Copper and Brass Sales
- INC -

(800) 926-2600
FAX (510) 437-8870

1900 EMBARCADERO
SUITE 101
OAKLAND, CALIFORNIA 94606

August 30, 1993

Susan L. Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

RE: Submittal of Preliminary Site Assessment Report, 1295 67th Street, Emeryville, California

Dear Ms. Hugo,

Enclosed is the document entitled "Preliminary Site Assessment Report, 1295 67th Street, Emeryville, California," which was prepared by Azure Environmental on behalf of Copper and Brass Sales, Inc. This report is submitted to you pursuant to requirements contained in letters sent by your agency on March 30 and June 22, 1993.

To the best of my knowledge, the information in the attached report is accurate and I concur with the conclusions and recommendations contained in the report.

Please call me should you have any questions or comments regarding this document.

Sincerely,

COPPER AND BRASS SALES, INC.

George T. Blandino
General Manager

Enclosure

cc: Rich Hiett, RWQCB

93 SEP -2 AM 10: 18

FEDERAL EXPRESS

[redacted]

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Recipient's Phone Number (Very Important): (510) 271-4530
Department/Floor No
Company: Alameda Co. Health Care Agency Rm 200
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Other 1
Other 2
Total Charges

REVISION DATE 11/92
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PRELIMINARY SITE ASSESSMENT REPORT
1295 67th Street
Emeryville, California

August 30, 1993
AZ119-001

Prepared for:
Copper and Brass Sales, Inc.
1295 67th Street
Emeryville, CA 94608

AZURE ENVIRONMENTAL

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SIGNATURE PAGE

All hydrogeologic and geologic information, conclusions, and recommendations contained in this report have been prepared by a California Registered Geologist.

Jeff Hennier
Principal Hydrogeologist
California Registered Geologist (4605)

8/30/93
Date

August 30, 1993 AZ119-001

PRELIMINARY SITE ASSESSMENT REPORT
1295 67th Street
Emeryville, California

1.0 INTRODUCTION

This Preliminary Site Assessment (PSA) Report presents the results of soil and ground-water investigations conducted by Azure Environmental on behalf of Copper and Brass Sales, Inc. (C&BS), for the facility at 1295 67th Street ("the Site") in Emeryville, California (Figure 1). This PSA was conducted pursuant to the Alameda County Health Care Services Agency's (ACHCSA) request for a PSA, contained in their letter to Mr. George Blandino dated March 30, 1993. The PSA was conducted in accordance with the report entitled "Workplan to Conduct a Preliminary Site Assessment, Copper and Brass Sales, Inc.", submitted to the ACHCSA on May 13, 1993, as amended by comments contained in a letter to C&BS from Ms. Susan Hugo of ACHCSA dated June 22, 1993.

The objectives of this Workplan are to assess the lateral and vertical extent of hydrocarbons in soil and ground water at the Site. Previous investigations found hydrocarbons in soil that appear to be associated with diesel storage in a 2,000-gallon capacity underground storage tank (UST) formerly located at the Site. Investigation data collected for the PSA were evaluated to assess whether further investigations and/or remedial actions may be necessary at the Site.

As required by the ACHCSA, we have completed this PSA in accordance with the Regional Water Quality Control Board's (RWQCB) "Tri-Regional Board Staff Recommendations For Preliminary Evaluation and Investigation of Underground Tank Sites" (August 1990) and ACHCSA guidelines.

1.1 Site Description

The Site is located at 1295 67th Street in Emeryville, approximately 1/2 mile east of the San Francisco Bay (Figure 1). Copper and Brass Sales, Inc. built the present facility in 1964 and occupied the Site during the period between 1964 and July 1993. Their operations at the facility involved the distribution of various types of non-ferrous metal rod and tubing. The building is currently vacant and is being prepared for a new tenant.

The ground surface in the Site vicinity is approximately 30 feet above mean sea level and slopes gently toward the Bay. Due to the Site's proximity to the Bay, shallow-depth sediments at the Site consist of fine-grained silt and clay sediments deposited in tidal marsh and estuarine environments.

One 2,000-gallon capacity UST was previously located at the western boundary of the Site (Figure 2). The UST was reportedly installed at the Site in 1973 and was used to store diesel until October 1992. The tank was removed from the Site in December 1992. No other USTs are known to be present at the Site.

1.2 Background and Summary of Previous Investigations

In December 1992, K.T.W. & Associates (KTW) conducted tank removal and soil sampling activities at the Site. These activities are described in KTW's report entitled "Tank Closure Report", prepared on December 29, 1992. KTW reported the presence of fuel hydrocarbons in soil samples collected from below the east and west ends of the former UST at a depth of 9 feet below grade. Chemical analysis of the soil samples indicated the presence of total petroleum hydrocarbons (TPH) as diesel (up to 1,800 ppm) and as gasoline (up to 6.5 ppm), benzene (up to 0.390 ppm), toluene (up to 0.380 ppm), ethylbenzene (up to 1.20 ppm) and total xylenes (up to 2.90 ppm). KTW reported that "a small amount of water with a sheen of free product" was present in the excavation pit. After collecting the soil samples, KTW reportedly removed an additional 75 cubic yards of soil from north, south and east walls of the excavation pit.

On February 22, Riedel Environmental Services (Riedel) collected verification soil samples from the north, south, east and west excavation walls at depths of 8 feet below ground surface. Analysis of the soil samples indicated fuel hydrocarbons were not detected, with the exception of 13 ppm of diesel found in the sample collected from the east excavation wall. A water sample collected from the tank pit detected relatively low concentrations of TPH as gasoline (0.120 ppm) and benzene (0.001 ppm). On April 27, the tank excavation was backfilled with imported fill.

Based on these results, the ACHCSA requested that a PSA be conducted at the Site in a letter to Copper and Brass Sales, Inc. dated March 30, 1993.

1.3 Scope of Work

Based on results indicating the presence of fuel compounds in soil beneath the former UST at the Site, further investigations were conducted. To assess the lateral extent of fuel hydrocarbons in soil, soil samples were collected from a boring (B-1) located 10 feet east of the UST excavation pit (Figure 2). A ground-water monitoring well (MW-1) was installed 6 feet southwest from the excavation pit to collect a ground-water sample in the downgradient direction from the former UST location (Figure 2). Results of these investigations were evaluated to assess the extent of fuel hydrocarbons in soil and ground water at the Site, and to assess the need for additional investigations and/or remediation.

2.0 RESULTS OF SOIL AND GROUND-WATER INVESTIGATIONS

2.1 Soil-Sampling Results

2.1.1 INTRODUCTION

On July 16, 1993, Azure Environmental collected soil samples from the soil boring located approximately 10 feet east of the east sidewall of the tank excavation pit (Figure 2). Field methods and procedures used to collect soil samples at the Site are described in Appendix A. Descriptions of sediments encountered in the boring are included in the lithologic log presented in Appendix B.

Soil boring B-1 was drilled to a total depth of 9 feet below grade. Soil samples for chemical analysis were collected from the boring at 5 and 8 feet below grade. No petroleum hydrocarbon odor or evidence of visual staining was noted in the samples. Since previous sampling from the excavation pit indicated diesel was detected in a sample collected at a depth of 8 feet, the soil sample collected at a depth of 8 feet in boring B-1 was selected for chemical analysis.

2.1.2 RESULTS OF SOIL SAMPLE ANALYSIS

In accordance with the RWQCB's Tri-Regional Guidelines, the soil sample from boring B-1 was analyzed for TPHd (EPA Method 3550), TPHg (EPA Method 5030), and benzene, toluene, ethylbenzene and xylenes (BTEX; EPA Method 8020). Sampling analysis results are summarized in Table 1; laboratory analysis certificates are presented in Appendix C.

Sample analysis results indicate that fuel hydrocarbons were not detected in the soil sample collected from boring B-1.

2.2 Ground-Water Sampling Results

2.2.1 INTRODUCTION

On July 29, 1993, ground-water samples were collected from monitoring well MW-1, located within 6 feet southwest of the former UST (Figure 2). Field methods and procedures used to install, develop and sample monitoring well MW-1 are described in Appendix A. Descriptions of sediments encountered in the well boring and details of monitoring well construction are included in the lithologic log for well MW-1 presented in Appendix B.

The objective of the ground-water sampling was to assess the extent of fuel hydrocarbons in ground water at and in the general downgradient direction of the former UST location. The well was drilled to a depth of 20 feet below grade. The screened interval in the well was placed across the ground-water surface to allow floating free product, if present, to enter the well and to accommodate seasonal water-level fluctuations.

2.2.2 RESULTS OF GROUND-WATER SAMPLE ANALYSIS

In accordance with the RWQCB's Tri-Regional Guidelines, the water sample from monitoring well MW-1 was analyzed for TPHd (EPA Method 3510), TPHg (EPA Method 5030), and BTEX (EPA Method 8020). Sampling analysis results are summarized in Table 1; laboratory analysis certificates are presented in Appendix C.

TPHd was detected at a concentration of 0.090 ppm in the ground-water sample collected from monitoring well MW-1. TPHg and BTEX compounds were not detected in the sample. Floating free product was also not present in the well.

2.2.3 SHALLOW-ZONE HYDROGEOLOGY

A water-level measurement was collected from monitoring well MW-1 to assess the depth to the ground-water surface at the Site. The depth to ground water measured in the well on July 29, 1993 was 10.70 feet below grade (17.82 feet above mean sea level).

The ground-water flow direction and gradient at the Site was estimated using ground-water elevation data collected at the nearby Oliver Rubber facility. The Oliver Rubber facility is located at 1200 65th Street in Emeryville, approximately 600 feet southeast of the Site (Figure 1). A potentiometric surface map using ground-water elevation data collected at Oliver Rubber on January 18, 1993 is presented in Appendix D.

Ground-water elevation measurements at the Oliver Rubber facility indicate the general direction of ground-water flow is toward the southwest (see figure in Appendix D). The calculated horizontal gradient is 0.001 ft/ft. The ground-water flow direction at Oliver Rubber is generally consistent with the estimated ground-water flow direction (southwest) based on the proximity and direction of the facility to San Francisco Bay. Ground-water flow at the Oliver Rubber facility is expected to be representative of ground-water flow conditions at the Site since the two locations are relatively near each other (less than 2 blocks apart), and they are nearly the same distance and direction from the Bay.

3.0 SUMMARY AND RECOMMENDATIONS

Analytical results for the soil sample collected 10 feet east of the excavation pit indicate fuel hydrocarbons were not detected. Previous results of soil sampling indicate fuel hydrocarbons were not detected in soil samples collected from the west, north and south excavation walls. These results indicate only relatively low concentrations of TPHd (13 ppm) may remain in soil immediately adjacent to the east wall of the excavation pit. The concentration of TPHd at the east wall is well below levels that would be considered a potential threat to ground-water quality at the Site. Therefore, no further actions are recommended for Site soil.

Ground-water sampling results from monitoring well MW-1 indicate TPHd was present at a concentration of 0.090 ppm. No other fuel hydrocarbons were detected in the ground-water sample. The TPHd concentration detected in the sample was below levels that would be considered a potential threat to further degradation of ground-water quality at the Site. The TPHd concentration found in well MW-1 is expected to be at or near the highest concentration in Site ground water because of the well's proximity (within approximately 6 feet) to the former UST location. Therefore, no additional monitoring wells are recommended to be installed at the Site.

Based on the results of this PSA, we recommend conducting quarterly monitoring at well MW-1 to assess future changes and trends of TPHd concentrations in ground water at the Site. In addition to analysis for TPHd, ground-water samples from the well will analyzed for TPHg and BTEX. If water-level data are available or if permission can be obtained to access the wells at Oliver Rubber, ground-water elevation data will be used to assess ground-water flow direction and gradients at the Site. After a period one year, it is recommended that the results of quarterly ground-water monitoring be evaluated to develop a plan for site closure.

4.0 SELECTED REFERENCES

K.T.W. & Associates. 1992. Tank closure report for Copper and Brass Sales, Inc., 1295 67th Street, Emeryville, California. December 29.

TABLE 1

SUMMARY OF FUEL HYDROCARBONS IN
SOIL AND GROUND-WATER SAMPLES (ppm)
1295 67th Street, Emeryville, California

SOIL SAMPLE	TPHd	TPHg	B	T	E	X
B-1-8	<1.0	<0.2	<0.005	<0.005	<0.005	<0.005

WATER SAMPLE	TPHd	TPHg	B	T	E	X
MW-1-1	**0.09**	<0.05	<0.0005	<0.0005	<0.0005	<0.002

Notes:

Samples analyzed by American Environmental Network (AEN)
ppm - parts per million

B - Benzene
T - Toluene
E - Ethylbenzene
X - Xylenes

TPHd - Total Petroleum Hydrocarbons as Diesel
TPHg - Total Petroleum Hydrocarbons as Gasoline

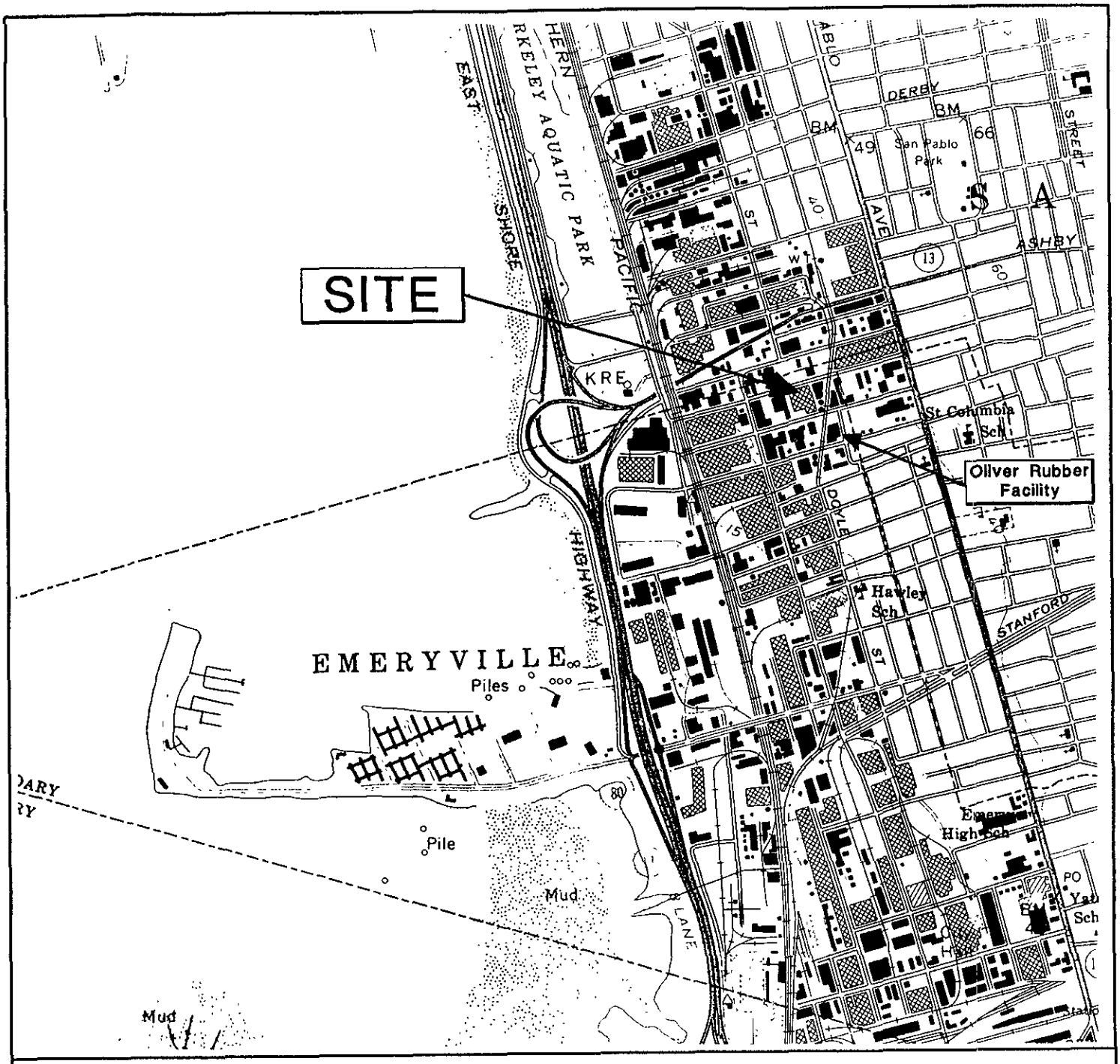

Figure 1: Site Location Map

AZURE ENVIRONMENTAL AZ119-001

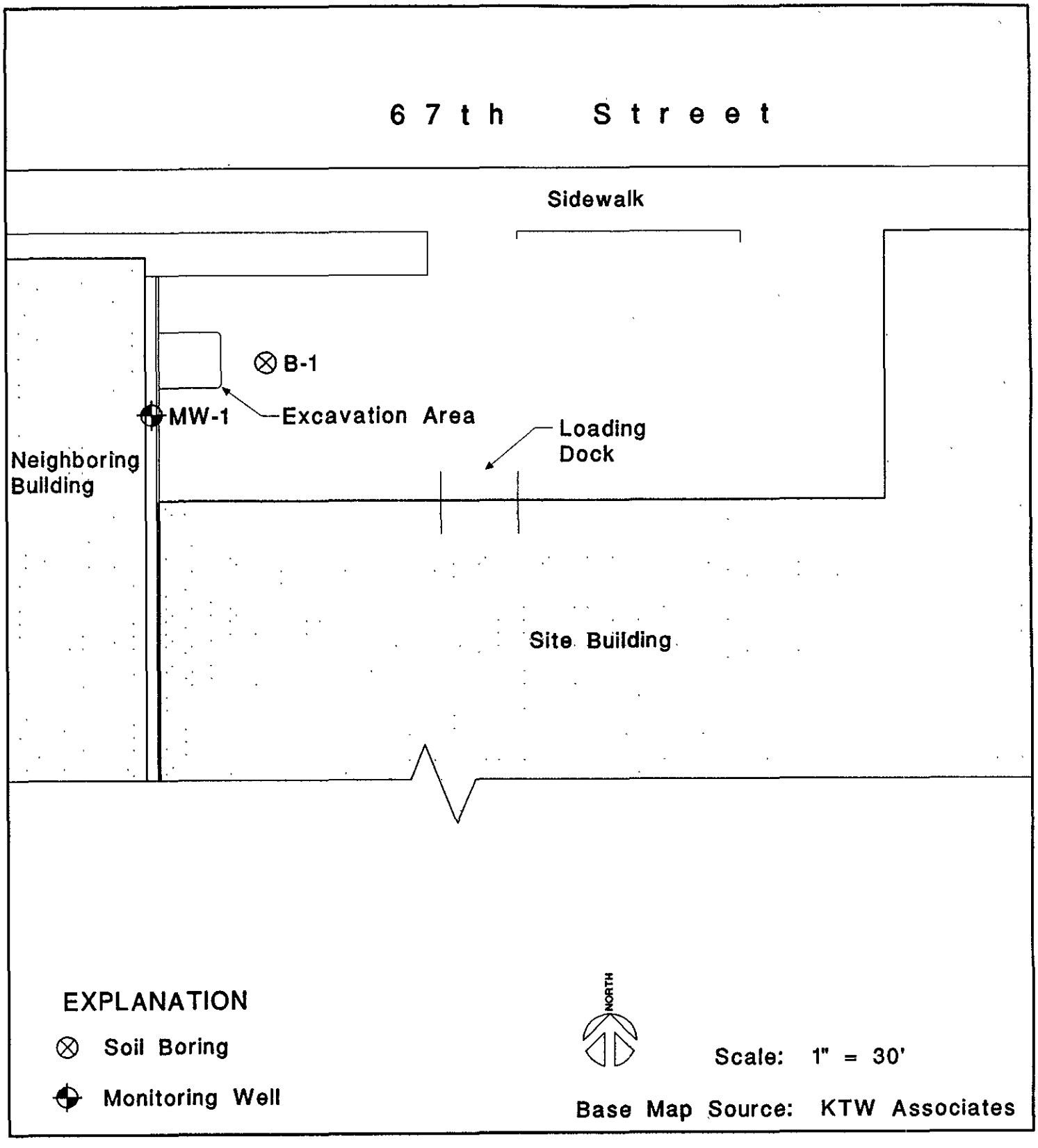

Figure 2: Site Map Showing Soil Boring and Monitoring Well Locations

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APPENDIX A

FIELD METHODS AND PROCEDURES

Borehole Drilling and Soil Sampling Methods

Soil boring B-1 and well boring MW-1 were drilled by Gregg Drilling on July 16, 1993 using truck-mounted drilling rig equipped with hollow-stem augers. Prior to conducting drilling activities, a survey of underground utilities was conducted by Underground Service Alert (USA) and by a private utility locating company (downUnder Technologies) to clear the boring and well locations for drilling access.

All drilling activities were conducted under the supervision of a California Registered Geologist. All down hole drilling and sampling equipment was steam cleaned prior to use at each drilling location to prevent potential cross-contamination between locations. Boring B-1 was backfilled with cement-bentonite grout after completion of drilling.

Soil samples were collected at approximately 2-1/2-foot intervals for lithologic description and possible chemical analysis. Soil samples were collected by driving a clean, 2-inch diameter split spoon sampler lined with clean brass tubes, ahead of the hollow-stem auger into undisturbed soil. The samples were analyzed in the field for the presence of volatile hydrocarbons using an OVM.

Two samples per boring were submitted to an analytical laboratory for chemical analysis. The soil sample selected for chemical analysis (B-1-8) was secured by placing thin Teflon sheeting and plastic caps over the ends of each sample tube. The samples were placed in a chilled cooler for transport to the analytical laboratory under strict chain-of-custody procedures.

Monitoring Well Construction

A ground-water monitoring well was installed in well boring MW-1. The monitoring well was constructed using flush-threaded, 2-inch-diameter polyvinyl chloride (PVC) casing with factory-slotted well screens. All drilling equipment, sampling tools, and well casing were steam cleaned before use.

The well casing was placed in the completed well boring through the hollow stem auger. Fifteen feet of slotted PVC casing was placed in the borehole, extending between depths of 5 to 20 feet below the ground surface. A filter pack of appropriately graded sand was placed in the annular space between the hollow-stem auger and the slotted PVC well casing as the auger was gradually removed from the borehole. Bentonite was placed above the filter pack to isolate the perforated interval from material above and prevent the entrance of grout into the filter pack. A cement-bentonite grout was poured above the bentonite seal to prevent surface water infiltration into the well annulus. A locking cap was placed over the top of the well casing to protect the well's integrity. A watertight well enclosure was placed over the top of the well and set slightly higher than the surrounding grade for visibility and protection from truck traffic at the Site.

Monitoring Well Survey and Water-Level Measurement

Following well installation, the top-of-casing elevation of the well was established to the nearest one-hundredth of a foot by a licensed surveyor. A water-level measurement was collected from the well on July 29, 1993. Depth to water measurement was collected using an electric water-level meter. Ground-water elevation was calculated based on the measured depth to ground water.

Well Development

The newly installed well was developed within 3 days of completing well installation activities. The well was developed by bailing to remove sediment from around the screened interval and enhance hydraulic communication with the surrounding formation. Observations of the quality and clarity of water withdrawn, and measurements of water temperature, pH and specific conductivity were recorded during this process. The well was developed until the above parameters stabilized. Approximately 10 well volumes were removed during well development.

Ground-Water Sampling

The well was sampled on July 29, 1993, approximately 10 days following completion of well development. Waiting 10 days to sample the well should have allowed adequate time for free product to enter the well, if present.

The well was purged by bailing to remove static water in the well. Observations of the quality and clarity of water withdrawn, and measurements of water temperature, pH and specific conductivity were recorded during this process. The well was purged until the above parameters stabilized. Approximately 5 well volumes were removed during well purging.

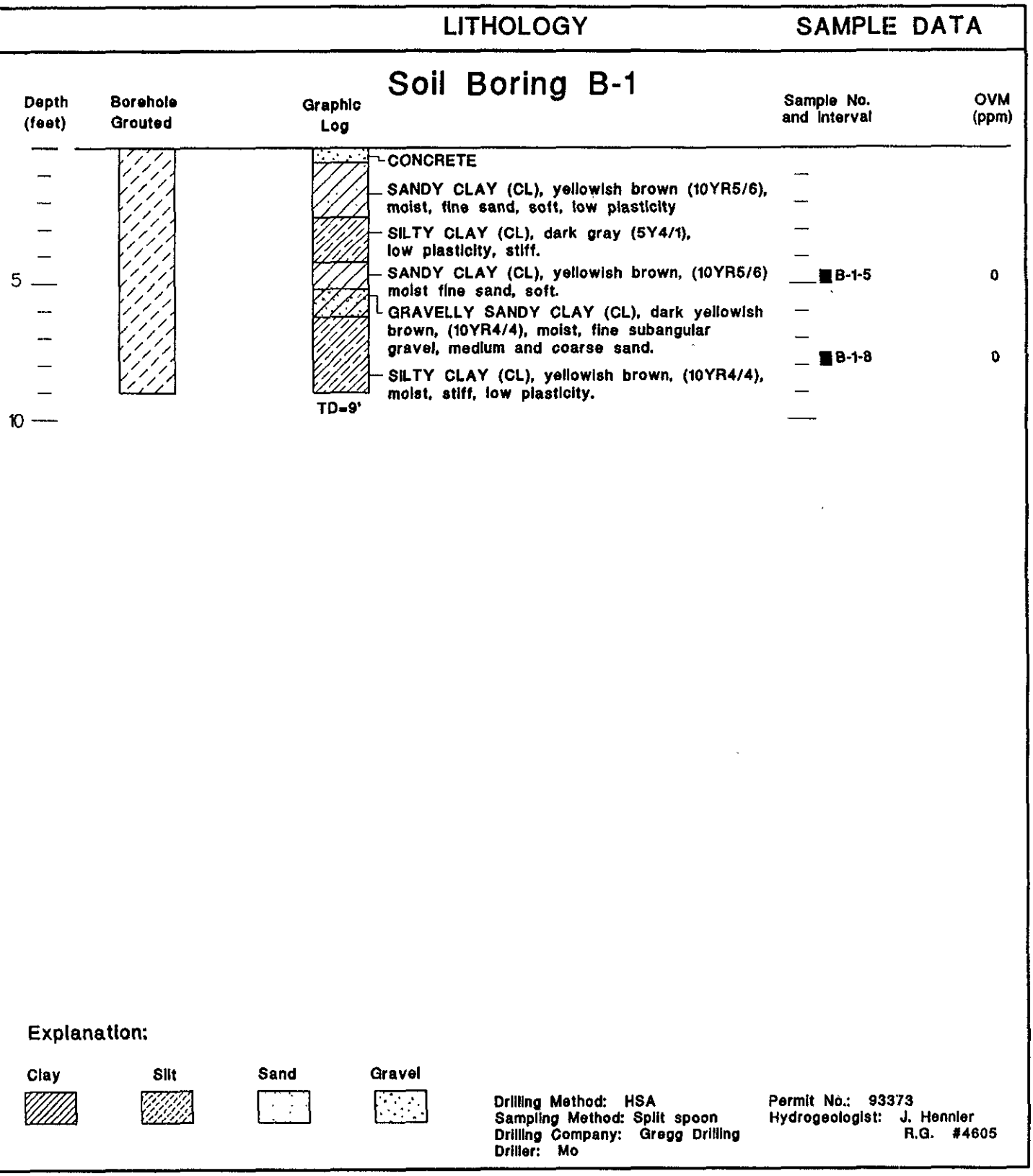
Ground-water samples were collected using a clean Teflon bailer and gently poured into laboratory supplied containers which were appropriate for the type of analyses performed on the sample. Samples to be analyzed for TPH as gasoline and BTEX were placed in four 40-milliliter VOA containers. Samples to be analyzed for diesel were placed in 2 one-liter amber containers. The containers were filled so as to exclude air bubbles, in order to minimize potential volatilization of chemical compounds in the samples. The water samples were placed in a chilled cooler immediately after collection for transport to the laboratory.

Drilling and Sampling Waste Storage

Waste soil generated during borehole drilling activities and purge water generated during well sampling activities was temporarily stored at the Site in separate 55-gallon drums. Appropriate disposal options will be evaluated.

APPENDIX B

BORING LOGS AND WELL CONSTRUCTION DATA



AZURE ENVIRONMENTAL		Figure B-1: Soil Boring Lithology and Sample Data
Project No. 119-001	July 16, 1993	Copper and Brass Sales Facility * Emeryville

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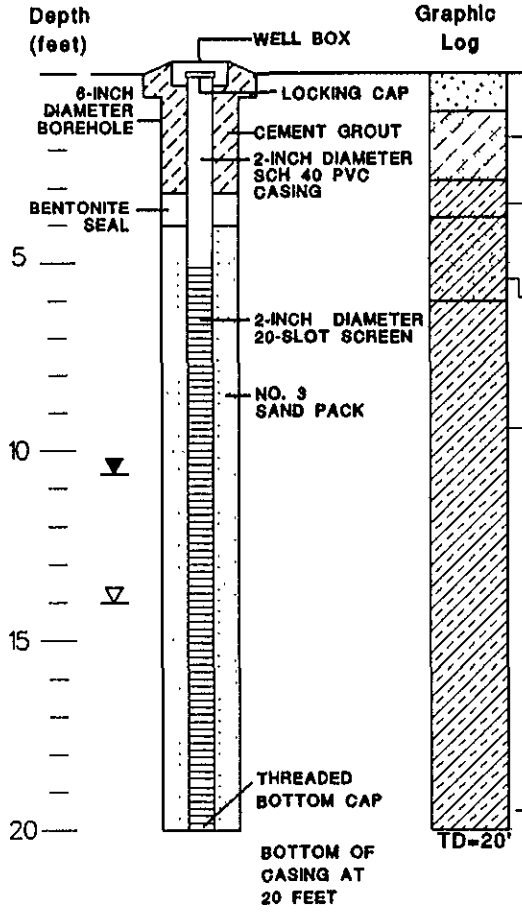
WELL CONSTRUCTION | LITHOLOGY | SAMPLE DATA

Monitoring Well MW-1



Depth (feet)	Lithology	Sample No. and Interval	OVM (ppm)
	FILL, sand and gravel materials		
	SILTY SAND (SM), very dark brown (10YR2/2), moist, fine and medium sand, loose.		0
	SILTY CLAY (CL), yellowish brown (10YR5/4), slightly moist, low plasticity, stiff, minor coarse sand.	MW-1-5	0
	SANDY SILTY CLAY (CL), light olive brown (2.5Y5/4), root holes <1/16" diam., slightly mottled low plasticity, slightly moist, medium sand.	MW-1-8	0
	SILTY CLAY (CL), yellowish brown (10YR5/4), slightly moist, low plasticity, minor root holes, slightly fractured, minor medium sand. Color change at 11' to dark yellowish brown (10YR4/4).		0
			0
	(Very moist to wet at 19.5')		0

Explanation:

Clay | Silt | Sand | Gravel

▽ Water level measured at time of drilling

▼ Water level measured on July 29, 1993

Drilling Method: HSA
Sampling Method: Split spoon
Drilling company: Gregg Drilling
Driller: Mo

Permit No.: 93373
Hydrogeologist: J. Hennler
R.G. #4605

AZURE ENVIRONMENTAL	Figure B-2: Boring Lithology and Monitoring Well Construction
Project No. 119-001 | July 16, 1993	Copper and Brass Sales Facility * Emeryville

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APPENDIX C
LABORATORY CERTIFICATES

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AZURE ENVIRONMENTAL
1001 LINCOLN AVENUE
SAN RAFAEL, CA 94901

ATTN: JEFF HENNIER

CLIENT PROJ. ID: 119-001

REPORT DATE: 07/30/93

DATE SAMPLED: 07/16/93

DATE RECEIVED: 07/22/93

AEN JOB NO: 9307199

PROJECT SUMMARY:

On July 22, 1993, this laboratory received four (4) soil samples.

Client requested one (1) sample be analyzed for organic parameters. Three (3) samples were placed on hold. Sample identification, methodologies, results and dates analyzed are summarized on the following pages.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
General Manager

Results FAXed 07/28/93

AZURE ENVIRONMENTAL

DATE SAMPLED: 07/16/93
DATE RECEIVED: 07/22/93
CLIENT PROJ. ID: 119-001

REPORT DATE: 07/30/93

AEN JOB NO: 9307199

Client Sample Id.	AEN Lab Id.	Extractable Hydrocarbons as Diesel (mg/kg)
B-1-8	02A	ND
Reporting Limit		1

Method: 3550 GCFID

Instrument: C

Date Extracted: 07/22/93
Date Analyzed: 07/24/93

ND = Not Detected

AZURE ENVIRONMENTAL

SAMPLE ID: B-1-8
CLIENT PROJ. ID: 119-001
DATE SAMPLED: 07/16/93
DATE RECEIVED: 07/22/93
REPORT DATE: 07/30/93

AEN LAB NO: 9307199-02A
AEN JOB NO: 9307199
DATE ANALYZED: 07/26/93
INSTRUMENT: H

BTEX AND HYDROCARBONS (SOIL MATRIX)
METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRATION (ug/kg)	REPORTING LIMIT (ug/kg)
Benzene	71-43-2	ND	5
Toluene	108-88-2	ND	5
Ethylbenzene	100-41-4	ND	5
Xylenes, Total	1330-20-7	ND	5
PURGEABLE HYDROCARBONS AS:			
Gasoline		ND mg/kg	0.2 mg/kg

ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 07/22/93
DATE ANALYZED: 07/23/93
CLIENT PROJ. ID: 119-001

AEN JOB NO: 9307199
SAMPLE SPIKED: 9307189-05A
INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
TPH EXTRACTABLE SOIL
METHOD: EPA 3550 GCFID

ANALYTE	Spike Conc. (mg/kg)	Sample Result (mg/kg)	MS Result (mg/kg)	MSD Result (mg/kg)	Average Percent Recovery	RPD
Diesel	40.4	19.7	51.9	56.6	85.5	8.7

CURRENT QC LIMITS (Revised 05/15/92)

Analyte	Percent Recovery	RPD
Diesel	(44.1-105.8)	24

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

QUALITY CONTROL DATA

CLIENT PROJ. ID: 119-001

AEN JOB NO: 9307199

INSTRUMENT: H

SURROGATE STANDARD RECOVERY SUMMARY
METHOD: EPA 8020
(SOIL MATRIX)

Date Analyzed	SAMPLE IDENTIFICATION Client Id.	Lab Id.	SURROGATE RECOVERY (PERCENT) Fluorobenzene
07/26/93	B-1-8	02A	93.7

CURRENT QC LIMITS

ANALYTE	PERCENT RECOVERY
Fluorobenzene	(70-115)

QUALITY CONTROL DATA

DATE ANALYZED: 07/26/93
SAMPLE SPIKED: 9307213-04A
CLIENT PROJ. ID: 119-001

AEN JOB NO: 9307199
INSTRUMENT: H

MATRIX SPIKE RECOVERY SUMMARY
METHOD: EPA 8020, 5030 GCFID
(SOIL MATRIX)

ANALYTE	Spike Conc. (ug/kg)	Sample Result (ug/kg)	MS Result (ug/kg)	MSD Result (ug/kg)	Average Percent Recovery	RPD
Benzene	28.0	ND	29.6	29.3	105.2	1.0
Toluene	98.7	ND	97.2	96.5	98.1	0.7
Hydrocarbons as Gasoline	1000	ND	871	856	86.4	1.7

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Benzene	(79.4-125.2)	9.8
Toluene	(84.4-116.8)	10.0
Gasoline	(53.7-124.2)	15.1

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

Reporting Information:

1. Client: Azure Environmental
Address: 1001 Lincoln
So. Rafael CA
Contact: Jeff Hennier
Alt. Contact:

Address Invoice To:

3. Same

Address Report To:

2. Same

Send Invoice To:

4. Same

Send Report To: 1 or 2 (Circle one)
Client project/P.O. #: 119-001
Sample Team Member ('s) JHH

QuanteQ
An Ecologics Company

Page 1 of 1

REQUEST FOR ANALYSIS/CHAIN OF CUSTODY

Lab Job Number: 9307199
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required: Normal + Overnight
Date Report Required: " "
Client Contact PH. No.: 415/485-7740
Client Contact Fax No.: 415/485-6962

Lab Number	Client Sample Identification	~~Air~~ Volume Date	~~Date~~ Time Collected	Sample Type *	Pres.	No. of Cont.	Type of Cont.	ANALYSIS: TPH diesel	ANALYSIS: BTEX + TPH gas	Comments/Inst., Hazards, etc.
01A	B-1-5	7/16/93	8:40	Soil		1	Brass tube			Hold
02A	B-1-8	"	8:50	"		1	"	X	X	ANALYZE
03A	MW-1-5	"	9:30	"		1	"			Hold
04A	MW-1-8	"	9:45	"		1	"			Hold

Relinquished by: (Signature)	DATE 7/22/93	TIME 10:45	Received by: (Signature)
Relinquished by: (Signature)	DATE 7/22/93	TIME 13:35	Received by: (Signature) Gina Gillespie
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Method of Shipment			Lab Comments

Received by: (Signature)	DATE 7/22/93	TIME 10:45	
Received by: (Signature)	DATE 7-22-93	TIME 1235	
Received by: (Signature)	DATE	TIME	

* Sample type (Specify): 1) 37 mm 0.8 Um MCEF 2) 25 mm 0.8 Um MCEF 3) 25 mm 0.4 Um polycarb. filter 4) PVC filter, diam. _____ pore size _____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other _____ (11) Other _____

COPIES: WHITE - JOB FILE • YELLOW - PROJECT FILE • PINK - CLIENT

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AZURE ENVIRONMENTAL
1001 LINCOLN AVENUE
SAN RAFAEL, CA 94901

ATTN: JEFF HENNIER

CLIENT PROJ. ID: 119-001

REPORT DATE: 08/22/93

DATE SAMPLED: 07/29/93

DATE RECEIVED: 07/30/93

AEN JOB NO: 9307292

PROJECT SUMMARY:

On July 30, 1993, this laboratory received one (1) water sample.

Client requested the sample be analyzed for organic parameters. Sample identification, methodologies, results and dates analyzed are summarized on the following pages.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
General Manager

Results FAXed 08/10/93

AZURE ENVIRONMENTAL

DATE SAMPLED: 07/29/93
DATE RECEIVED: 07/30/93
CLIENT PROJ. ID: 119-001

REPORT DATE: 08/22/93

AEN JOB NO: 9307292

Client Sample Id.	AEN Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
MW-1-1	01D	0.09
Reporting Limit		0.05

Method: 3510 GCFID

Instrument: C

Date Extracted: 08/03/93
Date Analyzed: 08/03/93

AZURE ENVIRONMENTAL

CLIENT ID: MW-1-1
CLIENT JOB NO: 119-001
DATE SAMPLED: 07/29/93
DATE RECEIVED: 07/30/93
REPORT DATE: 08/22/93

AEN LAB NO: 9307292-01A
AEN JOB NO: 9307292
DATE ANALYZED: 08/03/93
INSTRUMENT: F

BTXE AND HYDROCARBONS

METHOD: EPA 8020, 5030 GCFID

COMPOUND	CAS #	CONCENTRACTION (ug/L)	REPORTING LIMIT (ug/L)
Benzene	71-43-2	ND	0.5
Toluene	108-88-3	ND	0.5
Ethylbenzene	100-41-4	ND	0.5
Xylenes	1330-20-7	ND	2
PURGEABLE HYDROCARBONS:			
as Gasoline		ND mg/L	0.05 mg/L

ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 08/02/93
DATE ANALYZED: 08/02/93
CLIENT PROJ. ID: 119-001

AEN JOB NO: 9307292
SAMPLE SPIKED: D.I. WATER
INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
TPH EXTRACTABLE WATER
EPA METHOD 3510 GCFID

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	2.02	ND	1.89	1.76	90.4	7.1

CURRENT QC LIMITS (Revised 06/22/92)

Analyte	Percent Recovery	RPD
Diesel	(45-103.3)	25

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

QUALITY CONTROL DATA

CLIENT PROJ. ID: 119-001

AEN JOB NO: 9307292

INSTRUMENT: F

SURROGATE STANDARD RECOVERY SUMMARY
METHOD: EPA 8020
(WATER MATRIX)

Date Analyzed	SAMPLE IDENTIFICATION Client Id.	Lab Id.	SURROGATE RECOVERY (PERCENT) Fluorobenzene
08/03/93	MW-1-1	01B	86.3

CURRENT QC LIMITS

ANALYTE	PERCENT RECOVERY
Fluorobenzene	(70-115)

QUALITY CONTROL DATA

DATE ANALYZED: 08/02/93
SAMPLE SPIKED: 9307281-01A
CLIENT PROJ. ID: 119-001

AEN JOB NO: 9307292
INSTRUMENT: F

MATRIX SPIKE RECOVERY SUMMARY
METHOD: EPA 8020, 5030 GCFID
(WATER MATRIX)

ANALYTE	Spike Conc. (ug/L)	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Average Percent Recovery	RPD
Benzene	14.6	ND	12.9	13.1	89.0	1.5
Toluene	49.6	ND	48.2	47.4	96.4	1.7
Hydrocarbons as Gasoline	500	ND	443	448	89.1	1.1

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Benzene	(81.4-115.3)	10.2
Toluene	(85.3-112.4)	9.4
Gasoline	(72.0-119.4)	12.8

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

R-1.S-C R-3.SZ

Quanteq
An Ecologics Company

Page 1 of 1

REQUEST FOR ANALYSIS/CHAIN OF CUSTODY

Reporting Information:
1. Client: Azure Environmental
Address: 1001 Lincoln
San Rafael CA 94901
Contact: Jeff Hennier
Alt. Contact:

Address Invoice To:
3. Same

Address Report To:
2. Same

Send Invoice To:
4. Same

Lab Job Number: 9307292
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required: Normal Turnaround
Date Report Required:
Client Contact PH. No.: 415/485-9740
Client Contact Fax No.: 415/485-6062

Send Report To: 1 or 2 (Circle one)
Client project/P.O. #: 119-001
Sample Team Member ('s) JHH/GTM

Lab Number	Client Sample Identification	~~Air Volume~~ Date	~~Date/~~ Time Collected	Sample Type *	Pres.	No. of Cont.	Type of Cont.	TPH gas + BTEX	TPH diesel									Comments/Inst., Hazards, etc.
01A-E	MW-1-1	7/27/93	1500	H_2O		5	VOA Amber	X	X									

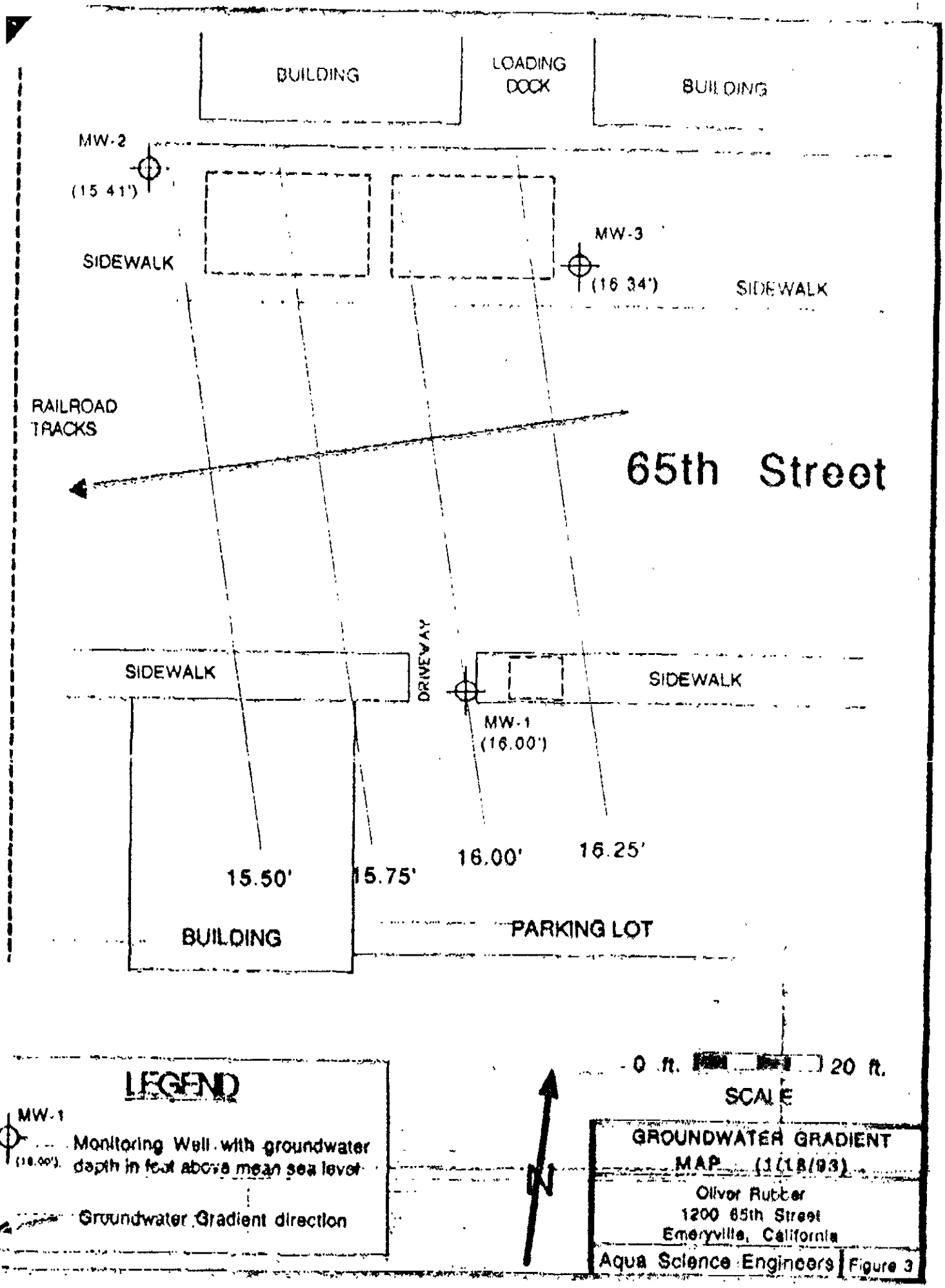
		DATE	TIME			DATE	TIME
Relinquished by: (Signature)	Peggy [signature]	7/30/93	15:10	Received by: (Signature)	[signature]	7/30/93	15:10
Relinquished by: (Signature)	[signature]	7/30/93	16:10	Received by: (Signature)	Gina Gillespie	7-30-93	1610
Relinquished by: (Signature)				Received by: (Signature)			
Method of Shipment				Lab Comments			

* Sample type (Specify): 1) 37 mm 0.8 Um MCEF 2) 25 mm 0.8 Um MCEF 3) 25 mm 0.4 Um polycarb. filter 4) PVC filter, diam. _____ pore size _____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample 10) Other __________ (11) Other __________

COPIES: WHITE - JOB FILE • YELLOW - PROJECT FILE • PINK - CLIENT

APPENDIX D

POTENTIOMETRIC SURFACE MAP FROM THE NEARBY OLIVER RUBBER FACILITY


BUILDING
LOADING DOCK
BUILDING
MW-2
(15.41')
SIDEWALK
MW-3
(16.34')
SIDEWALK
RAILROAD TRACKS
65th Street
SIDEWALK
DRIVEWAY
SIDEWALK
MW-1
(16.00')
15.50'
15.75'
16.00'
16.25'
BUILDING
PARKING LOT
LEGEND
MW-1
(16.00')
Monitoring Well with groundwater depth in feet above mean sea level
Groundwater Gradient direction
0 ft.
20 ft.
SCALE
N
GROUNDWATER GRADIENT MAP (1/18/93)
Oliver Rubber
1200 65th Street
Emeryville, California
Aqua Science Engineers
Figure 3