aqua science engineers inc.

93 AUG 16 PM 12:08

August 13, 1993

Ms. Susan Hugo
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

STID 3179

SUBJECT: Romak Iron Works
3250 Hollis Street
Oakland, California

Dear Ms. Hugo:

Enclosed is the subsurface environmental assessment for the Romak Iron Works property at 3250 Hollis Street in Oakland, California. We will also forward a copy of this report to Mr. Richard Hiett of the California Regional Water Quality Control Board - San Francisco Bay Region.

Should you have any questions or comments, please feel free to call us at (510) 820-9391.

Respectfully submitted,

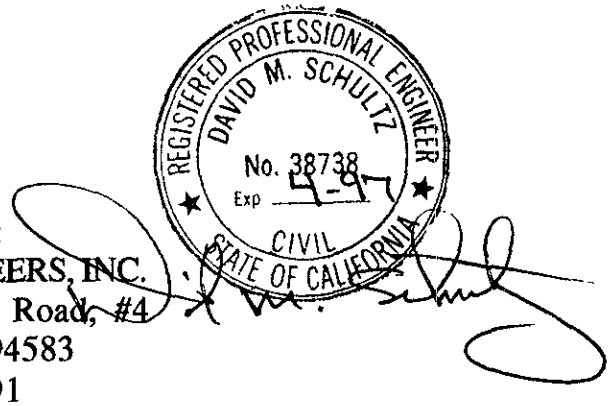
AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay
Project Geologist

aqua science engineers inc.

August 12, 1993

REPORT
of
SOIL AND GROUNDWATER ASSESSMENT
ASE JOB NO. 2659
at
Romak Iron Works
3250 Hollis Street
Oakland, California 94662



Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

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1.0 INTRODUCTION

This report outlines the methods and findings of Aqua Science Engineer's, Inc. (ASE) soil and groundwater investigation at the Romak Iron Works property located at 3250 Hollis Street in Oakland, California *(Figure 1)*. The proposed site assessment activities were initiated by the property owner in accordance with a letter received from the Alameda County Health Care Services Agency (ACHCSA), dated April 29, 1993 (Appendix A) as follow up to the January 15, 1992 underground fuel-storage tank removal.

2.0 SITE HISTORY

On January 15, 1992, ASE removed two underground gasoline storage tanks from the site. ASE collected one soil sample from beneath each former tank location. Total petroleum hydrocarbons as gasoline (TPH-G) were detected at 180 parts per million (ppm) in one of the two samples. On January 16, 1992, approximately 20 cubic yards of soil were overexcavated and additional soil samples were collected to confirm that all hydrocarbon-bearing soil was removed from the ground. Overexcavated material was aerated and placed back in the excavation. One of the confirmation samples still contained 11 ppm TPH-G. Since hydrocarbons were still detected in the soil, ACHCSA requested in a letter dated April 29, 1993 that a soil and groundwater investigation be preformed at the site. Although the April 29, 1993 letter from ACHCSA requests that three monitoring wells be installed at the site, Ms. Susan Hugo of ACHCSA, in a conversation with David Allen of ASE, stated that it would be acceptable to install only one groundwater monitoring well at the site if a reliable gradient could be established in the site vicinity.

ASE researched the groundwater flow direction in the site vicinity by reviewing the ACHCSA and San Francisco Bay Regional Water Quality Control Board files for the former Guiton Charter Bus Company at the opposite corner of the 34th Street and Hollis Street intersection at 3421 Hollis Street in Oakland, California. ASE also contacted Epigene International and Hageman-Aguiar, Inc. (Guiton's former environmental consultants) for information in their files concerning the groundwater flow direction beneath their site. ASE also measured depths to groundwater in the Guiton wells on June 25, 1993. Groundwater appears to flow to the southwest beneath the Guiton site.

3.0 SCOPE OF WORK (SOW)

Based on the site history and requirements outlined in the ACHCSA April 29, 1993 letter, ASE's SOW was limited to:

1) Reviewing the site history and preparing a site safety plan;

2) Preparing a workplan for review and approval by the ACHCSA and the San Francisco Bay - Regional Water Quality Control Board;

3) Obtaining all necessary permits from the appropriate agencies for the installation of a monitoring well;

4) Drilling one soil boring to approximately 25-feet below ground surface (bgs) within approximately 10-feet of the former tank in the assumed downgradient direction. Collecting soil samples for subsurface hydrogeologic description and possible chemical analysis; Analyzing selected soil samples for TPH-G and BTEX;

5) Completing the boring as a 2-inch diameter groundwater monitoring well;

6) Developing the well and collecting groundwater samples for analyses;

7) Analyzing the groundwater samples for TPH-G and BTEX;

8) Reporting the subsurface investigation results.

Each of these tasks is described in detail below.

4.0 DRILLING SOIL BORING AND COLLECTING SAMPLES

ASE obtained the required Alameda County Flood Control and Water Conservation District (Zone 7) well construction permit prior to drilling (Appendix B). On July 30, 1993, Soils Exploration Services of Vacaville, California drilled soil boring BH-A to 22.0 feet bgs using a CME-55 drill rig equipped with 8-inch diameter hollow-stem augers. Groundwater

monitoring well MW-1 was subsequently constructed in the boring *(Figure 2)*. The drilling was directed by ASE project geologist Robert E. Kitay. The boring was located approximately 10-feet southwest of the former tank pit in the assumed downgradient direction.

Undisturbed soil samples were collected at 5-foot intervals for lithologic and hydrogeologic description and for possible chemical analysis. The samples were collected by driving a split-barrel drive sampler lined with 2-inch diameter stainless steel tubes ahead of the auger tip with successive blows from a 140-lb. hammer dropped 30-inches. One tube from each sampling interval was immediately trimmed, sealed with Teflon tape, plastic end caps and duct tape, labeled, sealed in a plastic bag and stored on wet ice for transport to Priority Environmental Labs (PEL) of Milpitas, California (DHS #1708) 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 with an Organic Vapor Meter (OVM). The soil was screened by emptying soil from one of the sample tubes into a plastic bag. The bag was then sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons were allowed to volatilize, the OVM measured the vapor 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. Slight hydrocarbon odors were noted in all of the soil samples. The only significant positive OVM reading was 345 parts per million by volume (ppmv) in the soil sample from 5-feet bgs.

Drilling equipment was steam-cleaned prior to use, and sampling equipment was washed with a TSP solution between sampling intervals to prevent cross-contamination. Rinsate was contained on-site in sealed and labeled Department of Transportation approved 55-gallon (DOT 17H) drums.

Sediments encountered during drilling consisted of silty clay from the ground surface to approximately 4-feet bgs, clayey silt from approximately 4 to 8-feet bgs, silty clay from approximately 8 to 13.5-feet bgs, sandy silt from approximately 13.5 to 18.5-feet bgs and silty clay from about 18.5 to the total depth explored of 22-feet bgs. Groundwater was encountered at approximately 13.5-feet bgs and rose to approximately 9.5-feet bgs prior to the well development on August 3, 1993. The boring log and well construction details are included as Appendix C. Drill cuttings were contained in DOT 17H drums for future disposal by the client.

5.0 ANALYTICAL RESULTS FOR SOIL

The soil sample collected at 6.0 to 6.5-feet bgs was analyzed by PEL for TPH-G by modified EPA Method 5030/8015 and BTEX by EPA Method 8020. The analytical results are tabulated below in Table One, and the certified analytical report and chain of custody form are included in Appendix D.

No hydrocarbons were detected in the analyzed soil sample.

TABLE ONE
Summary of Chemical Analysis of **SOIL BORING BH-A** Samples
TPH-G and BTEX

Sample I.D.	TPH Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Total Xylenes (ppm)
BH-A 6.0'	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
EPA METHOD	5030/ 8015	8020	8020	8020	8020

ppm = parts per million

6.0 MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Groundwater monitoring well MW-1 was installed in boring BH-A *(Figure 2)*. The well was constructed with 2-inch diameter, 0.020-inch slotted, flush threaded, Schedule 40 PVC well screen and blank casing. The well was screened between 5 and 22-feet bgs to monitor the first water bearing zone encountered. Lonestar #3 Monterey sand occupies the annular space between the borehole and the casing from the bottom of the boring to about 1-foot above the well screen. A 1-foot thick, hydrated, bentonite layer separates the sand from the overlying cement surface seal. The wellhead is secured with a locking wellplug beneath an at-grade traffic-rated vault.

On August 3, 1993, the well was developed using two episodes of surge-block agitation and bailer evacuation. Ten well casing volumes of water were removed during development, and evacuation continued until the water was relatively clear. Hydrocarbon odors and a sheen were present during the well development. The well yielded approximately 0.1 feet per minute during development.

ASE sampled the well immediately following the well development. Since the well went dry following the well development and did not recover to 80 percent of the static water level, the samples were collected after the well was allowed to recover for two hours. The samples were collected from the well with a disposable polyethylene bailer. The groundwater samples were decanted from the bailer into three (3) 40-ml volatile organic analysis (VOA) vials. All of the samples were preserved with hydrochloric acid (except one VOA vial to be analyzed for pH), labeled, placed in protective foam sleeves, and stored on wet ice for transport to PEL under chain of custody.

Well development and sampling purge water were contained in DOT 17H drums and stored on-site for handling by the client at a later date. See Appendix E for a copy of the Field Log.

7.0 ANALYTICAL RESULTS FOR GROUNDWATER

The groundwater samples were analyzed by PEL for TPH-G by modified EPA Method 5030/8015, BTEX by EPA Method 602, pH by EPA Method 9045 and electrical conductivity by EPA Method 120.1. The analytical results are tabulated below in Table Two, and the certified analytical report and chain of custody form are included in Appendix D.

TPH-G was detected in the groundwater sample at 12,000 parts per billion (ppb), and BTEX was detected between 7.6 and 29 ppb. Only the concentration of benzene (7.6 ppb) exceeded the California EPA Department of Toxic Substance Control (DTSC) maximum contaminant level (mcl) for drinking water of 1 ppb. The pH was 6.5, and the conductivity was 1090 (these values are not tabulated below).

TABLE TWO
Summary of Chemical Analysis of GROUNDWATER Samples
TPH-G and BTEX

Sample I.D.	TPH Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	Total Xylenes (ppb)
MW-1	12,000	7.6	9.7	9.9	29
DTSC MCL	Not Established	1.0	100*	680	1,750
EPA METHOD	5030/ 8015	602	602	602	602

ppb = parts per billion
DTSC = California EPA Department of Toxic Substance Control
MCL = maximum contaminant level for drinking water
* = DTSC recommended action level for drinking water; MCL not established

8.0 CONCLUSIONS AND RECOMMENDATIONS

No hydrocarbons were detected in the soil sample collected from 6.0 to 6.5-feet bgs in boring BH-A.

12,000 ppb TPH-G and between 7.6 and 29 ppb BTEX were detected in groundwater samples from well MW-1. The benzene concentration of 7.6 ppb exceeds the DTSC MCL of 1 ppb.

ASE recommends sampling the groundwater monitoring well quarterly (every three months) for one year. A report of the analytical results should be forwarded to the ACHCSA and the California Regional Water Quality Control Board - San Francisco Bay Region (RWQCB).

9.0 REPORT LIMITATIONS

The results of this investigation represent conditions at the time of the soil and groundwater sampling, at the specific locations at which the samples were collected, and for the specific parameters analyzed for by the laboratory.

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

Aqua Science Engineers appreciates the opportunity to assist Romak Iron Works with its environmental needs. Should you have any questions or comments, please feel free to call us at (510) 820-9391.

Respectfully submitted,

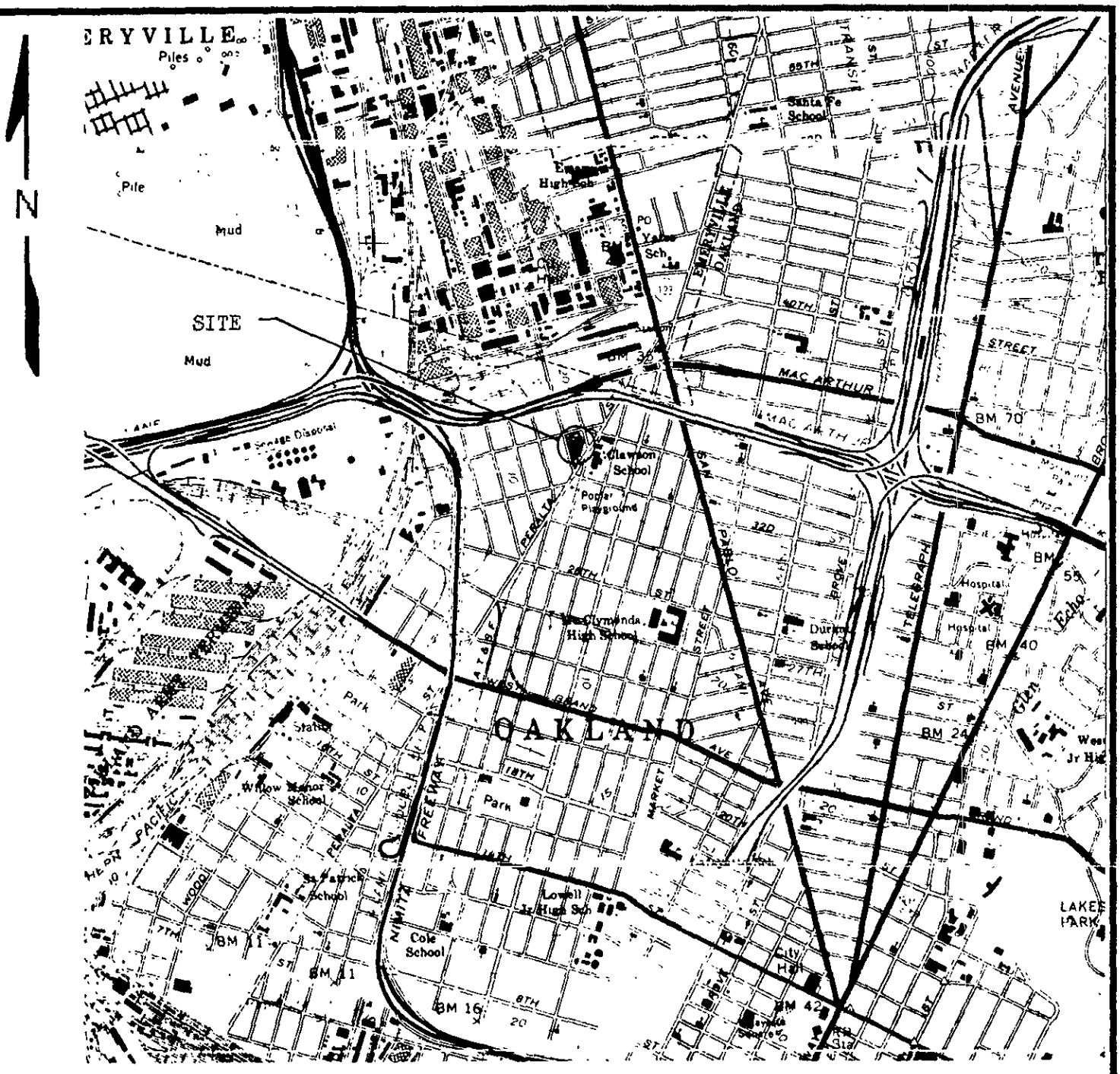
AQUA SCIENCE ENGINEERS, INC.

Robert E. Kitay

Robert E. Kitay
Project Geologist

Attachments: Figures 1 and 2
Appendices A through E

cc: Mr. Kevin Romak, Romak Iron Works
Ms. Susan Hugo, ACHCSA
Mr. Richard Hiett, RWQCB

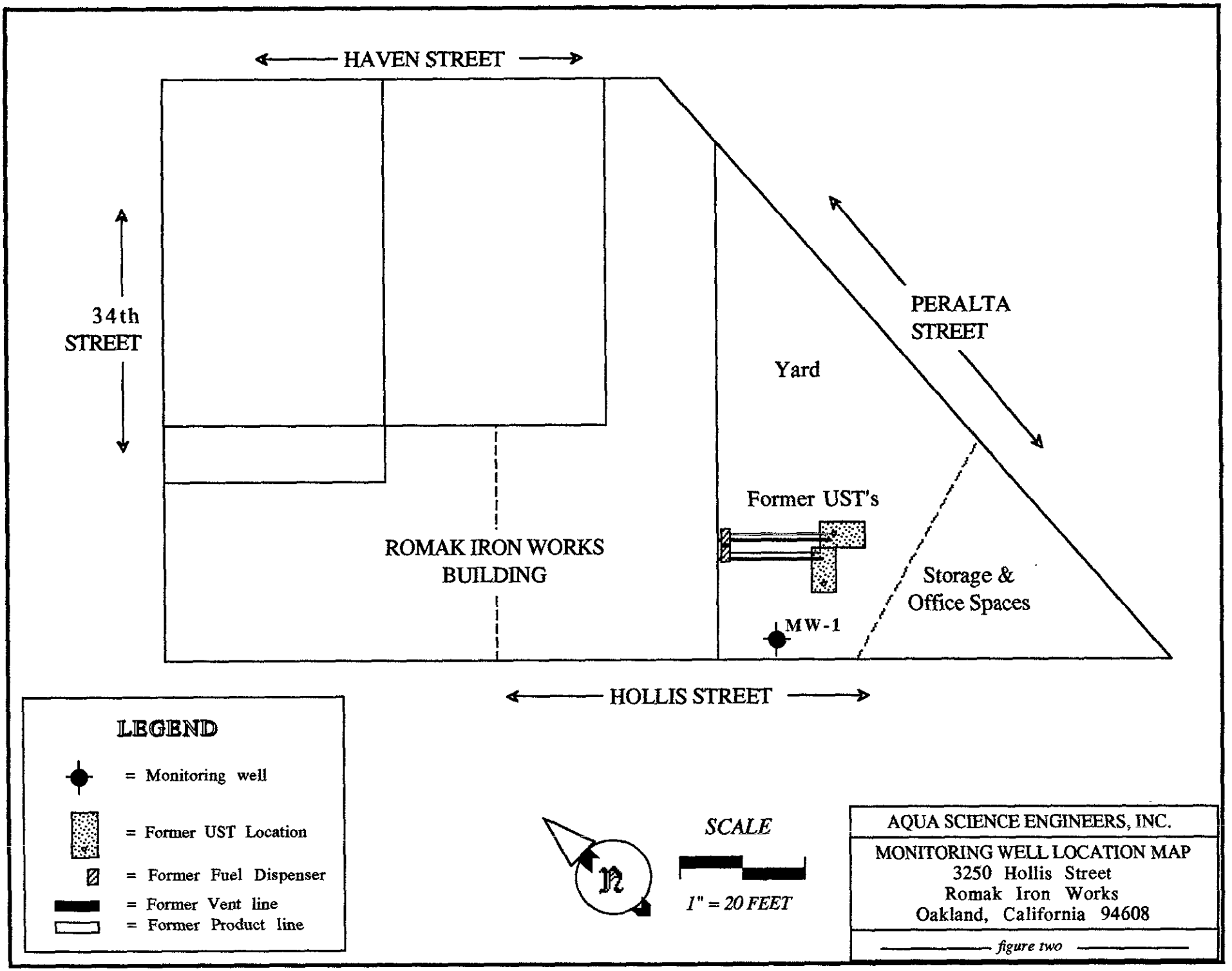


SITE LOCATION MAP

Romak Iron Works
3250 Hollis Street
Oakland, California

Aqua Science Engineers | Figure 1

BASE USGS Oakland West 7 5 minute quadrangle topographic
dated 1980, scale 1 24,000


HAVEN STREET
34th STREET
PERALTA STREET
Yard
Former UST's
ROMAK IRON WORKS BUILDING
Storage & Office Spaces
MW-1
HOLLIS STREET
LEGEND
= Monitoring well
= Former UST Location
= Former Fuel Dispenser
= Former Vent line
= Former Product line
N
SCALE
1" = 20 FEET
AQUA SCIENCE ENGINEERS, INC.
MONITORING WELL LOCATION MAP
3250 Hollis Street
Romak Iron Works
Oakland, California 94608
figure two

APPENDIX A

Alameda County Health Care Services Agency
"Direction" Letter

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

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

April 29, 1993
STID# 379
Mr. Kevin Romak
Romak Iron Works
3250 Hollis Street
Oakland, California 94608

RE: Removal of Two Underground Storage Tanks at Romak Iron Works 3250 Hollis Street, Oakland, CA 94608

Dear Mr. Romak:

The Alameda County Department of Environmental Health, Hazardous Materials Division has reviewed the files concerning the removal of two underground gasoline tanks on January 15, 1992 at the referenced site. We are in receipt of the Underground Storage Tank Removal Project Report (January 27, 1992) and the Sampling and Tank Pit Closure Final Report (August 27, 1992) prepared by Aqua Science Engineers.

Soil samples collected beneath the tank areas showed elevated levels of Total Petroleum Hydrocarbon as gasoline (180 ppm) and benzene (510 ppb). In addition, free floating product was observed during the tank removal activities. Limited overexcavation was performed on January 16, 1992 and verification soil samples collected showed 11 ppm of TPH gasoline and 120 ppb of benzene. Because of the degree of contamination found at the site which exceeded regulatory threshold levels, further environmental assessment is required to determine the extent of the unauthorized release associated with the former tanks at the site.

This office will be the lead agency overseeing the environmental investigation and cleanup activities at the site. The RWQCB has delegated this authority to our office. However, you must keep the Water Board apprised of all actions taken to characterize and remediate contamination at the site, because the Board retains the ultimate responsibility for ensuring protection of the waters of the state.

A preliminary assessment should be conducted to determine the extent of soil and/or groundwater contamination that has resulted from the former leaking tank. The information gathered by this investigation will be used to assess the need for additional actions at the site. The preliminary assessment should be designed to provide all of the information in the format shown in the attachment at the end of this letter, which is based on the RWQCB's guidelines. You should be prepared to install at a minimum, three monitoring wells to establish gradient direction of the groundwater at the site. One of the wells should be installed within 10 feet downgradient of the former tank location. Monthly water elevation reading for the first six months and reduced to every quarter is necessary to determine groundwater flow direction. Quarterly

sampling for target compounds (TPH gasoline, benzene, ethyl benzene, toluene, & xylene) must occur to determine extent of the groundwater contamination.

Until cleanup is complete, you will need to submit reports to this office and to RWQCB every three months (or at a more frequent interval, if specified at any time by either agency). These reports must include information pertaining to further investigative results; the methods of cleanup actions implemented to date; and the method and disposal of any contaminated material. Copies of manifests for such disposal must be sent to this office.

Your work plan must be submitted to this office no later than June 14, 1993. All reports and proposals must be submitted under seal of a California Registered Geologist or Registered Civil Engineer with a statement of qualifications for each lead professionals involved with the project. Copies of the reports and proposals must also be submitted to:

Rich Hiett
RWQCB, San Francisco Bay Region
2101 Webster Street, Fourth Floor
Oakland, California 94612

Because we are overseeing this site under the designated authority of the Regional Water Quality Control Board, this letter constitutes a formal requests for technical reports pursuant to California Water Code Section 13267(b). Any extensions of stated deadlines or changes in the workplan must be confirmed in writing and approved by this agency or RWQCB.

Enclosed is a copy of Appendix A (Workplan for Initial Subsurface Investigation (August 20, 1991) for your reference.

Should you have any questions regarding this letter, please contact me at (510) 271-4530.

Sincerely,

Susan L. Hugo

Susan L. Hugo
Senior Hazardous Materials Specialist

Enclosure
cc: Rafat A. Shahid, Asst. Agency Director, Environmental Health
Rich Hiett, San Francisco Bay RWQCB
Gil Jensen, Alameda County District Attorney's Office
Edgar B. Howell, Chief, Hazardous Materials Division /file
David Allen, Aqua Science Engineers, Inc.
P.O. Box 535 San Ramon, CA 94583

APPENDIX B

Well Construction Permit

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Romak Iron Works
3250 Hollis Street
Oakland, California

CLIENT
Name Romak Iron Works
Address 3250 Hollis Street Phone (510) 658-0588
City Oakland, CA Zip 94608

APPLICANT
Name Robert Kitay
Agua Engineering
Address 2411 Old Crow Canyon Rd Phone (510) 820-9391
City San Ramon, CA Zip 94583

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C-57 582696

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 30 ft.
Surface Seal Depth 3 ft. Number 1

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

ESTIMATED STARTING DATE 7-30-93
ESTIMATED COMPLETION DATE 8-13-93

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

APPLICANT'S SIGNATURE Robt C. Kitay Date 7-27-93

FOR OFFICE USE

PERMIT NUMBER 93413
LOCATION NUMBER ___

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. 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 drilling logs and location sketch for geotechnical projects.
3. 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.
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. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 27 Jul 93
Wyman Hong

91992

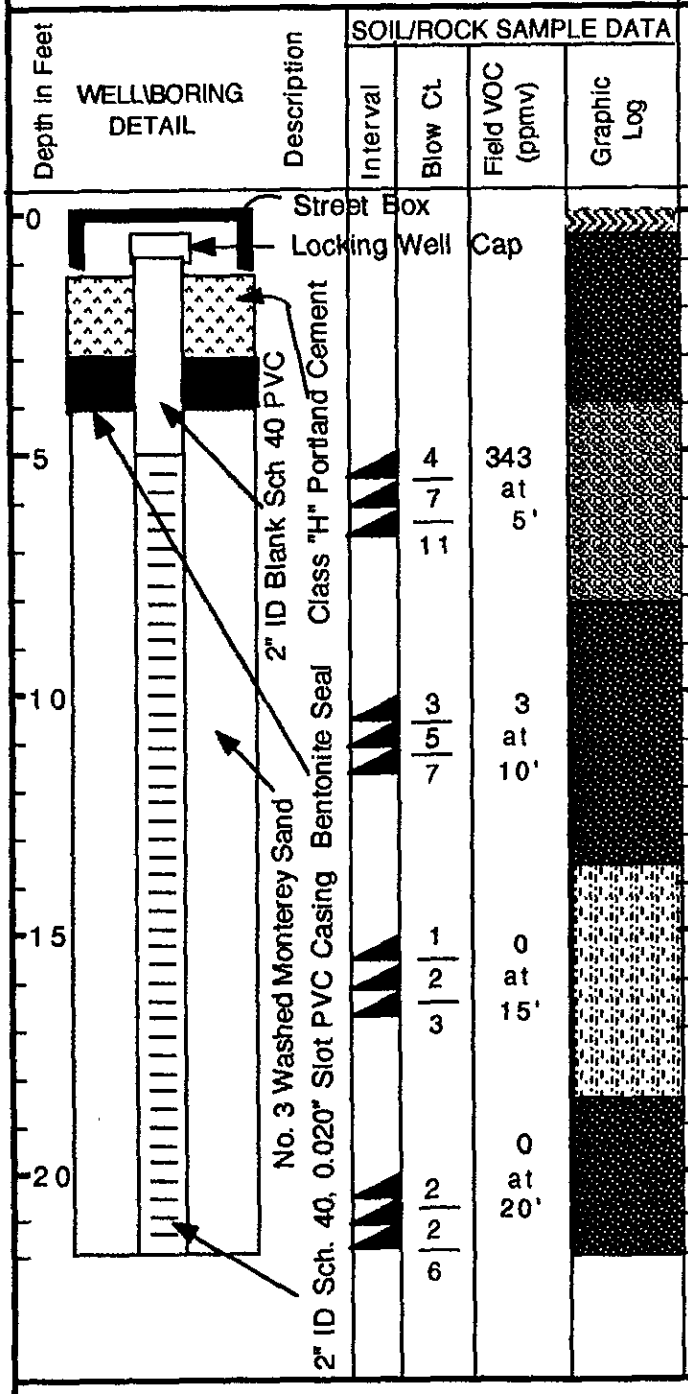
APPENDIX C

Boring Log and Well Construction Log

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DETAILS		Boring BH-A/Well MW-1
Project Name: Romak Iron Works	Project Location: 3250 Hollis Street, Oakland, CA	Page 1 of 1
Driller: Soils Exploration Services	Type of Rig: CME 55	Type and Size of Auger: 8-inch O.D. Hollow-stem.
Logged By: Robert E. Kitay	Date Drilled: July 30, 1993	Checked By: David M. Schultz, P.E.

WATER AND WELL DATA

Depth of Water First Encountered: ≈ 13.5'	Total Depth of Well Completed: 22.0'
Static Depth of Water in Well: 9.43' Below T.O.C.	Well Screen Type and Diameter: 2" Diameter Schedule 40 PVC
Total Depth of Boring: 22.0'	Well Screen Slot Size: 0.020"
	Type and Size of Soil Sampler: 2" I.D., Calif. Split-barrel



DESCRIPTION OF LITHOLOGY

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

Concrete surface

0.5'; Silty CLAY (CL); black; stiff; moist; 80% clay; 20% silt; moderate plasticity; very low estimated K; no odor

~4.0'; Clayey SILT (ML); olive; medium stiff; moist; 75% silt; 15% clay; 10% very fine to fine sand; moderate plasticity; low estimated K; moderate hydrocarbon odor

~8.0'; Silty CLAY (CL); yellow brown mottled blue green; stiff; moist; 80% clay; 20% silt; moderate plasticity; very low estimated K; slight hydrocarbon odor

Static Water Level = 9.43'

Groundwater encountered at 13.5'

~13.5'; Sandy SILT (ML); olive; soft; wet; 70% silt; 20% very fine to fine sand; 10% clay; moderate plasticity; low estimated K; slight hydrocarbon odor

~18.5'; Silty CLAY (CL); light yellow brown; stiff; wet; 65% clay; 30% silt; 5% fine sand; moderate plasticity; very low estimated K; slight hydrocarbon odor

APPENDIX D

Analytical Reports and Chain of Custody Forms

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

August 06, 1993 PEL # 9308017

AQUA SCIENCE ENGINEERS, INC.

Attn: Robert Kiday
Re: One soil and one water sample for pH, Gasoline/BTEX and Conductivity analyses.

Project number: Romak Iron Works
Project location: 3250 Hollis St., - Oakland
Project number: 2659

Date sampled: Jul 30-Aug 03, 1993 Date submitted: Aug 04, 1993
Date extracted: Aug 04-05, 1993 Date analyzed: Aug 04-05, 1993

RESULTS:

SAMPLE I.D.	Gasoline (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
BH-A-6.0'	N.D.	N.D.	N.D.	N.D.	N.D.
Detection limit	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030/8015	8020	8020	8020	8020

SAMPLE I.D.	pH	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	Conductivity (uS)
MW 1	6.5	12000	7.6	9.7	9.9	29	1090
Blank	7.0	N.D.	N.D.	N.D.	N.D.	N.D.	0
Spiked Recovery	---	92.4%	91.0%	93.7%	90.1%	99.6%	---
Detection limit	0.05	50	0.5	0.5	0.5	0.5	10
Method of Analysis	9045	5030 / 8015	602	602	602	602	120.1

David Duong
Laboratory Director

1764 Houret Court Milpitas CA 95035 Tel 408-946-9636 Fax 408-946-9663

PEL # 9308017 (1 of 2)

INV # 23857

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Cust

DATE 8-4-93 PAGE 1 OF 1

SAMPLERS (SIGNATURE) Robert C. Kitay (PHONE NO.) (510)820 9391

PROJECT NAME Homak Iron Works NO. 2659

ADDRESS 3350 Mount Street, Oakland, CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS.

SAMPLE ID	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH GASOLINE (EPA 5030/8015)	TPH-GASOLINE/BTEX (EPA 5030/8015-8020)	TPH DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NEUTRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	HOLD
BH-A 6.0'	7/30	12:05	Soil	1		X												
BH-A 11.0'	7/30	12:15	Soil	1														X
BH-A 16.0'	7/30	12:25	Soil	1														X

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS
(signature) Robert E. Kitay	(signature)	(signature)	(signature) David Duong 9:45 AM	
(time) 9:45	(time)	(time)	(time)	
(printed name) Robert Kitay	(printed name)	(printed name)	(printed name) DAVID DUONG	
(date) 8-4-93	(date)	(date)	(date) 8/4/93	
Company- ASE	Company-	Company-	Company- PEL	

Aqua Science Engineers, Inc.
2411 Old Crow Canyon Road, #4,
San Ramon, CA 94583
(510) 820-9391 - FAX (510) 837-4853

Chain of Cust

PEL # 9308017(2 of 2)

INV # 23857

DATE 8-4-93 PAGE 1 OF 1

SAMPLERS (SIGNATURE) (PHONE NO.)
Robert E. Kitay (510) 820-9391

PROJECT NAME Bonk Iron Works NO. 2659

ADDRESS 3250 Hollis Street, Oakland, CA

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:
Use unpreserved VOA for pH analysis.

SAMPLE ID	DATE	TIME	MATRIX	NO OF SAMPLES	TPH-GASOLINE (EPA 5030/8015)	TPH-GASOLINE/BTEX (EPA 5030/8015-8020)	TPH-DIESEL (EPA 3510/8015)	PURGABLE AROMATICS (EPA 602/8020)	PURGABLE HALOCARBONS (EPA 601/8010)	VOLATILE ORGANICS (EPA 624/8240)	BASE/NEUTRALS, ACIDS (EPA 625/8270)	OIL & GREASE (EPA 5520 E&F or B&F)	LUFT METALS (5) (EPA 6010+7000)	TITLE 22 (CAM 17) (EPA 6010+7000)	TCLP (EPA 1311/1310)	STLC-CAM WET (EPA 1311/1310)	REACTIVITY CORROSIVITY IGNITABILITY	pH (EPA 9045) + Conductivity (EPA 120.1)				
MW-1	8/3	15:30	Water	3		X												X				

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY LABORATORY	COMMENTS
Robert E. Kitay			[signature] 4:45 pm	
(signature) (time) 945	(signature) (time)	(signature) (time)	(signature) (time)	
Robert E. Kitay 8-4-93			DAVID DUONG 8/4/93	
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	
Company- ASE	Company-	Company-	Company- PEL	

APPENDIX E

Well Sampling Field Log

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Aqua Science Engineers, Inc, San Ramon, CA 94583

Project Name: Bonak Iron Works
Project Address: 3250 Hollis Street, Oakland, CA
Job # 2659 Date of sampling: 8-13-93
Completed by: REIC
Well Number / Designation: MW-1
Top of casing elevation: Unknown
Total depth of well casing: 22.65' Well diameter: 2"
Depth to water (before sampling): 9.43'
Thickness of floating product if any: sheen
Depth of well casing in water: 13.22'
Req'd volume of groundwater to be purged before sampling: 22 gals
Approximate volume of groundwater purged: 22 gals
Type of seal at grade: cement
Type of cap on the casing: locking well plug
Is the seal water tight? Yes Is the cap water tight? Yes
Number of samples (containers) collected 3
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: 19.1°C
Sample pH: 6.5 Test method: 9045
Conductivity: 1090 Test method: 120.1
Physical description of water during initial bailing period:
silty brown
Physical description of water sample: mostly clear

Type of analysis requested: TPH-G/BETX
pH
conductivity

Type of bailer/sampling equipment used: new polyethylene

Equipment decontamination procedures: Not applicable

Disposition of bailed water volume:
stored in drums and left on-site