



## AMERICAN BRASS & IRON FOUNDRY

7825 San Leandro Street • Oakland, CA 94621 • (510) 632-3467  
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June 15, 1993

*MW install*

Mr. Barney Chan  
Alameda County Health Care  
Service Agency  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

*4/93 Invest.*

Dear Mr. Chan:

Please find attached for your review, American Brass & Iron Foundry's shallow soil and ground water investigation report, written by BSK & Associates.

If you have questions or require additional information, please feel free in contacting me at (510) 632-3467 ext. 211.

Sincerely,

Dave Robinson  
Environmental Engineering Manager

DR/lp

cc: Mr. Ed So  
California Regional Water  
Quality Control Board

BSK & ASSOCIATES  
GEOTECHNICAL CONSULTANTS, INC.

BSK JOB NO. P92270.3

APRIL 1993

REPORT  
SHALLOW SOIL AND  
GROUNDWATER INVESTIGATION  
AMERICAN BRASS & IRON FOUNDRY  
7825 SAN LEANDRO STREET  
OAKLAND, CALIFORNIA



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April 30, 1993

BSK Job No.P92270.3

American Brass and Iron Foundry  
7825 San Leandro Street  
Oakland, CA 94621

Attention: Mr. David Robinson  
Environmental Engineer

Subject: Report  
Shallow Soil and Groundwater Investigation  
American Brass and Iron Foundry  
7825 San Leandro Street  
Oakland, California

As requested and authorized, BSK & Associates has prepared this report describing the installation of four shallow groundwater monitoring wells, MW-1 through MW-4, at American Brass and Iron Foundry (AB & I), located at 7825 San Leandro Street, Oakland, California. The wells were installed in general accordance with the BSK Work Plan of November 16, 1992 (Job No. P92270.3 of November 16, 1992), which was accepted by the Alameda County Department of Environmental Health (ACDEH) November 25, 1992. Analytical testing described in the Work Plan was subsequently modified, as recorded in the ACEH letter to AB & I of February 10, 1993. The site location is shown on the Site Location Map, Figure 1.

BSK appreciates this opportunity to be of service to American Brass & Iron. If there are questions or comments regarding this report, please contact the undersigned.

Respectfully submitted,  
BSK & Associates

Tim W. Berger, C.E.G. 1828  
Project Geologist

Alex Y. Eskandari, C.E. 38101  
Project Manager

AYE/TWB:slc  
(ENV/P92270-3.AB1)

Distribution: American Brass & Iron ( 4 copies)

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**REPORT  
SHALLOW SOIL AND GROUNDWATER INVESTIGATION  
AMERICAN BRASS & IRON FOUNDRY  
7825 SAN LEANDRO STREET  
OAKLAND, CALIFORNIA**

**Introduction**

This preliminary assessment was requested by the Alameda County Department of Environmental Health (ACDEH), in their letter of October 2, 1992, to David Robinson of American Brass & Iron Foundry (AB & I). In their letter, ACDEH requested the installation of four shallow groundwater monitoring wells (one per former UST location) shallow soil contaminant concentration information; and groundwater quality data.

This report is subsequent to these previous related activities performed at the site:

- Levine-Fricke's report entitled "Removal of 8,000-Gallon Capacity Underground Storage Tank, American Brass and Iron, Oakland, California," dated October 15, 1991.
- Levine-Fricke's report entitled "Removal of 550-Gallon Capacity Underground Gasoline Storage Tank, American Brass & Iron, Oakland, California," dated January 31, 1992.
- AB & I tank removal report, dated April 8, 1992, for 8,000-gallon capacity 1,1,1-trichloroethane (1,1,1-TCA) underground storage tank (UST);
- AB & I tank removal report, dated September 22, 1992 for 12,000-gallon capacity diesel UST.

**Background**

American Brass & Iron Foundry has been operating at its present location for more than fifty years. AB & I's current activities include the manufacture of cast 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. Documentation of the removal and disposal of two of the USTs (the 8,000-gallon capacity gasoline tank and the 550-gallon capacity leaded gasoline tank) was described in the two consultant's reports mentioned above. 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 these tank removal projects contained 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 vertically to the top of the saturated sediments and laterally until confirmation samples indicated the chemicals of concern were at relatively low concentrations, or to where an obstruction made further excavation impossible or hazardous.

## PURPOSE AND SCOPE

### Purpose

The objective of our shallow soil and groundwater investigation was to provide a preliminary characterization of shallow soil and groundwater conditions in the vicinity of four former USTs.

### Scope

In order to meet our objective, the following tasks were performed:

1. Installation of three, two-inch and one, four-inch shallow groundwater monitoring wells;
2. Excavation and sampling of one shallow soil boring to assess soil contamination;
3. Sampling of soil and groundwater from the monitoring well borings and wells to test for the contaminants of concern;
4. Analytical testing of soil and water samples by a California-certified analytical laboratory;
5. Assessment of the information obtained;
6. Preparation of a formal report presenting the observations, services performed, conclusions and recommendations based on our assessment of the data obtained;

Each task is described in detail in the following text.

### **Task 1 - GROUNDWATER MONITORING WELL INSTALLATION**

Shallow groundwater monitoring well installation was performed on February 17 and 18, 1993. Three two-inch ID PVC wells were installed at the former gasoline and diesel UST locations, as shown in Figure 2, Site Plan. One four-inch PVC groundwater monitoring well was installed adjacent to the former solvent UST location. The wells were installed within 10 feet of the tank excavation limits, <sup>down-gradient</sup> down-gradient from the former tank location where possible. Analysis of local well records suggested that the appropriate down-gradient direction is northwest of the former tank locations.

The wells were installed to depths of 17 to 25 feet below present grade, and screened 10 to 15 feet of the initial encountered groundwater, with two feet of screen above the water table to allow for water table fluctuation. Details of well construction are provided in Figures 3 through 6, Monitoring Well Installation Diagrams. Each well head was encased at the surface in a heavy traffic-worthy cast iron and aluminum well box, resistant to water and unauthorized entry, and marked "Monitoring Well". The well casing head was further secured with an expanding-type, padlocked well plug. A card listing pertinent well data was enclosed in each well box.

The monitoring wells were developed February 23, 1993 by pumping, or surging and bailing until coarse sediment was removed, a degree of clarity achieved, and parameters such as temperature, conductivity and ~~pH~~ stabilized.

Following installation, each well was located to within 1/100th vertical foot and 1 horizontal foot based on a USC&GS datum, by a California licensed surveyor.

## Task 2 - SHALLOW SOIL BORING

One shallow soil boring was to have been augured to a depth just above the groundwater table in the area of the former 550-gallon gasoline tank, as shown in Figure 2, Site Plan. The boring was to have been advanced by angle drilling, beneath the adjacent building and foundation for assessment of soil contamination in the building direction. Due to the location of overhead power lines at the boring location, the boring was unable to be safely executed.

## Task 3 - SOIL AND WATER SAMPLING

### Soil Samples

Soil samples were obtained every five feet from the level of the bottom of the former UST to first encountered groundwater, and as necessary due to soil conditions or contaminant encounter. A specimen from each sampled horizon was tested, as specified in the Tri-Regional Water Board Staff Recommendations.

) Not correct!

Soil samples were obtained through hollow-stem auger by driving a Modified California split-barrel sampler, housing three stainless steel or brass sample liners, to the selected interval ahead of the auger bit, into undisturbed soil. Upon sampler retrieval, one or more of the soil-filled liners were capped with Teflon® sheeting and plastic caps, labeled, and refrigerated on-site in a cooler with dry ice to 4°C. The remaining soil was used to classify site soil by the Unified Soil Classification System. Field logging was performed by a California Registered Geologist. The soil classification system, sampler and related data are shown in Figure 7, Legend For Boring Logs. The Boring Logs are presented in Figures 8 through 11. The selection of soil samples and sampling horizons was aided in the field by the use of a Photo-ionization Detector (PID), calibrated daily to an isobutylene standard.



## Water Samples

Water samples from site wells were obtained after purging each well of three to 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 the purge, the water parameters: Ph, temperature and conductivity were monitored and recorded at regular intervals on Well Field Logs to assess the influx of fresh formation water. the Well Field Logs are presented in Figures 12 through 15. Water samples for analytical testing were obtained by Teflon® bailer or bladder pump, and transferred to the appropriate sample container, with preservative as needed. The samples were labeled, and refrigerated on-site using water-ice or blue ice, to 4°C.

### **Task 4 - ANALYTICAL TESTING**

Analytical testing of soil and water samples obtained from the site were performed by the BSK California certified analytical laboratory.

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

Gasoline:	TPH-G by GCFID-5030 (soil and water) BTEX by Methods 8020 (soil) and 602 (water) Total Lead by Atomic Adsorption (soil and water) [Leaded Gasoline Tank only]
Diesel Fuel:	TPH-G by GCFID-3550 (soil) and 3510 (water) BTEX by Methods 8020 (soil) and 602 (water)
1,1,1 - TCA:	EPA Methods 8010 (soil) and 601 (water) <u>S/B TPHg + BTEX also</u>
Tarry Substance:	Oil and Grease by Methods 5520 D&F (soil) and C&F (water)

### Blanks

For each day of water sampling, one set of Equipment Blanks was obtained from decontaminated sampling equipment, for each type of contaminant sampled for that day. Deionized water was used for Equipment Blanks.

Samples and blanks were submitted to the laboratory with Chain-Of-Custody documentation and procedures.

The results of the chemical analyses of soil and groundwater are summarized in the following two tables: Table 1 - Soil Results, and Table 2 - Water Results. Soil results are reported in Parts Per Million-PPM (mg/kg); water results are reported in Parts Per Billion-PPB (ug/l).

**TABLE 1A - SOIL RESULTS**

**BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES**  
Results in Parts Per Million (ppm)

<b>C O N S T I T U E N T S</b>				
<b>Sample Location</b>	<b>Benzene</b>	<b>Toluene</b>	<b>Ethylbenzene</b>	<b>Xylenes</b>
MW-1 at 11'	ND	ND	ND	ND
MW-2 at 10.5'	ND	0.039	ND	0.008
MW-3 at 10'	ND	ND	ND	ND
MW-4 at 14.5'	6.6	4.1	7.0	17
MW-4 at 25.5'	ND	ND	ND	ND

ND - None Detected

**TABLE 1B - SOIL RESULTS**

**TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE AND DIESEL,  
TOTAL AND HYDROCARBON OIL AND GREASE, TOTAL ORGANIC LEAD,  
AND VOLATILE HALOCARBONS**  
Results in Parts Per Million (ppm)

<b>C O N S T I T U E N T S</b>						
<b>Sample Location</b>	<b>TPH Gasoline</b>	<b>TPH Diesel</b>	<b>Total Oil &amp; Grease</b>	<b>Hydrocarbon Oil &amp; Grease</b>	<b>Total Organic Lead</b>	<b>Volatile Halocarbons</b>
MW-1, 11'	ND	34	--	--	--	--
MW-2, 10.5'	63	140	3500	3500	--	--
MW-3, 10'	ND	--	--	--	--	--
MW-4, 14.5'	2100	--	--	--	0.6	--
MW-4, 25.5'	ND	--	--	--	ND	--

ND - None Detected

-- - Not Tested

**TABLE 2A - WATER RESULTS**

**BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES**  
Results in Parts Per Billion (ppb)

C O N S T I T U E N T S				
Sample Location (Action Level)	Benzene (1) <sub>1</sub>	Toluene (100) <sub>2</sub>	Ethylbenzene (680) <sub>1</sub>	Xylenes (1750) <sub>1</sub>
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

**TABLE 2B - WATER RESULTS**

**TOTAL PETROLEUM HYDROCARBONS (TPH) AS GASOLINE AND DIESEL, TOTAL AND  
HYDROCARBON OIL AND GREASE, TOTAL LEAD, AND VOLATILE HALOCARBONS**  
Results in Parts Per Billion (ppb)

C O N S T I T U E N T S						
Sample Location (Action Level)	TPH Gasoline (NA)	TPH Diesel (NA)	Total Oil & Grease (NA)	Hydrocarbon Oil & Grease (NA)	Total Lead (50)	Volatile Halocarbons (Determined by Compound)
MW-1	--	830	--	--	--	--
MW-2	920	--	1.0	ND	--	0.6 - Bromoform(100) <sub>2</sub> 5 - Chloroethane(NA) 1.7 - 1,1-Dichloroethane(0.5) 6.7 - 1,1,1-Trichloroethane(200) <sub>1</sub>
MW-3	ND	--	--	--	--	--
MW-4	1800	--	--	--	0.058	--

ND - None Detected

NA - Not Applicable

-- - Not Tested

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

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

*SB 58 ppb?*  
*is this ppm yet!*  
*mg/l*

## Tasks 5 & 6 - ANALYSIS AND REPORTING

### REGIONAL HYDROGEOLOGY

The American Brass & Iron facility is located on the San Leandro alluvial cone of the East Bay Plain. The upper 400 feet of the San Leandro Cone consists of 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 are 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 tapped by wells less than 50 feet in depth, and are often used as small irrigation wells. These minor aquifers are most susceptible to groundwater pollution (Maslonowski, 1984).

### SUBSURFACE CONDITIONS

The subsurface conditions were explored to a maximum depth of 26.5 feet in the four Well Borings performed, MW-1 through MW-4. The conditions described here are as observed in our borings. More detailed descriptions of the conditions at each well boring are available on the Boring Logs, Figures 8 through 11.

The first encountered material beneath the pavement or concrete section was 6 to 12 feet of fill, comprising clay or silt, and sand. In MW-2, the clay, silt or sand was replaced with what appeared to be slag. The fill was generally dark gray or brown in color, moist to saturated, and soft to firm. Clasts within the fill varied with location, and ranged from small gravel to concrete rubble one foot in diameter. At location MW-4, the fill appeared to be underlain by an additional 6 feet of clean, poorly graded sand, which may represent UST excavation backfill.

Native sediments beneath the fill generally comprised silty clay and clayey silt, with poorly graded sand horizons of 4 feet in thickness, where thickness is known. Sand horizons appear to be more extensive in the western portion of the site. The encountered sand was generally gray to reddish-brown, coarse with pebbles or gravel, and contained thin clay lenses. The silt and clay sediments were generally firm to stiff, contained few to no pores, were light to medium gray-yellow, brown or red, when not stained by hydrocarbon. The upper clay at locations MW-2 and MW-3 contained calcareous concretions.

*Calcareous*

Hydrocarbon contamination was detected and observed in Well Borings MW-2 and MW-4. In MW-2, contamination was evidenced by an odor, sheen on drilling equipment, greenish-gray coloration of sediment, and PID response. The contamination was noted from 10.5 to 12 feet in depth, at a sand lense. In Well Boring MW-4, hydrocarbon contamination was abruptly noted in silty clay at 12 to 13 feet in depth, below the overlying sand. Contamination was evidenced to 25 feet in depth by PID response, odor, sheen, and blue coloration of sediment to 20 feet, and pore walls to 25 feet.

## **SITE HYDROGEOLOGY**

Groundwater was initially encountered from 8 to 12 feet in depth at the site. Water levels in well borings stabilized at a depth below present grade of 5 to 7 feet. Some water from saturated fill material may have contributed to the stabilized levels. Clayey deposits encountered in our borings were typically damp to moist, with wet fractures and pores, if present. Sand horizons were wet to saturated.

Contamination of groundwater was observed in Wells MW-1, MW-2 and MW-4 during development, purging and sampling. Free product was not observed, though sheen was pronounced in Wells MW-2 and MW-4. Strong odors were also associated with these two wells.

Two three-point problems were used to assess the groundwater flow direction at the site. The solutions to both problems indicate flow to the northwest. The gradient is 0.4 percent. Figure 16, Groundwater Flow Direction and Gradient, illustrates groundwater flow direction and gradient.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

Based on chemical analyses of soil and water samples, field observation and measurement during the installation and initial water sampling of groundwater monitoring wells, MW-1 through MW-4, there appears to be significant degradation of soil and water quality in the vicinity of Wells MW-1, MW-2 and MW-4.

Diesel fuel hydrocarbons were detected in soil and water at Well MW-1, as well as a trace of Benzene.

Gasoline, diesel, and oil and grease hydrocarbons were detected in the soil at Well MW-2. Gasoline, diesel, oil and grease, and chlorinated hydrocarbons were detected in water from Well MW-2.

Hydrocarbons were not detected by the tests performed at Well MW-3.

Gasoline hydrocarbons and trace amounts of lead were detected at Well location, MW-4. Well MW-4 had the greatest amount of contamination observed at the four well locations.

Recommended and enforceable regulatory action levels and contaminant limits are exceeded in soil and water at the MW-2 and MW-4 locations, and in water at MW-1.

### **Recommendations**

Based on the conclusions presented, it is recommended that the lateral extent of soil contamination be assessed at locations MW-2 and MW-4.

The assessment of lateral extent of shallow groundwater contamination should be considered in the vicinity of Wells, MW-1, and MW-2 and MW-4.

Quarterly monitoring of the four wells installed should be performed to assess contaminant concentration fluctuation with respect to groundwater level, gradient and flow direction.

Additional characterization at the site should include the acquisition of data pertaining to the physical and chemical characteristics of the subsurface environment, for use in remedial planning and hydrologic control of contaminants.

### LIMITATIONS

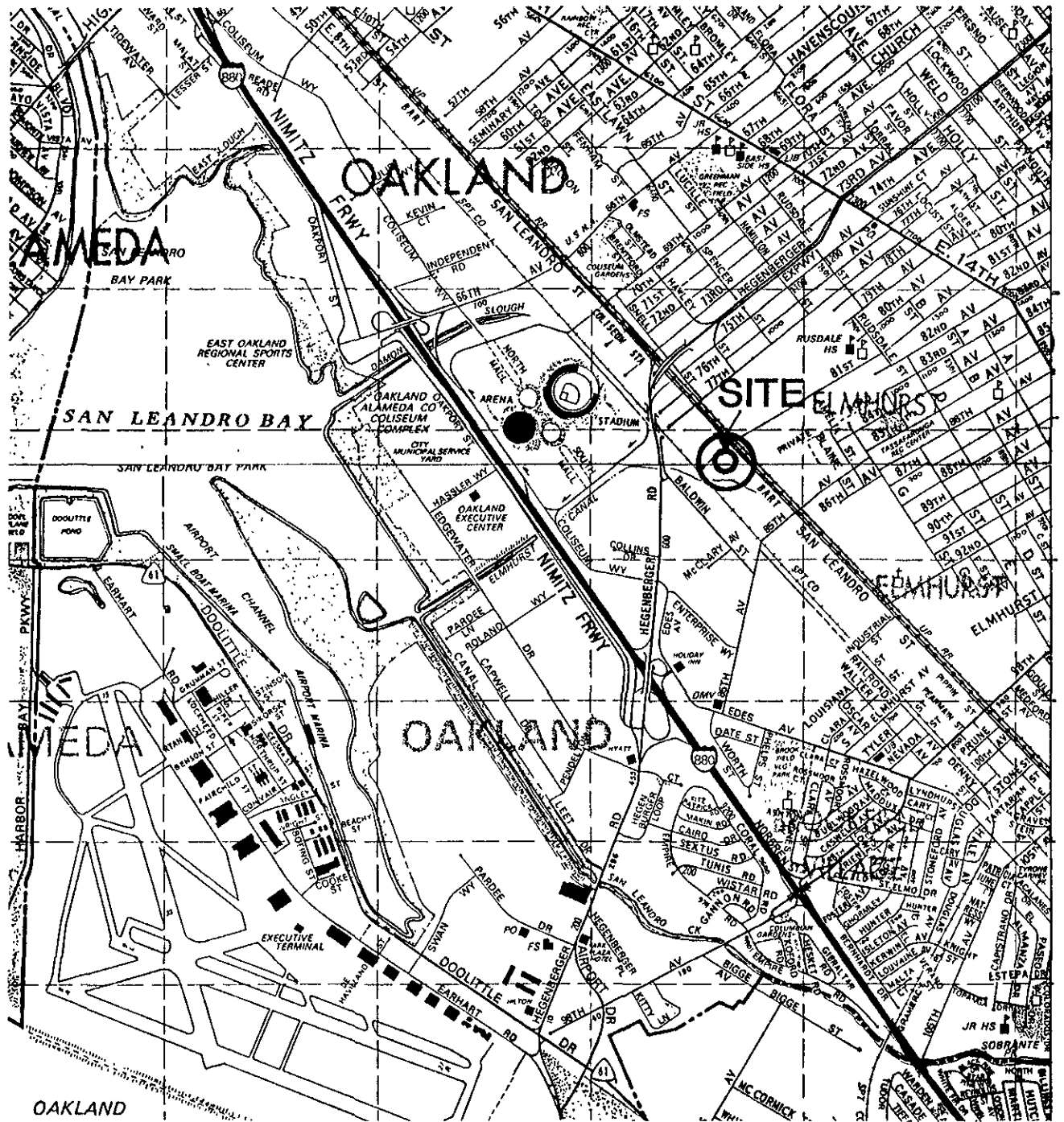
*This groundwater monitoring well installation report has been prepared for the exclusive use of American Brass & Iron Foundry Company. Unauthorized use of or reliance on the information contained in this report by others, unless given express written consent by BSK & Associates, is strictly prohibited.*

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.

\* \* \* \*



Source: Thomas Guide, 1992, Alameda and Contra Costa Counties

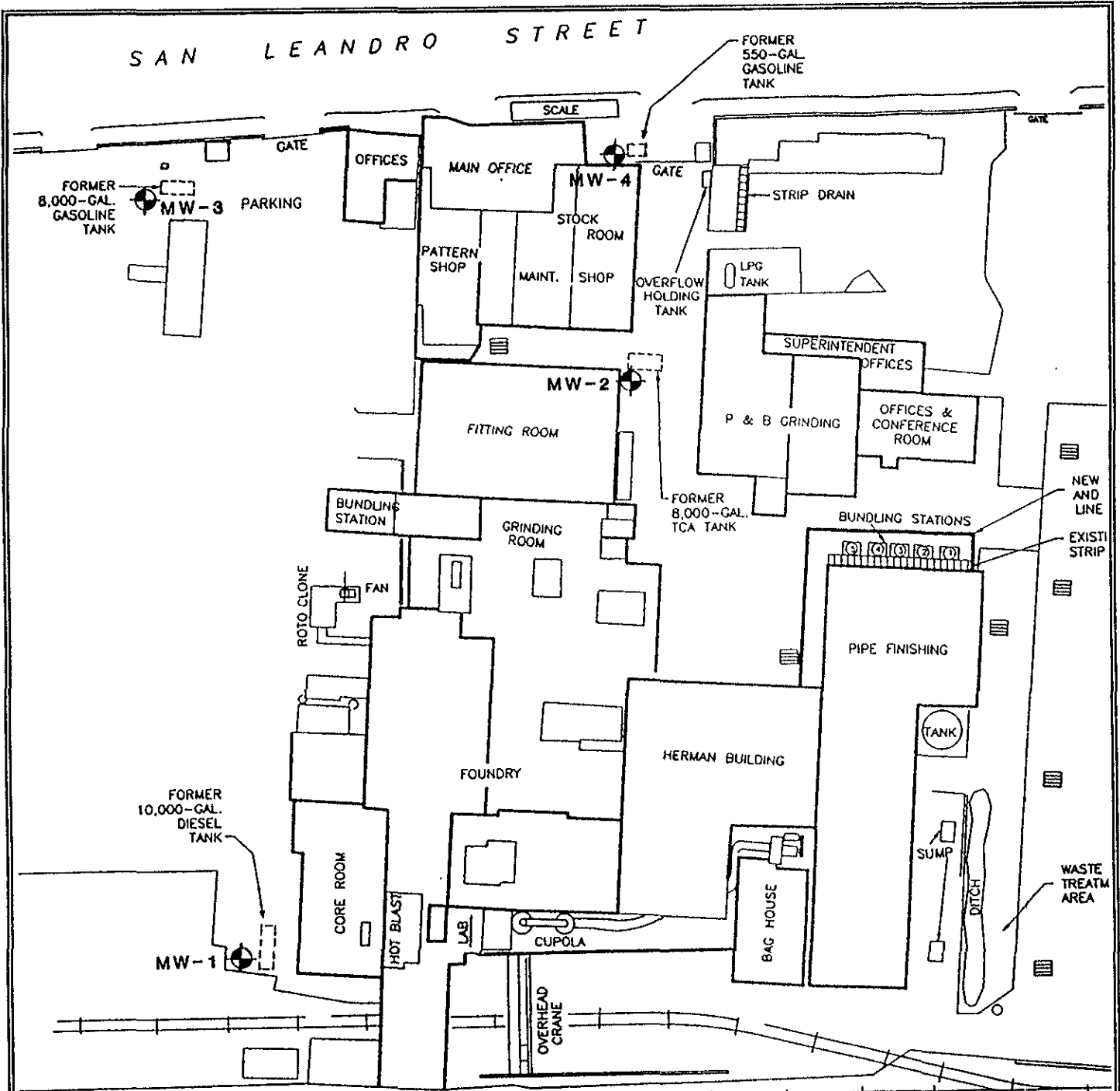
Scale: 1' = 2200'

**SHALLOW SOIL AND GROUNDWATER  
CHARACTERIZATION  
AMERICAN BRASS & IRON  
7825 SAN LEANDRO STREET  
OAKLAND, CALIFORNIA**

**VICINITY MAP**

**Job No. P92270.3  
April 1993  
FIGURE: 1**

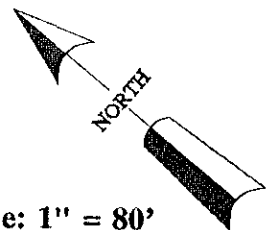
**BSK  
& ASSOCIATES**



**LEGEND:**

⊙ - Groundwater Monitoring Well Location and Designation

S.P.R.R. Spur



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

Scale: 1" = 80'

**SHALLOW SOIL AND GROUNDWATER CHARACTERIZATION  
AMERICAN BRASS & IRON  
7825 SAN LEANDRO STREET  
OAKLAND, CALIFORNIA**

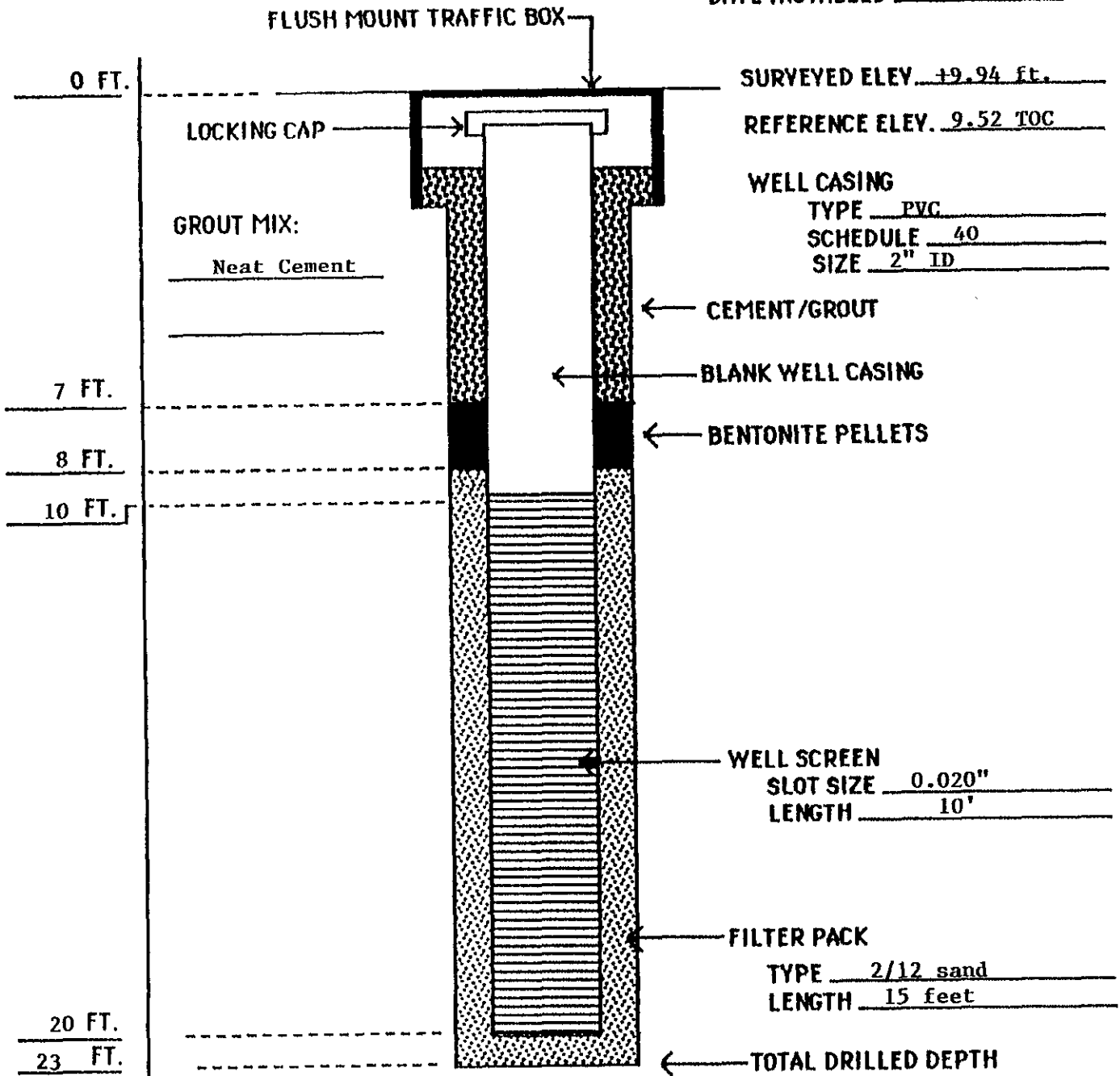
**SITE PLAN**

Job No. P92270.3  
April 1993  
FIGURE: 2

**BSK**  
& ASSOCIATES



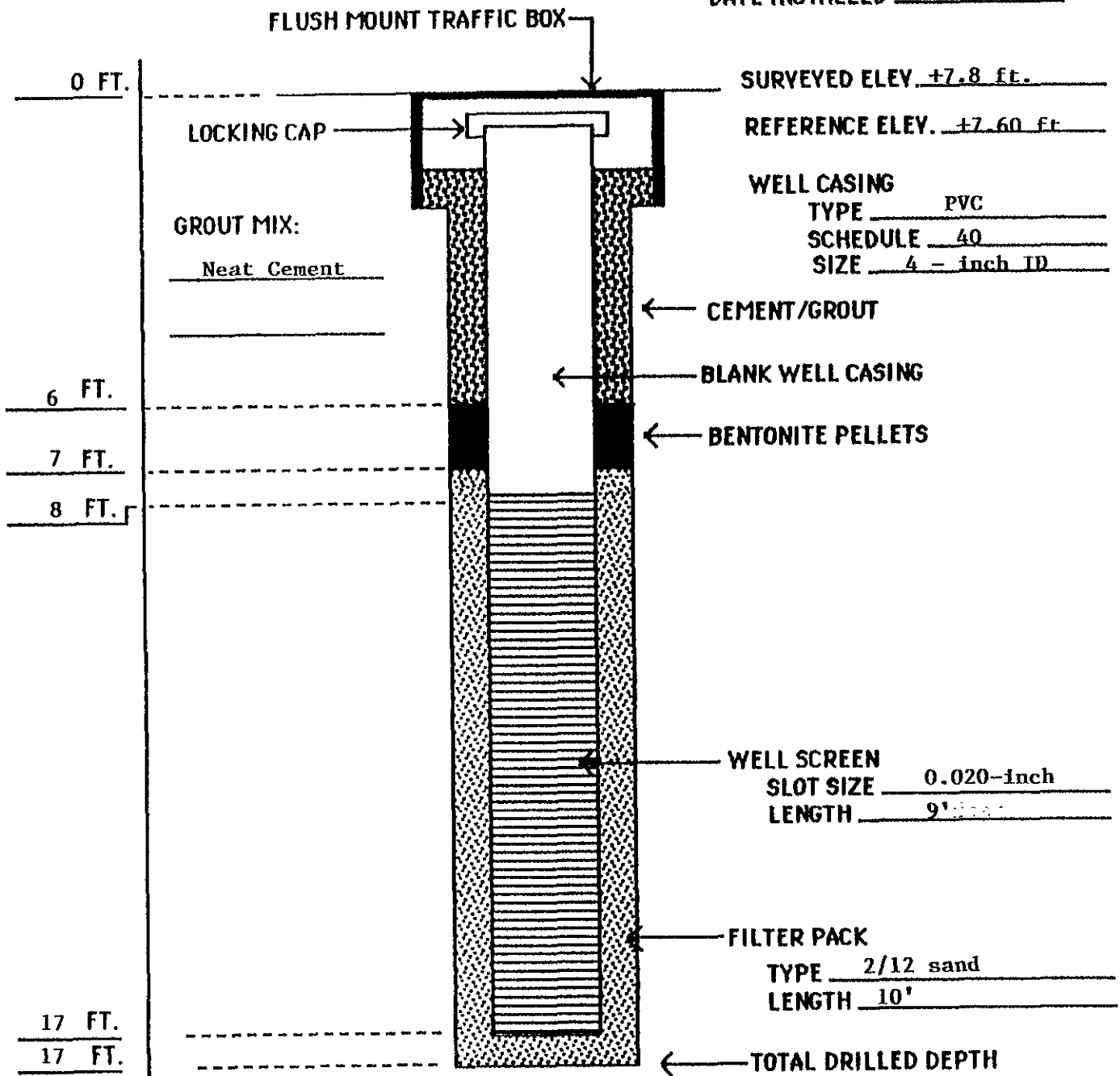
WELL NO. MW-1  
 PROJECT NO. P92270.3  
 DATE INSTALLED 3/10/93



REMARKS : \_\_\_\_\_  
 \_\_\_\_\_

PROJECT NO. <u>P92270.3</u>	MONITORING WELL INSTALLATION DIAGRAM	<b>BSK</b> & ASSOCIATES
FIGURE: <u>3</u>		

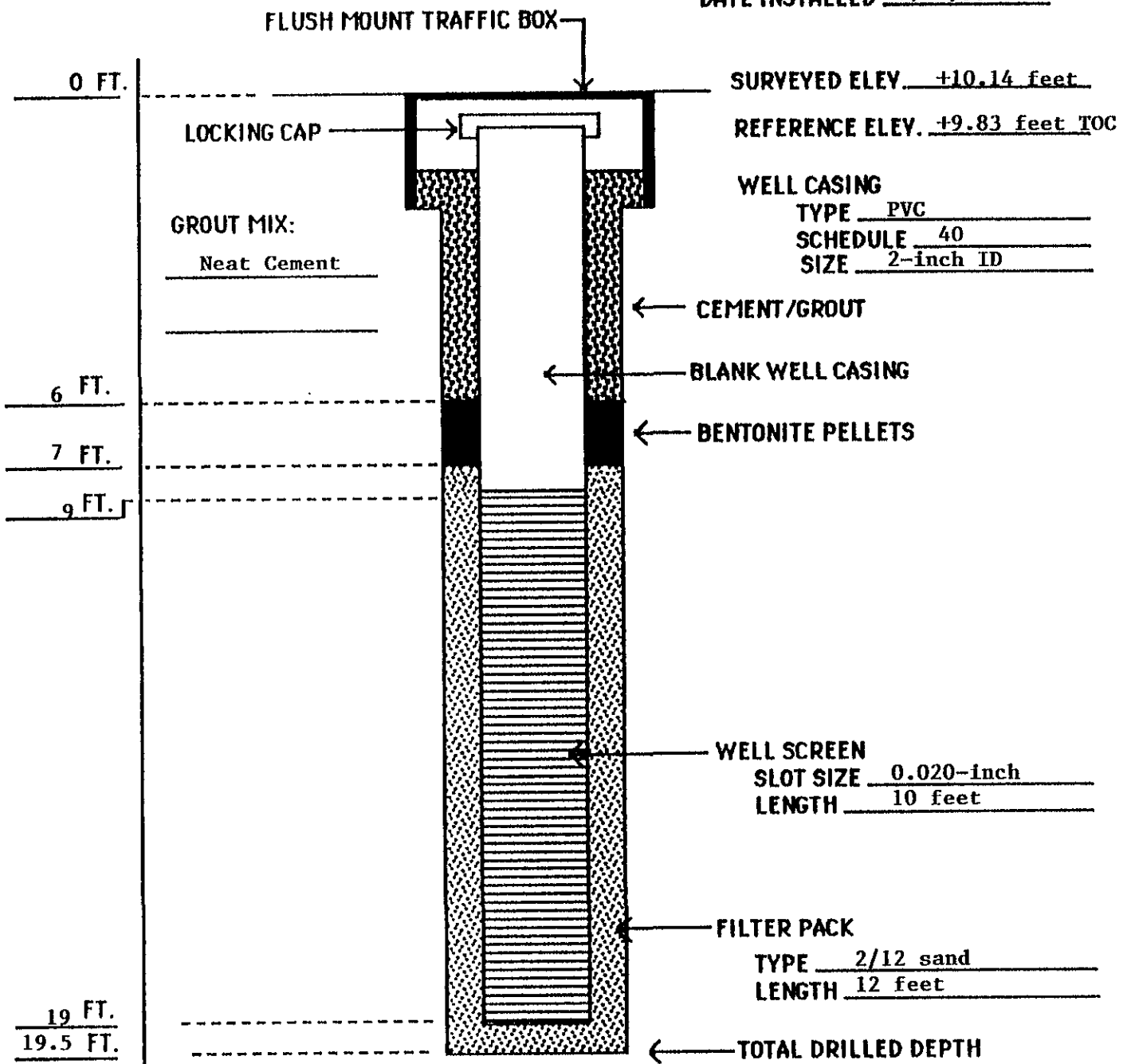
WELL NO. MW-2  
 PROJECT NO. P92270.3  
 DATE INSTALLED 3/10/93



REMARKS : \_\_\_\_\_  
 \_\_\_\_\_

PROJECT NO. <u>P92270.3</u>	MONITORING WELL INSTALLATION DIAGRAM	<b>BSK</b> & ASSOCIATES
FIGURE: <u>4</u>		

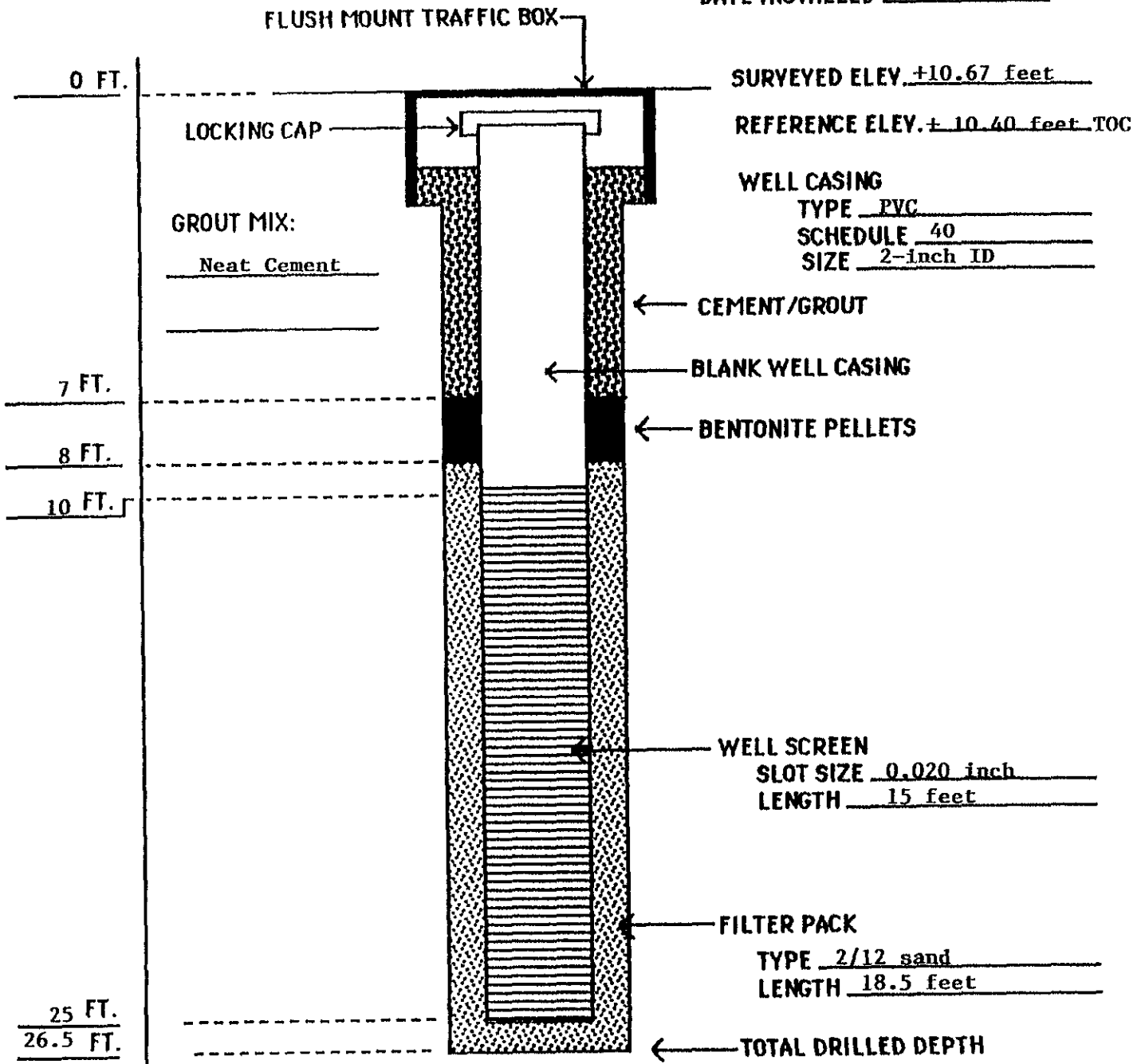
WELL NO. MW-3  
 PROJECT NO. P92270.3  
 DATE INSTALLED 3/10/93



REMARKS : \_\_\_\_\_  
 \_\_\_\_\_

PROJECT NO. P92270.3	MONITORING WELL INSTALLATION DIAGRAM	<b>BSK</b> & ASSOCIATES
FIGURE: 5		

WELL NO. MW-4  
 PROJECT NO. P92270.3  
 DATE INSTALLED 3/10/93



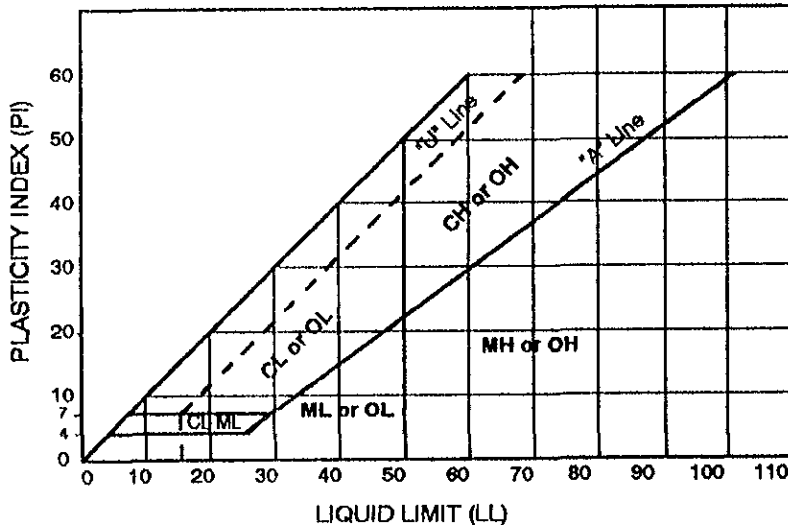
REMARKS : \_\_\_\_\_  
 \_\_\_\_\_

PROJECT NO. <u>P92270.3</u>	MONITORING WELL INSTALLATION DIAGRAM	<b>BSK</b> &ASSOCIATES
FIGURE: <u>6</u>		

# UNIFIED SOIL CLASSIFICATION CHART

SYMBOL	LETTER	DESCRIPTION	MAJOR DIVISIONS		
	GW	WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	<b>CLEAN GRAVELS</b> (LITTLE OR NO FINES)	<b>GRAVELS</b> MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	<b>COARSE-GRAINED SOILS</b> MORE THAN HALF OF MATERIAL IS LARGER THAN NO.200 SIEVE SIZE
	GP	POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	<b>GRAVELS WITH FINES</b> (APPRECIABLE AMOUNT OF FINES)		
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES			
	SW	WELL-GRADED SAND OR GRAVELLY SANDS, LITTLE OR NO FINES	<b>CLEAN SANDS</b> (LITTLE OR NO FINES)	<b>SANDS</b> MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	<b>COARSE-GRAINED SOILS</b> MORE THAN HALF OF MATERIAL IS LARGER THAN NO.200 SIEVE SIZE
	SP	POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES			
	SM	SILTY SANDS, SAND-SILT MIXTURES	<b>SANDS WITH FINES</b> (APPRECIABLE AMOUNT OF FINES)		
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES			
	ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	<b>SILTS &amp; CLAYS</b> LIQUID LIMIT LESS THAN 50		<b>FINE-GRAINED SOILS</b> MORE THAN HALF OF MATERIAL IS SMALLER THAN NO.200 SIEVE SIZE
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY			
	MH	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY	<b>SILTS &amp; CLAYS</b> LIQUID LIMIT GREATER THAN 50		
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	<b>HIGHLY ORGANIC SOILS</b>			

**SOIL PLASTICITY CHART**



TYPES OF SAMPLERS

- SPT—Standard Penetration 1.4" ID Split Spoon Sampler
- CS—2" ID Split Spoon Sampler
- MC—2.4" ID California Sampler
- SH—3.0" ID Thin-Wall (Shelby Tube)
- CC—2.7" ID Double Tube Continuous Coring Sampler

NOTES

- ND Denotes concentration below the test detection limits
- Denotes not analysed
- PID Photoionization Detector Reading in ppm

**LEGEND FOR BORING LOGS**

Job No. P92270.3  
April 1993  
FIGURE: 7

**BSK**  
& ASSOCIATES

**BORING LOG: MW-1**

DATE: 2/17/93

LOGGED BY: T.W.B.

WATER LEVEL: 12.5 Foot depth

ELEVATION:

EQUIPMENT: Mobile Drill B-53, 8" Hollow Stem Auger

DEPTH IN FEET	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS	DESCRIPTION
0						4" concrete on raised platform.
0	0				FILL	Silty CLAY and SAND: dark to medium gray, soft to firm, moist. (FILL) contains some small gravel
5					▽	GRAVEL, CONCRETE and SLAG (?)
10	0 0 0		13	MC	CL	SAND and GRAVEL: gray, angular, fine, loose, saturated. (FILL) Silty CLAY: mottled gray and yellow, firm to stiff, damp to moist.
15	0		36	MC	SP CL	SAND with some fine Gravel: Gray, medium dense. Sandy Silty CLAY: light gray-brown, damp, hard, no to few pores.
20	0		29	SPT	SP	SAND: gray to reddish brown, pebbly, dense, wet, thin (1") clay -sand lenses.
	0		30	SPT		no recovery Boring Terminated.

▽ Denotes stabilized water table

▼ Denotes water table at the time of drilling

**NOTES:**

1. Boring completed at a depth of 23 feet on 2/17/93.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soil Classification Chart, Figure 3.
5. Well constructed of 2" PVC, 0.020" screen from 20' to 10', case from 10' to surface, sand from 23' to 8', bentonite from 8' to 6', cement from 6' to surface.

SHALLOW SOIL AND GROUNDWATER  
CHARACTERIZATION  
AMERICAN BRASS & IRON  
OAKLAND, CALIFORNIA

Job No. P92270.3  
April 1993  
FIGURE: 8

**BSK**  
& ASSOCIATES

**BORING LOG: MW-2**

DATE: 2/17/93

LOGGED BY: T.W.B.

WATER LEVEL: 9.5 Foot depth

ELEVATION:

EQUIPMENT: Mobile Drill B-53, 10" Hollow Stem Auger

DEPTH IN FEET	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS	DESCRIPTION
0					FILL	4" - 6" concrete. SLAG: Medium to dark gray, wire, chunks to 12", saturated, slightly sticky. (FILL)
5	0				▽	
	0				CL	Silty CLAY to Clayey SILT: gray-green, damp to moist, firm to stiff, color lightens with depth, calcareous nodules to 1/4".
10	253 62		66	MC	SP	SAND: greenish-gray, coarse, angular, gravelly with trace fines, dense, sheen noted on rod, odor. PID 253 instant, 62 from cuttings.
			22	SPT	CL	Silty CLAY: red-brown, grades to gray-green with depth, damp to moist, very stiff, few to no pores.
15	0		28	SPT		Grades to light brown, trace coarse sand, trace to no pores, damp, very stiff. Boring Terminated.

▽ Denotes stabilized water table

▼ Denotes water table at the time of drilling

**NOTES:**

- Boring completed at a depth of 17 feet on 2/17/93.
- Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.
- Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
- For an explanation of terms used see the Soil Classification Chart, Figure 3.
- Well constructed of 4" PVC, 0.020" screen from 17' to 8', case to surface, sand from 17' to 7', bentonite to 6', cement to surface.

SHALLOW SOIL AND GROUNDWATER  
CHARACTERIZATION  
AMERICAN BRASS & IRON  
OAKLAND, CALIFORNIA

Job No. P92270.3  
April 1993  
FIGURE: 9

**BSK**  
& ASSOCIATES

**BORING LOG: MW-3**

DATE: 2/18/93

LOGGED BY: T.W.B.

WATER LEVEL: 11.0 Foot depth

ELEVATION:

EQUIPMENT: Mobile Drill B-53, 8" Hollow Stem Auger

DEPTH IN FEET	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS DESCRIPTION	
					SYMBOLS	DESCRIPTION
0					FILL	2" Asphalt concrete. with 3/4" to 1" Aggregate base. Clayey SILT and SAND: gray-brown, wet, concrete rubble to 12", cobbles to 2". (FILL)
5					ML	Clayey SILT: greenish-gray, damp, very stiff, calcareous.
10	0	█	33	MC	▼	
	0	█	8	SPT	CL	Silty CLAY: mottled blue and green with orange streaks, soft to firm, some carbonate, fractures, wet in fractures.
15	0	█	9	SPT	SM	Silty SAND: wet to moist, trace fine gravel.
	0	█	31	SPT	SP CL	SAND: brown to red-brown, coarse, poorly sorted, loose, with clayey layers, wet to saturated. Silty CLAY with trace coarse Sand: gray-brown with black mottles, damp to moist, very stiff. Boring terminated.

▽ Denotes stabilized water table

▼ Denotes water table at the time of drilling

**NOTES:**

1. Boring completed at a depth of 19.5 feet on 2/18/93.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soil Classification Chart, Figure 3.
5. Well constructed of 2" PVC, 0.020" screen from 19' to 9', case to surface, sand from 19' to 7', bentonite to 6', cement to surface.

SHALLOW SOIL AND GROUNDWATER  
CHARACTERIZATION  
AMERICAN BRASS & IRON  
OAKLAND, CALIFORNIA

Job No. P92270.3  
April 1993  
FIGURE: 10

**BSK**  
& ASSOCIATES



**BORING LOG: MW-4**

DATE: 2/18/93

LOGGED BY: T.W.B.

WATER LEVEL: 8.5 Foot depth

ELEVATION:

EQUIPMENT: Mobile Drill B-53, 8" Hollow Stem Auger

DEPTH IN FEET	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS	DESCRIPTION
0					FILL	4" of concrete at street level. Clayey SAND: black, moist to wet, stiff. (FILL)
5					▽ SP	SAND with trace 1/4" Gravel: gray, fine, angular, well sorted, saturated.
10	0		20	MC		
	377		18	SPT	CL	Silty CLAY: blue, very stiff, damp to moist.
15	85		10	MC		
	655		17	SPT	CL-ML	Grades to Silty CLAY -Clayey SILT: strong odor and few 1 mm vertical pores. Sheen on sample water.
20	503		9	SPT	CL	Contains 1.5" yellow-brown layer, vertical pores to 2mm, saturated. Sheen noted.
25	30		24	SPT	CL-ML	Grades Silty CLAY- Clayey Silt: yellow and red-brown, blue wet pore spaces, damp, stiff to very stiff. Sheen noted.
			34	MC		Boring terminated.

- ▽ Denotes stabilized water table
- ▼ Denotes water table at the time of drilling

**NOTES:**

1. Boring completed at a depth of 26.5 feet on 2/18/93.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soil Classification Chart, Figure 3.
5. Well constructed of 2" PVC, 0.020" screen from 25' to 10', case to surface, sand from 26.5' to 8', bentonite to 7', cement to surface.

SHALLOW SOIL AND GROUNDWATER  
CHARACTERIZATION  
AMERICAN BRASS & IRON  
OAKLAND, CALIFORNIA

Job No. P92270.3  
April 1993  
FIGURE: 11

**BSK**  
& ASSOCIATES

## WELL FIELD LOG

Well Development:                    Date:  
 Well Observation:            x        Date: 03/10/93  
 Sample Collection:           x        Date: 03/10/93

Project Name:            American Brass & Iron  
 Location:                Oakland, CA  
 Personnel:                TWB  
 Weather:                 Overcast, 60's F.

**WELL INFORMATION:**

Well Number	MW-1	Date Purged	03/10/93
Depth to Water - feet(TOC)	6.07	Purge Method	PVC Bailer
Well Depth (feet)	20		
Water Volume (gallons)	2.2	Purge Begin	09:40
Reference Elevation - feet(TOC)	9.52	Purge End	10:10
Groundwater Elevation (feet)	3.45	Purge Rate	0.27 GPM
Measurement Technique	Solinst Electric Water Sounder		

**IMMISCIBLE LAYERS:**

Top:                               None  
 Bottom:                       None  
 Detection Method:            Visual  
 Collection Method:           Point-Source Bailer

**WELL DEVELOPMENT/PURGE DATA:**

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
09:50	1.0	NA	6.10	66.6	Brown, opaque
09:54	2.5	NA	6.43	66.0	"
10:00	5.0	NA	7.04	66.1	", fine sand, very slight sheen
10:09	8.0	NA	7.51	66.2	"
10:12	Depth to water	6.14'			

**SAMPLE COLLECTION DATA:**

Sampling Equipment: Stainless and Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
10:20	TPH-D	2-250 ml amber glass bottles with H <sub>2</sub> SO <sub>4</sub>	top of water column
"	BTEX	2-40 ml glass vials with HCl	"

Field Observations: Well insufficiently developed

## WELL FIELD LOG

Well Development:                    Date:  
 Well Observation:    x                Date: 03/10/93  
 Sample Collection:   x                Date: 03/10/93

Project Name:            American Brass & Iron  
 Location:                Oakland, CA  
 Personnel:                TWB  
 Weather:                 60-70 F., overcast

### WELL INFORMATION:

Well Number	MW-2	Date Purged	03/10/93
Depth to Water - feet(TOC)	4.19	Purge Method	Teflon Bladder Pump
Well Depth (feet)	17		
Water Volume (gallons)	8.3	Purge Begin	13:20
Reference Elevation - feet(TOC)	7.60	Purge End	14:13
Groundwater Elevation (feet)	3.41	Purge Rate	0.47 GPM
Measurement Technique	Solinst Electric Water Sounder		

### IMMISCIBLE LAYERS:

Top:                       None  
 Bottom:                   None  
 Detection Method:       Visual  
 Collection Method:       Point-Source Bailer

### WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
13:31	5.0	NA	6.68	72.3	Clear
13:41	10.0	NA	6.68	72.1	"
13:52	15.0	NA	6.70	72.0	" ,sulfide odor
14:03	20.0	NA	6.61	72.1	"
14:13	25.0	NA	6.62	72.0	"
14:16	Depth to water:	4.36'			Rising

### SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Bladder Pump

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
14:25	EPA 601	2-40 ml glass vials with HCl	Top of water column
	TPH-G and BTEX	2-40 ml glass vials with HCl	"
	Total and Hydrocarbon Oil & Grease	1-liter amber glass bottle with H <sub>2</sub> SO <sub>4</sub>	"

Field Observations: None

## WELL FIELD LOG

Well Development:                      Date:  
 Well Observation:                    x        Date: 03/10/93  
 Sample Collection:                   x        Date: 03/10/93

Project Name:                    American Brass & Iron  
 Location:                        Oakland, CA.  
 Personnel:                        TWB  
 Weather:                         60's, overcast

**WELL INFORMATION:**

Well Number	MW-3	Date Purged	03/10/93
Depth to Water - feet(TOC)	7.30	Purge Method	PVC Bailer
Well Depth (feet)	19		
Water Volume (gallons)	1.9	Purge Begin	11:30
Reference Elevation - feet(TOC)	9.83	Purge End	11:44
Groundwater Elevation (feet)	2.53	Purge Rate	0.36 GPM
Measurement Technique	Solinst Electric Water Sounder		

**IMMISCIBLE LAYERS:**

Top:                               None  
 Bottom:                           None  
 Detection Method:               Visual  
 Collection Method:               Point-Source Bailer

**WELL DEVELOPMENT/PURGE DATA:**

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
11:28	0	NA	6.94	73.2	Clear
11:33	2.0	NA	6.78	72.5	very slightly cloudy brown
11:39	4.0	NA	6.69	72.4	"
11:44	5.0	NA	6.61	71.9	"
11:49	Depth to water:	7.36'			

**SAMPLE COLLECTION DATA:**

Sampling Equipment: Stainless Steel and Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
11:50	TPH-G & BTEX	2-40 ml glass vials with HCl	Top of water column

Field Observations: None

## WELL FIELD LOG

Well Development:                      Date:  
 Well Observation:    x                Date: 03/10/93  
 Sample Collection:   x                Date: 03/10/93

Project Name:            American Brass & Iron  
 Location:               Oakland, CA  
 Personnel:             TWB  
 Weather:               60-70 F., clear

**WELL INFORMATION:**

Well Number	MW-4	Date Purged	03/10/93
Depth to Water - feet(TOC)	7.23	Purge Method	PVC Bailer
Well Depth (feet)	25		
Water Volume (gallons)	2.8	Purge Begin	15:30
Reference Elevation - feet(TOC)	9.52	Purge End	15:53
Groundwater Elevation (feet)	2.29	Purge Rate	0.43 GPM
Measurement Technique	Solinst Electric Water Sounder		

**IMMISCIBLE LAYERS:**

Top:                                   None  
 Bottom:                               None  
 Detection Method:                Visual  
 Collection Method:                Point-Source Bailer

**WELL DEVELOPMENT/PURGE DATA:**

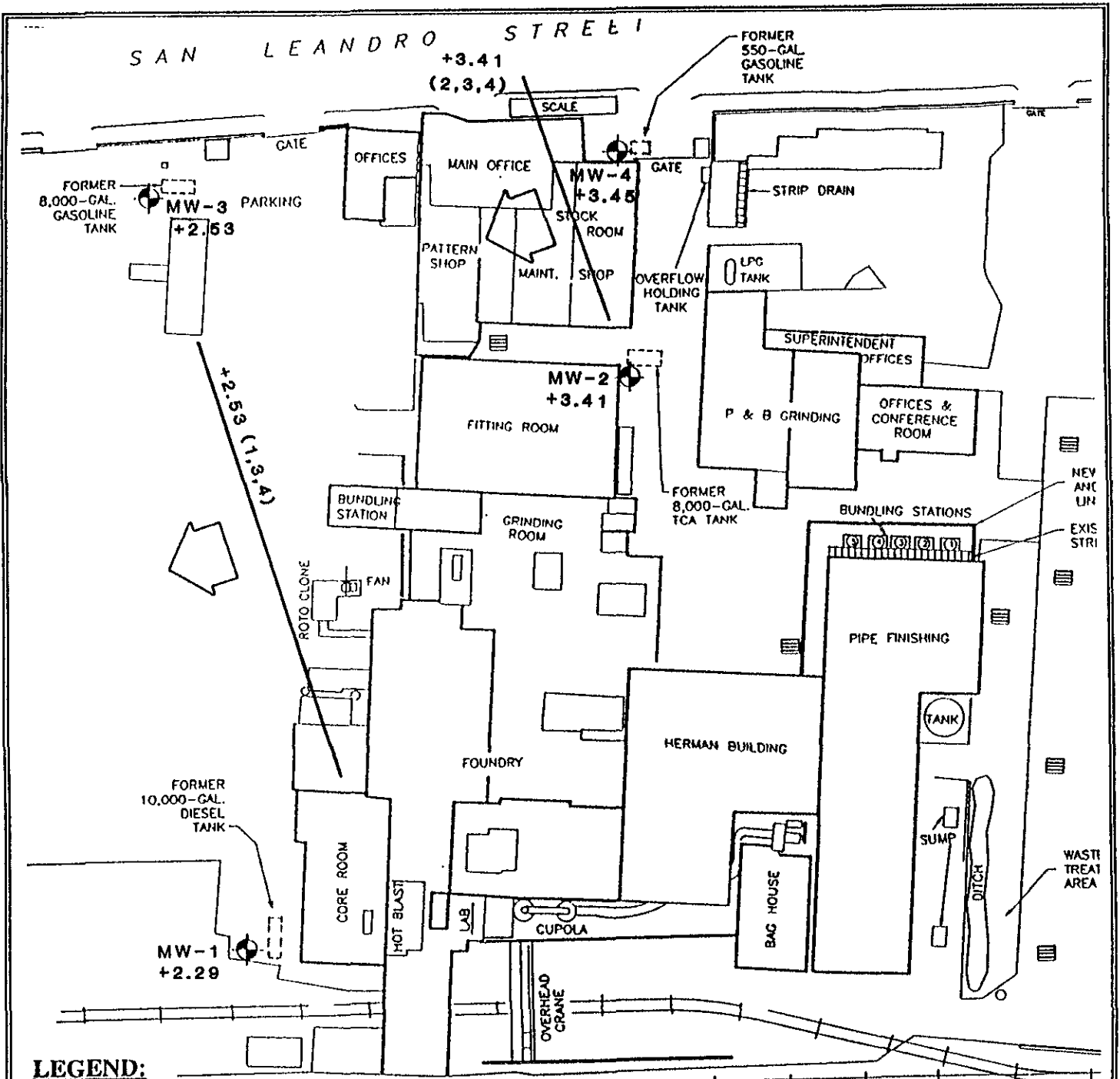
TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Ec/Range)	pH	TEMP. (°F)	COLOR/COMMENTS
15:34	2.5	NA	7.35	69.5	Gray sheen
15:41	5.0	NA	7.30	68.4	"
15:49	7.5	NA	7.35	68.6	"
15:53	10.0	NA	7.23	68.3	"
15:58	Depth to water:	7.27'			

**SAMPLE COLLECTION DATA:**

Sampling Equipment: Stainless steel and Teflon Bailer

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
16:00	TPH-G & BTEX	2-40 ml glass vials with HCl	Top of water column
"	Total Lead	1-16 oz. plastic bottle with HNO <sub>3</sub>	"

Field Observations: None



GRADIENT - 0.4%

Scale: 1" = 80'



**SHALLOW SOIL AND GROUNDWATER CHARACTERIZATION**  
**AMERICAN BRASS & IRON**  
 7825 SAN LEANDRO STREET  
 OAKLAND, CALIFORNIA

**GROUNDWATER FLOW DIRECTION AND GRADIENT**  
 Job No. P92270.3  
 April 1993  
 FIGURE: 16

**BSK**  
 & ASSOCIATES

APPENDIX "A"

CHEMICAL TEST DATA SHEETS  
CHAIN-OF-CUSTODY DOCUMENTS



Environmental Services

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1-800-877-8310

FIGURE: A-1

BSK-Pleasanton
AB & 1

Date Sampled : 02/17/93
Time Sampled : 0758
Date Received : 02/19/93
Date of Analysis : 02/23/93
Report Issue Date: 03/04/93

Case Number : Ch930427
Lab ID Number : 0427-1
Project Number : P92270.3
Sample Description: MW-1, #1 @ 11'

Sample Type : SOLID

Analyses for BTEX by EPA Method 8020
and TPH (G) by EPA Method 8015

Results Reported in Milligrams per Kilogram (mg/kg)

Table with 3 columns: Compound, Results, DLR. Rows include Benzene, Toluene, Ethylbenzene, Total Xylene Isomers, and Total Petroleum Hydrocarbons (G).

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences
may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager





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FIGURE: A-2

BSK-Pleasanton
AB & 1

Date Sampled : 02/17/93
Time Sampled : 0758
Date Received : 02/19/93
Date of Analysis : 02/25/93
Report Issue Date: 03/04/93

Case Number : Ch930427
Lab ID Number : 0427-1
Project Number : P92270.3
Sample Description: MW-1, #1 @ 11'

Sample Type : SOLID

Analyses for Total Petroleum Hydrocarbons as Diesel [TPH(D)]
by Method DHS GC/FID

Results Reported in Milligrams per Kilogram (mg/kg)

Table with 3 columns: Analyte, Results, DLR. Row 1: TPH(D) ..... 34\*\* 1

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.

Exceptional sample conditions or matrix interferences
may result in higher detection limits.

ND: None Detected

- \* - This sample contains lower molecular weight hydrocarbons.
\*\* - This sample contains higher molecular weight hydrocarbons.
\*\*\*-This sample contains both higher and lower molecular weight hydrocarbons.

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager



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FIGURE: A-3

BSK-Pleasanton  
AB & 1

Date Sampled : 02/17/93  
Time Sampled : 1152  
Date Received : 02/19/93  
Date of Analysis : 02/23/93  
Report Issue Date: 03/04/93

Case Number : Ch930427  
Lab ID Number : 0427-2  
Project Number : P92270.3  
Sample Description: MW-2, #1 @ 10.5'

Sample Type : SOLID

Analyses for BTEX by EPA Method 8020  
and TPH (G) by EPA Method 8015

Results Reported in Milligrams per Kilogram (mg/kg)

Compound	Results	DLR
Benzene .....	ND	0.005
Toluene .....	0.039	0.005
Ethylbenzene .....	ND	0.005
Total Xylene Isomers .....	0.008	0.005
Total Petroleum Hydrocarbons (G)	63	1.

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
Exceptional sample conditions or matrix interferences  
may result in higher detection limits.  
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager



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FIGURE: A-4

Environmental Services

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/17/93  
 Time Sampled : 1152  
 Date Received : 02/19/93  
 Date of Analysis : 02/25/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-2  
 Project Number : P92270.3  
 Sample Description: MW-2, #1 @ 10.5'

Sample Type : SOLID

Analyses for Volatile Halocarbons by EPA Method 8010

Results Reported in Milligrams per Kilogram (mg/kg)

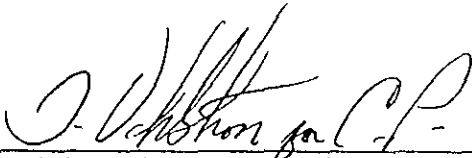
Compound	Results	DLR	Compound	Results	DLR
Bromodichloromethane .....	ND	0.01	1,2-Dichloroethane .....	ND	0.01
Bromoform .....	ND	0.01	1,1-Dichloroethene .....	ND	0.01
Bromomethane .....	ND	0.02	trans-1,2-Dichloroethene ..	ND	0.01
Carbon tetrachloride .....	ND	0.01	1,2-Dichloropropane .....	ND	0.01
Chlorobenzene .....	ND	0.01	cis-1,3-Dichloropropene ...	ND	0.01
Chloroethane .....	ND	0.01	trans-1,3-Dichloropropene .	ND	0.01
Chloroform .....	ND	0.01	Methylene chloride .....	ND	0.01
Chloromethane .....	ND	0.01	1,1,2,2-tetrachloroethane .	ND	0.01
Dibromochloromethane .....	ND	0.01	Tetrachloroethene .....	ND	0.01
1,2-Dichlorobenzene .....	ND	0.01	1,1,1-Trichloroethane .....	ND	0.01
1,3-Dichlorobenzene .....	ND	0.01	1,1,2-Trichloroethane .....	ND	0.01
1,4-Dichlorobenzene .....	ND	0.01	Trichloroethene .....	ND	0.01
Dichlorodifluoromethane ....	ND	0.04	Trichlorofluoromethane ....	ND	0.01
1,1-Dichloroethane .....	ND	0.01	Vinyl chloride .....	ND	0.02

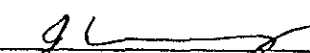
Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

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

ND: None Detected

---: Not Analyzed

  
 Cynthia Pigman, QA/QC Supervisor

  
 Jeffrey Creager, Organics Manager



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 Fresno, California 93706  
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FIGURE: A-5

Environmental Services

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/17/93  
 Time Sampled : 1152  
 Date Received : 02/19/93  
 Date of Analysis : 02/25/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-2  
 Project Number : P92270.3  
 Sample Description: MW-2, #1 @ 10.5'

Sample Type : SOLID

Analyses For Total & Hydrocarbon Oil & Grease  
By Standard Method 503D, & E

Results Reported in Milligrams Per Kilogram (mg/kg)

Analyte	Results	DLR
Total Oil and Grease.....	3500	20
Hydrocarbon Oil and Grease	3500	20

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 10

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager



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FIGURE: A-6

Environmental Services

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/17/93  
 Time Sampled : 1152  
 Date Received : 02/19/93  
 Date of Analysis : 02/25/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-2  
 Project Number : P92270.3  
 Sample Description: MW-2, #1 @ 10.5'

Sample Type : SOLID

Analyses for Total Petroleum Hydrocarbons as Diesel [TPH(D)]  
by Method DHS GC/FID

Results Reported in Milligrams per Kilogram (mg/kg)

Analyte	Results	DLR
TPH(D) .....	140***	1

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.


Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.

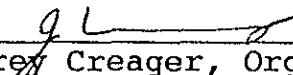
ND: None Detected

\* - This sample contains lower molecular weight hydrocarbons.

\*\* - This sample contains higher molecular weight hydrocarbons.

\*\*\*-This sample contains both higher and lower molecular weight hydrocarbons.

  
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 Jeffrey Creager, Organics Manager



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FIGURE: A-7

Environmental Services

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/18/93  
 Time Sampled : 0937  
 Date Received : 02/19/93  
 Date of Analysis : 02/23/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-3  
 Project Number : P92270.3  
 Sample Description: MW-3, #1 @ 10'

Sample Type : SOLID

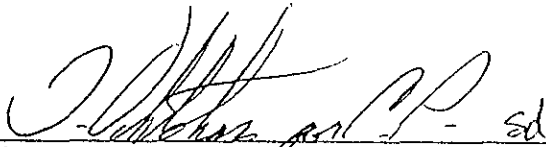
Analyses for BTEX by EPA Method 8020  
and TPH (G) by EPA Method 8015

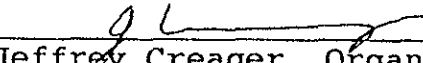
Results Reported in Milligrams per Kilogram (mg/kg)

Compound	Results	DLR
Benzene .....	ND	0.005
Toluene .....	ND	0.005
Ethylbenzene .....	ND	0.005
Total Xylene Isomers .....	ND	0.005
Total Petroleum Hydrocarbons (G)	ND	1.

Sample DLR = DLR x DLR Multiplier,                      DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

  
 Cynthia Pigman, QA/QC Supervisor

  
 Jeffrey Creager, Organics Manager



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FIGURE: A-8

Environmental Services

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/18/93  
 Time Sampled : 1330  
 Date Received : 02/19/93  
 Date of Analysis : 02/23/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-4  
 Project Number : P92270.3  
 Sample Description: MW-4, #1 @ 14.5'

Sample Type : SOLID

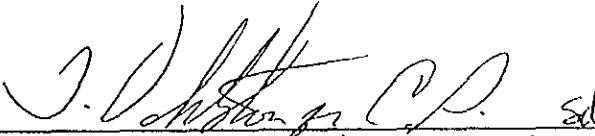
Analyses for BTEX by EPA Method 8020  
and TPH (G) by EPA Method 8015

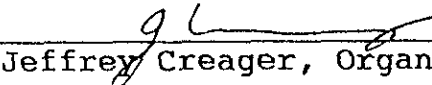
Results Reported in Milligrams per Kilogram (mg/kg)

Compound	Results	DLR
Benzene .....	6.6	0.005
Toluene .....	4.1	0.005
Ethylbenzene .....	7.0	0.005
Total Xylene Isomers .....	17	0.005
Total Petroleum Hydrocarbons (G)	2100	1.

Sample DLR = DLR x DLR Multiplier,                      DLR Multiplier = 500

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

  
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 Jeffrey Creager, Organics Manager



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FIGURE: A-9

Environmental Services

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/17/93  
 Time Sampled : 1330  
 Date Received : 02/19/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-4  
 Project Number : P92270.3  
 Sample Description: MW-4, #1 @ 14.5'

Sample Type : SOLID

Analyses for Total Organic Lead (TOL)

Results Reported in Milligrams per Kilogram (mg/kg)

Compound	Results	DLR
Total Organic Lead .....	0.6	0.5

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

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

ND: None Detected

Cynthia Pigman, QA/QC Supervisor *ed*

Doug Deasy, Inorganics Manager





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FIGURE: A-10

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/18/93  
 Time Sampled : 1436  
 Date Received : 02/19/93  
 Date of Analysis : 02/23/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-5  
 Project Number : P92270.3  
 Sample Description: MW-4, #2 @ 25.5'

Sample Type : SOLID

Analyses for BTEX by EPA Method 8020  
and TPH (G) by EPA Method 8015

Results Reported in Milligrams per Kilogram (mg/kg)

Compound	Results	DLR
Benzene .....	ND	0.005
Toluene .....	ND	0.005
Ethylbenzene .....	ND	0.005
Total Xylene Isomers .....	ND	0.005
Total Petroleum Hydrocarbons (G)	ND	1.

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager



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FIGURE: A-11

*Environmental Services*

BSK-Pleasanton  
 AB & 1

Date Sampled : 02/17/93  
 Time Sampled : 1436  
 Date Received : 02/19/93  
 Report Issue Date: 03/04/93

Case Number : Ch930427  
 Lab ID Number : 0427-5  
 Project Number : P92270.3  
 Sample Description: MW-4, #2 @ 25.5'

Sample Type : SOLID

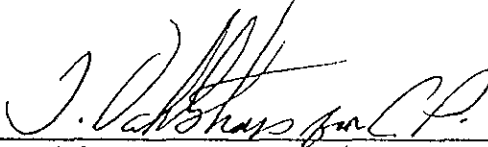
Analyses for Total Organic Lead (TOL)

Results Reported in Milligrams per Kilogram (mg/kg)

Compound	Results	DLR
Total Organic Lead .....	ND	0.5

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

  
 Cynthia Pigman, QA/QC Supervisor

  
 Doug Deasy, Inorganics Manager



Environmental Services

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FIGURE: A-12

BSK-Pleasanton  
Abel

Date Sampled : 03/10/93  
Time Sampled : 1020  
Date Received : 03/11/93  
Date of Analysis : 03/12/93  
Report Issue Date: 03/24/93

Case Number : Ch930660  
Lab ID Number : 0660-1  
Project Number : P92270.3  
Sample Description: MW-1, #1

Sample Type : LIQUID


Analyses for BTEX by EPA Method 602M  
Prepared by EPA Method 5030

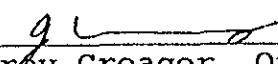
Results Reported in Micrograms per Liter ( $\mu\text{g/L}$ )

Compound	Results	DLR
Benzene	0.6	0.3
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Xylene	ND	0.3

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
Exceptional sample conditions or matrix interferences  
may result in higher detection limits.  
ND: None Detected  
--: Not Analyzed

  
Cynthia Pigman, QA/QC Supervisor

  
Jeffrey Creager, Organics Manager



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FIGURE: A-13

Environmental Services

BSK-Pleasanton  
 Abel

Date Sampled : 03/10/93  
 Time Sampled : 1020  
 Date Received : 03/11/93  
 Date of Analysis : 03/17/93  
 Report Issue Date: 03/24/93

Case Number : Ch930660  
 Lab ID Number : 0660-1  
 Project Number : P92270.3  
 Sample Description: MW-1, #1

Sample Type : LIQUID

Analyses for TPH (Total Petroleum Hydrocarbons) as Diesel  
 by Method DHS GC/FID.

Results Reported in Micrograms per Liter ( $\mu\text{g/L}$ )

Analyte	Results	DLR
TPH(D) .....	830	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.


Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.

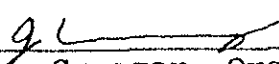
ND: None Detected

\*-This sample contains lower molecular weight hydrocarbons.

\*\* -This sample contains higher molecular weight hydrocarbons.

\*\*\*-This sample contains both higher and lower molecular weight hydrocarbons.

  
 Cynthia Pigman, QA/QC Supervisor

  
 Jeffrey Creager, Organics Manager



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FIGURE: A-14

Environmental Services

BSK-Pleasanton  
 Abel

Date Sampled : 03/10/93  
 Time Sampled : 1425  
 Date Received : 03/11/93  
 Date of Analysis : 03/12/93  
 Report Issue Date: 03/24/93

Case Number : Ch930660  
 Lab ID Number : 0660-3  
 Project Number : P92270.3  
 Sample Description: MW-2, #1

Sample Type : LIQUID

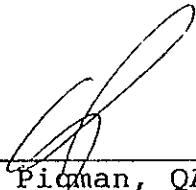
Analyses for BTEX by EPA Method 8020  
and TPH(G) by EPA Method 8015  
Prepared by Method 5030

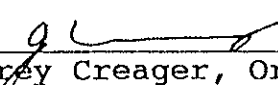
Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene .....	ND	0.3
Toluene .....	0.8	0.3
Ethylbenzene .....	ND	0.3
Total Xylene Isomers .....	ND	0.3
Total Petroleum Hydrocarbons (G)	920	50

Sample DLR = DLR x DLR Multiplier,                      DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

  
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 Jeffrey Creager, Organics Manager



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FIGURE: A-15

Environmental Services

BSK-Pleasanton  
 Abel

Date Sampled : 03/10/93  
 Time Sampled : 1425  
 Date Received : 03/11/93  
 Date of Analysis : 03/16/93  
 Report Issue Date: 03/24/93

Case Number : Ch930660  
 Lab ID Number : 0660-3  
 Project Number : P92270.3  
 Sample Description: MW-2, #1

Sample Type : LIQUID

Analyses for Volatile Halocarbons by EPA Method 601  
Prepared by EPA Method 5030

Results Reported in Micrograms per Liter ( $\mu\text{g/L}$ )

Compounds	Results	DLR	Compound	Results	DLR
Bromodichloromethane .....	ND	0.5	1,2-Dichloroethane .....	ND	0.5
Bromoform .....	0.6	0.5	1,1-Dichloroethene .....	ND	0.5
Bromomethane .....	ND	1.0	cis-1,2 Dichloroethene.....	ND	0.5
Carbon tetrachloride .....	ND	0.5	trans-1,2-Dichloroethene...	ND	0.5
Chlorobenzene .....	ND	0.5	1,2-Dichloropropane .....	ND	0.5
Chloroethane .....	5	0.5	cis-1,3-Dichloropropene ...	ND	0.5
Chloroform .....	ND	0.5	trans-1,3-Dichloropropene..	ND	0.5
Chloromethane .....	ND	0.5	Methylene chloride .....	ND	0.5
Dibromochloromethane .....	ND	0.5	1,1,2,2-tetrachloroethane..	ND	0.5
1,2-Dichlorobenzene .....	ND	0.5	Tetrachloroethene .....	ND	0.5
1,3-Dichlorobenzene .....	ND	0.5	1,1,1-Trichloroethane .....	6.7	0.5
1,4-Dichlorobenzene .....	ND	0.5	1,1,2-Trichloroethane .....	ND	0.5
Dichlorodifluoromethane ...	ND	2.0	Trichloroethene .....	ND	0.5
1,1-Dichloroethane .....	1.7	0.5	Trichlorofluoromethane ....	ND	0.5
			Vinyl chloride .....	ND	1.0

Sample DLR = DLR x DLR Multiplier,

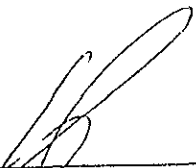
DLR Multiplier = 1

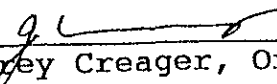
DLR: Detection Limit for the Purposes of Reporting.

Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.

ND: None Detected

---: Not Analyzed

  
 Cynthia Pigman, QA/QC Supervisor

  
 Jeffrey Creager, Organics Manager



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FIGURE: A-16

BSK-Pleasanton  
Abel

Date Sampled : 03/10/93  
Time Sampled : 1425  
Date Received : 03/11/93  
Date of Analysis : 03/15/93  
Report Issue Date: 03/24/93

Case Number : Ch930660  
Lab ID Number : 0660-3  
Project Number : P92270.3  
Sample Description: MW-2, #1

Sample Type : LIQUID

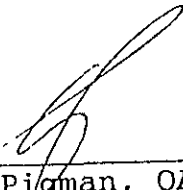
Analyses For Total & Hydrocarbon Oil & Grease  
By Standard Method 503B, & E

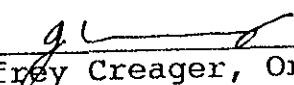
Results Reported in Milligrams Per Liter (mg/L)

Analyte	Results	DLR
Total Oil and Grease.....	ND	1.0
Hydrocarbon Oil and Grease	1.0	1.0

Sample DLR = DLR x DLR Multiplier,                      DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
Exceptional sample conditions or matrix interferences  
may result in higher detection limits.  
ND: None Detected

  
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Jeffrey Creager, Organics Manager



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FIGURE: A-17

Environmental Services

BSK-Pleasanton  
 Abel

Date Sampled : 03/10/93  
 Time Sampled : 1150  
 Date Received : 03/11/93  
 Date of Analysis : 03/12/93  
 Report Issue Date: 03/24/93

Case Number : Ch930660  
 Lab ID Number : 0660-2  
 Project Number : P92270.3  
 Sample Description: MW-3, #1

Sample Type : LIQUID


Analyses for BTEX by EPA Method 8020  
and TPH(G) by EPA Method 8015  
Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene .....	ND	0.3
Toluene .....	ND	0.3
Ethylbenzene .....	ND	0.3
Total Xylene Isomers .....	ND	0.3
Total Petroleum Hydrocarbons (G)	ND	50

Sample DLR = DLR x DLR Multiplier,                      DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

  
 Cynthia Pigman, QA/QC Supervisor

  
 Jeffrey Creager, Organics Manager





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FIGURE: A-18

Environmental Services

BSK-Pleasanton  
 Abel

Date Sampled : 03/10/93  
 Time Sampled : 1600  
 Date Received : 03/11/93  
 Date of Analysis : 03/12/93  
 Report Issue Date: 03/24/93

Case Number : Ch930660  
 Lab ID Number : 0660-4  
 Project Number : P92270.3  
 Sample Description: MW-4, #1

Sample Type : LIQUID


Analyses for BTEX by EPA Method 8020  
and TPH(G) by EPA Method 8015  
Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Compound	Results	DLR
Benzene .....	1.0	0.3
Toluene .....	2.0	0.3
Ethylbenzene .....	7.6	0.3
Total Xylene Isomers .....	19	0.3
Total Petroleum Hydrocarbons (G)	1800	50

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.  
 Exceptional sample conditions or matrix interferences  
 may result in higher detection limits.  
 ND: None Detected

  
 Cynthia Pignán, QA/QC Supervisor

  
 Jeffrey Creager, Organics Manager



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FIGURE: A-19

BSK-Pleasanton  
Abel

Date Sampled : 03/10/93  
Time Sampled : 1600  
Date Received : 03/11/93  
Report Issue Date: 03/24/93

Case Number : Ch930660  
Lab ID Number : 0660-4  
Project Number : P92270.3  
Sample Description: MW-4, #1

Sample Type : LIQUID

General Chemical Analyses

Analyte	Units	Results	DLR
Lead (Pb).....	mg/L	0.058	0.005

ND: None Detected

--: Not analyzed

mg/L: Milligrams per Liter

µg/L: Micrograms per Liter

µmhos/cm: Micromhos per Centimeter at 25°C

Std.: Standard Units

DLR: Detection Limit for the Purposes of Reporting.

Exceptional sample conditions or matrix interferences may result in higher detection limits.

Cynthia Pigman, QA/QC Supervisor

Doug Deasy, Inorganics Manager



Environmental Services

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FIGURE: A-20

BSK-Pleasanton
Abel

Date Sampled : 03/10/93
Time Sampled : 1638
Date Received : 03/11/93
Date of Analysis : 03/12/93
Report Issue Date: 03/24/93

Case Number : Ch930660
Lab ID Number : 0660-5
Project Number : P92270.3
Sample Description: Equipment Blank

Sample Type : LIQUID

Analyses for BTEX by EPA Method 8020
and TPH(G) by EPA Method 8015
Prepared by Method 5030

Results Reported in Micrograms per Liter (ug/L)

Table with 3 columns: Compound, Results, DLR. Rows include Benzene, Toluene, Ethylbenzene, Total Xylene Isomers, and Total Petroleum Hydrocarbons (G).

Sample DLR = DLR x DLR Multiplier, DLR Multiplier = 1

DLR: Detection Limit for the Purposes of Reporting.
Exceptional sample conditions or matrix interferences
may result in higher detection limits.
ND: None Detected

Cynthia Pigman, QA/QC Supervisor

Jeffrey Creager, Organics Manager

0427

ANALYSIS REQUEST/CHAIN OF CUSTODY RECORD

1000-4716

Client Name <b>ABel</b>			Project or PO.# <b>992270-3</b>			Lab Use Only in this section		Analysis required						
Address <b>1181 Quarry Lane, Bldg. 300</b>			Phone # <b>510 462 4000</b>					TPN-BTEX TPN-Diesel Oil & Grease DAF SO10 Total Organic Carbon Hazardous sample Special handling required						
City, State, Zip <b>Pleasanton, CA 94566</b>			Report, attention <b>Tim Berger</b>											
Date sampled	Time sampled	Type (See key below)	Sampled by	Number of containers	Lab Sample number	Sample Seals (See key below)	Remarks							
			<b>Tim Berger</b>											
<b>2/17/93</b>	<b>07:59</b>	<b>SO</b>	<b>MW-1, #1 @ 11'</b>	<b>1</b>	<b>-1</b>	<b>P</b>	<b>X</b>	<b>X</b>						
<b>"</b>	<b>11:52</b>	<b>SO</b>	<b>MW-2, #1 @ 10.5'</b>	<b>1</b>	<b>-2</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>				
<b>2/18/93</b>	<b>09:37</b>	<b>SO</b>	<b>MW-3, #1 @ 10'</b>	<b>1</b>	<b>-3</b>		<b>X</b>							
<b>"</b>	<b>13:30</b>	<b>SO</b>	<b>MW-4, #1 @ 14.5'</b>	<b>1</b>	<b>-4</b>		<b>X</b>			<b>X</b>				
<b>"</b>	<b>14:36</b>	<b>SO</b>	<b>MW-4, #2 @ 25.5'</b>	<b>1</b>	<b>-5</b>		<b>X</b>			<b>X</b>				

~~0427~~  
 2-25-93  
 3-25-93  
 3-3-93

IMPORTANT NOTICE: No samples will be analyzed without an authorized signature in this section.

I am hereby requesting BSK's Normal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in the U.S. E.P.A. SW 846 and that there is no extra charge for this service.

By: Tim Berger  
 Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of \$50.00 per work order or \$5.00 a bottle, whichever is greater.

By: \_\_\_\_\_  
 Authorized Signature

Signature	Print Name	Company	Date	Time
<u>Tim Berger</u>	<b>Tim Berger</b>	<b>BSK-P</b>	<b>2/19/93</b>	<b>08:16</b>
<u>C. Harris</u>	<b>C. HARRIS</b>	<b>BSK Lab</b>	<b>2-19-93</b>	<b>1311</b>
Relinquished by				
Received by				
Relinquished by				
Received by				
Relinquished by				
Received by				

KEY: Type: AQ-Aqueous SL-Sludge SO-Soil PE-Petroleum OT-Other  
 Seals: P-Present A-Absent B-Broken  
 DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR  
 Note:

FIGURE: A-21

**BSK** & Associates Chemical Laboratories

Client Name <b>ABel</b>			Project or PO.# <b>P92270-3</b>			Analysis required						3-17-93 3-23-93			
Address <b>1131 Quarry Lane, Bldg. 300</b>			Phone # <b>510 462 4000</b>			Lab Use Only in this section									
City, State, Zip <b>Pleasanton, CA 94566</b>			Report, attention <b>Tim Berger</b>			TPH-G & BTEX TPH-D BTEX Oil/Grease C&F EPA 601 Total Lead (AA) Hazardous sample Special handling required									
Date sampled	Time sampled	Type (See key below)	Sampled by	Sample description	Number of containers	Lab Sample number	Sample Seals (See key below)	TPH-G & BTEX	TPH-D	BTEX	Oil/Grease C&F	EPA 601	Total Lead (AA)	Hazardous sample Special handling required	Remarks
3/10/93	10:20	AQ	Tim Berger	MW-1, #1	4	-1	P	X	X						
	11:50			MW-3, #1	2	-2	1	X							
	14:25			MW-2, #1	5	-3	1	X		X	X				
	16:00			MW-4, #1	4	-4	1	X				X			
	16:38			Equipment Blank	2	-5	P	X							

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By: Tim Berger  
Authorized Signature

I am hereby requesting BSK's Formal Chain-of-Custody Procedures for the above samples. I understand that these procedures are generally consistent with those outlined in U.S. EPA Contract Laboratory Program Statement of Work, Section F, and that there is a charge of \$50.00 per work order or \$5.00 a bottle, whichever is greater.

By: \_\_\_\_\_  
Authorized Signature

Signature	Print Name	Company	Date	Time
Relinquished by <u>Tim Berger</u>	<u>Tim Berger</u>	<u>BSK-P</u>	<u>3/11/93</u>	<u>08:30</u>
Received by <u>Cecil Harris</u>	<u>C. Harris</u>	<u>BSK-P</u>	<u>3-11-93</u>	<u>15:15</u>
Relinquished by				
Received by				
Relinquished by				
Received by				

KEY: Type: AQ-Aqueous SL-Sludge SO-Soil PE-Petroleum OT-Other

Seals: P-Present A-Absent B-Broken

DISTRIBUTION: WHITE, CANARY - LABORATORY PINK - ORIGINATOR

Note:

Samples are discarded 14 days after results are reported unless other arrangements are made.

Hazardous samples will be returned to client or disposed of at client expense.

FIGURE: A-22