

**Twelfth Quarterly Groundwater
Monitoring Report - February 1997
AB&I Foundry
7825 San Leandro Street
Oakland, California**

**BSK & ASSOCIATES
GEOTECHNICAL CONSULTANTS, INC.**

BSK JOB NO. P92270.3

March 4, 1997



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March 4, 1997

BSK JOB NO. P92270.3

AB&I Foundry
7825 San Leandro Street
Oakland, California 94621

Attention: Mr. David Robinson
Environmental Engineering Manager

Subject: Twelfth Quarterly Groundwater
Monitoring Report - February 1997
AB&I Foundry
7825 San Leandro Street
Oakland, California

As requested and authorized, BSK & Associates (BSK) has performed the Twelfth quarterly monitoring of three shallow groundwater Monitoring Wells MW-2 through MW-4 at AB&I Foundry, located at 7825 San Leandro Street, Oakland, California (Site). This report presents the project background, groundwater data obtained during this sampling event as well as previous data, conclusions based on this quarter's data, and recommendations for further action, as appropriate. The Site location is shown on the Vicinity Map, Figure 1.

BSK appreciates this opportunity to continue to be of service to AB&I. If there are questions or comments regarding this report, please contact the undersigned.

Respectfully submitted,
BSK & Associates

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(ENV\AB&I\P92270.3 Q11)

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TABLE OF CONTENTS

TEXT	<u>PAGE</u>
Introduction	1
Background	1
 <u>TWELFTH QUARTERLY MONITORING ACTIVITIES - FEBRUARY 1997</u>	 1
General	1
Field Work	2
Analytical Testing	2
 <u>GROUNDWATER DATA - FEBRUARY 1997</u>	 7
Regional Hydrology	7
Site Groundwater Conditions	7
 <u>FINDINGS</u>	 8
 <u>RECOMMENDATIONS</u>	 9
 <u>LIMITATIONS</u>	 9
 <u>DISTRIBUTION</u>	 9
 TABLES	
Table 1 Analytical Results, Groundwater Samples Benzene, Toluene, Ethylbenzene and Xylenes	3
Table 2 Analytical Results, Groundwater Samples Total Petroleum Hydrocarbons (TPH) as Gasoline and Diesel Total and Hydrocarbon Oil and Grease Total Lead, and Volatile Halocarbons	5
Table 3 Summary of Groundwater Data	7
 FIGURES	
Figure 1 Vicinity Map	
Figure 2 Site Plan	
Figures 3 - 6 Well Field Logs	
Figure 7 Groundwater Elevation Contour Map	
Figure 8 Summary of Groundwater Elevations	
 APPENDICES	
<u>Appendix "A"</u>	
Figures A-1 through A-6 Chemical Test Data Sheets	
Figures A-7 and A-8 Chain-of-Custody Records	

**TWELFTH QUARTERLY GROUNDWATER
MONITORING REPORT - FEBRUARY 1997
AB&I FOUNDRY
7825 SAN LEANDRO STREET
OAKLAND, CALIFORNIA**

Introduction

This quarterly monitoring report has been prepared to meet Alameda County Department of Environmental Health (ACDEH) requirements for status updates of groundwater at the Site following the removal of four Underground Storage Tanks (USTs) during 1991 and 1992, as initially presented in their letter of October 2, 1992, to David Robinson of AB&I Foundry.

Background

AB & I has been operating at its present location for more than eighty years. AB & I's current activities include the manufacture of cast iron pipe and fittings. The facility accepts scrap iron and steel, which it stockpiles on-site, and utilizes in its processes.

AB & I maintained three USTs to store petroleum products and one UST to store solvent. AB & I removed the four USTs between August 1991 and June 1992. Removal and disposal of two of the USTs (the 8,000-gallon capacity gasoline tank and the 550-gallon capacity leaded gasoline tank) were described in two consultant's (Levine-Fricke) reports. Documentation of the removal and disposal of the two remaining USTs (the 8,000-gallon capacity 1,1,1-TCA UST and the 10,000-gallon capacity diesel UST) was reported by AB & I.

In general, analytical results for the soil and groundwater samples collected adjacent to the tanks during the tank removal projects showed detectable concentrations of Total Petroleum Hydrocarbons as gasoline (TPHg), Total Petroleum Hydrocarbons as diesel (TPHd), 1,1-DCA, Chloroethane, and 1,1,1-TCA. Affected soil at each former tank location was excavated until confirmation samples indicated the chemicals of concern were at relatively low concentrations, or to where an obstruction made further excavation impossible or hazardous.

BSK & Associates (BSK) installed four shallow groundwater monitoring wells at the Site in February 1993, one well per former tank location as shown on Figure 2, Site Plan. Soil and groundwater samples revealed soil contamination in the vicinities of the former 500-gallon gasoline tank and the TCA solvent tank, and contaminated groundwater at these two locations as well as the former diesel tank location. The well installation and sampling findings are presented in BSK Report No. P92270.3, dated April 30, 1993.

TWELFTH QUARTERLY MONITORING ACTIVITIES - FEBRUARY 1997

General

Twelfth quarterly monitoring of groundwater Monitoring Wells MW-2, MW-3 and MW-4 was performed by BSK personnel on February 3, 1997, in accordance with the Groundwater Well

Monitoring portion of our Proposal No. PR93204.3 of July 29, 1993. The samples collected from monitoring well MW-4 were broken during shipment and the well was subsequently resampled on February 10, 1997. As directed by Mr. David Robinson (after meeting with Barney Chan of ACEHD on March 13, 1995), sampling of the groundwater Monitoring Well MW-1, was not performed this quarter. Field procedures and observations are provided in the following text and figures.

Field Work

Water samples from site wells were obtained after purging each well of approximately four casing volumes, and allowing eighty percent recovery. Observation of water level, and for immiscible product, was performed using an electric sounder and clear point-source bailer prior to purging. The water level was recorded to the nearest 1/100th of a foot. During purging, the water parameters: pH, temperature and electrical conductivity were monitored and recorded at regular intervals on Well Field Logs. The Well Field Logs are presented in Figures 3 through 7. Water samples for analytical testing were obtained in the order of most to least volatility. Samples were obtained via point-source bailer (Teflon^R or polyethylene disposable), and transferred to the appropriate sample containers, with preservative as needed. The samples were labeled and placed into a cooler with water-ice or blue ice for delivery to our State-certified analytical laboratory.

Sampling, purging and decontamination waste water was contained on-site in a 55-gallon drum provided by AB & I. Each container was labeled according to the wastewater source, date of accumulation and owner.

Analytical Testing

Analytical testing of the water samples obtained from the site were performed by BSK State-certified Analytical Laboratories in Fresno, California.

The analyses performed for each contaminant type are those specified by the Tri-Regional Water Board Staff Recommendations of August 10, 1992 and ACDEH. The analyses are:

Well MW-2

Chlorinated Solvent by EPA Method 601
Oil and Grease by EPA Methods 413.2 and 418.1
TPHgasoline by GCFID-5030
BTEX by EPA Method 602

Well MW-3

TPHgasoline by GCFID-5030
BTEX by Method 602

Well MW-4

TPHgasoline by GCFID-5030
BTEX by Method 602

Samples were submitted to the analytical laboratory utilizing Chain-of-Custody documentation. The results of the chemical analyses of groundwater for this quarter, and previous quarterly test results, are summarized in the following tables; water analyses results and related Action Levels are reported in Micrograms per liter (ug/l). The Chemical Test Data Sheets and project Chain-of-Custody documentation are presented in Appendix "A" of this report.

**TABLE 1 - ANALYTICAL RESULTS, GROUNDWATER SAMPLES
BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES (BTEX)
Results in micrograms per liter (ug/l)**

C O N S T I T U E N T S				
Sample Location (Action Level)	Benzene (1) ₁	Toluene (100) ₂	Ethylbenzene (680) ₁	Xylenes (1750) ₁
SAMPLE DATE: 2/3/97 and 2/10/97 (MW4)				
MW-1	--	--	--	--
MW-2	ND	ND	ND	1.7
MW-3	ND	ND	ND	ND
MW-4	ND	ND	0.53	ND
SAMPLE DATE: 4/26/96				
MW-1	--	--	--	--
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	ND	ND	ND	ND
SAMPLE DATE: 1/18/96 and 1/19/96 (Tenth Quarter)				
MW-1	--	--	--	--
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	0.8	ND	1.2	0.9
SAMPLE DATE: 9/6/95 (Ninth Quarter)				
MW-1	--	--	--	--
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	9.4	1.4	6.3	6.2
SAMPLE DATE: 6/23/95 (Eighth Quarter)				
MW-1	--	--	--	--
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	ND	ND	0.9	1.7
SAMPLE DATE: 3/17/95 (Seventh Quarter)				
MW-1	--	--	--	--
MW-2	4.9	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	ND	ND	ND	ND
SAMPLE DATE: 12/16/94 (Sixth Quarter)				
MW-1	0.6	ND	ND	ND

TABLE 1 (CONTINUED)

CONSTITUENTS				
Sample Location (Action Level)	Benzene (1) ₁	Toluene (100) ₂	Ethylbenzene (680) ₁	Xylenes (1750) ₁
MW-2	ND	18	ND	ND
MW-3	ND	ND	ND	ND
MW-4	0.4	0.4	ND	1.2
SAMPLE DATE: 09/09/94 (Fifth Quarter)				
MW-1	ND	ND	ND	ND
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	0.4	ND	0.7	1.3
SAMPLE DATE: 06/10/94 (Fourth Quarter)				
MW-1	ND	ND	ND	ND
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND
MW-4	4.3	ND	1.8	4.3
SAMPLE DATE: 03/04/94 (Third Quarter)				
MW-1	1.1	ND	ND	ND
MW-2	ND	ND	ND	3.6
MW-3	ND	ND	ND	ND
MW-4	ND	0.9	ND	1.1
SAMPLE DATE: 12/03/93 (Second Quarter)				
MW-1	ND	ND	ND	ND
MW-2	ND	250	19	5.1
MW-3	ND	ND	ND	ND
MW-4	ND	ND	1.4	2.8
SAMPLE DATE: 08/20/93 (First Quarter)				
MW-1	2.2	3.7	4.5	17
MW-2	2.9	4.2	6.3	25
MW-3	7.2	9.3	8.6	31
MW-4	5.6	4.9	7.5	22
SAMPLE DATE: 03/10/93 (Initial Well Installation Sampling)				
MW-1	0.6	ND	ND	ND
MW-2	ND	0.8	ND	ND
MW-3	ND	ND	ND	ND
MW-4	1.0	2.0	7.6	19

- ND - None Detected
 1 - California Department Of Health Services Drinking Water Standard, Revised 10/23/91
 2 - California DOHS Action Level, 7/1/92
 -- - Not Sampled

**TABLE 2 - ANALYTICAL RESULTS, GROUNDWATER SAMPLES
TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE AND DIESEL,
TOTAL AND HYDROCARBON OIL AND GREASE
TOTAL LEAD, AND VOLATILE HALOCARBONS**
Results in micrograms per liter (ug/l)

C O N S T I T U E N T S						
Sample Location (Action Level)	TPH Gasoline (NA)	TPH Diesel (100) ₁	Total Oil & Grease (NA)	Hydrocarbon Oil & Grease (NA)	Total Lead (50)	Volatile Halocarbons (Determined by Compound)
SAMPLE DATE: 2/3/97 and 2/10/97						
MW-1	--	--	--	--	--	--
MW-2	250	--	ND	ND	--	ND
MW-3	--	--	--	--	--	--
MW-4	110	--	--	--	--	--
SAMPLE DATE: 4/26/96						
MW-1	--	--	--	--	--	--
MW-2	500 ₍₄₎	--	ND	ND	--	ND
MW-3	ND	--	--	--	--	--
MW-4	ND	--	--	--	--	--
SAMPLE DATE: 1/18/96 and 1/19/96 (Tenth Quarter)						
MW-1	--	--	--	--	--	--
MW-2	120 ₍₄₎	--	1	ND	--	ND
MW-3	ND	--	--	--	--	--
MW-4	90 ₍₄₎	--	--	--	--	--
SAMPLE DATE: 9/6/95 (Ninth Quarter)						
MW-1	--	--	--	--	--	--
MW-2	110 ₍₄₎	--	ND	ND	--	ND
MW-3	ND	--	--	--	--	--
MW-4	420	--	--	--	--	--
SAMPLE DATE: 6/23/95 (Eighth Quarter)						
MW-1	--	--	--	--	--	--
MW-2	190 ₍₄₎	--	ND	ND	--	Chloroethane - 0.9(NA)
MW-3	ND	--	--	--	--	--
MW-4	180 ₍₄₎	--	--	--	--	--
SAMPLE DATE: 3/17/95 (Seventh Quarter)						
MW-1	--	--	--	--	--	--
MW-2	320 ₍₄₎	--	--	1	--	Chloroethane - 2.4(NA)
MW-3	ND	--	--	--	--	--
MW-4	62 ₍₄₎	--	--	--	ND	--
SAMPLE DATE: 12/16/94 (Sixth Quarter)						
MW-1	--	180 ₍₅₎	--	--	--	--
MW-2	130 ₍₄₎	--	ND	ND	--	ND
MW-3	ND	--	--	--	--	--
MW-4	100	--	--	--	86	--
SAMPLE DATE: 09/09/94 (Fifth Quarter)						
MW-1	--	ND	--	--	--	--

TABLE 2 (CONTINUED)

CONSTITUENTS						
Sample Location (Action Level)	TPH Gasoline (NA)	TPH Diesel (100) ₁	Total Oil & Grease (NA)	Hydrocarbon Oil & Grease (NA)	Total Lead (50)	Volatile Halocarbons (Determined by Compound)
MW-2	830 ₍₂₎	--	2	2	--	Chloroethane - 1.4(NA) 1,1-Dichloroethane - 0.8(0.5)
MW-3	ND	--	--	--	--	--
MW-4	150 ₍₂₎	--	--	--	ND	--
SAMPLE DATE: 06/10/94 (Fourth Quarter)						
MW-1	--	490	--	--	--	--
MW-2	920	--	2,000	2,000	--	Chloroethane - 4.2(NA) 1,1-Dichloroethane - 0.6(0.5) ₃ 1,1,1-Trichloroethane - 0.8(200) ₃
MW-3	ND	--	--	--	--	--
MW-4	460	--	--	--	ND	--
SAMPLE DATE: 03/04/94 (Third Quarter)						
MW-1	--	710	--	--	--	--
MW-2	420	--	ND	ND	--	Chloroethane - 3.7(NA)
MW-3	ND	--	--	--	--	--
MW-4	50	--	--	--	ND	--
SAMPLE DATE: 12/03/93 (Second Quarter)						
MW-1	--	3200 ₍₃₎	--	--	--	--
MW-2	900	--	ND	ND	--	Chloroethane - 3.8(NA)
MW-3	80	--	--	--	--	--
MW-4	1100	--	--	--	ND	--
SAMPLE DATE: 08/20/93 (First Quarter)						
MW-1	--	2100 ₍₁₎	--	--	--	--
MW-2	720 ₍₂₎	--	ND	ND	--	Chloroethane - 4.7(NA)
MW-3	190	--	--	--	--	--
MW-4	350	--	--	--	ND	--
SAMPLE DATE: 03/10/93 (Initial Well Installation Sampling)						
MW-1	--	830	--	--	--	--
MW-2	920	--	1.0	ND	--	Bromoform - 0.6(100) ₂ Chloroethane - 5.0(NA) 1,1-Dichloroethane - 1.7(0.5) ₃ 1,1,1-Trichloroethane - 6.7(200) ₃
MW-3	ND	--	--	--	--	--
MW-4	1800	--	--	--	58.0	--

ND - None Detected, NA - Not Applicable

-- - Not Tested

1 - 1980 EPA 10-Day Suggested No Adverse Response Level (SNARL)

2 - EPA Drinking Water Standard, Revised 7/1/92

3 - California Department of Health Services Drinking Water Standards, Revised 10/23/91

(1) - "Not Diesel-Like", as reported by analytical laboratory

(2) - "Not Gasoline-Like", as reported by analytical laboratory

(3) - "Appears to be heavier than diesel," as reported by analytical laboratory

(4) - Chromatography for this sample is described as inconsistent with the gasoline standard

(5) - Chromatography for this sample is described as inconsistent with the diesel standard

GROUNDWATER DATA - FEBRUARY 1997

Regional Hydrogeology

The AB&I Foundry facility is located on the San Leandro alluvial cone of the East Bay Plain. The upper 400 feet of the San Leandro Cone comprises discontinuous beds of sand and gravel which extend westward under San Francisco Bay, and are capped by confining clay layers. Groundwater in this area is used mainly for industrial and irrigation purposes, but is suitable in quality for most uses. Shallow aquifers of limited extent located throughout the Bay Plain, are often perched and unconfined, and typically yield less than 35 gallons per minute from silty sands. These aquifers are often tapped by wells less than 50 feet in depth and used for local irrigation. These minor aquifers are most susceptible to groundwater pollution (Maslonowski, 1984).

Site Groundwater Conditions

Based upon the groundwater elevations in the three on-site groundwater monitoring wells (MW-2, MW-3 and MW-4) the direction of groundwater flow is generally in a northeast direction (Figure 7). The calculated hydraulic gradient is about 0.002 ft/ft. The groundwater elevation in wells MW-2 and MW-4 have decreased by 0.71 and 0.32 feet respectively, and the groundwater elevation in well MW-3 has increased by 0.40 feet since the last sampling event. A summary of the groundwater data collected to date is listed below in Table 3 and graphically presented on Figure 8.

TABLE 3
SUMMARY OF GROUNDWATER DATA

Well Number	Date Measured	Groundwater Elevation (Feet) DTW	Hydraulic Gradient (ft/ft)	Direction of Groundwater Flow
MW-2 MW-3 MW-4	2/3/97	2.85 4.95 2.86 6.97 2.69 6.83	0.002 (1)	Northeast (1)
MW-2 MW-3 MW-4	4/26/96	3.30 4.5 2.26 7.57 2.09 7.43	0.0096 (1)	Northeast (1)
MW-2 MW-3 MW-4	1/19/96 1/18/96 1/18/96	3.56 4.24 2.46 7.37 2.37 7.15	0.012 (1)	Northeast (1)
MW-2 MW-3 MW-4	6/9/95	2.80 5.0 1.85 7.98 1.60 7.92	0.010 (1)	Northeast (1)
MW-2 MW-3 MW-4	6/23/95	3.05 4.75 2.31 7.52 2.04 7.48	0.008 (1)	Northeast (1)
MW-2 MW-3 MW-4	3/17/95	3.79 4.01 3.05 6.78 2.93 6.59	0.007 (1)	Northeast (1)

TABLE 3 (CONTINUED)

Well Number	Date Measured	Groundwater Elevation (Feet) DTW	Hydraulic Gradient (ft/ft)	Direction of Groundwater Flow
MW-1 MW-2 MW-3 MW-4	12/16/95	3.65 5.87 3.30 4.5 2.69 7.14 2.48 7.04	0.007 (1) 0.005 (2)	Northeast (1) Northeast (2)
MW-1 MW-2 MW-3 MW-4	9/9/94	2.14 7.38 2.38 5.42 1.74 8.09 1.43 8.09	0.008 (1) 0.003 (2)	Northeast (1) North-Northwest (2)
MW-1 MW-2 MW-3 MW-4	6/10/94	2.55 6.97 2.73 5.07 2.12 7.71 1.78 7.74	0.008 (1) 0.002 (2)	Northeast (1) North-Northwest (2)
MW-1 MW-2 MW-3 MW-4	3/4/94	1.29 8.23 3.14 4.66 2.54 7.29 2.25 7.27	0.007 (1) 0.005 (2)	Northeast (1) West (2)
MW-1 MW-2 MW-3 MW-4	12/3/93	2.04 7.48 2.39 5.41 1.72 8.11 1.47 8.05	0.008 (1) 0.003 (2)	Northeast (1) Northwest-West (2)
MW-1 MW-2 MW-3 MW-4	8/20/93	2.05 7.47 2.30 5.5 1.55 8.28 1.29 8.23	0.008 (1) 0.003 (2)	Northeast (1) Northwest (2)
MW-1 MW-2 MW-3 MW-4	3/10/93	2.29 7.23 3.41 4.39 2.53 7.3 3.45 6.07	0.004 (1) 0.003 (2)	North-Northwest (1) West (2)

- (1) Based upon a three point solution using wells MW-2, MW-3 and MW-4.
 (2) Based upon a three point solution using wells MW-1, MW-2 and MW-3.

FINDINGS

Petroleum hydrocarbons as gasoline (TPH-g) and total xylenes were detected at levels of 250 and 1.7 ug/l, respectively in the groundwater sample collected from the groundwater Monitor Well MW-2. Total and hydrocarbon oil and grease and volatile halocarbons were reported as none detected in the groundwater samples collected from MW-2. Petroleum hydrocarbons as gasoline and BTEX were reported as none detected in the groundwater samples collected from MW-3. TPH-g and ethylbenzene were detected at levels of 110 and 0.53 ug/l, respectively in the groundwater sample collected from the groundwater Monitor Well MW-4.

RECOMMENDATIONS

Since MW-1 will no longer be monitored, the well should be properly closed. Assessment of the lateral extent of shallow groundwater contamination should be considered in the vicinity of Wells MW-2 and MW-4.

Quarterly monitoring of the three wells installed should continue to be performed to assess contaminant concentration fluctuation with respect to groundwater level, gradient and flow direction. Groundwater samples collected from the quarterly monitoring of Well MW-4, should be analyzed for chlorinated hydrocarbons by EPA Method 601.

LIMITATIONS

This groundwater monitoring well report has been prepared for the exclusive use of AB&I Foundry Company. Unauthorized use of or reliance on the information contained in this report by others, unless given express written consent by BSK & Associates, is strictly prohibited.

The findings and conclusions presented in this report are based on field observations, and on data obtained from the sources listed in this report. This report has been prepared in accordance with generally accepted methodologies and standards of practice for the area. No other warranty, either expressed or implied, is made as to the findings or conclusions included in this report.

The findings of this report are valid as of the present. The passage of time, natural processes or human intervention on the property or adjacent properties, and changes in the regulations can cause changed conditions which can invalidate the findings and conclusions in this report.

This report is neither certification nor guarantee that the property is free of, or contains hazardous substance contamination, other than that mentioned in the report.

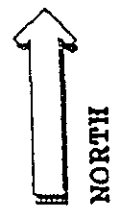
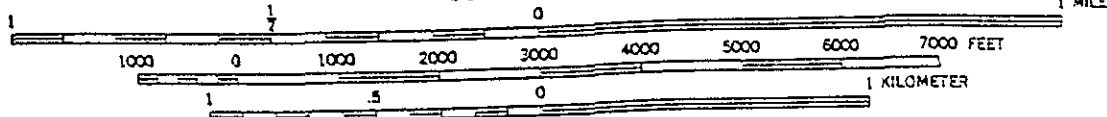
DISTRIBUTION

A copy of this report should be forwarded by the client to the Alameda County Department of Environmental Health for their review. An extra copy of this report has been forwarded to American Brass and Iron Foundry for this purpose.

Respectfully Submitted,
BSK & Associates



SCALE 1:24 000



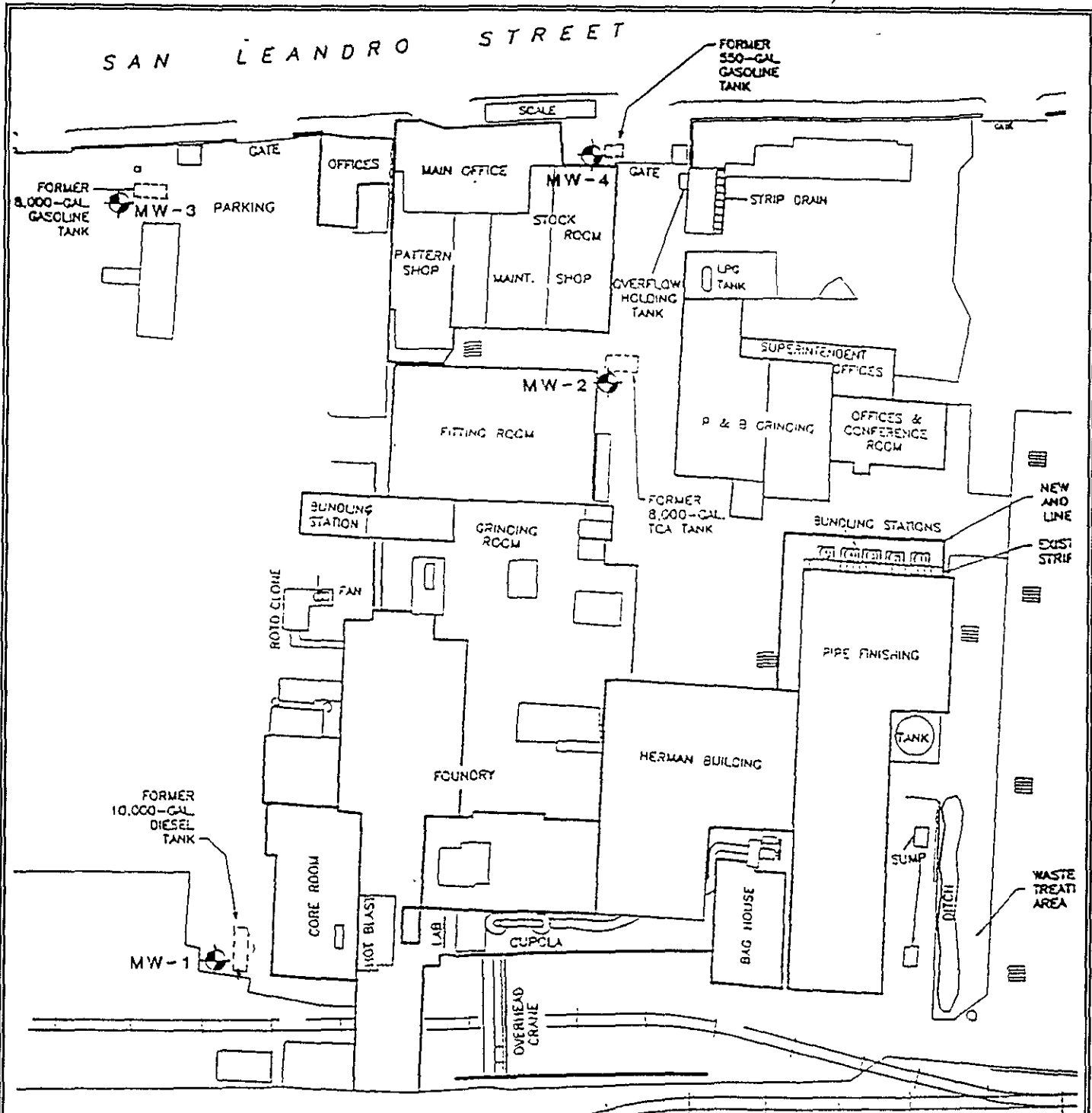
CONTOUR INTERVAL 20 FEET
 DOTTED LINES REPRESENT 5-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929
 DEPTH CURVES IN FEET—DATUM IS MEAN LOWER LOW WATER

Source: USGS 7.5 Minute Topographic Maps, Oakland East and San Leandro Quadrangles


**TWELFTH QUARTERLY
 GROUNDWATER MONITORING
 AMERICAN BRASS & IRON FOUNDRY
 7825 SAN LEANDRO STREET
 OAKLAND, CALIFORNIA**

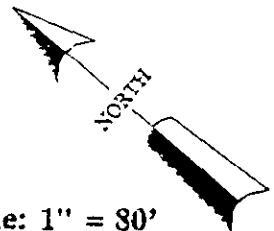
VICINITY MAP
 Job No. P92270.3
 FEBRUARY 1997
 FIGURE: 1

BSK
 & ASSOCIATES



LEGEND:

 - Groundwater Monitoring Well
Location and Designation



Basemap Source: Levine-Fricke Work Plan 92P-404I, 10/30/91

Scale: 1" = 30'

**TWELFTH QUARTERLY
GROUNDWATER MONITORING
AMERICAN BRASS & IRON FOUNDRY
7825 SAN LEANDRO STREET
OAKLAND, CALIFORNIA**

SITE PLAN
Job No. P92270.3
FEBRUARY 1997
FIGURE: 2

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WELL FIELD LOG

Well Observation: x Date: 2/3/97
 Sample Collection: x Date: 2/3/97

Project Name: American Brass & Iron
 Location: Oakland, CA
 Personnel: MC
 Weather: Clear, Mild

WELL INFORMATION:

Well Number	MW-2	Date Purged	2/3/97
Depth to Water - feet(TOC)	4.95	Purge Method	Submersible Pump
Well Depth (feet)	17.0		
Water Volume (gallons)	7.8	Purge Begin	12:10
Reference Elevation - feet(TOC)	+7.80	Purge End	12:21
Groundwater Elevation (feet)	+2.85	Purge Rate	2.9 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, No Odor
 Bottom: None Observed, No Odor
 Detection Method: Visual
 Collection Method: Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
12:13	8.0	1920	6.17	58	
12:16	16.0	1910	5.64	62	
12:19	24.0	1940	5.58	63	
12:21	32.0	1930	5.62	63	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
12:10	EPA 601	2-40 ml glass vials with Hcl	7'
"	TPH-G and BTEX	2-40 ml glass vials with Hcl	"
"	Total and Hydrocarbon Oil & Grease	1-liter amber glass bottle with H ₂ SO ₄	"

Field Observations: None

WELL FIELD LOG

Well Observation: x Date: 2/3/97
 Sample Collection: x Date: 2/3/97

Project Name: American Brass & Iron
 Location: Oakland, CA
 Personnel: MC
 Weather: Clear, Mild

WELL INFORMATION:

Well Number	MW-3	Date Purged	2/3/97
Depth to Water - feet(TOC)	6.97	Purge Method	Submersible Pump
Well Depth (feet)	19.0		
Water Volume (gallons)	2.0	Purge Begin	12:24
Reference Elevation - feet(TOC)	+9.83	Purge End	12:28
Groundwater Elevation (feet)	+2.86	Purge Rate	2.0 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: None observed, no odor
 Bottom: None observed, no odor
 Detection Method: Visual
 Collection Method: Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
11:25	2.0	3100	5.39	62	
11:26	4.0	3230	5.39	65	
11:27	6.0	3270	5.25	66	
11:28	8.0	3300	5.36	67	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
11:35	TPHg, BTEX	2-40 ml glass vials with Hcl	8'

Field Observations: None

WELL FIELD LOG

Well Observation: x Date: 2/3/97
 Sample Collection: x Date: 2/3/97

Project Name: American Brass & Iron
 Location: Oakland, CA.
 Personnel: MC
 Weather: Clear, Warm

WELL INFORMATION:

Well Number	MW-4	Date Purged	2/3/97
Depth to Water - feet(TOC)	6.83	Purge Method	Submersible Pump
Well Depth (feet)	24.5		
Water Volume (gallons)	3.0	Purge Begin	13:00
Reference Elevation - feet(TOC)	+9.52	Purge End	13:07
Groundwater Elevation (feet)	+2.69	Purge Rate	1.7 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: None Observed, Hydrocarbon Odor
 Bottom: Orange Particles Observed, Faint Hydrocarbon Odor
 Detection Method: Visual
 Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
13:02	3.0	566	7.20	60	
13:04	6.0	508	6.66	62	
13:05	9.0	509	6.52	64	
13:07	12.0	510	6.49	64	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
13:15	TPH-G & BTEX	2-40 ml glass vials with Hcl	7.0'

Field Observations: None

WELL FIELD LOG

Well Observation: -- Date: --
 Sample Collection: x Date: 2/10/97 (Resample)

Project Name: American Brass & Iron
 Location: Oakland, CA.
 Personnel: MC
 Weather: Clear, Warm

WELL INFORMATION:

Well Number	MW-4	Date Purged	2/10/97
Depth to Water - feet(TOC)	--	Purge Method	Submersible Pump
Well Depth (feet)	24.5		
Water Volume (gallons)	3.0	Purge Begin	16:08
Reference Elevation - feet(TOC)	+9.52	Purge End	16:14
Groundwater Elevation (feet)	--	Purge Rate	2.0 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: --
 Bottom: --
 Detection Method: Visual
 Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

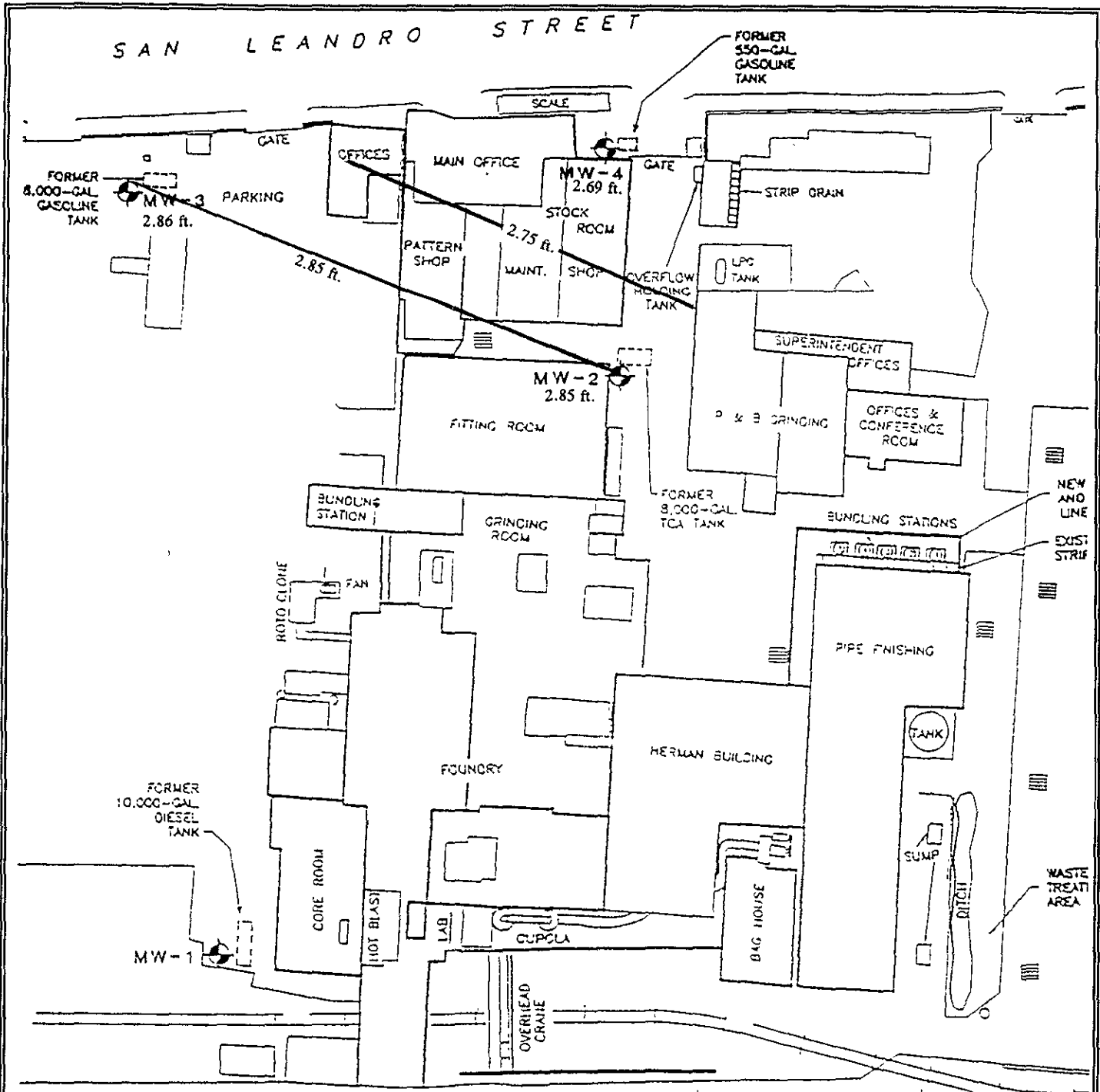
TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
16:10	3.0	601	5.34	64	
16:11	6.0	589	5.92	64	
16:12	9.0	588	5.67	64	
16:14	12.0	585	5.57	64	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
16:15	TPH-G & BTEX	2-40 ml glass vials with Hcl	7.0'

Field Observations: None



LEGEND:

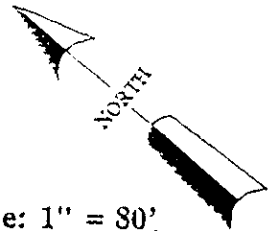


Groundwater Monitoring Well
Location and Groundwater
Elevation on 2/3/97



Line of Equal Groundwater Elevation
in feet Above Mean Sea Level

S.P.R.R. Spur



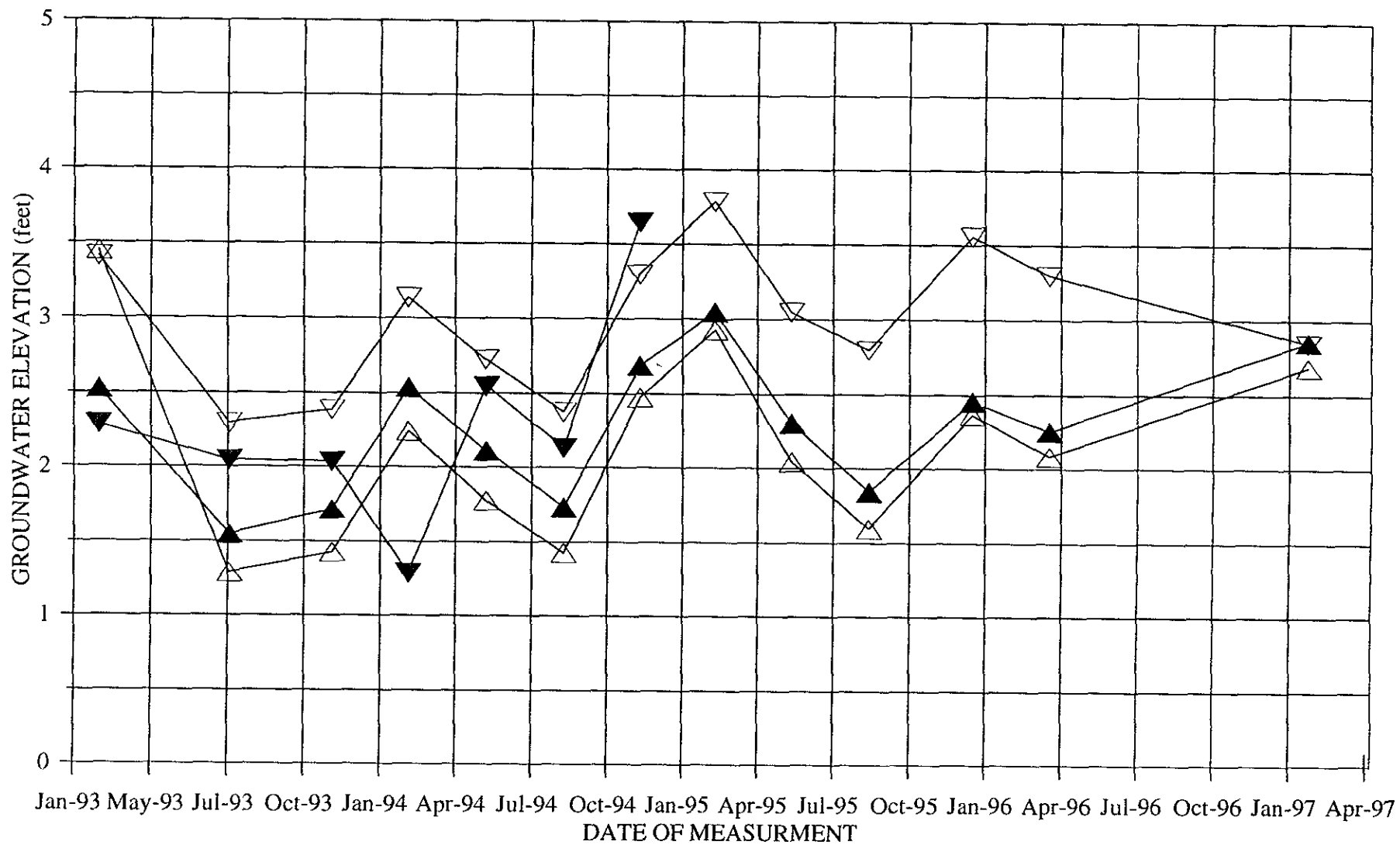
Scale: 1" = 80'

**TWELFTH QUARTERLY
GROUNDWATER MONITORING
AMERICAN BRASS & IRON FOUNDRY
7825 SAN LEANDRO STREET
OAKLAND, CALIFORNIA**

**Job No. P92270.3
GROUNDWATER
ELEVATION CONTOUR
FEBRUARY 1997
FIGURE: 7**

BSK
& ASSOCIATES

SUMMARY OF GROUNDWATER ELEVATIONS



▼ MW-1 ▽ MW-2 ▲ MW-3 △ MW-4

BSK Job No. P92270.3
FEBRUARY 1997
FIGURE 8

BSK

APPENDIX "A"

BSK ANALYTICAL
LABORATORIES

CERTIFICATE OF ANALYSIS
Cover Letter

February 13, 1997

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

BSK Submission Number : 9702000036
Date Received : 02/04/97


Dear Martin Cline,

BSK adheres to a quality assurance plan that has been approved by the State of California, Department of Health Services. Our ELAP certificate number is 1180.

This Certificate of Analysis has been prepared in response to your request for analytical services. Information was taken from your Chain-of-Custody or related correspondence. All sample handling and analytical procedures were completed within BSK Laboratories' standard acceptability criteria with any exceptions noted below.

If additional clarification of information contained within this certificate is needed, please contact our Client Service Department at 1-800-877-8310 or 209-497-2888.

Sincerely,


Jeffrey Koelewyn
Laboratory Operations Supervisor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 02/13/97

Submission Number : 9702000036
Lab Number : 13394
Project Number : P92270.3
Project Desc. : AB&I
Sample Description : MW-2

Sample Date : 02/03/97
Sample Time : 12:25
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
SM 5520D	Total Oil & Grease	02/07/97	02/07/97	ND	mg/L	1	1
520F	Hydrocarbon Oil & Grease	02/07/97	02/07/97	ND	mg/L	1	1
EPA 8015 / EPA 8020	Benzene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	02/07/97	02/07/97	0.40	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	02/07/97	02/07/97	0.80	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	02/07/97	02/07/97	0.50	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline	02/07/97	02/07/97	250	µg/L	50	1

ND : None Detected
mg/L : Milligrams/Liter = ppm
µg/L : Micrograms/Liter = ppb
mg/kg : Milligrams/Kilogram = ppm
µg/kg : Micrograms/Kilogram = ppb

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences
may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
 BSK & Associates, Pleasanton
 1181 Quarry Lane Suite 300
 Pleasanton, CA 94566

Preparation Date : 02/04/97
 Analysis Date : 02/04/97
 Report Issue Date : 02/13/97

Submission Number : 9702000036
 Lab Number : 13394
 Project Number : P92270.3
 Project Desc. : AB&I
 Sample Description : MW-2

Sample Date : 02/03/97
 Sample Time : 12:25
 Sample Type : LIQUID

601, Volatile Halocarbons

Analyte	Result	Units	DLR	Dil
Bromodichloromethane	ND	µg/L	.5	1
Bromomethane	ND	µg/L	1.0	1
Bromoform	ND	µg/L	.5	1
Carbon tetrachloride	ND	µg/L	.5	1
Chlorobenzene	ND	µg/L	.5	1
Chloroethane	ND	µg/L	.5	1
Chloromethane	ND	µg/L	.5	1
Chloroform	ND	µg/L	.5	1
Dibromochloromethane	ND	µg/L	.5	1
1,1-Dichloroethane	ND	µg/L	.5	1
1,1-Dichloroethene	ND	µg/L	.5	1
1,2-Dichlorobenzene	ND	µg/L	.5	1
1,2-Dichloroethane	ND	µg/L	.5	1
1,2-Dichloropropane	ND	µg/L	.5	1
1,3-Dichlorobenzene	ND	µg/L	.5	1
1,4-Dichlorobenzene	ND	µg/L	.5	1
Dichlorodifluoromethane	ND	µg/L	2.0	1
cis-1,3-Dichloropropene	ND	µg/L	.5	1
trans-1,2-Dichloroethene	ND	µg/L	.5	1
trans-1,3-Dichloropropene	ND	µg/L	.5	1
Methylene chloride	ND	µg/L	2.0	1
1,1,2,2-Tetrachloroethane	ND	µg/L	.5	1
Tetrachloroethene	ND	µg/L	.5	1
1,1,1-Trichloroethane (1,1,1-TCA)	ND	µg/L	.5	1
1,1,2-Trichloroethane (1,1,2-TCA)	ND	µg/L	.5	1
Trichloroethene (TCE)	ND	µg/L	.5	1
Trichlorofluoromethane (Freon 11)	ND	µg/L	.5	1
Vinyl chloride	ND	µg/L	1.0	1
cis-1,2-Dichloroethene	ND	µg/L	.5	1

ND : None Detected
 mg/L : Milligrams/Liter = ppm
 µg/L : Micrograms/Liter = ppb
 mg/kg : Milligrams/Kilogram = ppm
 µg/kg : Micrograms/Kilogram = ppb

DLR : Detection Limit for the Purposes of Reporting
 Exceptional sample matrices or interferences
 may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Martin Cline
 BSK & Associates, Pleasanton
 1181 Quarry Lane Suite 300
 Pleasanton, CA 94566

Report Issue Date : 02/13/97

Submission Number : 9702000036
 Lab Number : 13393
 Project Number : P92270.3
 Project Desc. : AB&I
 Sample Description : MW-3

Sample Date : 02/03/97
 Sample Time : 11:35
 Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	02/07/97	02/07/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline	02/07/97	02/07/97	ND	µg/L	50	1

MW-4 sample bottles arrived at the lab broken

ND : None Detected
 mg/L : Milligrams/Liter = ppm
 µg/L : Micrograms/Liter = ppb
 mg/kg : Milligrams/Kilogram = ppm
 µg/kg : Micrograms/Kilogram = ppb

DLR : Detection Limit for the Purposes of Reporting
 Exceptional sample matrices or interferences
 may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL
LABORATORIES

CERTIFICATE OF ANALYSIS
Cover Letter

February 25, 1997

Martin Cline
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

BSK Submission Number : 9702000130
Date Received : 02/11/97

Dear Martin Cline,

BSK adheres to a quality assurance plan that has been approved by the State of California, Department of Health Services. Our ELAP certificate number is 1180.

This Certificate of Analysis has been prepared in response to your request for analytical services. Information was taken from your Chain-of-Custody or related correspondence. All sample handling and analytical procedures were completed within BSK Laboratories' standard acceptability criteria with any exceptions noted below.

If additional clarification of information contained within this certificate is needed, please contact our Client Service Department at 1-800-877-8310 or 209-497-2888.

Sincerely,



Jeffrey Koelewyn
Laboratory Operations Supervisor

Certificate of Analysis

Martin Cline
 BSK & Associates, Pleasanton
 1181 Quarry Lane Suite 300
 Pleasanton, CA 94566

Report Issue Date : 02/25/97

Submission Number : 9702000130
 Lab Number : 13792
 Project Number : P92270.3
 Project Desc. : AB & I
 Sample Description : MW-4

Sample Date : 02/10/97
 Sample Time : 16:15
 Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	02/14/97	02/14/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	02/14/97	02/14/97	0.53	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	02/14/97	02/14/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	02/14/97	02/14/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	02/14/97	02/14/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	02/14/97	02/14/97	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline Higher boiling-point hydrocarbons decreased relative to standard.	02/14/97	02/14/97	110	µg/L	50	1

ND : None Detected
 mg/L : Milligrams/Liter = ppm
 µg/L : Micrograms/Liter = ppb
 mg/kg : Milligrams/Kilogram = ppm
 µg/kg : Micrograms/Kilogram = ppb

DLR : Detection Limit for the Purposes of Reporting
 Exceptional sample matrices or interferences
 may result in higher detection limits

DLR = DLR x Dilution Factor

Conversions:
 1 ppm = 1000 ppb
 1 ppb = 0.001 ppm

Analyses Request / Chain of Custody

9702000130 BSK_P

Environmental Services

Shaded areas for LAB use only

Client Name <i>ABEI</i>	Report Attention: <i>Martin Clive</i>	Phone #
Address <i>C/O BSK-P</i>	Project, Quote or PO # <i>P92270.3</i>	FAX #
City, State, Zip	Copy to:	System #

LAB use only			Date Sampled	Time Sampled	Sampled by: <i>M. Clive</i>	Sample Description/Location	Comment or Station Code
Sample #	Type	# Cont.					
<i>1</i>	<i>C</i>	<i>2</i>	<i>2/14/97</i>	<i>16:15</i>	<i>MW-4</i>	<i>13792</i>	

X TPAH-G-BTEX

Matrix Type: L - Liquid S - Solid G - Gas
Type of Hazards Associated with Samples:

Additional Services:
Rush Priority: [] - 2 Day [] - 5 Day
[] - Formal Chain of Custody [] - QC Data package

Additional Services Authorized by:

Payment Received with Delivery
Date: _____ Amount: \$ _____
Check # _____ Initials _____
Receipt # _____

(Signature)

Signature	Print Name	Company	Date	Time
<i>Martin Clive</i>	<i>Martin Clive</i>	<i>BSK-P</i>	<i>2/14/97</i>	<i>08:30</i>
<i>Kelly Smith</i>	<i>Kelly Smith</i>	<i>BSK Lab</i>	<i>2/14/97</i>	<i>17:10</i>

9702000036 BSK_P

of Custody

BSK Log Number: 9702/036

Analytical Due Date:

Environmental Services

areas for LAB use only

Requested Analyses

Client Name <i>AB&I</i>	Report Attention: <i>Martin Cline</i>	Phone #
Address <i>c/o BSK - Pleasanton</i>	Project, Quote or PO # <i>P92270.3</i>	FAX #
City, State, Zip	Copy to	System #

LAB use only			Date Sampled	Time Sampled	Sampled by <i>M. Cline</i>	Sample Description/Location	Comment or Station Code	Requested Analyses									
Sample #	Type	# Cont.						TPH-G, BTEX	EPA 601	Total Hydrocarbons	Oil & Grease						
1	L	2	2/3/97	11:35	<i>MW-3</i>		13393	X									
2	L	5	↓	12:25	<i>MW-2</i>		13394	X	X	X							
3	L	0	↓	13:15	<i>MW-4</i>	<i>Rec'd Broken</i>		X									

Matrix Type: L - Liquid S - Solid G - Gas
 Type of Hazards Associated with Samples: _____
 Additional Services: Rush Priority: [] - 2 Day [] - 5 Day
 [] - Formal Chain of Custody [] - QC Data package
 Additional Services Authorized by: _____
 Payment Received with Delivery: Date: _____ Amount: \$ _____
 Check # _____ Initials _____
 Receipt # _____
 (Signature) _____

Signature	Print Name	Company	Date	Time
<i>Martin Cline</i>	<i>Martin Cline</i>	<i>BSK-P</i>	<i>2/3/97</i>	<i>15:00</i>
Received / Relinquished by:				
Received / Relinquished by:				
Received / Relinquished by:				
Received for Laboratory by: <i>Mark Ellis</i>	<i>Mark Ellis</i>	<i>BSK Labs</i>	<i>2/4/97</i>	<i>11:30</i>

Figure A-8