aqua science engineers inc.

P.E.

92 FEB 14 PM 1:06

February 12, 1992

Ms. Pamela J. Evans
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Rm. 210
Oakland, CA 94621

Re: Letter of Transmittal - Final Report of Site Investigations
21065 Foothill Blvd., Hayward, California.

Ms. Evans,

Enclosed please find a copy of Aqua Science Engineers' final report on preliminary soil and groundwater investigations conducted at the above referenced site.

All the analytical data and procedures presented in this report are to the best of our knowledge an accurate description of the site and the work performed at the site.

Respectfully,
AQUA SCIENCE ENGINEERS, INC.

David C. Prull
Project Manager

cc. Mr. Roy Breitenbach, Property Owner
Mr. Michael Tanzillo, Property Manager
Mr. Eddy So, Regional Water Quality Control Board
Mr. Craig Mayfield, Alameda Flood Control
and Water Conservation District, Zone 7

aqua science engineers inc.

FINAL REPORT
of
METHODS & FINDINGS
for

PRELIMINARY SITE ASSESSMENT METHODS AND FINDINGS: SOIL BORING AND SAMPLING, GROUNDWATER MONITORING WELL DRILLING, INSTALLATION, SAMPLING

at
21065 Foothill Blvd.
Hayward, Ca.

submitted by
AQUA SCIENCE ENGINEERS, INC.
Concord, CA 94518

REGISTERED PROFESSIONAL ENGINEER
DAVID M. SCHULTZ
No. 38738
Exp. 4-93
CIVIL
STATE OF CALIFORNIA

Breitenbach- February 12, 1992

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and
LIST OF TABLES, FIGURES, APPENDICES

INTRODUCTION

Aqua Science Engineers, Inc. (ASE) was contracted by the property owner to drill one soil boring which was converted into a groundwater monitoring well (MW-1). This scope of work represents the first phase of preliminary site assessment activities conducted at "the site", 21065 Foothill Blvd, Hayward, Ca. (Figure 1: Site Location Map). Subsequent to review of documentation describing a previously performed underground fuel storage tank removal and soil sampling, the Alameda County Department of Health Services requested the performance of the additional investigative activities documented herein.

The current property owner, Mr. Roy Breitenbach, Prescott, Ariz. leases commercial/warehouse space at this 15,000 sq.ft. site located near the southwest corner of the intersection of Foothill Boulevard and Mattox Road. The site is relatively flat although it drops of slightly along the east boundary where the property fronts onto Foothill Boulevard. The site is bounded on the southeast by other commercial space and on the northwest by residential property. Local topography slopes gently downhill to the west-southwest where the site is located along the crest of low hills near the intersection of Foothill Boulevard and Highway 580.

The site history with regards to contaminated site assessment activities begins in October of 1991 with the removal of a single underground fuel storage facility last containing gasoline. The UST was located near the center of the property (Figure 2: Site Plan). Associated soil sampling conducted at the time of tank removal indicated detectable levels of Total Petroleum Hydrocarbons (TPH) and fuel fractions Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) in the vicinity of the removed tank. TPH concentrations were reported at 1300 parts per million (ppm), Benzene at 320 parts per billion (ppb), Toluene at 11000 ppb, Ethylbenzene at 2700 ppb and Xylenes at 85000 ppb. Tank removal and soil sampling was performed by Decon Environmental, Hayward, CA. Documentation of the precise depth and location of soil samples was not made available to ASE.

An excavation of petroleum hydrocarbon contaminated soil was undertaken by Decon Environmental, Hayward, CA in November of 1991. An additional 30 cubic yards of contaminated soil were removed from the tank excavation. Documents detailing the total depth of excavation were not made available to ASE. Six (6) soil samples from the pit walls and floor were obtained and analyzed for TPH as gasoline and BTEX. Analysis indicated non-detectable concentrations in all samples for all constituents analyzed. The limits of detection were reported at 1 ppm and 3 ppb for TPH gasoline and fractions, respectively. Copies of tables of previously performed soil testing can be found in Appendix A (Appendix A: Previous Investigative Data).

Documentation provided to ASE referencing work conducted by Decon Environmental made no report of any groundwater in the UST excavations.

The purpose of the project detailed herein was to determine whether site groundwater at the location of the monitoring well installation has been impacted by petroleum hydrocarbon contamination previously identified in site soils.

A workplan detailing the scope of work to be performed and the methodology to be utilized was prepared and submitted to the Alameda County Department of Health Services and the Regional Water Quality Control Board (RWQCB). Upon approval by the Alameda County Department of Health and permitting with the Alameda County Flood Control and Water Conservation District Zone 7, site investigations were initiated on January 30, 1992.

DRILLING AND WELL CONSTRUCTION PROCEDURES

A workplan was prepared and submitted to the Alameda County Department of Health Services and the RWQCB. The workplan was approved by Ms. Pamela J. Evans of the Alameda County Department of Health prior to permitting the well construction with the Alameda County Flood Control and Water Conservation District Zone 7 (Appendix B: Permits).

One soil boring was performed at the site in accordance with the approved workplan. The boring is located about 10 feet away from the former tank excavation in an assumed down gradient direction (Figure 2: Site Plan).

A Mobile Drill B-61 hydraulic rotary drill with 4.25" I.D. X 8" O.D. hollow stem augers was used to drill the boring to 44 feet depth below grade. A two inch groundwater monitoring well was installed through the augers, to 43.75' feet total depth. Two inch I.D. schedule 40 PVC well casing was used, of which the bottom 10 feet was machine slotted (0.02") well screen. All casing joints were flush threaded. The well was suspended about three inches above total depth within the augers while #2/12 sand was placed to two feet above the top of the perforated casing interval. Two feet of medium bentonite pellets was placed above the sand and hydrated with tap water. The remainder of the boring was filled to near original grade with cement/bentonite grout. A flush mounted, traffic rated, watertight well cover and locking inner cap comprised the surface completion of MW-1 (Appendix C: Boring/Well Completion Logs).

Soils excavated by the augers were placed onto plastic sheeting and left on site nearby the boring location. The drill rig and augers were high pressure hot washed prior to arrival on site, and the augers were again washed on site after drilling. Steam cleaning and sampler cleaning rinsates were temporarily contained then disposed of on site.

SITE GEOLOGY

The site rests upon mildly consolidated alluvial deposits of silty clay with increasing content of sands and gravels to a depth of approximately 10 feet below grade. From a depth of 10 feet below grade to the depth of the boring terminus at 44 feet, fractured metamorphosed rock formations were encountered. Shallow groundwater was encountered at 37 feet depth below grade.

The soils encountered as drilling progressed were logged by an ASE geologist using the Unified Soil Classification System (USCS) (Appendix D: Unified Soil Classification System). The surface cover at the boring location is 3" asphaltic concrete. From grade to about 3 feet depth the soils were clay fill, dark grey and brown mottled, silty 10%, v. fine sandy <10%, damp to moist, stiff, (CL). Between 3 feet and 5.5 feet depth, the native materials were found to be clay, dark olive gray, silty 10%, v. fine sand <10%, damp, stiff, (CH). Between 6 feet and 10 feet depth, the soils were sand, tan brown, v. fine to coarse grained, well graded, silty 10-20%, minor clay, occasional 3/8" gravel, mildly consolidated (SW). Between 10 feet and and 44 feet below grade the formation encountered was a metamorphic gabbro diabase, multicolored green, gray, tan, red, v. fine to course grained, mineralized clayey (altered) matrix, silty 10-20%, hard, fractured, iron oxide and manganese oxide staining abundant. Refusal of the split spoon sampler was encountered in the hard rock materials between 15.5 feet below grade and end of boring at 44 feet below grade.

No fuel product odors were noted at any time during drilling of the bore hole.

SOIL SAMPLING PROCEDURES

Undisturbed soil samples were obtained from the boring at 5 foot intervals to 15.5 feet depth with a California modified split spoon sampler and a 140 lb. drop hammer. The sampler was advanced ahead of the auger tip by successive blows from the down hole hammer. The samples were collected into pre-cleaned 2" X 6" brass liners, and used for visual soils classification and certified chemical analysis. Below the depth of 15.5 feet soil sampling was attempted at 20 feet, 30 feet, 40 feet and 43.75 feet. Sampler refusal was encountered at these sample elevations.

The sample tubes were sealed with aluminum foil, plastic caps and tape, permanently labeled, then placed into a cooler with wet ice for transport to a State Certified Hazardous Waste Analytical Lab following chain of custody procedures. The samplers and liners were cleaned immediately prior to each use with a TSP solution and rinsed with tap water in plastic buckets. Cleaning rinsates were temporarily contained then disposed of on site.

WELL DEVELOPMENT AND SAMPLING

After casing and sand installation and prior to emplacement of the cement well seal, the well was developed with a high volume steel bailer and rubber swabbing tools. The bailer and swabbing tool were steam cleaned prior to insertion into the well. The close fitting swabs were used to clear residual muddy materials from the well slots during bailing. The well was bailed into labeled drums at a rate of one gallon per minute or greater during much of the development. A total of about 80 gallons of groundwater were removed.

On February 3, 1992, a clear acrylic bailer was lowered into the well until it was about half submerged, then gently retrieved from the well. A visual inspection of the piezometric surface waters did not show petroleum sheen or product. The well was then purged of five well volumes with a Teflon bailer in to a plastic bucket, then an existing drum. The bailer and new string were washed with a TSP solution and brush in a bucket, then rinsed twice with tap water. The sampler wore new nitrile gloves during the bailing and sampling of the water.

Four amber septum vials were filled from the bailer until no head space remained and a positive meniscus was apparent. The vials were then gently sealed, labeled, and placed into a cooler with wet ice for transport to the laboratory following chain of custody procedures.

The well developing, purging, and sampling documentation can be found in Appendix E (Appendix E: Well Development and Sampling Documentation). Water generated during well development and sampling was disposed of on site following receipt of non-detectable analytical sample results.

SOIL AND GROUNDWATER SAMPLE ANALYSES

Three selected soil samples were submitted to and analyzed at a State Certified Hazardous Waste Analytical Lab (#E694). The samples were analyzed for the following constituents using EPA methods approved by the Regional Water Quality Control Board: total petroleum hydrocarbons (TPH) as gasoline with aromatic volatile hydrocarbons Benzene, Toluene, Ethylbenzene and Xylenes (BTEX). Soil samples obtained from MW-1 at 6 feet, 10.5 feet, and 15 feet depth yielded non detectable results for all sample analysis. A groundwater sample was analyzed and showed a distinct lack of the same constituents of interest (Appendix F: Soil and Groundwater Sample Analysis).

TABLE ONE: RESULTS OF SOIL SAMPLE ANALYSES (1-30-92)

Sample #	TPH gas mg/kg	benzene ug/kg	toluene ug/kg	ethyl benzene ug/kg	total xylenes ug/kg
MW-1,6'	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1,10.5'	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1, 15'	N.D.	N.D.	N.D.	N.D.	N.D.

TABLE TWO: RESULTS OF WATER SAMPLE ANALYSES (2-3-92)

Sample #	TPH gas mg/l	benzene ug/l	toluene ug/l	ethyl benzene ug/l	total xylenes ug/l
MW-1A	N.D.	N.D.	N.D.	N.D.	N.D.

mg/kg and mg/l = parts per million
ug/kg and ug/l = parts per billion
N.D. = Not Detected

CONCLUSIONS

One soil boring was drilled and sampled, then converted into a groundwater monitoring well (MW-1) at the commercial/warehouse space, 21065 Fremont Boulevard, Hayward, Ca. The well was developed and sampled. Soil and groundwater samples were analyzed at a State Certified lab for petroleum hydrocarbon products as gasoline and fractions.

This work was performed for the property owner as per Alameda County Department of Health direction and in accordance with Regional Water Quality Control Board guidelines. The well installation follows directly from an earlier detection of petroleum hydrocarbon contaminated soil in the vicinity of a previously removed underground fuel storage tank last containing gasoline. Previously detected soil contamination was removed through excavation and landfill disposal. Confirming sample analysis performed at the time of soil excavation reported petroleum hydrocarbons and fractions not detected in excavation sidewall and bottom samples.

The purpose of the project was to ascertain the possible presence of earlier identified petroleum hydrocarbon contamination in shallow site groundwater near the former excavation site.

The boring was advanced with hollow stem auger equipment, and soil samples were taken for visual classification and certified chemical analysis. The well was installed by placing 2" schedule 40 PVC well casing through the augers to near total depth, followed by the emplacement of sand, bentonite, and cement, in that order, through the augers as well. The well specifications were based on field observations of subsurface soil and groundwater conditions.

The soils were sampled during drilling at 5 foot intervals to 15 feet depth and at 10 foot intervals from 20 to 44 feet total depth. Fuel product odors were not noted during drilling or sampling. Three discrete soil samples were obtained in the elevations between 5 feet and 15 feet below grade. The samples were submitted for chemical analysis at a State Certified Hazardous Waste Analytical Lab.

Development, purging and sampling of the well were performed. A groundwater sample was obtained for chemical analysis at a State Certified Hazardous Waste Analytical Lab.

Certified chemical analysis of soil and groundwater samples indicated a distinct lack of the chemicals of interest, namely TPH as gas and BTEX at the sampling locations.

The depth to free groundwater was measured at 37 feet depth below grade at the well site. At the time of groundwater sampling, site groundwaters at the well location had not been impacted by petroleum hydrocarbons.

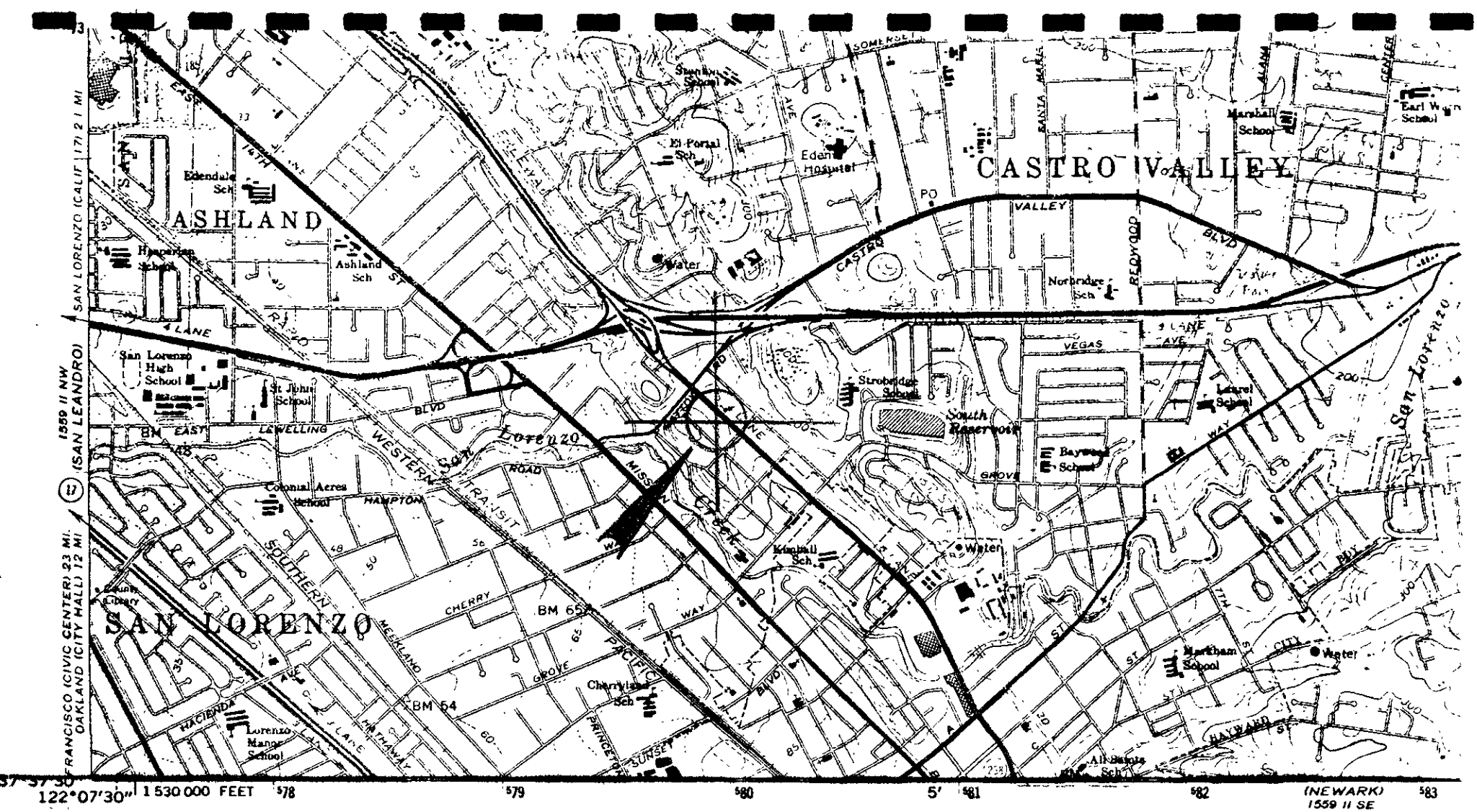
RECOMMENDATIONS

As per current RWQCB guidelines, the well should be monitored quarterly for one year and the sample results distributed to the Alameda County Department of Health and the RWQCB. Should the well analyze "clean" for the constituents of interest for four consecutive quarters a petition to discontinue groundwater sampling and properly abandon the well may be in order.

LIMITATIONS

This report has been prepared for the exclusive use of Mr. Roy Breitenbach for this project only. The analysis and conclusions in this report are based on conditions encountered at the time of our field activities, information provided to us, and our experience and engineering judgement.

Our work has been performed in a manner consistent with that of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the area. No other warranty express or implied, is made.



Mapped, edited, and published by the Geological Survey

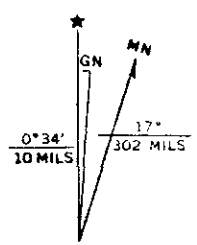
Control by USGS, USC&GS, USCE, and Alameda County

Topography from aerial photographs by photogrammetric methods and by planetable surveys 1947. Revised from aerial photographs taken 1958. Field check 1959

Polyconic projection
10,000-foot grid based on California coordinate system, zone 3
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue 1927 North American Datum
To place on the predicted North American Datum 1983
move the projection lines 14 meters north and
95 meters east as shown by dashed corner ticks

Red tint indicates areas in which only landmark buildings are shown

There may be private inholdings within the boundaries of the National or State reservations shown on this map



UTM GRID AND 1980 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Revisions shown in purple and woodland compiled from aerial photographs taken 1979 and other source data This information not field checked. Map edited 1980

SCALE 1:24000

1 0 1 2 3 4 KILOMETERS

1000 0 1000 2000 3000 4000 FEET

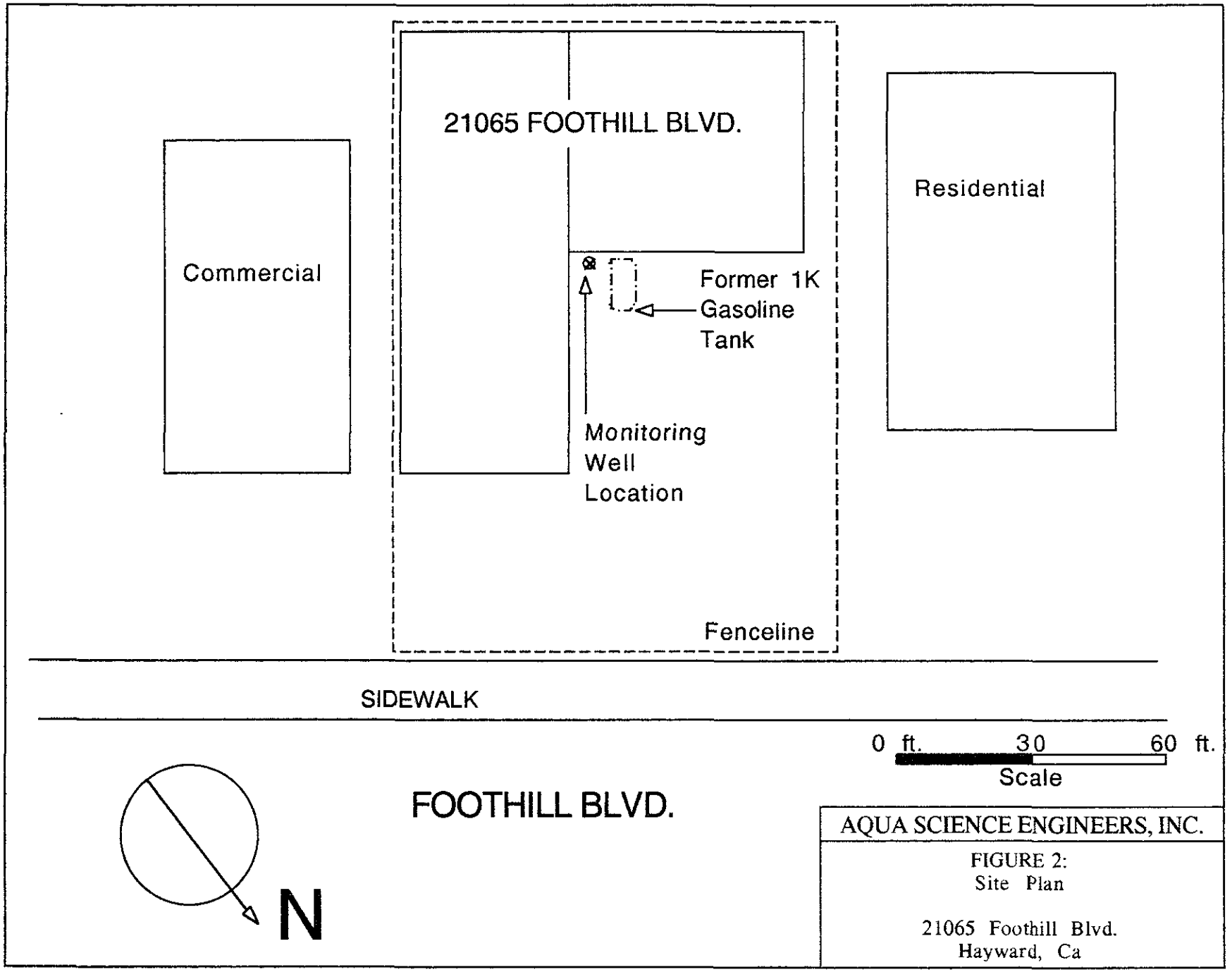
1 5 0 MILES

CONTOUR INTERVAL 20 FEET

AQUA SCIENCE ENGINEERS, INC.

FIGURE 1:
Site Location Map

21065 Foothill Blvd.
Hayward, Ca


21065 FOOTHILL BLVD.
Commercial
Residential
Former 1K
Gasoline
Tank
Monitoring
Well
Location
Fenceline
SIDEWALK
0 ft.
30
60 ft.
Scale
FOOTHILL BLVD.
N
AQUA SCIENCE ENGINEERS, INC.
FIGURE 2:
Site Plan
21065 Foothill Blvd.
Hayward, Ca

APPENDIX A - Previous Investigative Data

Breitenbach- February 12, 1992

DECON
ENVIRONMENTAL SERVICES, INC.

December 18, 1991

Mr. Roy Breitenbach
9986 East Fanfol Drive
Scottsdale, AR 85258

RE: UNDERGROUND TANK REMOVAL PROJECT AT 21065 FOOTHILL BOULEVARD IN HAYWARD, CALIFORNIA

Dear Mr. Breitenbach:

The purpose of this letter is to summarize our activities at 21065 Foothill Boulevard in Hayward.

On October 30, 1991, DECON Environmental Services, Inc. (DECON) removed from 21065 Foothill Boulevard in Hayward, California, a 1,000 gallon underground storage tank. Excavation work for this tank began on October 28, 1991.

Under the direction of Pamela Evans, Alameda County Health Department, DECON took two samples from the soil beneath the tank. The samples results, forwarded to you in our letter dated November 5, 1991, showed the presences of petroleum hydrocarbons (BTE&X and total petroleum hydrocarbons, gasoline range).

Shortly after receiving the sample results, DECON returned to the excavation and removed approximately 30 additional yards of soil. Under the direction of Alameda County Health Department, DECON took six samples from the excavation, two from the floor of the excavation, and one from the each sidewall. All six samples showed non-detectable levels of petroleum hydrocarbons. We forwarded the sample results to you in our letter dated December 13, 1991.

After receipt of the analytical results, and in accordance with Alameda County Health Department policies, DECON backfilled the excavation. the excavation area will be paved once the stockpile of soil from the excavation is removed.

26102 Eden Landing Road, Suite 4 Hayward, CA 94545 (415) 732-6444 Fax (415) 782-8584 CL#545726

It is our understanding that Alameda County Health Department policies do not require you to perform any further remedial work (such as groundwater monitoring) with respect to the excavation. This is based on the latest soil analyses from the excavation showing non-detectable levels of petroleum hydrocarbons. The stockpiled soil however, may require remediation and/or removal. DECON is not aware of the condition of the site in areas other than the excavation itself.

If you have any questions regarding the above, please do not hesitate to contact me.

Sincerely,

Anthony Cappella
Project Manager

AC/emt

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 54279
CLIENT: Decon Environmental Services
CLIENT JOB NO.: BREITENBACH

DATE RECEIVED: 10/31/91
DATE REPORTED: 11/07/91

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/kg) Benzene	Toluene	Ethyl Benzene	Xylenes
1	669-01	ND<3	9	5	160
2	669-02	320	11000	2700	85000

ug/kg - parts per billion (ppb)

Minimum Detection Limit in Soil: 3.0ug/kg

QAQC Summary:
Daily Standard run at 20ug/L: %DIFF 8020 = <15%
MS/MSD Average Recovery = 92% ; Duplicate RPD = 2.9%

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 54279
CLIENT: Decon Environmental Services
CLIENT JOB NO.: BREITENBACH

DATE RECEIVED: 10/31/91
DATE REPORTED: 11/07/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/kg) Gasoline Range
1	669-01	4
2	669-02	1300

mg/kg - parts per million (ppm)
Minimum Detection Limit for Gasoline in Soil: 1mg/kg

QAQC Summary:
Daily Standard run at 2mg/L: %DIFF Gasoline = <15%
MS/MSD Average Recovery = 92%: Duplicate RPD = 3.1%

Richard Srna, Ph.D.

Laboratory Director

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 84357
CLIENT: Decon Environmental Services
CLIENT JOB NO.: 669

DATE RECEIVED: 11/11/91
DATE REPORTED: 11/18/91
DATE SAMPLED : 11/11/91

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by MODIFIED EPA SW-846 METHOD 5030 and 8015

LAB #	Sample Identification	Concentration (mg/Kg) Gasoline Range
1	669-1111-1	ND<1
2	669-1111-2	ND<1
3	669-1111-3	ND<1
4	669-1111-4	ND<1
5	669-1111-5	ND<1
6	669-1111-6	ND<1

mg/Kg - parts per million (ppm)

Method Detection Limit for Gasoline in Soil: 1 mg/Kg

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15
MS/MSD Average Recovery = 98%: Duplicate RPD = 3

Richard Srna, Ph.D.
Laboratory Director

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 84357
CLIENT: Decon Environmental Services
CLIENT JOB NO.: 669

DATE RECEIVED: 11/11/91
DATE REPORTED: 11/18/91
DATE SAMPLED : 11/11/91

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/Kg) Benzene	Toluene	Ethyl Benzene	Xylenes
1	669-1111-1	ND<3	ND<3	ND<3	ND<3
2	669-1111-2	ND<3	ND<3	ND<3	ND<3
3	669-1111-3	ND<3	ND<3	ND<3	ND<3
4	669-1111-4	ND<3	ND<3	ND<3	ND<3
5	669-1111-5	ND<3	ND<3	ND<3	ND<3
6	669-1111-6	ND<3	ND<3	ND<3	ND<3

ug/Kg - parts per billion (ppb)

Method Detection Limit in Soil: 3 ug/Kg

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 90%: Duplicate RPD = < 1

Richard Srna, Ph.D.
Laboratory Director

APPENDIX B - Permits

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484 2600
(510) 462-3914

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 21065 FOOTHILL BLVD.
HAYWARD, CA 94545

(2) CLIENT
Name ROY BREITENBACH
Address 2358 LOMA VISTA DR Phone (602) 776-8995
City PRESCOTT, AZ Zip 86301

(3) APPLICANT
Name AQUA SCIENCE ENGINEERS, INC.
Address 1041 SHARY CIRCLE Phone (510) 685-6700
City CONCORD, CA Zip 94518

(4) DESCRIPTION OF PROJECT
Water Well Construction X Geotechnical ___
Cathodic Protection ___ Well Destruction ___

(5) PROPOSED WATER WELL USE
Domestic ___ Industrial ___ Irrigation ___
Municipal ___ Monitoring X Other ___

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

WELL PROJECTS
Drill Hole Diameter 8 in. Depth(s) 50 ft.
Casing Diameter 2 in. Number
Surface Seal Depth 28 ft. of Wells 1
Driller's License No. 487000 C-57

GEOTECHNICAL PROJECTS
Number ___
Diameter ___ in. Maximum Depth ___ ft.

(7) ESTIMATED STARTING DATE ~~FEB 3~~ JAN 30, 1992
ESTIMATED COMPLETION DATE ~~FEB 4~~ JAN 30, 1992

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

APPLICANT'S SIGNATURE [signature] Date Jan 22 1992

FOR OFFICE USE

PERMIT NUMBER 92052
LOCATION NUMBER ___

Approved Wyman Hong Date 29 Jan 92
Wyman Hong

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or bore hole logs and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed.
4. Permit is void if project not begun within 90 days of approval date.

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

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie, or equivalent.

E. WELL DESTRUCTION. See attached.

01087

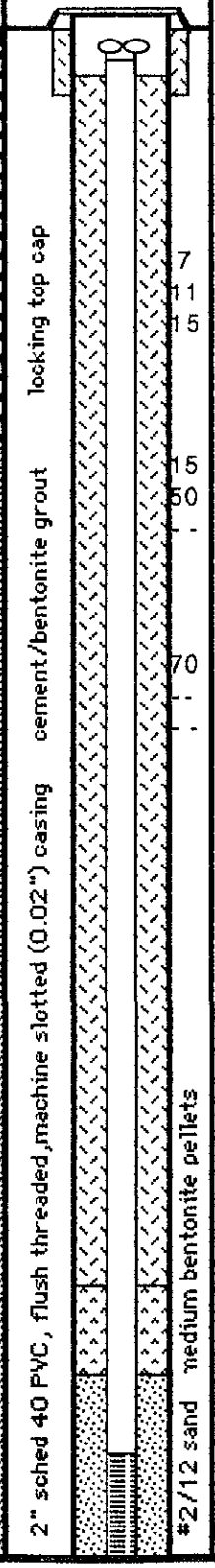
APPENDIX C - Boring / Well Completion Logs

Breitenbach- February 12, 1992

PROJECT: 21065 Foothill Blvd., Hayward

LOG OF BORING #**MW-1** sheet 1 of 2

DEPTH FEET	SOILS/ROCK DESCRIPTION	GRAPHIC LOG	BACKFILL DETAILS	REMARKS
0			flush well cover	
0	3" asphalt			
1	clay fill, dk. gray and brown mixed, silty 10%, sandy			no odors
2	v. fine <10%, damp, stiff			
3				
4	clay, dk. olive gray, silty 10%, sandy v. fine <10%,			
5	stiff, damp. (CH)			soil sample 5-6.5'
6	sand, tan brown, v. fine to coarse gr., well graded,		7	no fuel odors
7	silty 10-20%, clay minor, occ. 3/8" gravel,		11	
8	mildly consolidated (SW)		15	
9				
10	Metamorphic rocks, green and multicolored, pervasive		15	soil sample 10-11'
11	quartzose fractures 1/16" wide on 1/2" grid, silty tan		50	no odors
12	brown matrix 10-20%, heavy Fe Ox and Mn Ox			
13	staining, friable, hard, damp			
14	Meta-mafic granitic rocks			
15			70	soil sample 15-15.5
16	Mafic, granitic rocks, metamorphosed,			no odors
17	olive green gray, rusty, brickred, tan, gray mottled,			
18	v. fine to coarse gr., well graded, silty10-20%,			
19	hard, fractured, Fe Ox and Mn Ox staining abundant			
20				soil sample 20'
21				refusal
22				
23				
24				
25				
26				
27				
28				
29				
30	Meta-granite (diabase/gabbro as per USGS Open File			sample 30' refusal
31	Report # 80-540, "Preliminary Geologic Map of the			
32	Hayward Quadrangle..." by Thomas Dibblee, Jr., 1980)			
33				
34				
35				



Logged by: G. Gouvea Date Logged: 1-30-92
Rig/Driller: B-61, Bill

AQUA SCIENCE ENGINEERS, INC.

PROJECT: 21065 Foothill Blvd., Hayward

LOG OF BORING #MW-1 sheet 2 of 2

DEPTH FEET	SOILS/ROCK DESCRIPTION	GRAPHIC LOG	BACKFILL DETAILS	REMARKS
35	Meta-gabbro/diabase, highly altered, fractured, angular well graded, green-gray clayey matrix 10-20%, quartose fracture fillings, heavy Mn Ox, Fe Ox, 60% dark minerals, wet		threaded bottom cap #2/12 sand; 2" sch. 40 PVC, 0.02" slotted	▽ approx. 37'
40				sample 40-40.25' refusal, no odor
43	as above, damp			sample 43.75-44' refusal, no odor
44	Bottom of Hole 44'			

Logged by: G. Gouvea Date Logged: 1-30-92
Rig/Driller: B-61, Bill

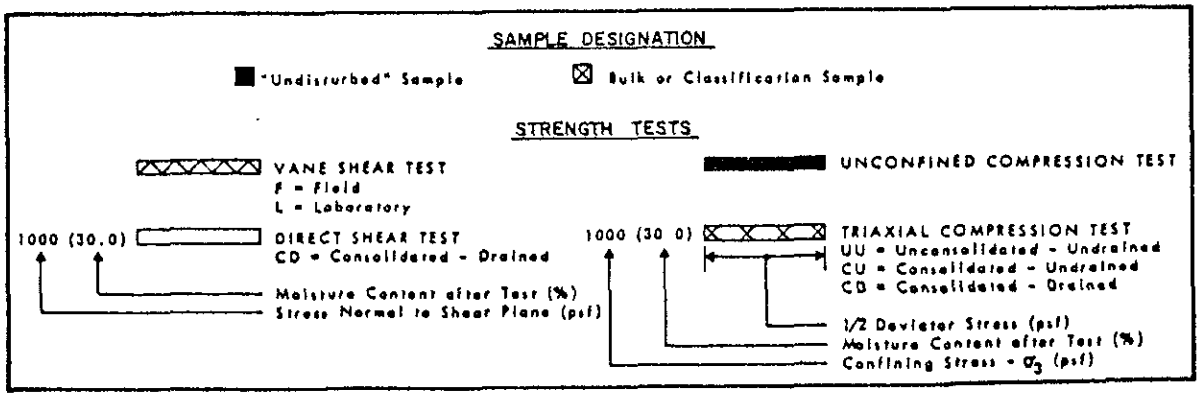
AQUA SCIENCE ENGINEERS, INC.

APPENDIX D - Unified Soil Classification System

Breitenbach- February 12, 1992

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS (MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL - SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL - SAND - CLAY MIXTURES
	SANDS (MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE)	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND - SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM



KEY TO TEST DATA

aqua science engineers inc.

UNIFIED SOIL CLASSIFICATION SYSTEM

APPENDIX E- Well Development and Sampling Documentation

Breitenbach- February 12, 1992

WELL SAMPLING FIELD LOG

Project: Breitenbach

ASE
environmental
1041 Shary Circle
Concord, CA 94518
(800) 678-9391

Project Name: Breitenbach
Project Address: 21065 Foothill Blvd, Fremont, CA
Job # 2481 Date of sampling: Feb 3,1992 Completed by: Gouvea
Well Number / Designation: MW-1
Top of casing elevation: Not measured
Total depth of well casing: 43.25' Well diameter: 2"
Depth to water (before sampling): 36.5'
Depth of floating product if any: Not detected
Depth of well casing in water: 6.75'
Req'd volume of groundwater to be purged before sampling: 5.5 gallons
Approximate volume of groundwater purged: 10 gallons
Type of seal at grade: Portland cement seal, locking cover
Type of cap on the casing: locking type expanded plug
Is the seal water tight? yes Is the cap water tight? yes
Number of samples (containers) collected (3) 40 ml. VOA
Did 40 ml VOA vials have headspace: No
Were sample containers chilled after sampling & for delivery ? Yes
Are Chain of Custody documents accompanying the samples: Yes
Sample temperature: Not tested
Sample pH: N/A Test method: N/A
Physical description of water during initial bailing period:
Slightly turbid with silt, grey
Physical description of water sample: opaque
Type of analysis requested: TPH gasoline w/BTEX

Type of bailer/sampling equipment used: Acrylic bailer w/new cord

Equipment cleaning procedures: TSP wash, water rinse

Disposition of bailed water volume: Temporarily drummed, disposed of on site subsequent to receipt of N.D. sample results.

APPENDIX F - Soil and Groundwater Sample Analyses

Breitenbach- February 12, 1992

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

February 6, 1992

ChromaLab File No.: 0192274

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: Three soil samples for Gasoline/BTEX analysis

Project Name: BREITENBACH, FOOTHILL BLVD.
Project Location: Foothill, Hayward
Date Sampled: Jan. 30, 1992 Date Submitted: Jan. 30,1992
Date Extracted: Feb. 3, 1992 Date Analyzed: Feb. 4, 1992

RESULTS:

Sample I.D.	Gasoline (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
MW-1,6'	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1,10.5'	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1,15'	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	113%	103%	107%	100%	103%
DETECTION LIMIT	1.0	5.0	5.0	5.0	5.0
METHOD OF ANALYSIS	5030/8015	8020	8020	8020	8020

ChromaLab, Inc.

Mary Cappelli
Analytical Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1788 • Facsimile 510/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

February 10, 1992 ChromaLab File No.: 0292003

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: One water sample for Gas/BTEX analysis

Project Name: BREITENBACH, FOOTHILL, HAYWARD
Date Sampled: Feb. 3, 1992 Date Submitted: Feb. 3, 1992
Date Extracted: Feb. 6, 1992 Date Analyzed: Feb. 6, 1992

RESULTS:

Sample I.D.	Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
MW-1A	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	88%	102%	108%	96%	97%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

ChromaLab, Inc.

Charles Woolley
Analytical Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
510/831-1786 • Facsimile 510/831-8798
Federal ID #68-0140157

aqua science engineers inc. — Aqua Science Engineers Inc.

PO Box 535, San Ramon, CA 94583 • 415-820-9391

Chain of Custody

DATE Feb 3 1992 PAGE 1 OF 1

PROJ. Breitenbach Estell Hayward

COMPANY Aqua Science Engs.

ADDRESS Cimora

SAMPLERS (SIGNATURE) Greg Gouveia (PHONE NO.) 838-1500

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 624/627, 8270)	TOTAL OIL & GREASE (EPA 5030&E)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	HOLD		METALS: Cd, Cr, Pb, Zn	CAM METALS (18) w/Cr VI	PRIORITY POLLUTANT METALS (13)						NUMBER OF CONTAINERS
MW-1A	2-3-92	11:00	water			X																			1
MW-1B	"	11:00	"												X										1
MW-1C	"	11:04	"												X										1

CHROMALAB FILE # 292003
ORDER # 5337

PROJECT INFORMATION	
PROJECT	Breitenbach
PO NO	
SHIPPING ID NO	
VIA	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	3
CHAIN OF CUSTODY SEALS	—
REC'D GOOD CONDITION/COLD	—
CONFORMS TO RECORD	—
LAB NO.	

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(Signature) Greg Gouveia (Time) 11:49	(Signature) (Time)	(Signature) (Time)
(Printed Name) Greg Gouveia (Date) 2-3-92	(Printed Name) (Date)	(Printed Name) (Date)
(Company) Aqua Science	(Company)	(Company)

RECEIVED BY 1.	RECEIVED BY 2.	RECEIVED BY (LABORATORY) 3.
(Signature) (Time)	(Signature) (Time)	(Signature) [signature] (Time) 11:49
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) Yin Keung Lam (DATE) 2-3-92
(Company)	(Company)	(LAB) Chroma Lab

SPECIAL INSTRUCTIONS/COMMENTS:

5 day turn

aqua science engineers inc.

Aqua Science Engineers Inc.,
PO Box 535, San Ramon, CA 94583 • 415-820-9391

Chain of Custo

DATE Jan 30 PAGE 1 OF 1

PROJ. Breitenbach Foothill Blvd
COMPANY Aqua Science
ADDRESS Concord

SAMPLERS (SIGNATURE) (PHONE NO.)
685-6700

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270)	TOTAL OIL & GREASE (EPA 5030E)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)			METALS: Cd, Cr, Pb, Zn	CAM METALS (18) w/Cr VI	PRIORITY POLLUTANT METALS (13)					
MW-1, 6'	1-30-92	11:00	Soil			X																		
MW-1, 10.5'	1-30-92	12:00	"			X																		
MW-1, 15'	1-30-92	13:00	"			X																		

CHROMALAB FILE # 192274
ORDER # 5305

PROJECT INFORMATION	
PROJECT	Foothill, Hayward
PO NO	
SHIPPING ID NO.	
VIA	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	3
CHAIN OF CUSTODY SEALS	/
REC'D GOOD CONDITION/COLD	/
CONFORMS TO RECORD	/
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

5 day turn

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY
(Signature) (Time) 16:35	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date) 1-30-92	(Printed Name) (Date)	(Printed Name) (Date)
(Company) Aqua Science	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY)**
(Signature) (Time)	(Signature) (Time)	(Signature) Ronald E. Hulsey (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) Chromalab (Date) 1/30
(Company)	(Company)	(LAB)