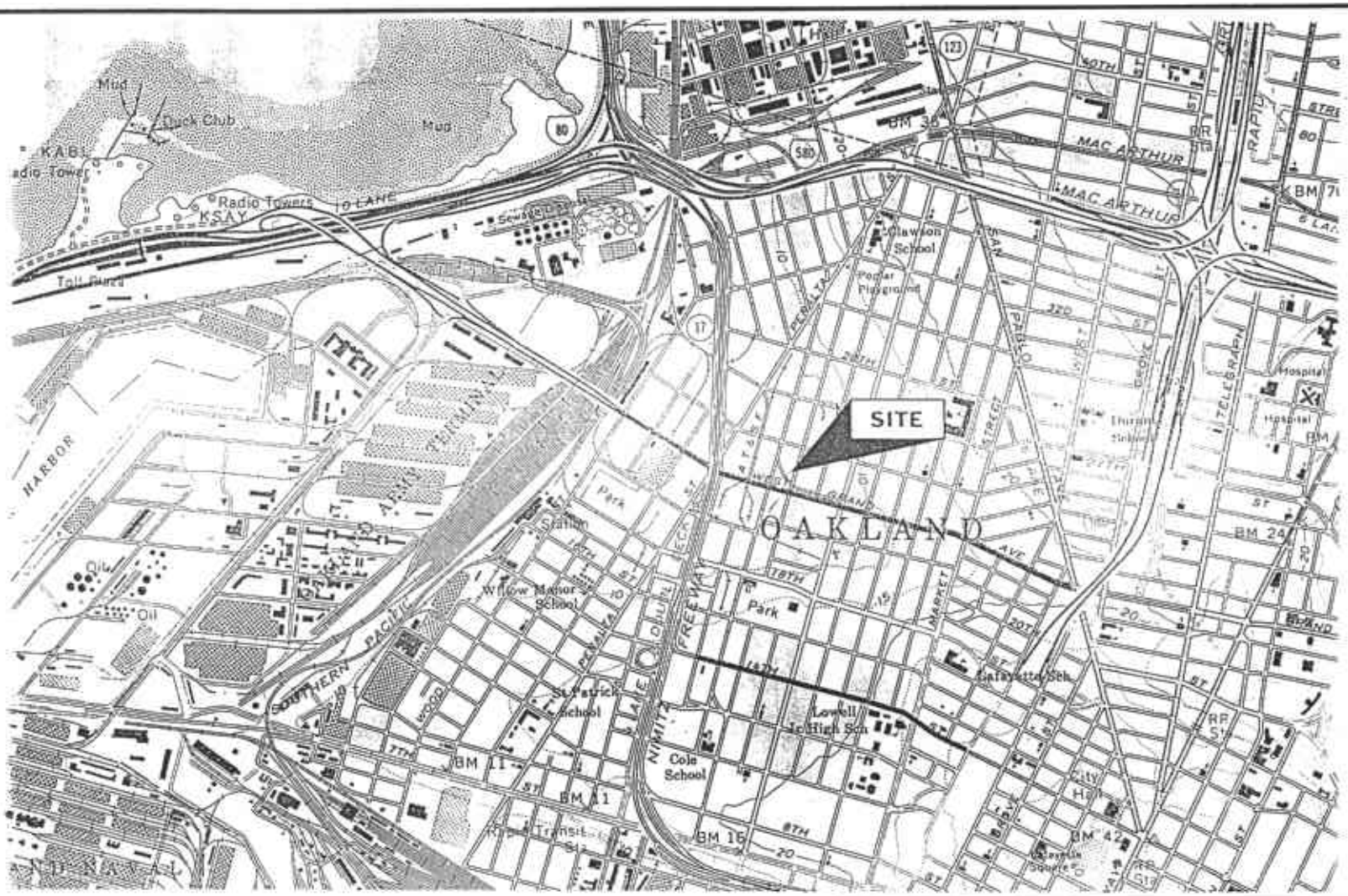
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

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

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

Copies to: Ms. Eva Chu, ACHCSA
Mr. John Kendall, Trustee
Ms. Anne Bruff, Wells & Bennett Realtors

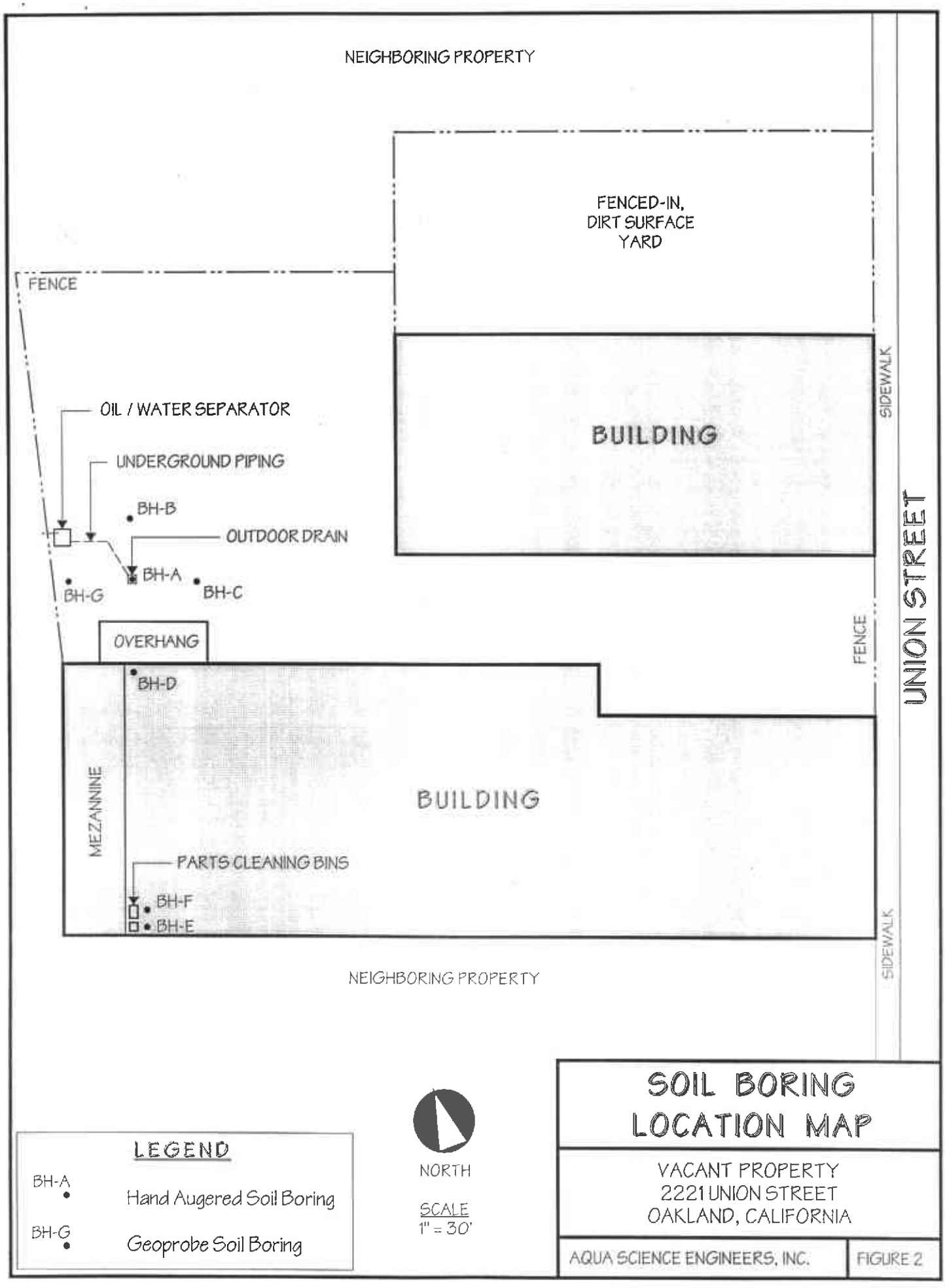


NORTH

LOCATION MAP

Vacant Property
2221 Union Street
Oakland, California

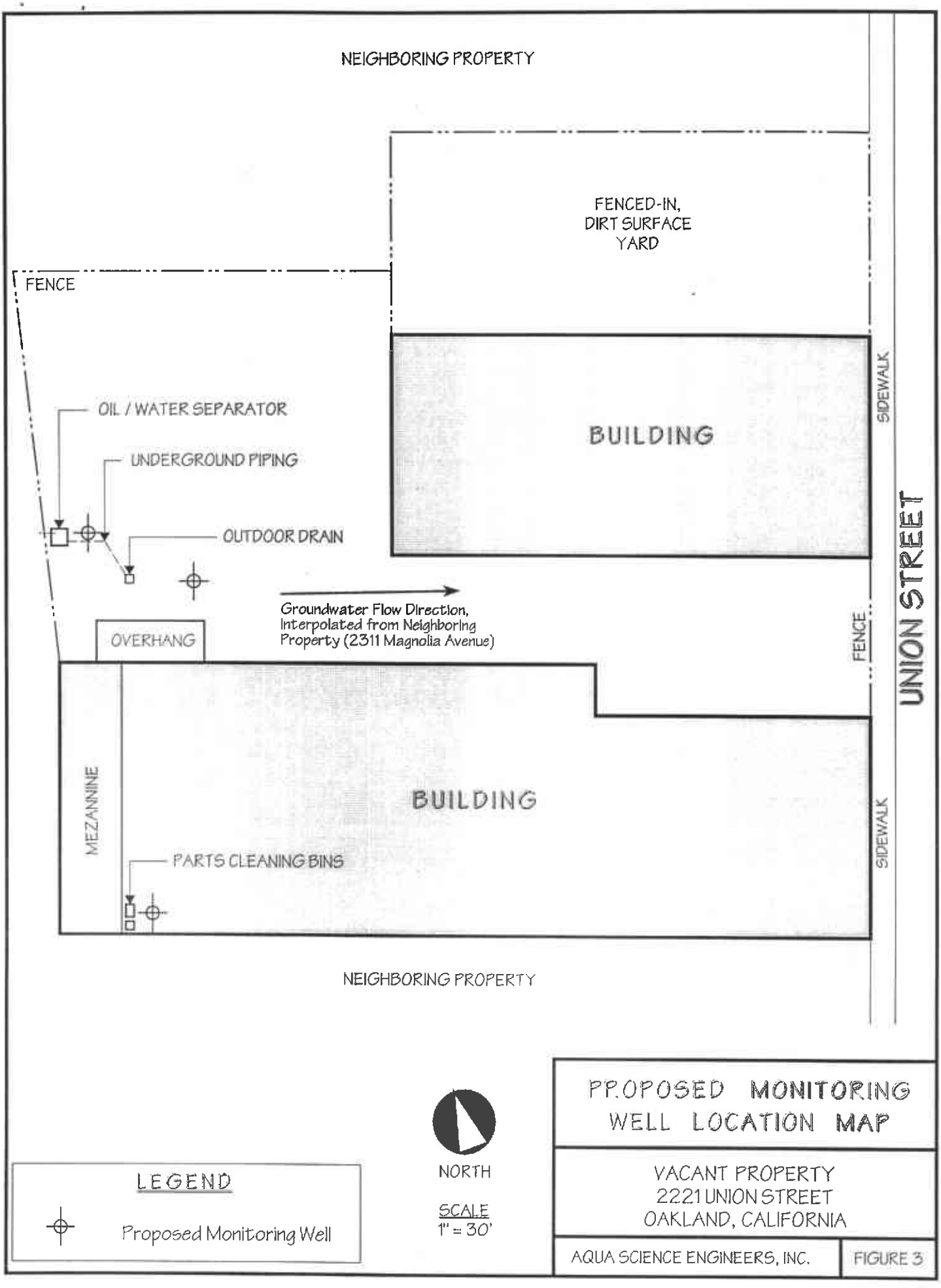
AQUA SCIENCE ENGINEERS, INC. | Figure 1

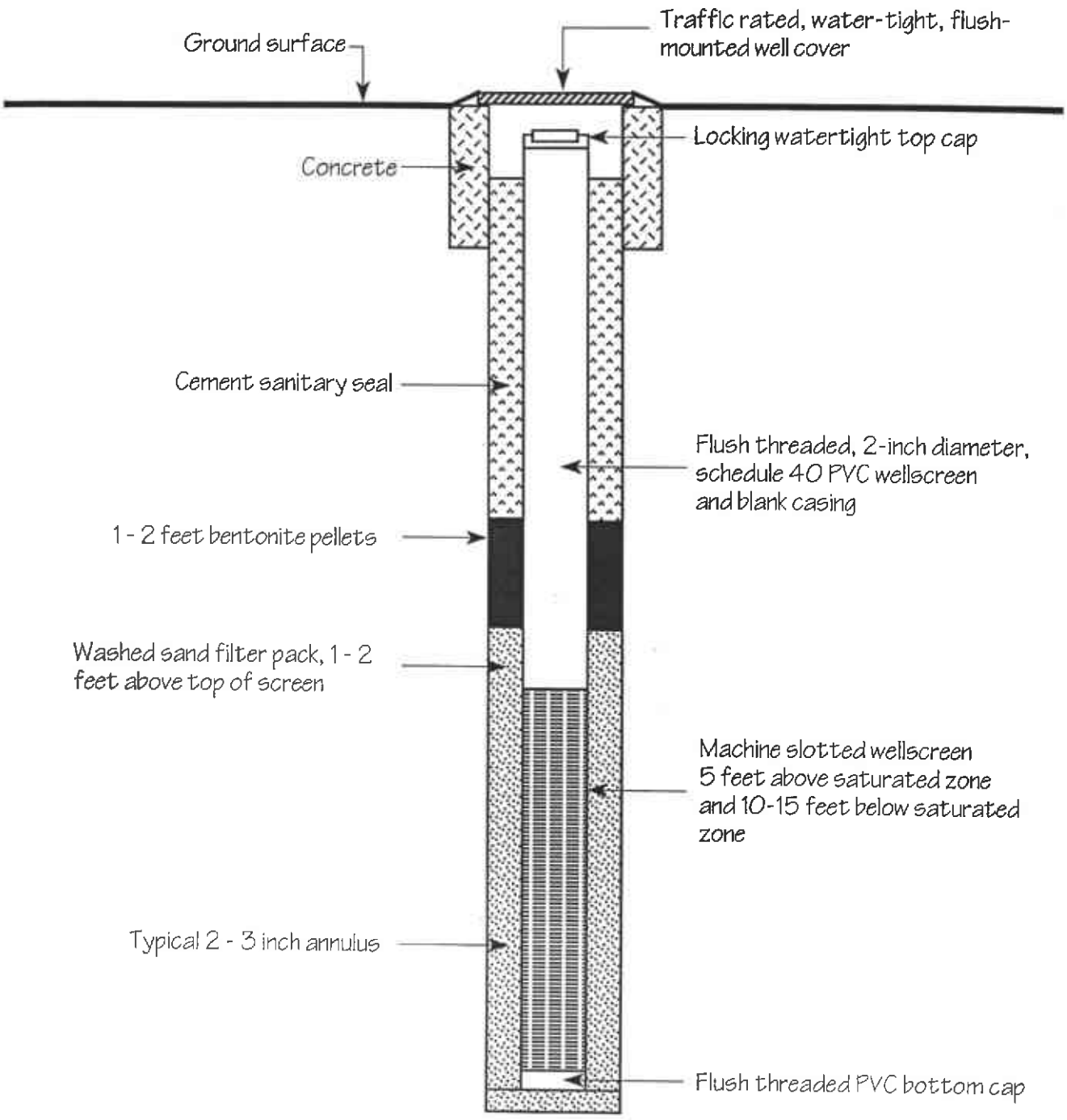


SOIL BORING LOCATION MAP

VACANT PROPERTY
2221 UNION STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | FIGURE 2


NEIGHBORING PROPERTY
FENCED-IN,
DIRT SURFACE
YARD
FENCE
OIL / WATER SEPARATOR
UNDERGROUND PIPING
OUTDOOR DRAIN
BUILDING
SIDEWALK
UNION STREET
Groundwater Flow Direction,
Interpolated from Neighboring
Property (2311 Magnolia Avenue)
OVERHANG
FENCE
MEZZANINE
BUILDING
PARTS CLEANING BINS
SIDEWALK
NEIGHBORING PROPERTY
LEGEND
Proposed Monitoring Well
NORTH
SCALE
1" = 30'
PROPOSED MONITORING
WELL LOCATION MAP
VACANT PROPERTY
2221 UNION STREET
OAKLAND, CALIFORNIA
AQUA SCIENCE ENGINEERS, INC.
FIGURE 3



TYPICAL
MONITORING WELL CONSTRUCTION
IN CROSS SECTION

Aqua Science Engineers | Figure 4

APPENDIX A

ACHCSA Letter dated August 9, 1999

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