aqua science engineers inc.

October 23, 2000

REPORT
for
ADDITIONAL SOIL AND GROUNDWATER ASSESSMENT
at
5725 Thornhill Drive
Oakland, CA 94611

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

1.0 INTRODUCTION

This submittal presents Aqua Science Engineers, Inc. (ASE)'s report for a soil and groundwater assessment at the property located at 5725 Thornhill Drive in Oakland, California *(Figure 1)*. The proposed site assessment activities were initiated by Mr. Mohammad Mashhoon, owner of the property, to meet the requirements of the Alameda County Health Care Services Agency (ACHCSA) as outlined in their letter dated June 23, 2000 *(Appendix A)*.

2.0 BACKGROUND INFORMATION

The subject site has been a gasoline service station since the 1950s. The site dispenses gasoline and has conducted auto repair at the site. A 550-gallon steel underground storage tank (UST) for the storage of waste oil was removed from the site by Penn Environmental in November 1998. Soil samples collected from the excavation contained up to 1,100 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G), 2,700 ppm total petroleum hydrocarbons as diesel (TPH-D) and 4,200 ppm total petroleum hydrocarbons as motor oil (TPH-MO).

On February 4, 1999, Penn Environmental overexcavated contaminated soil surrounding the former waste oil tank. This soil was previously removed but was placed back into the excavation temporarily. This soil was once again removed from the excavation to be transported for disposal. ASE collected confirmation soil samples from two sidewalls of the excavation at that time. Sidewall samples were collected since the bottom of the excavation was saturated. These samples were collected from a backhoe bucket from a depth of approximately 5.5-feet below ground surface (the capillary zone). The soil samples were analyzed for TPH-G, TPH-D, TPH-MO, benzene, toluene, ethyl benzene and total xylenes (collectively known as BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8020. These analyses were requested by Mr. Hernan Gomez of the Oakland Fire Department in a telephone conversation on February 4, 1999. The only compound detected in these two soil samples was 0.040 ppm MTBE in one of the two samples.

In July 1999, ASE drilled boring BH-A in the vicinity of the former waste oil UST using a Geoprobe hydraulic sampling rig in order to collect groundwater samples for analysis and to collect samples to analyze for additional parameters not previously requested by the City of Oakland. No halogenated volatile organic compounds (HVOCs), semi-volatile organic compounds (SVOCs) or polychlorinated biphenols (PCBs) were

detected in either soil or groundwater samples collected from the boring. None of the metal concentrations detected in the soil sample exceeded United States Environmental Protection Agency (US EPA) Region IX preliminary remediation goals (PRGs) for residential soil. Total petroleum hydrocarbons were detected in groundwater samples collected from the boring at 1,700 parts per billion (ppb) in the gasoline range, 10,000 ppb in the diesel range and 4,700 ppb in the motor oil range. The only compounds that were detected at concentrations above California Department of Health Services (DHS) maximum contaminant levels (MCLs) for drinking water were MTBE and cadmium. Although these compounds were detected above drinking water standards, they still represent relatively low concentrations, which would not present a threat to human health in non-drinking water scenarios.

3.0 PROPOSED SCOPE OF WORK (SOW)

Based on the requirements of the ACHCSA and RWQCB, ASE's proposed scope of work was to:

1) Prepare a workplan for approval by the Alameda County Health Care Services Agency (ACHCSA) and Regional Water Quality Control Board (RWQCB).

2) Contract with an underground utility locator to locate the underground stream conduit as it passes near the site. ASE will also notify Underground Service Alert (USA) to have all known public utility lines marked.

3) Obtain a drilling permit from the Alameda County Public Works Agency (ACPWA) and an excavation permit from the City of Oakland.

4) Drill two (2) soil borings using a Geoprobe drill rig. One boring will be located at the southwest corner of the site and the other will be located in the sidewalk south of the site. Collect groundwater samples from the borings for analysis.

5) Analyze one soil and one groundwater sample from each boring at a CAL-EPA certified environmental laboratory for TPH-G by modified EPA Method 5030/8015, TPH-D and TPH-MO by modified EPA Method 3550/8015 and BTEX and MTBE by EPA Method 8020. The groundwater samples will also be analyzed for dissolved cadmium by EPA Method 6010.

Details of the assessment are presented below.

4.0 UNDERGROUND UTILITY LOCATING

On August 29, 2000, Subtronics Corporation of Concord, California accurately located the underground stream conduit near the site *(Figure 2)*.

5.0 DRILL SOIL BORINGS AND COLLECT SAMPLES

Prior to drilling, ASE obtained a drilling permit from the Alameda County Public Works Agency (ACPWA) and an excavation permit from the City of Oakland. Copies of the permits are located in *Appendix B*.

On September 6, 2000, Vironex, Inc. of San Leandro, California drilled soil borings BH-B and BH-C at the site using a Geoprobe hydraulic sampling rig *(Figure 2)*. The drilling was directed by ASE associate geologist Ian Reed.

Undisturbed soil samples were collected continuously as drilling progressed for lithologic and hydrogeologic description and for possible analysis. The samples were collected by driving a sampler lined with acetate tubes using hydraulic direct push methods. Selective soil samples were immediately trimmed, sealed with Teflon tape, plastic end caps and tape, labeled, sealed in plastic bags and stored on ice for transport to Kiff Analytical, LLC of Davis, California under chain of custody. Soil from the remaining tubes was described by the site geologist using the Unified Soil Classification System and was screened for volatile compounds using 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 volatile compounds 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. OVM readings can be found on the boring logs located in *Appendix C*.

Groundwater samples were removed from the borings with a peristaltic pump. The groundwater samples to be analyzed for TPH-G, TPH-D, TPH-MO, BTEX and MTBE were contained in 40-ml volatile organic analysis (VOA) vials (pre-preserved with hydrochloric acid) and sealed without headspace. These samples were stored on ice for transport to Kiff Analytical Laboratory of Davis, Califonia. The groundwater samples to be analyzed for dissolved cadmium were contained in 500-ml plastic bottles

and stored on ice for transport to Chromalab, Inc. The samples to be analyzed for dissolved cadmium were immediately filtered and preserved upon arrival at the laboratory. All samples were transported under chain of custody.

Upon completion of the soil and groundwater sampling, the borings were backfilled with neat cement to the ground surface.

Drilling equipment was cleaned with a TSP solution between sampling intervals and between borings to prevent potential cross-contamination.

Sediments encountered during drilling generally consisted sandy silt and gravel from beneath the concrete or asphalt surface to the total depth explored of 16-feet below ground surface (bgs). Groundwater was encountered between approximately 8-feet bgs and 8.7-feet bgs. Boring logs are presented as *Appendix C.*

6.0 ANALYTICAL RESULTS FOR SOIL

Soil samples collected from 7.5-feet bgs in borings BH-B and BH-C were analyzed by Kiff Analytical LLC for TPH-D and TPH-MO by modified EPA Method 3550/8015, and TPH-G, BTEX and MTBE by EPA Method 8260. These samples represent either the capillary zone or the unsaturated soil sample that appeared the most contaminated based on odor, staining, and/or OVM readings. The analytical results are tabulated in *Table One* and the certified analytical report and chain of custody forms are included in *Appendix D.*

The soil sample collected at 7.5-feet bgs in boring BH-B contained 240 parts per million (ppm) TPH-G, 370 ppm TPH-D, 0.043 ppm benzene, and 0.13 ppm ethyl benzene. There were no compounds detected above laboratory reporting limits in the soil sample collected in boring BH-C.

7.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed by Kiff Analytical, LLC for TPH-D and TPH-MO by modified EPA Method 3510/8015, and TPH-G, BTEX and MTBE by EPA Method 8260. Additional groundwater samples were analyzed by Chromalab, Inc. for dissolved cadmium by EPA Method 6010. The analytical results are tabulated in *Table Two*, and the certified analytical report and chain of custody forms are included in *Appendix D.*

The groundwater samples collected from boring BH-B contained 12,000 parts per billion (ppb) TPH-G, 11,000 ppb TPH-D, 420 ppb TPH-MO, 44 ppb benzene, 360 ppb ethyl benzene, 49 ppb total xylenes, and 4,300 ppb MTBE. The groundwater samples collected from boring BH-C contained 7,300 ppb TPH-G, 25,000 ppb TPH-D, 620 ppb TPH-MO, and 5,300 ppb MTBE.

8.0 CONCLUSIONS AND RECOMMENDATION

There were no compounds detected above United States Environmental Protection Agency (US EPA) Region IX Preliminary Remediation Goals (PRGs) for residential soil in the soil samples collected from borings BH-B and BH-C.

The benzene concentration in groundwater samples collected from boring BH-C exceeded the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water. Also, the MTBE concentration in groundwater samples collected from both borings BH-B and BH-C exceeded the DHS MCL for drinking water.

ASE recommends that two additional borings be drilled. One immediately southwest of Temascal Creek and one downgradient of the pump islands. ASE also recommends that a surface water sample be collected from Temascal Creek.

9.0 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.

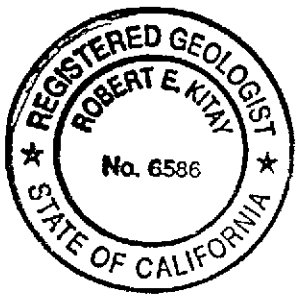
This report does not fully characterize the site for contamination resulting from unknown sources or for parameters not analyzed by the laboratory. All of the laboratory work cited in this report was prepared under the direction of an independent CAL-EPA certified laboratory. The independent laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Aqua Science Engineers appreciates the opportunity 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.

Ian T. Reed
Associate Geologist



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

Attachments: Tables One and Two
Figures 1 and 2
Appendices A through E

cc: Mr. Mohammad Mashhoon, Mash Petroleum, 1721 Jefferson Street, Oakland, CA 94612

Mr. Don Hwang, Alameda County Health Care Services Agency, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502

Mr. Hernan Gomez, City of Oakland Fire Department, Office of Emergency Services Division, 505 14th Street, 7th Floor, Oakland, CA 94612

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

TABLE ONE
Summary of Chemical Analysis of SOIL Samples
All results are in parts per million

Boring	Depth (feet bgs)	TPH Gasoline	TPH Diesel	TPH Motor Oil	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE
BH-B	8	**240**	**370**	< 200	**0.043**	< 0.02	**0.13**	< 0.02	< 0.02
BH-C	8	< 1.0	< 1.0	< 1.0	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
PRG		NE	NE	NE	0.67	520	230	210	NE

Notes:

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

Detectable concentrations are in bold.

PRG is the United States Environmental Protection Agency (US EPA) Region IX Preliminary Remediation Goal (PRG) for residential soil.

TABLE TWO
Summary of Chemical Analysis of GROUNDWATER Samples
All results are in parts per billion

Boring	TPH Gasoline	TPH Diesel	TPH Motor Oil	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE	Dissolved Cadmium
BH-B	**12,000**	**11,000**	**420**	**44**	< 5.0	**360**	**49**	**4,300**	< 2
BH-C	**7,300**	**25,000**	**620**	< 20	< 20	< 20	< 20	**5,300**	< 2
DHS MCL	NE	NE	NE	1	150	700	1,750	13	5

Notes:

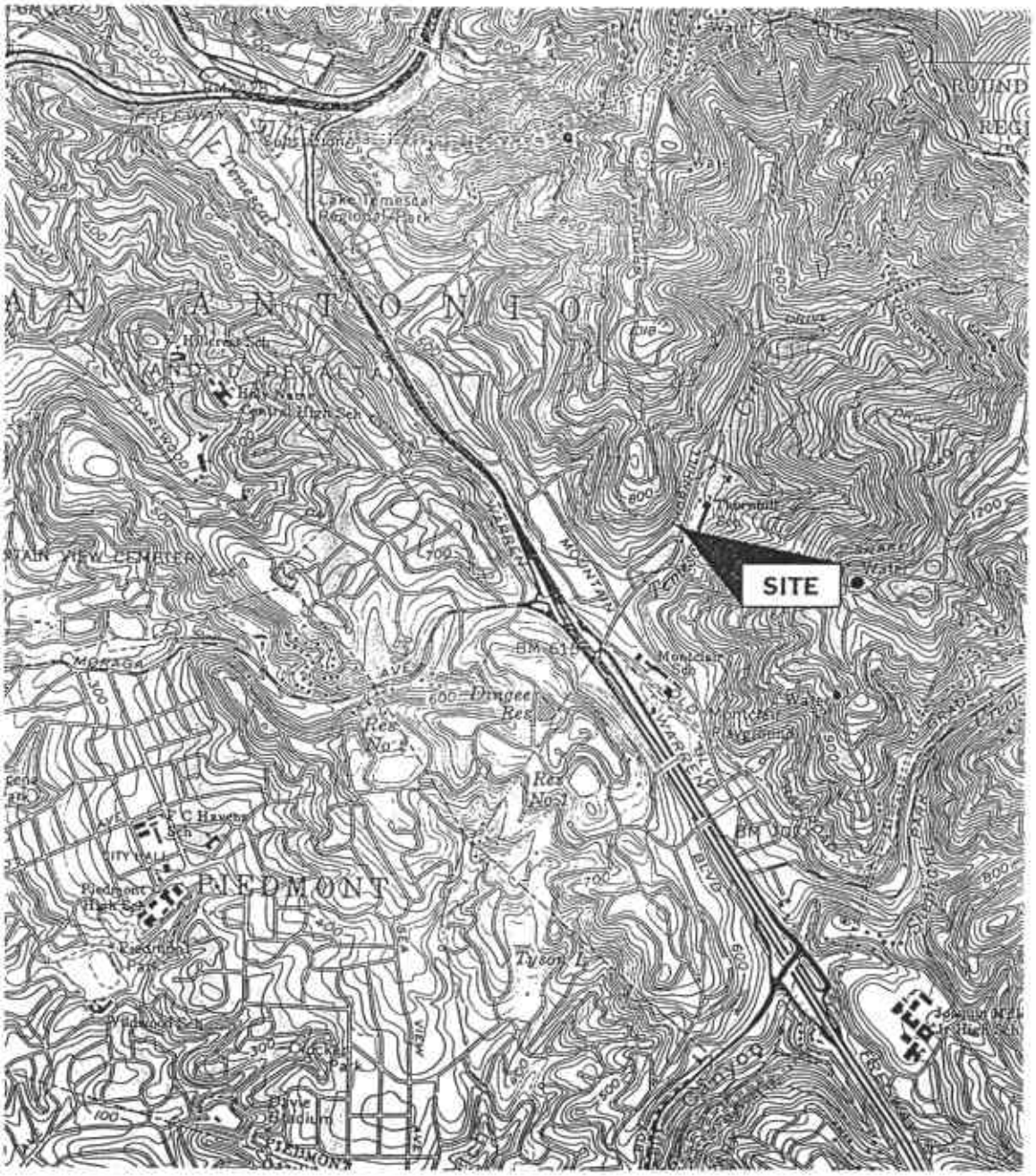
Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit.

Detectable concentrations are in bold.

DHS MCL is the California Department of Health Services maximum contaminant level for drinking water.

NE = DHS MCLs are not established.

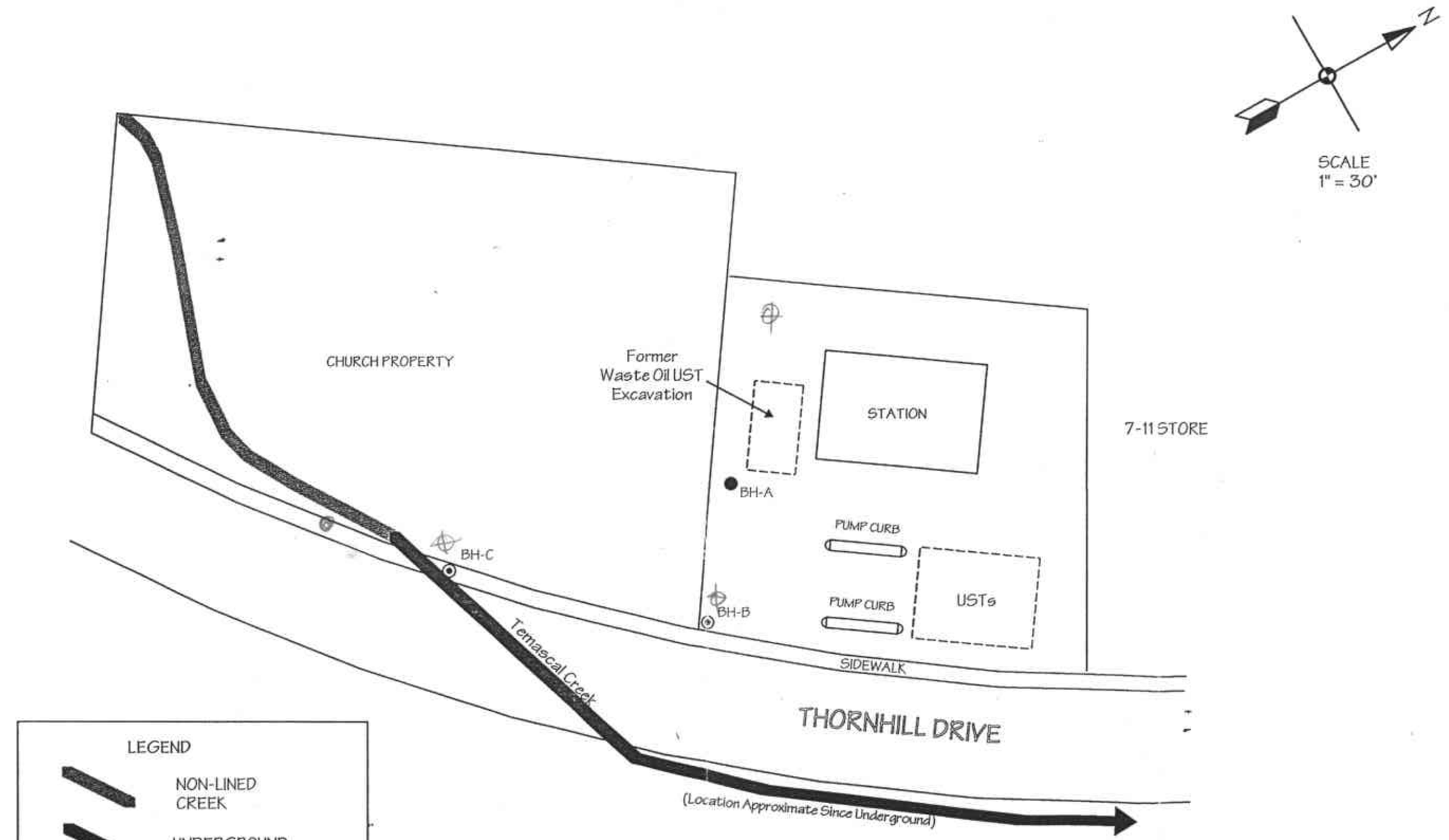
NORTH



SITE LOCATION MAP

Mash Petroleum
5725 Thornhill Street
Oakland, California

AQUA SCIENCE ENGINEERS, INC.	Figure 1



SOIL BORING LOCATION MAP

MASH PETROLEUM
5725 THORNHILL DRIVE
OAKLAND, CA

SCALE : 1" =30'.	DATE: 10/02/00
AQUA SCIENCE ENGINEERS, INC.	FIGURE 2

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

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

June 23, 2000

Mo Mashhoon
Mash Petroleum, Inc.
5725 Thornhill Dr.
Oakland, CA 94611

Re: 5725 Thornhill Dr., Oakland, CA 94611
Stid 1145

Dear Mr. Mashhoon:

On May 19, 2000, Larry Seto and Eva Chu from our office and I met your consultant, Robert Kitay, Aqua Science Engineers, at the site. We determined that two more borings would be required, at the southwest corner of the property and on the sidewalk south of the property to assess the nature and vertical and lateral extent of the release from the waste oil tank. Additionally, as requested in my letter dated April 27, 1999, the destruction of the wells, MW-1, MW-2, and MW-3, in the underground tank trenches, is required to prevent surface contamination from reaching the subsurface.

A workplan addressing these issues is required. If you have any questions, please call me at (510) 567-6746.

Sincerely,

Don Hwang
Hazardous Materials Specialist

C: Robert Kitay, Aqua Science Engineers, Inc., 208 W. El Pintado Rd., Danville, CA 94526
File

C.S.

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 5725 Thornhill Drive
Oakland, CA

CLIENT
Name Mo Mashhoon
Address 5725 Thornhill Dr Phone
City Oakland CA Zip

APPLICANT
Name Aqua Science Eng. Inc Fax (925) 837-4853
Address 208 W El Pintado Phone (925) 820-9391
City Danville CA Zip

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	X		

DRILLER'S NAME Virongx
DRILLER'S LICENSE NO. C57-705927

WELL PROJECTS
Drill Hole Diameter ____ in. Maximum
Casing Diameter ____ in. Depth ____ ft
Surface Seal Depth ____ ft. Owner's Well Number ____

GEOTECHNICAL PROJECTS
Number of Borings 3 Maximum
Hole Diameter 2 in. Depth 25 ft.

ESTIMATED STARTING DATE 9/6/00
ESTIMATED COMPLETION DATE 9/6/00

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

APPLICANT'S SIGNATURE Ian T. Reed DATE 9/1/00
PLEASE PRINT NAME Ian T. Reed

Rev.6-2-00

FOR OFFICE USE
PERMIT NUMBER W00-539
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 original Department of Water Resources Well Completion Report.
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 by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

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

F. WELL DESTRUCTION
See attached requirements for destruction of shallow wells. Send a map of work site. A different permit application is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 9-5-00

CITY OF OAKLAND
Office of Planning and Building

EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

PERMIT NUMBER	SITE ADDRESS/LOCATION
X000/437	5725 THORNHILL DR
APPROX. START DATE / APPROX. END DATE	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number)
CONTRACTOR'S LICENSE # AND CLASS	CITY BUSINESS TAX #

ATTENTION:

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: _____

2) 48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

☐ I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law).

☐ I am exempt under Sec. _____, B&PC for this reason _____.

WORKER'S COMPENSATION

☐ I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).

Policy # _____ Company Name _____

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Title 12 Chapter 12.12 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

X _____ 9-5-00

Signature of Permittee ☐ Agent for ☐ Contractor ☐ Owner Date

DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED? ☐ YES ☐ NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) ☐ YES ☐ NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) ☐ YES ☐ NO
ISSUED BY		DATE ISSUED 9-5-00	

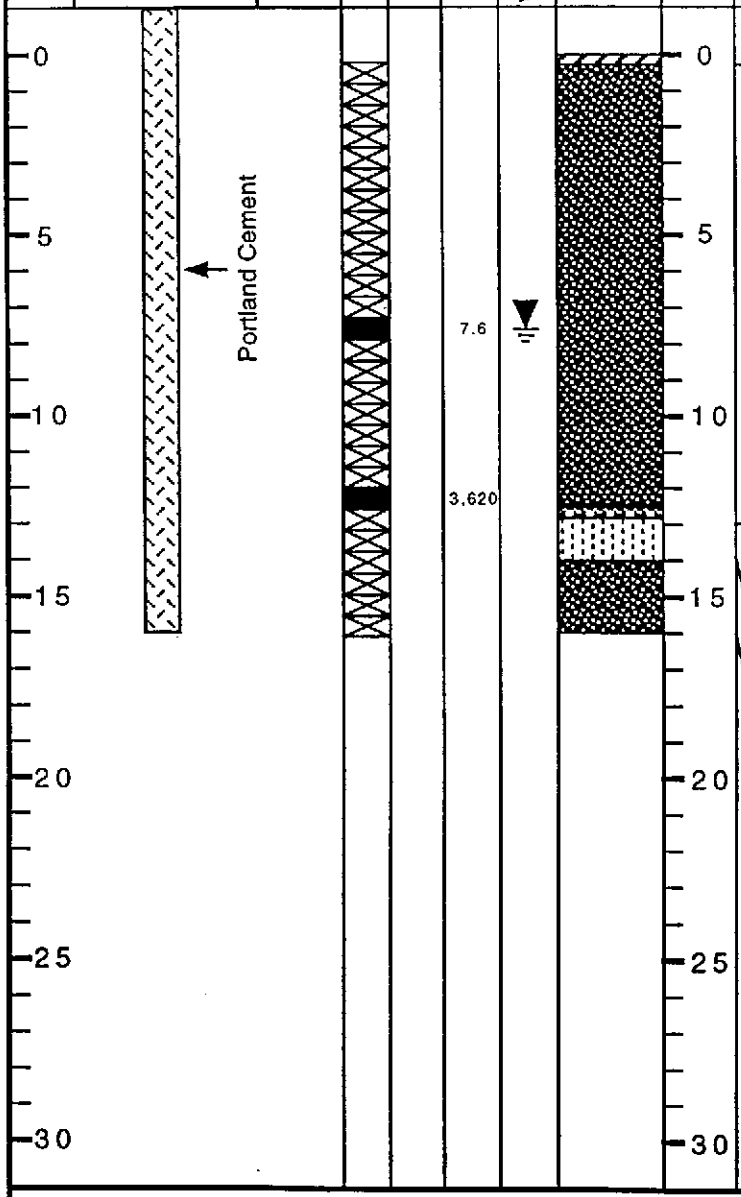
$87.00

APPENDIX C

Boring Logs

SOIL BORING LOG AND MONITORING WELL COMPLETION DETAILS		Boring: BH-C
Project Name: Mashhoon-Thornhill	Project Location: 5725 Thornhill Drive, Oakland, CA	Page 1 of 1
Driller: Vironex	Type of Rig: Geoprobe	Size of Drill: 2.0" Diameter
Logged By: Ian T. Reed	Date Drilled: September 6, 2000	Checked By: Robert E. Kitay, R.G.

WATER AND WELL DATA	
Depth of Water First Encountered: 8.7'	Total Depth of Well Completed: NA
Static Depth of Water in Well: NA	Well Screen Type and Diameter: NA
Total Depth of Boring: 16'	Well Screen Slot Size: NA
	Type and Size of Soil Sampler: 2.0" I.D. Macro Sampler

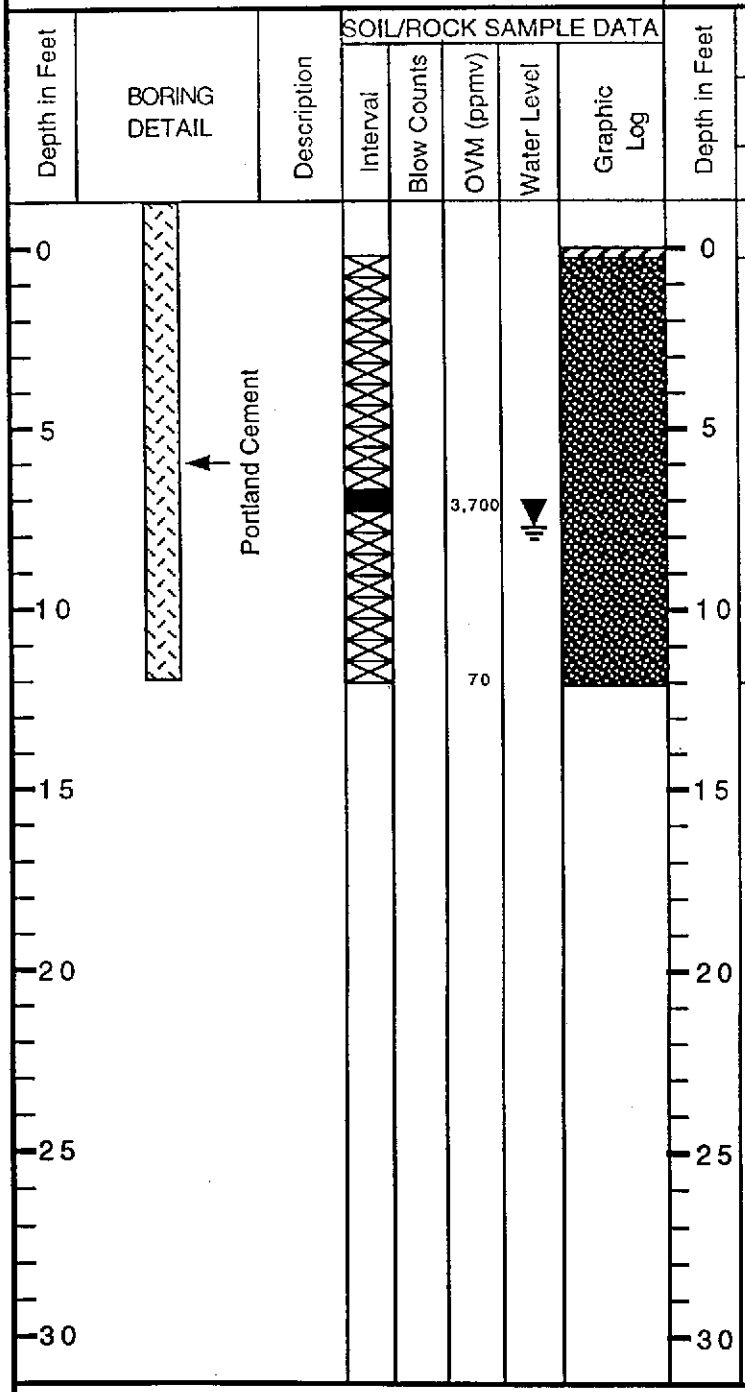


Depth in Feet	DESCRIPTION OF LITHOLOGY standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.
0	Concrete
0	Sandy SILT (ML); light brown to brown; damp to moist; medium stiff; 60% silt; 30% fine to coarse sand; 10% gravel to 1.0" diameter; non-plastic; medium estimated K; no odor [FILL]
8.7	wet at 8.7'
10	green to black; trace clay; moderate hydrocarbon odor
11.5	gravel zone at 11.5'
11.5	Sandy GRAVEL (GM); gray to black; wet; stiff; 60% gravel; 40% fine to coarse sand; trace silt; non-plastic; medium estimated K; strong hydrocarbon odor
15	Sandy SILT (ML); gray to black; wet; stiff; 60% silt; 30% fine to coarse sand; 10% clay; strong hydrocarbon odor
16	End of boring at 16'

AQUA SCIENCE ENGINEERS, INC.

SOIL BORING LOG AND MONITORING WELL COMPLETION DETAILS		Boring: BH-B
Project Name: Mashhoon-Thornhill	Project Location: 5725 Thornhill Drive, Oakland, CA	Page 1 of 1
Driller: Vironex	Type of Rig: Geoprobe	Size of Drill: 2.0" Diameter
Logged By: Ian T. Reed	Date Drilled: September 6, 2000	Checked By: Robert E. Kitay, R.G.

WATER AND WELL DATA	
Depth of Water First Encountered: 8.0'	Total Depth of Well Completed: NA
	Well Screen Type and Diameter: NA
Static Depth of Water in Well: NA	Well Screen Slot Size: NA
Total Depth of Boring: 12'	Type and Size of Soil Sampler: 2.0" I.D. Macro Sampler



Depth in Feet	DESCRIPTION OF LITHOLOGY standard classification, texture, relative moisture, density, stiffness, odor-staining, USCS designation.
0	Asphalt
	Sandy SILT (ML); dark brown; medium stiff; damp; 60% silt; 40% fine to coarse sand; trace gravel to 0.5" diameter; non-plastic, medium estimated K; no odor
5	gray; moist to wet; 60% silt; 30% fine to coarse sand; 10% gravel to 1.0" diameter; moderate hydrocarbon odor wet at 8'
10	End of boring at 12'
15	
20	
25	
30	

AQUA SCIENCE ENGINEERS, INC.

APPENDIX D

Certified Analytical Report
and
Chain of Custody Documentation
Soil Samples

KIFF ANALYTICAL LLC

Report Number : 17695
Date : 9/20/00

Ian Reed
Aqua Science Engineers, Inc.
208 W. El Pintado Road
Danville, CA 94526

Subject : 3 Soil Samples
Project Name : THORNHILL
Project Number :

Dear Mr. Reed,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 17695
Date : 9/20/00

Project Name : **THORNHILL**
Project Number :

Sample : **BH-B-8'** Matrix : Soil Lab Number : 17695-01
Sample Date :9/6/00

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	0.043	0.020	mg/Kg	EPA 8260B	9/15/00
Toluene	< 0.020	0.020	mg/Kg	EPA 8260B	9/15/00
Ethylbenzene	0.13	0.020	mg/Kg	EPA 8260B	9/15/00
Total Xylenes	< 0.020	0.020	mg/Kg	EPA 8260B	9/15/00
Methyl-t-butyl ether	< 0.020	0.020	mg/Kg	EPA 8260B	9/15/00
TPH as Gasoline	240	5.0	mg/Kg	EPA 8260B	9/15/00
TPH as Diesel	370	20	mg/Kg	M EPA 8015	9/19/00
TPH as Motor Oil	< 200	200	mg/Kg	M EPA 8015	9/19/00
Toluene - d8 (Surr)	98.1		% Recovery	EPA 8260B	9/15/00
4-Bromofluorobenzene (Surr)	98.7		% Recovery	EPA 8260B	9/15/00
1-Chlorooctadecane (Diesel Surrogate)	85.4		% Recovery	M EPA 8015	9/19/00

Sample : **BH-C-8'** Matrix : Soil Lab Number : 17695-02
Sample Date :9/6/00

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	9/13/00
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	9/13/00
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	9/13/00
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	9/13/00
Methyl-t-butyl ether	< 0.0050	0.0050	mg/Kg	EPA 8260B	9/13/00
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/13/00
TPH as Diesel	< 1.0	1.0	mg/Kg	M EPA 8015	9/19/00
TPH as Motor Oil	< 10	10	mg/Kg	M EPA 8015	9/19/00
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	9/13/00
4-Bromofluorobenzene (Surr)	101		% Recovery	EPA 8260B	9/13/00
1-Chlorooctadecane (Diesel Surrogate)	92.6		% Recovery	M EPA 8015	9/19/00

Approved By: Joel Kiff

APPENDIX E

Certified Analytical Report
and
Chain of Custody Documentation
Groundwater Samples

KIFF ANALYTICAL LLC

Report Number : 17696
Date : 9/18/00

Ian Reed
Aqua Science Engineers, Inc.
208 W. El Pintado Road
Danville, CA 94526

Subject : 2 Water Samples
Project Name : THORNHILL
Project Number :

Dear Mr. Reed,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 17696
Date : 09/18/2000

Project Name : THORNHILL
Project Number :

Sample : BH-B Matrix : Water Lab Number : 17696-01
Sample Date :09/06/2000

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	44	5.0	ug/L	EPA 8260B	09/15/2000
Toluene	< 5.0	5.0	ug/L	EPA 8260B	09/15/2000
Ethylbenzene	360	5.0	ug/L	EPA 8260B	09/15/2000
Total Xylenes	49	5.0	ug/L	EPA 8260B	09/15/2000
Methyl-t-butyl ether	4300	50	ug/L	EPA 8260B	09/15/2000
TPH as Gasoline	12000	500	ug/L	EPA 8260B	09/15/2000
TPH as Diesel	11000	50	ug/L	M EPA 8015	09/14/2000
TPH as Motor Oil	420	100	ug/L	M EPA 8015	09/14/2000
Toluene - d8 (Surr)	99.5		% Recovery	EPA 8260B	09/15/2000
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	09/15/2000

Sample : BH-C Matrix : Water Lab Number : 17696-02
Sample Date :09/06/2000

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 20	20	ug/L	EPA 8260B	09/14/2000
Toluene	< 20	20	ug/L	EPA 8260B	09/14/2000
Ethylbenzene	< 20	20	ug/L	EPA 8260B	09/14/2000
Total Xylenes	< 20	20	ug/L	EPA 8260B	09/14/2000
Methyl-t-butyl ether	5300	200	ug/L	EPA 8260B	09/14/2000
TPH as Gasoline	7300	2000	ug/L	EPA 8260B	09/14/2000
TPH as Diesel	25000	50	ug/L	M EPA 8015	09/14/2000
TPH as Motor Oil	620	100	ug/L	M EPA 8015	09/14/2000
Toluene - d8 (Surr)	99.2		% Recovery	EPA 8260B	09/14/2000
4-Bromofluorobenzene (Surr)	94.4		% Recovery	EPA 8260B	09/14/2000

Approved By: Joel Kiff

17696

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 THORNHILL JOB NO.

ADDRESS 5725 Thornhill Drive, Oakland CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-DIESEL (EPA 3510/8015)	TPH-DIESEL & MOTOR OIL (EPA 3510/8015)	PURGEABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240/8260)	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)	FUEL OXYGENATES (EPA 8260)	Pb (TOTAL or DISSOLVED) (EPA 6010)	TPH-G/BTEX/5 OXY'S (EPA 8260)	TPH-G/BTEX/7 OXY'S / HVOCS (EPA 8260)			COMPOSITE
BH-B	9/6	1030	Water	8	X		X															
BH-C	9/6	1150	water	8	X		X															

RELINQUISHED BY: Ian T. Reed 1700 (signature) (time)

Ian T. Reed 9/7/00 (printed name) (date)

Company- ASE

RECEIVED BY: (signature) (time)

(printed name) (date)

Company-

RELINQUISHED BY: (signature) (time)

(printed name) (date)

Company-

RECEIVED BY LABORATORY: Osama Albalawi (signature) (time) 1720

Osama Albalawi (printed name) (date) 090700

Company- Kiff Analytical

COMMENTS:

TURN AROUND TIME

STANDARD 24Hr 48Hr 72Hr

OTHER:

CHROMALAB, INC.
Environmental Services (SDB)

Submission #: 2000-09-0074
Date: September 13, 2000

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

Attn.: Mr. Ian T. Reed

Project: Thornhill

Dear Mr. Reed,

Attached is our report for your samples received on Wednesday September 6, 2000
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 21, 2000 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. You can also contact me via email.
My email address is: vvancil@chromalab.com

Sincerely,

Vincent Vancil

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 2000-09-0074

Soluble Metals

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: Thornhill

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
BH-B	Water	09/06/2000 10:30	1
BH-C	Water	09/06/2000 11:50	2

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 2000-09-0074

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

Test Method: 6010B
Prep Method: 3005A

Soluble Metals

Sample ID:	**BH-B**	Lab Sample ID:	**2000-09-0074-001**
Project:	Thornhill	Received:	09/06/2000 13:05
		Extracted:	09/08/2000 06:38
Sampled:	09/06/2000 10:30	QC-Batch:	2000/09/08-03.15
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Cadmium	ND	0.0020	mg/L	1.00	09/08/2000 12:13	

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 2000-09-0074

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

Test Method: 6010B
Prep Method: 3005A

Soluble Metals

Sample ID:	**BH-C**	Lab Sample ID:	**2000-09-0074-002**
Project:	Thornhill	Received:	09/06/2000 13:05
		Extracted:	09/08/2000 06:38
Sampled:	09/06/2000 11:50	QC-Batch:	2000/09/08-03.15
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Cadmium	ND	0.0020	mg/L	1.00	09/08/2000 12:40	

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

Test Method: 6010B
Prep Method: 3005A

Batch QC Report
Soluble Metals

Method Blank | **Water** | **QC Batch # 2000/09/08-03.15**

MB: 2000/09/08-03.15-064

Date Extracted: 09/08/2000 06:38

Compound	Result	Rep.Limit	Units	Analyzed	Flag
Cadmium	ND	0.0020	mg/L	09/08/2000 12:01	

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 2000-09-0074

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

Attn: Ian T. Reed

Test Method: 6010B

Prep Method: 3005A

Batch QC Report

Soluble Metals

Laboratory Control Spike (LCS/LCSD) Water **QC Batch # 2000/09/08-03.15**

LCS: 2000/09/08-03.15-065 Extracted: 09/08/2000 06:38 Analyzed 09/08/2000 12:05

LCSD: 2000/09/08-03.15-066 Extracted: 09/08/2000 06:38 Analyzed 09/08/2000 12:09

Compound	Conc. [mg/L]		Exp.Conc. [mg/L]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Cadmium	0.525	0.528	0.500	0.500	105.0	105.6	0.6	80-120	20		

CHROMALAB, INC.

Environmental Services (SDB)

Submission #: 2000-09-0074

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

Attn.: Ian T. Reed

Test Method: 6010B

Prep Method: 3005A

Batch QC Report

Soluble Metals

Matrix Spike (MS / MSD) Water **QC Batch # 2000/09/08-03.15**

Sample ID: **BH-B** Lab Sample ID: 2000-09-0074-001

MS: 2000/09/08-03.15-068 Extracted: 09/08/2000 06:38 Analyzed: 09/08/2000 12:17 Dilution: 1.0

MSD: 2000/09/08-03.15-071 Extracted: 09/08/2000 06:38 Analyzed: 09/08/2000 12:36 Dilution: 1.0

Compound	Conc. [mg/L]			Exp.Conc. [mg/L]		Recovery [%]		RPD	Ctrl. Limits [%]		Flags	
	MS	MSD	Sample	MS	MSD	MS	MSD	[%]	Recovery	RPD	MS	MSD
Cadmium	0.497	0.495	ND	0.500	0.500	99.4	99.0	0.4	75-125	20		

CHROMALAB, INC.

Environmental Services (SDB) (DOHS 1094)

1220 Quarry Lane · Pleasanton, California · (925) 484-1919 · Fax (925) 484-1096

2000-09-0094

Reference #: 54294

Chain of Custody

DATE 9/6/00 PAGE 1 OF 1

PROJ. MGR. Ian Reed
COMPANY Aqua Science Eng. Inc.
ADDRESS 208 W. El Pintado
Danville CA
SAMPLERS (SIGNATURE) (PHONE NO.)
(FAX NO.)

SAMPLE ID.	DATE	TIME	MATRIX	PRESERV.	TPH-(EPA 8015,8020) ☐ Gas w/ ☐ BTEX ☐MTBE	PURGEABLE AROMATICS BTEX (EPA 8020)	TPH-Diesel (EPA 8015M)	TEPH (EPA 8015M) ☐ Diesel ☐ M.O. ☐ Other	PURGEABLE HALOCARBONS (HVOCs) (EPA 8010)	VOLATILE ORGANICS (VOCs) (EPA 8260)	SEMIVOLATILES (EPA 8270)	Oil & Grease ☐ Petrol ☐ Total ☐ 1664		☐ PESTICIDES(EPA 8080) ☐ PCB'S (EPA 8080)	PNA's by ☐ 8270 ☐ 8310	☐ Spec Cond. ☐ TSS ☐ TDS	LUFT METALS: Cd, Cr, Pb, Ni, Zn	CAM 17 METALS (EPA 6010/7470/7471)	TOTAL LEAD	☐ W.E.T. (STLC) ☐ TCLP	☐ Hexavalent Chromium ☐ pH (24 hr hold time for H20)	Dissolved Cadmium by EPA 6010			NUMBER OF CONTAINERS
BH-B	9/6	1030	water																			X			
BH-C	9/6	1150	water																			X			

PROJECT INFORMATION

PROJECT NAME: Thornhill
PROJECT NUMBER
P.O. #

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS
HEAD SPACE
TEMPERATURE
CONFORMS TO RECORD

TAT: STANDARD 5-DAY | 24 | 48 | 72 | OTHER

SPECIAL INSTRUCTIONS/COMMENTS:
Report: ☐ Routine ☐ Level 2 ☐ Level 3 ☐ Level 4 ☐ Electronic Report
Need to be filtered

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) 1305 (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
Ian T. Reed 9/6/00 (PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
AQ2 (COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) 1305 (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	C ROWLEY 9/6/00 (PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	Chromalab (LAB)