



November 5, 1997

34467 1

Mr. Jeff Christoff  
Blue Print Service Company  
1057 Shary Circle  
Concord, California 94518

**Semiannual Report (including third Quarter 1997)  
April 1, 1997 through September 31, 1997  
Groundwater Remediation and Monitoring  
Blue Print Service Facility  
1700 Jefferson Street  
Oakland, California**

Dear Mr. Christoff:

This letter presents Harding Lawson Associates's (HLA) sample results from the groundwater monitoring wells and treatment system at the Blue Print Service facility at 1700 Jefferson Street, Oakland, California. This report is for the period of April 1, 1997 through September 31, 1997. It was prepared to satisfy quarterly groundwater monitoring (third Quarter 1997) reporting required by the Alameda County Health Care Services Agency (Alameda County) and second 1997 semiannual reporting required by the East Bay Municipal Utilities District (EBMUD).

#### **BACKGROUND**

Three underground gasoline storage tanks were removed from the property in 1987. Preliminary investigation indicated that there had been a release of fuel into the soil and groundwater. Three groundwater monitoring wells were installed (MW-1, MW-2, and MW-3) on the property to evaluate the distribution of petroleum hydrocarbons in the soil and groundwater and to determine the direction of groundwater flow.

Groundwater level measurements indicated a groundwater gradient in a north to northwest direction. Monitoring of these wells revealed free phase gasoline floating on the surface of the groundwater in monitoring well MW-1. Monitoring well MW-2 was abandoned in November 1987 to facilitate the construction of the present facility reducing the ability to accurately calculate the groundwater gradient and flow direction. In January 1988, two additional wells, MW-1A and MW-4, were installed by HLA at the facility to be used as groundwater extraction wells. One downgradient offsite monitoring well, MW-5, was installed by HLA in August 1988. Monitoring well MW-6 was installed offsite in April 1996, in an upgradient location to enable groundwater gradient calculation to resume. The location of the monitoring wells are shown on Plate 1.

November 5, 1997

34467 1

Mr. Jeff Christoff

Blue Print Service Company

Page 2

The existing biodegradation groundwater treatment system began operating in June 1992. Groundwater is extracted from MW-1A and MW-4, and passes through an oil-water separator which removes the free phase gasoline. The water is then drawn into a 3,000-gallon bioreactor tank for treatment by hydrocarbon reducing microbes. Air and nutrient are supplied to the groundwater within the bioreactor to facilitate microbial growth. The treated water from the bioreactor is pumped in batches of approximately 500 gallons through three granular carbon adsorption (GAC) vessels before being discharged to the sanitary sewer. Approximately 4,875 pounds of gasoline has been removed and 995,000 gallons of groundwater treated and discharged to the sanitary sewer by the groundwater extraction system since operation begin in 1992.

### TREATMENT SYSTEM STATUS

During this reporting period, approximately 129,000 gallons of water were treated and discharged to the sanitary sewer. The average daily discharge flow rate for the treatment system was approximately 814 gallons per day (gpd). Average combined extraction rate for the two extraction wells was 0.57 gallons per minute (gpm). Approximately 7 gallons of free phase gasoline were recovered from the groundwater by the oil water separator. The amount of gasoline removed is estimated to be 75 pounds during this reporting period, represented by both the free product removal and dissolved concentrations treated. Flow totalizer readings and system maintenance activities are summarized in Table 1.

### TREATMENT SYSTEM SAMPLING AND ANALYSIS

The EBMUD Wastewater Discharge Permit (Account No. 500-68191) requires effluent monitoring on a quarterly basis. As proposed by HLA in a letter to EBMUD dated April 30, 1997, HLA has collected a sample of the system effluent for every 40,000 gallons of water discharged to the sanitary sewer. HLA fills 40-milliliter volatile vials with system effluent from the system sampling ports. The water samples are placed in ice-chilled coolers and submitted to American Environmental Network Laboratory in Pleasant Hill, California, under chain-of-custody protocol for analysis. The samples are analyzed by EPA Test Method 8015 for total petroleum hydrocarbons as gasoline (TPHg) and EPA Test Method 8020 for benzene, toluene, ethylbenzene and xylene (BTEX). HLA has forwarded the chemical analysis to EBMUD within 24 hour of receipt.

During this reporting period, the treatment system effluent was sampled by an HLA representative on May 6, 1997; June 21, 1997; and August 8, 1997. Results of the chemical analysis of these samples indicate that treatment system effluent concentrations were below the EBMUD discharge limitations. On April 4, 1997, Mr. Rodney Temples of EBMUD sampled the treatment system effluent. Sample results provided by EBMUD indicated the treatment system's discharge was below discharge limitations. HLA's treatment system sampling results are presented in Table 2. The laboratory reports are presented in the Appendix.

97 NOV 12 PM 3:50  
ENVIRONMENTAL  
LABORATORY

November 5, 1997

34467 1

Mr. Jeff Christoff

Blue Print Service Company

Page 3

## GROUNDWATER SAMPLING AND ANALYSIS

On June 6, 1997 and September 26, 1997, HLA measured the water levels and checked for the presence of free phase product in wells MW-1, MW-3, MW-5 and MW-6. During each sampling event the monitoring wells were sampled after purging at least three well volumes from each. During purging the pH, conductivity, and temperature of the purge water were monitored. Sampling was not performed until these groundwater parameters had stabilized. Three 40-milliliter VOA vials of water were collected from each well with a disposable Teflon bailer. Purge water was discharged to the treatment system.

Groundwater surface elevations collected on June 4, 1997, and on September 26, 1997, are presented on Plates 1 and 2, respectively. Data from both sampling events show a depression in the groundwater surface elevation at the site of the two extraction wells.

The two extraction wells, MW-1A and MW-4, were sampled during the quarterly groundwater monitoring events. These two wells were sampled at sampling ports upstream of the oil-water separator.

All of the water samples were placed in ice-chilled coolers and submitted to American Environmental Network Laboratory in Pleasant Hill, California under chain-of-custody protocol. The samples were analyzed by EPA Test Method 8015 (modified) for TPHg and EPA Test Method 8020 for BTEX. The groundwater samples from MW-1, MW-4, MW-5 and MW-6 were analyzed for methyl t-butyl ether (MTBE). The historical analytical results are summarized in Table 3. Plates 3 and 4 presents the THPg and BTEX results of the two sampling events for this reporting period. The laboratory reports are presented in the Appendix.

## DISCUSSION

We have compared the last two quarterly groundwater results with historical data. The monitoring wells located onsite all contained dissolved concentrations of petroleum hydrocarbons; however the free product that was present in these four monitoring wells in December 1996 is gone. The offsite upgradient well, MW-6, did not contain any detectable concentrations of TPHg or BTEX. The offsite downgradient well, MW-5, has show a decrease in both TPHg and BTEX concentrations.

The treatment system continues to be effective in reducing the TPHg and BTEX concentrations in the extracted groundwater as evidenced by reduced concentration between the two extraction wells, MW-1A and MW-4, and the bioreactor effluent. Results of the chemical analysis of the bioreactor effluent indicate reductions of over 90 percent in TPHg concentrations and reductions in excess of 99 percent in BTEX concentrations.

Blue Print Services will to continue quarterly groundwater monitoring and reporting as required by Alameda County, and treatment system discharge monitoring with semiannual reporting as required

ENVIRONMENTAL  
PROTECTION

Harding Lawson Associates

November 5, 1997  
34467 1  
Mr. Jeff Christoff  
Blue Print Service Company  
Page 4

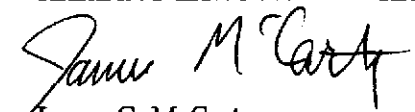
97 NOV 12 PM 1:24

by EBMUD. The next groundwater sampling will be performed during the fourth quarter of 1997 in December, and monitoring of the system effluent will continue to be performed for every 40,000 gallons of treated groundwater discharged to the sanitary sewer.

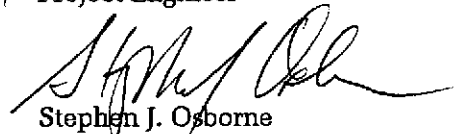
If you have any questions, please contact James McCarty at (510) 628-3220).

Yours very truly,

**HARDING LAWSON ASSOCIATES**



James G. McCarty  
Project Engineer



Stephen J. Osborne  
Geotechnical Engineer

JGM/MS/mlw 34467036600L.DOC

Attachments: Table 1 - City Blue Groundwater Treatment System Maintenance Log  
Table 2 - Groundwater Treatment System Analytical Results  
Table 3 - Groundwater Monitoring Analytical Results  
Plate 1 - Groundwater Surface Elevations, June 6, 1997  
Plate 2 - Groundwater Surface Elevations, September 26, 1997  
Plate 3 - TPHg and BTEX Concentration, June 6, 1997  
Plate 4 - TPHg and BTEX Concentration, September 26, 1997  
Appendix - Laboratory Reports

**Table 1. City Blue Groundwater Treatment System Maintenance Log  
Blue Print Services Facility  
1700 Jeferson Street  
Oakland, California**

DATE	FLOW TOTALIZER (gal)	DISCHARGE RATE (gpd)	DISCHARGE RATE (gpm)	COMMENTS
04/04/97	866,820			Meet with EBMUD to collect sys effluent sample
04/15/97	868,985	197	0.14	System down due to plugged carbon
04/20/97	869,952	193	0.13	System down due to plugged carbon, Restart system, backwash sand and carbon filters
04/29/97	871,511	173	0.12	System down due to plugged carbon, Restart system, backwash sand and carbon filters
05/03/97	875,710	1050	0.73	Put new carbon online, change oil in compressor
05/06/97	877,944	745	0.52	Sampled Bio-Eff, CD2-Eff, and CD3-Eff
05/08/97	878,680	368	0.26	Check on system, high biotank
05/27/97	897,377	984	0.68	Check on system
06/08/97	906,605	769	0.53	Check on system, backwash sand and carbon filters
06/15/97	911,316	673	0.47	Check on system
06/19/97	915,680	1091	0.76	Check on system, add nutrient
06/21/97	918,180	1250	0.87	Collect sample; Bio-eff, C2 & C3 eff
06/28/97	924,780	943	0.65	Check on system
07/05/97	929,050	610	0.42	Check on system, backwash sand and carbon filters
07/15/97	933,710	466	0.32	Check on system, high sand filter pressure, increase discharge back pressure
07/25/97	942,810	910	0.63	Solnoid failure, put new carbon online, leave sys off
07/31/97	945,333	421	0.29	Rebuild air line solinoid, restart system
08/01/97	946,980	1647	1.14	Check on system
08/06/97	951,670	938	0.65	Check on system
08/08/97	953,526	928	0.64	Check on system
08/13/97	958,574	1010	0.70	Collect samples from Bio-eff, CD-2, & Cd-3, backwash all three carbon vessels
08/28/97	967,150	572	0.40	System at high level, pumps off, effluent pump lost prime, restart
09/09/97	976,280	761	0.53	Surge tank discharge slow, growth in recycle line, cleaned out as best able, backwash carbons and s. filters
09/23/97	984,530	589	0.41	Check on system, clean out discharge line
09/25/97	986,800	1135	0.79	Check on system, backwash C1
09/28/97	990,466	1222	0.85	Change oil in compressor, put gasket on separator tank and remove gas, backwash C1,C2,C3 and sand filters
10/01/97	992,420	651	0.45	System down due to high pressure, reduced discharge flow rate
10/03/97	995,810	1695	1.18	Sample Bio-eff, C2-eff, C3-eff; turn off air to the well pumps, turn down air & nutrient rate

2nd QTR

Total	Average	Average
128,990	814	0.57

**Table 2. Groundwater Treatment System Analytical Results  
Blue Print Service Facility  
1700 Jefferson Street  
Oakland, California**

Date/Analytes	Bioreactor Influent	Bioreactor Effluent	First Carbon Bed Effluent	Second Carbon Bed Effluent	Third* Carbon Bed Effluent
<b>16-Jun-92</b>					
TPHg	NA	3	ND <0.05	NA	—
Benzene	NA	220	ND <0.3	NA	—
Toluene	NA	460	ND <0.3	NA	—
Ethylbenzene	NA	35	ND <0.3	NA	—
Xylene	NA	290	ND <0.3	NA	—
<b>19-Jun-92</b>					
TPHg	180	2	ND <0.05	NA	—
Benzene	18,000	2	ND <0.3	NA	—
Toluene	31,000	5	ND <0.3	NA	—
Ethylbenzene	2,200	ND <0.3	ND <0.3	NA	—
Xylene	16,000	150	ND <0.3	NA	—
<b>2-Jul-92</b>					
TPHg	160	0	ND <0.05	NA	—
Benzene	14,000	1	ND <0.3	NA	—
Toluene	27,000	ND <0.3	ND <0.3	NA	—
Ethylbenzene	1,700	ND <0.3	ND <0.3	NA	—
Xylene	1,300	1	ND <0.3	NA	—
<b>20-Aug-92</b>					
TPHg	190	6	0.073	NA	—
Benzene	14,000	31	ND <0.3	NA	—
Toluene	24,000	14	ND <0.3	NA	—
Ethylbenzene	2,000	ND <6	ND <0.3	NA	—
Xylene	13,000	150	ND <0.3	NA	—
<b>15-Sep-92</b>					
TPHg	230	23	0.054	NA	—
Benzene	17,000	1,100	0.4	NA	—
Toluene	29,000	3,600	0.8	NA	—
Ethylbenzene	2,200	59	ND <0.3	NA	—
Xylene	15,000	1,100	0.6	NA	—
<b>3-Mar-94</b>					
TPHg	80	4	NA	ND <0.05	—
Benzene	1,500	270	NA	ND <0.5	—
Toluene	9,200	370	NA	ND <0.5	—
Ethylbenzene	1,000	32	NA	ND <0.5	—
Xylene	14,000	840	NA	ND <0.5	—

**Table 2. Groundwater Treatment System Analytical Results**  
**Blue Print Service Facility**  
**1700 Jefferson Street**  
**Oakland, California**

<i>Date/Analytes</i>	<b>Bioreactor Influent</b>	<b>Bioreactor Effluent</b>	<b>First Carbon Bed Effluent</b>	<b>Second Carbon Bed Effluent</b>	<b>Third* Carbon Bed Effluent</b>
<b>7-Apr-94</b>					
TPHg	79	0	ND <0.05	NA	—
Benzene	8,300	16	3.7	NA	—
Toluene	19,000	4	ND <0.5	NA	—
Ethylbenzene	990	ND <0.5	ND <0.5	NA	—
Xylene	9,300	2	ND <0.5	NA	—
<b>13-May-94</b>					
TPHg	220	1	ND <0.05	NA	—
Benzene	12,000	45	ND <0.5	NA	—
Toluene	23,000	7	ND <0.5	NA	—
Ethylbenzene	1,700	1	ND <0.5	NA	—
Xylene	17,000	11	ND <0.5	NA	—
<b>29-Sep-94</b>					
TPHg	96	1	NA	ND <0.05	—
Benzene	8,000	5	NA	ND <0.5	—
Toluene	16,000	8	NA	ND <0.5	—
Ethylbenzene	ND <250	ND <2.5	NA	ND <0.5	—
Xylene	9,000	9	NA	ND <0.5	—
<b>19-Dec-94</b>					
TPHg	NA	6	0.59	ND<0.05	—
Benzene	NA	140	60	1	—
Toluene	NA	100	14	0.5	—
Ethylbenzene	NA	ND<5	ND<0.5	ND <0.5	—
Xylene	NA	1,600	100	ND <0.5	—
<b>5-Jan-95</b>					
TPHg	NA	NA	0.2	ND<0.05	—
Benzene	NA	NA	17	0.7	—
Toluene	NA	NA	3	ND<0.5	—
Ethylbenzene	NA	NA	ND<0.5	ND<0.5	—
Xylene	NA	NA	3	ND<0.5	—
<b>14-Apr-95</b>					
TPHg	NA	2	0.9	NA	—
Benzene	NA	36	22	NA	—
Toluene	NA	6	3	NA	—
Ethylbenzene	NA	3	0.6	NA	—
Xylene	NA	58	13	NA	—

**Table 2. Groundwater Treatment System Analytical Results  
Blue Print Service Facility  
1700 Jefferson Street  
Oakland, California**

<b>Date/Analytes</b>	<b>Bioreactor Influent</b>	<b>Bioreactor Effluent</b>	<b>First Carbon Bed Effluent</b>	<b>Second Carbon Bed Effluent</b>	<b>Third* Carbon Bed Effluent</b>
<b>18-May-95</b>					
TPHg	41	1	0.1	ND<0.05	—
Benzene	4,400	22	2	ND<0.5	—
Toluene	5,700	9	ND<0.5	ND<0.5	—
Ethylbenzene	430	ND<0.5	ND<0.5	ND<0.5	—
Xylene	8,200	16	ND<0.5	ND<2	—
<b>7-Sep-95</b>					
TPHg	NA	4	1.1	0.2	—
Benzene	NA	400	120	15	—
Toluene	NA	300	75	9	—
Ethylbenzene	NA	12	2	ND<0.5	—
Xylene	NA	320	82	9	—
<b>16-Nov-95</b>					
TPHg	NA	3	2.8	0.8	—
Benzene	NA	18	17	3	—
Toluene	NA	11	18	2	—
Ethylbenzene	NA	7	6	0.9	—
Xylene	NA	90	74	10	—
<b>22-Dec-95</b>					
TPHg	NA	10	0.54	NA	—
Benzene	NA	95	1	NA	—
Toluene	NA	38	0.6	NA	—
Ethylbenzene	NA	6	ND<0.5	NA	—
Xylene	NA	1,300	13	NA	—
<b>29-Dec-95</b>					
TPHg	NA	NA	0.7	0.1	—
Benzene	NA	NA	5	ND<0.5	—
Toluene	NA	NA	3	ND<0.5	—
Ethylbenzene	NA	NA	1	ND<0.5	—
Xylene	NA	NA	19	ND<0.5	—
<b>17-Jan-96</b>					
TPHg	NA	1	ND<0.05	NA	—
Benzene	NA	8	ND<0.5	NA	—
Toluene	NA	4	ND<0.5	NA	—
Ethylbenzene	NA	1	ND<0.5	NA	—
Xylene	NA	15	ND<2	NA	—



**Table 2. Groundwater Treatment System Analytical Results  
Blue Print Service Facility  
1700 Jefferson Street  
Oakland, California**

<b>Date/Analytes</b>	<b>Bioreactor Influent</b>	<b>Bioreactor Effluent</b>	<b>First Carbon Bed Effluent</b>	<b>Second Carbon Bed Effluent</b>	<b>Third* Carbon Bed Effluent</b>
<b>16-Feb-96</b>					
TPHg	NA	1	0.2	ND<0.05	—
Benzene	NA	13	ND<0.5	ND<0.5	—
Toluene	NA	6	ND<0.5	ND<0.5	—
Ethylbenzene	NA	1	ND<0.5	ND<0.5	—
Xylene	NA	16	ND<2	ND<2	—
<b>19-Mar-96</b>					
TPHg	33	1	0.1	NA	—
Benzene	460	12	ND<0.5	NA	—
Toluene	360	7	ND<0.5	NA	—
Ethylbenzene	59	3	ND<0.5	NA	—
Xylene	3,300	32	ND<2	NA	—
<b>18-Apr-96</b>					
TPHg	NA	NA	1.3	0.17	0.09
Benzene	NA	NA	37	1.4	ND<0.5
Toluene	NA	NA	16	0.5	ND<0.5
Ethylbenzene	NA	NA	3.8	ND<0.5	ND<0.5
Xylene	NA	NA	66	ND<2	ND<2
<b>5-Jun-96</b>					
TPHg	NA	NA	5.8	0.53	0.19
Benzene	NA	NA	93	2.1	ND<0.5
Toluene	NA	NA	93	1.2	ND<0.5
Ethylbenzene	NA	NA	11	1.7	0.5
Xylene	NA	NA	490	6	ND<2
<b>9-Aug-96</b>					
TPHg	NA	74	NA	0.77	0.19
Benzene	NA	5,600	NA	12	ND<0.5
Toluene	NA	11,000	NA	4.8	ND<0.5
Ethylbenzene	NA	990	NA	1.2	ND<0.5
Xylene	NA	18,000	NA	26	ND<2
<b>4-Oct-96</b>					
TPHg	NA	2,100	NA	670	44
Benzene	NA	2,900	NA	3,700	ND<30
Toluene	NA	13,000	NA	8,400	50
Ethylbenzene	NA	7,000	NA	1,600	110
Xylene	NA	170,000	NA	36,000	870

**Table 2. Groundwater Treatment System Analytical Results**  
**Blue Print Service Facility**  
**1700 Jefferson Street**  
**Oakland, California**

Date/Analytes	Bioreactor Influent	Bioreactor Effluent	First Carbon Bed Effluent	Second Carbon Bed Effluent	Third* Carbon Bed Effluent
<b>11-Dec-96</b>					
TPHg	69	5	51	2.8	0.31
Benzene	11,000	72	4,300	2.3	ND<0.5
Toluene	17,000	120	8,500	8.0	ND<0.5
Ethylbenzene	1,500	32	750	7.8	0.6
Xylene	12,000	1,000	16,000	45	ND<2
<b>16-Dec-96</b>					
TPHg	NA	6	NA	NA	0.16
Benzene	NA	450	NA	NA	ND<0.5
Toluene	NA	790	NA	NA	ND<0.5
Ethylbenzene	NA	52	NA	NA	ND<0.5
Xylene	NA	540	NA	NA	ND<2
<b>23-Dec-96</b>					
TPHg	100	NA	NA	NA	NA
Benzene	15,000	NA	NA	NA	NA
Toluene	26,000	NA	NA	NA	NA
Ethylbenzene	1,800	NA	NA	NA	NA
Xylene	14,000	NA	NA	NA	NA
<b>18-Feb-97</b>					
TPHg	NA	2.0	NA	0.12	ND<0.05
Benzene	NA	14	NA	ND<0.5	ND<0.5
Toluene	NA	18	NA	ND<0.5	ND<0.5
Ethylbenzene	NA	2.1	NA	ND<0.5	ND<0.5
Xylene	NA	140	NA	ND<2	ND<2
<b>6-May-97</b>					
TPHg	NA	3.9	NA	0.05	ND<0.05
Benzene	NA	390	NA	ND<0.5	ND<0.5
Toluene	NA	770	NA	ND<0.5	ND<0.5
Ethylbenzene	NA	20	NA	ND<0.5	ND<0.5
Xylene	NA	700	NA	ND<2	ND<2
<b>21-Jun-97</b>					
TPHg	NA	0.22	NA	0.68	ND<0.05
Benzene	NA	0.9	NA	ND<0.5	ND<0.5
Toluene	NA	ND<0.5	NA	ND<0.5	ND<0.5
Ethylbenzene	NA	ND<0.5	NA	ND<0.5	ND<0.5
Xylene	NA	5	NA	ND<2	ND<2
<b>13-Aug-97</b>					
TPHg	NA	0.28	NA	0.05	ND<0.05
Benzene	NA	4.2	NA	ND<0.5	ND<0.5
Toluene	NA	0.9	NA	ND<0.5	ND<0.5
Ethylbenzene	NA	ND<0.5	NA	ND<0.5	ND<0.5

**Table 2. Groundwater Treatment System Analytical Results  
Blue Print Service Facility  
1700 Jefferson Street  
Oakland, California**

Date/Analytes	Bioreactor Influent	Bioreactor Effluent	First Carbon Bed Effluent	Second Carbon Bed Effluent	Third* Carbon Bed Effluent
Xylene	NA	5	NA	ND<2	ND<2
<b>3-Oct-97</b>					
TPHg	NA	0.49	NA	0.17	ND<0.05
Benzene	NA	8.4	NA	2.2	ND<0.5
Toluene	NA	0.7	NA	ND<0.5	ND<0.5
Ethylbenzene	NA	ND<0.5	NA	ND<0.5	ND<0.5
Xylene	NA	3	NA	ND<2	ND<2

TPHg = total petroleum hydrocarbons as gasoline

TPHg concentrations presented in milligrams per liter (mg/l)

Benzene, Toluene, Ethylbenzene, and Xylenes concentrations presented in micrograms per liter (µg/l)

ND = Not detected above the reporting limit in parenthesis

NA = Not analyzed

\* Third carbon added online December 29, 1996

**Table 3. Groundwater Monitoring Analytical Results**  
**Blue Print Service Facility**  
**1700 Jefferson Street**  
**Oakland, California**

TPHg	Date Sampled																		
	8/1/91	9/30/92	3/30/93	1/13/94	4/13/94	6/29/94	12/8/94	4/3/95	6/27/95	9/19/95	12/13/96	3/6/96	6/11/96	9/19/96	12/23/96	3/27/97	6/4/97	9/26/97	
MW-1	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP
MW-1A	350	FP	FP	FP	170	95	190	67	53	52	62	200	140	100	FP	66	54	73	
MW-3	74	FP	FP	FP	FP	39	4,600	51	20	6	19	7	16	6	FP	FP	85	47	
MW-4	86	FP	FP	FP	58	16	92	35	13	14	11	110	260	95	FP	37	24	41	
MW-5	120	51	74	80	63	64	59	51	41	50	45	51	48	48	45	44	35	36	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>Benzene</b>																			
MW-1	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	2,200	6,000
MW-1A	17,000	FP	FP	FP	17,000	16,000	13,000	11,000	11,000	8,900	9,900	14,000	18,000	16,000	FP	12,000	11,000	10,000	
MW-3	1,600	FP	FP	FP	FP	3,200	1,500	1,100	270	220	220	120	170	45	FP	FP	8,500	610	
MW-4	1,500	FP	FP	FP	1,500	1,300	1,700	1,200	1,300	630	2,200	2,600	6,600	9,900	FP	2,600	2,600	2,900	
MW-5	20,000	13,000	16,000	19,000	14,000	29,000	13,000	15,000	12,000	13,000	16,000	15,000	12,000	12,000	12,000	11,000	8,900	7,900	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
<b>Toluene</b>																			
MW-1	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	14,000	4,500
MW-1A	31,000	FP	FP	FP	31,000	21,000	21,000	13,000	9,900	11,000	9,200	22,000	28,000	22,000	FP	15,000	12,000	16,000	
MW-3	4,600	FP	FP	FP	FP	2,900	4,200	2,300	550	480	140	170	270	30	FP	FP	13,000	6,000	
MW-4	6,200	FP	FP	FP	2,500	790	4,100	3,400	1,600	470	2,100	3,600	19,000	19,000	FP	6,900	3,200	5,000	
MW-5	14,000	5,900	5,000	8,200	3,500	5,400	3,800	2,200	2,100	2,100	2,700	2,800	2,900	4,500	2,200	1,100	560	270	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
<b>Ethylbenzene</b>																			
MW-1	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	1,500	1,600
MW-1A	3,000	FP	FP	FP	2,100	1,500	1,400	910	500	790	710	2,700	2,800	2,100	FP	1,400	1,000	1,400	
MW-3	670	FP	FP	FP	FP	580	6,000	580	190	140	68	49	68	15	FP	FP	2,400	930	
MW-4	1,000	FP	FP	FP	520	51	310	280	77	14	110	780	3,700	2,000	FP	540	140	350	
MW-5	1,900	1,400	1,800	1,400	1,500	2,800	1,800	2,800	1,400	16,000	2,000	2,000	2,000	2,300	2,700	1,900	1,500	1,500	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
<b>Xylene</b>																			
MW-1	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	FP	11,000	8,600
MW-1A	FP	FP	FP	14,000	22,000	12,000	11,000	9,800	6,300	5,300	6,800	22,000	19,000	14,000	FP	100	7,200	8,500	
MW-3	FP	FP	FP	FP	4,300	4,300	95,000	4,800	1,700	1,700	500	440	1,500	300	FP	FP	16,000	5,900	
MW-4	FP	FP	FP	3,200	7,300	3,400	5,400	5,800	1,800	1,800	2,100	10,000	28,000	13,000	FP	5,500	3,500	4,800	
MW-5	2,600	2,700	2,700	2,100	4,900	4,500	2,900	4,500	1,600	1,900	2,100	2,400	2,700	4,000	6,500	2,800	1,700	1,300	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	<2	<2	<2	<2	<2	<2	
<b>MTBE</b>																			
MW-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	<500	<500	
MW-1A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800	<500	<500	
MW-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	<500	<100	
MW-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400	<300	<500	
MW-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	600	300	<100	<500	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	NA	NA	<5	<5	<5	<5	

TPHg = total petroleum hydrocarbons as gasoline

TPHg concentrations presented in milligrams per liter (mg/l)

Benzene, Toluene, Ethylbenzene Xylenes, and MTBE concentrations presented in micrograms per liter (µg/l)

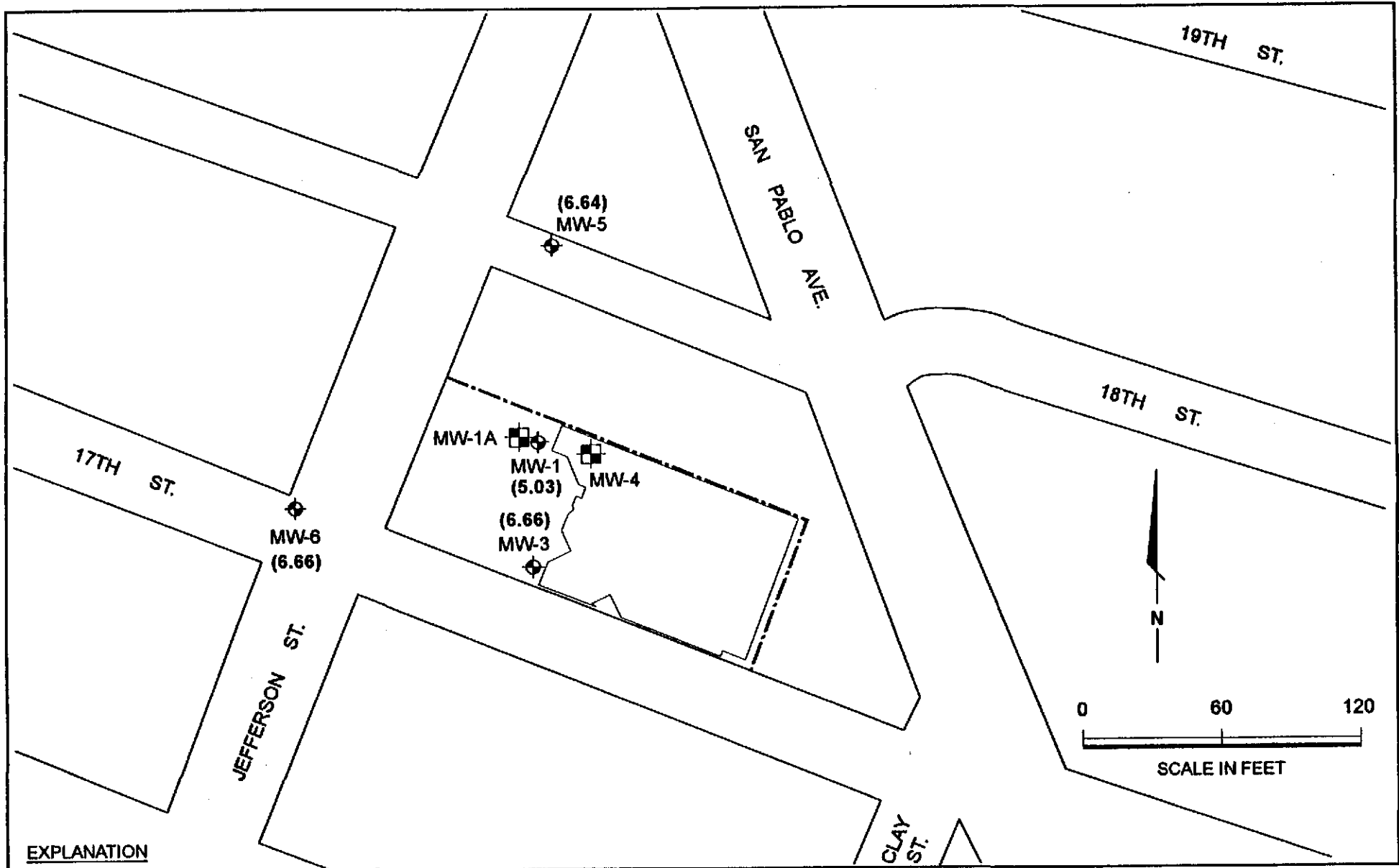
MTBE = methyl t-butyl ether

ND = Not detected above the reporting limit in parenthesis




NA = Not analyzed

FP = Free Product

-- = Well did not exist at date indicated



**EXPLANATION**

-  Site Boundary
-  Monitoring Well
-  Extraction Well
- (5.03)** Groundwater Elevation (in feet based on City of Oakland datum)



**Harding Lawson Associates**  
Engineering and Environmental Services

**Groundwater Surface Elevations**  
June 4, 1997  
City Blue Production Facility  
Oakland, California

PLATE

**1**

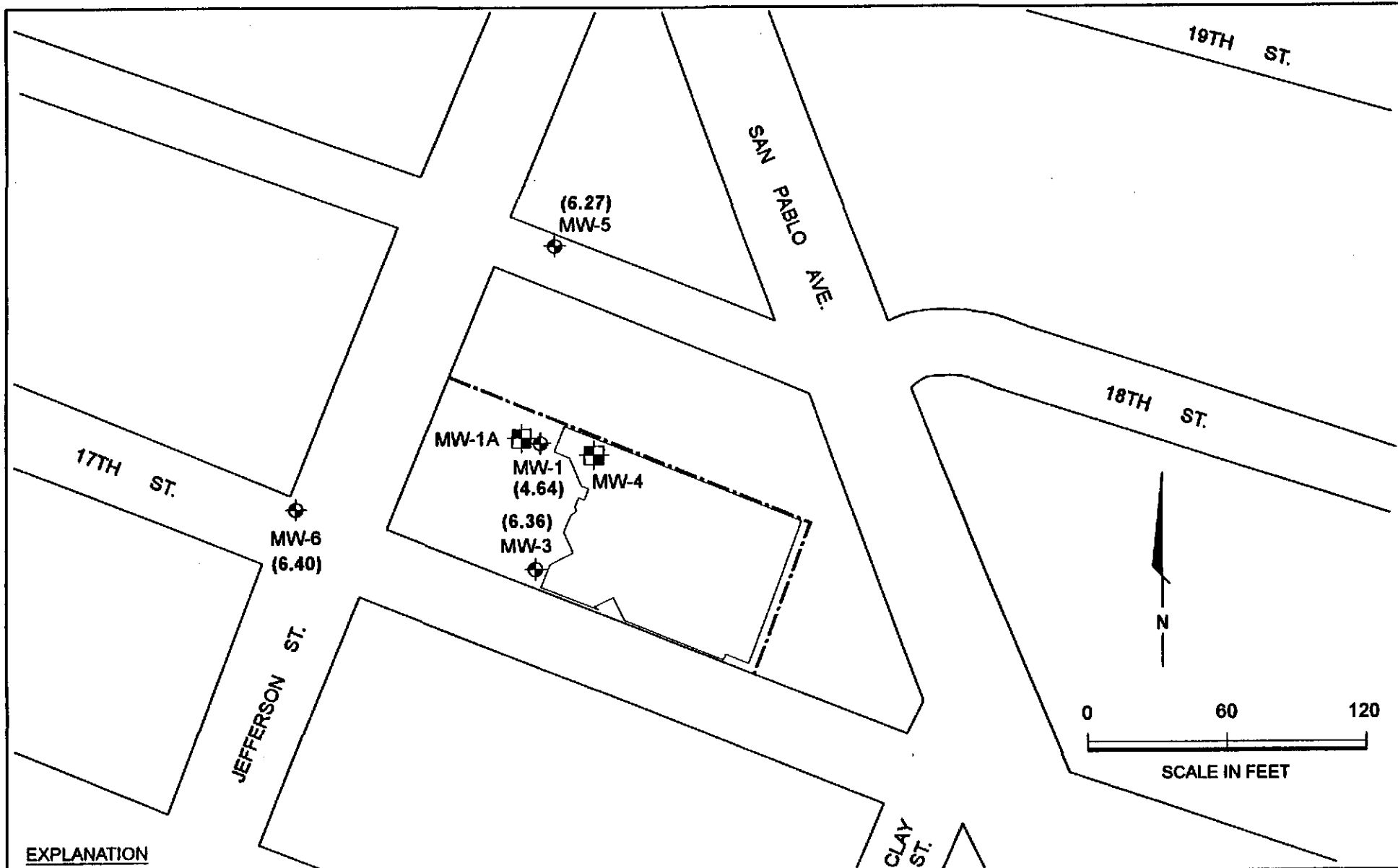
DRAWN  
AJW

PROJECT NUMBER  
34667.1

APPROVED  
JGM

DATE  
07/08/97

REVISED DATE



**EXPLANATION**

- Site Boundary
- ⊕ Monitoring Well
- ⊞ Extraction Well
- (5.03) Groundwater Elevation (in feet based on City of Oakland datum)



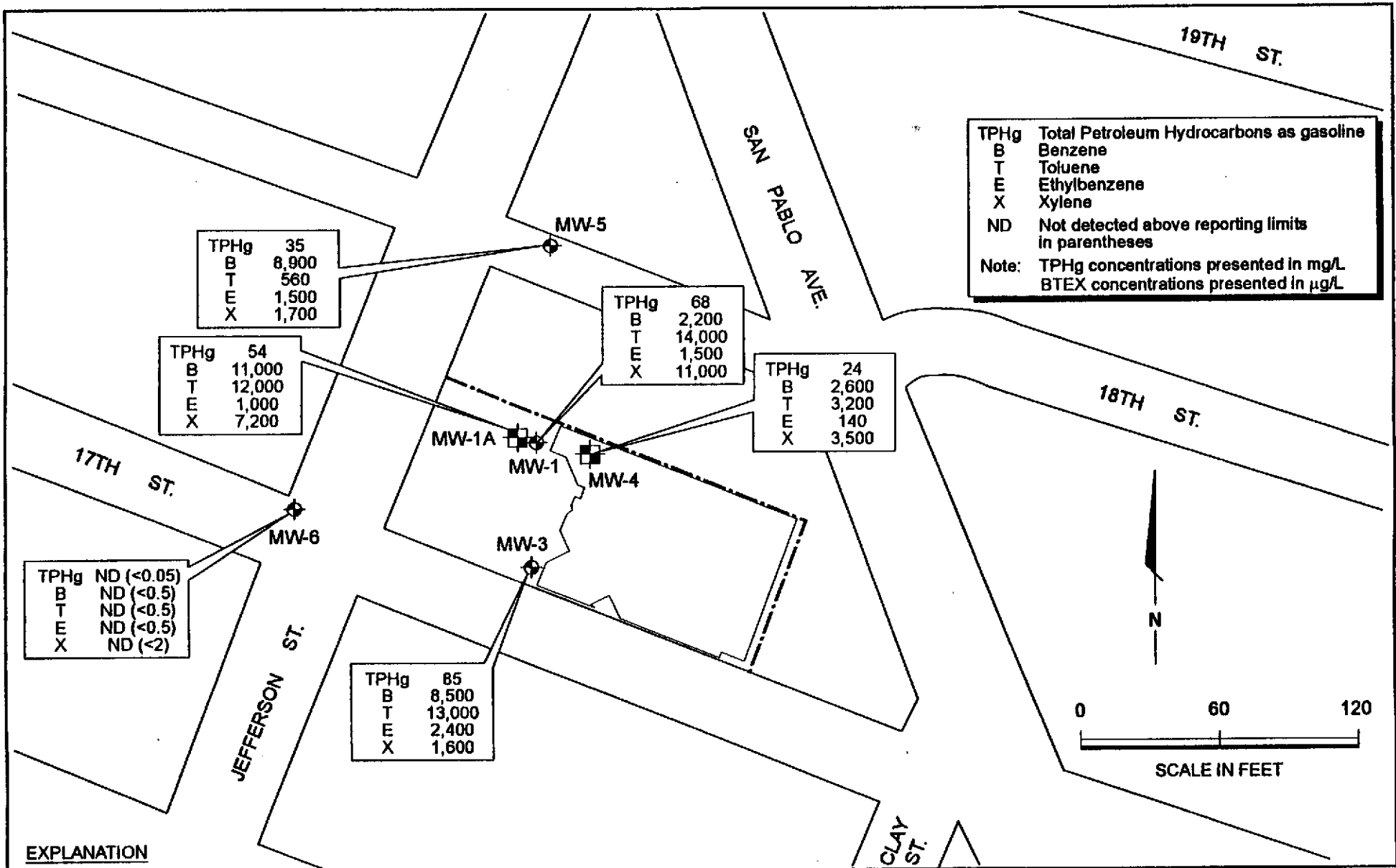
**Harding Lawson Associates**  
Engineering and Environmental Services

**Groundwater Surface Elevations**  
**September 26, 1997**  
City Blue Production Facility  
Oakland, California

PLATE

**2**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	34667.1	JGM	11/03/97	



**TPHg** Total Petroleum Hydrocarbons as gasoline  
**B** Benzene  
**T** Toluene  
**E** Ethylbenzene  
**X** Xylene  
**ND** Not detected above reporting limits in parentheses  
 Note: TPHg concentrations presented in mg/L  
 BTEX concentrations presented in µg/L

TPHg 35  
 B 8,900  
 T 560  
 E 1,500  
 X 1,700

TPHg 54  
 B 11,000  
 T 12,000  
 E 1,000  
 X 7,200

TPHg 68  
 B 2,200  
 T 14,000  
 E 1,500  
 X 11,000

TPHg 24  
 B 2,600  
 T 3,200  
 E 140  
 X 3,500

TPHg ND (<0.05)  
 B ND (<0.5)  
 T ND (<0.5)  
 E ND (<0.5)  
 X ND (<2)

TPHg 85  
 B 8,500  
 T 13,000  
 E 2,400  
 X 1,600

**EXPLANATION**

- Site Boundary
- ⊕ Monitoring Well
- ⊠ Extraction Well

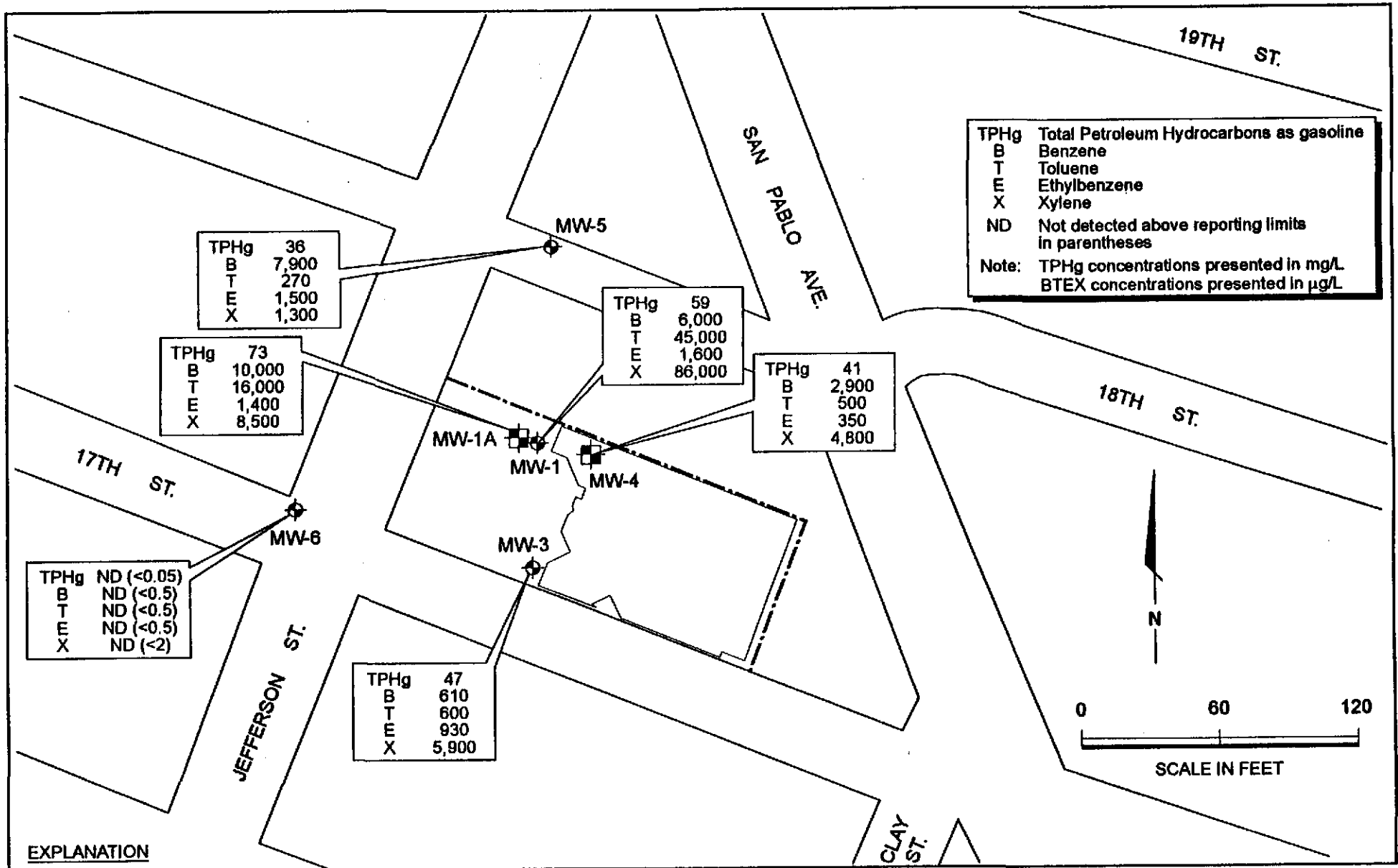


**Harding Lawson Associates**  
 Engineering and  
 Environmental Services

**TPHg and BTEX Concentrations  
 in Groundwater, June 4, 1997**  
 City Blue Production Facility  
 Oakland, California

PLATE  
**3**

DRAWN AJW	PROJECT NUMBER 34667.1	APPROVED JGM	DATE 07/08/97	REVISED DATE
--------------	---------------------------	-----------------	------------------	--------------



**EXPLANATION**

- Site Boundary
- ◊ Monitoring Well
- ⊠ Extraction Well



**Harding Lawson Associates**  
 Engineering and  
 Environmental Services

DRAWN  
 Jgm

PROJECT NUMBER  
 34667.1

APPROVED  
 JGM

DATE  
 11/03/97

REVISED DATE

**TPHg and BTEX Concentrations  
 in Groundwater, September 26, 1997  
 City Blue Production Facility  
 Oakland, California**

PLATE

**4**



**APPENDIX**  
**LABORATORY REPORTS**

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

HARDING ASSOC.

PAGE 1

OCT 24 1997

HARDING LAWSON ASSOCIATES  
383 FOURTH ST., STE. 300  
OAKLAND, CA 94607

REPORT DATE: 10/21/97

DATE(S) SAMPLED: 10/03/97

DATE RECEIVED: 10/03/97

ATTN: MIKE BRINK  
CLIENT PROJ. ID: 11295-012  
CLIENT PROJ. NAME: CITY BLUE  
C.O.C. NUMBER: 1693

AEN WORK ORDER: 9710059


### PROJECT SUMMARY:

On October 3, 1997, this laboratory received 3 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

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

  
Larry Klein  
Laboratory Director

## HARDING LAWSON ASSOCIATES

SAMPLE ID: BIO-EFF  
AEN LAB NO: 9710059-01  
AEN WORK ORDER: 9710059  
CLIENT PROJ. ID: 11295-012

DATE SAMPLED: 10/03/97  
DATE RECEIVED: 10/03/97  
REPORT DATE: 10/21/97

---

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	8.4 *	0.5	ug/L	10/12/97
Toluene	108-88-3	0.7 *	0.5	ug/L	10/12/97
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/12/97
Xylenes, Total	1330-20-7	3 *	2	ug/L	10/12/97
Purgeable HCs as Gasoline	5030/GCFID	0.49 *	0.05	mg/L	10/12/97

---

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: C2-EFF  
AEN LAB NO: 9710059-02  
AEN WORK ORDER: 9710059  
CLIENT PROJ. ID: 11295-012

DATE SAMPLED: 10/03/97  
DATE RECEIVED: 10/03/97  
REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	2.2 *	0.5	ug/L	10/14/97
Toluene	108-88-3	ND	0.5	ug/L	10/14/97
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/14/97
Xylenes, Total	1330-20-7	ND	2	ug/L	10/14/97
Purgeable HCs as Gasoline	5030/GCFID	0.17 *	0.05	mg/L	10/14/97

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: C3-EFF  
AEN LAB NO: 9710059-03  
AEN WORK ORDER: 9710059  
CLIENT PROJ. ID: 11295-012

DATE SAMPLED: 10/03/97  
DATE RECEIVED: 10/03/97  
REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/14/97
Toluene	108-88-3	ND	0.5	ug/L	10/14/97
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/14/97
Xylenes, Total	1330-20-7	ND	2	ug/L	10/14/97
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/14/97

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9710059

CLIENT PROJECT ID: 11295-012

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9710059  
 INSTRUMENT: F  
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery
			Fluorobenzene
10/12/97	BIO-EFF	01	88
10/14/97	C2-EFF	02	95
10/14/97	C3-EFF	03	93
QC Limits:			70-130

DATE ANALYZED: 10/14/97  
 SAMPLE SPIKED: LCS  
 INSTRUMENT: F

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	100	84	8	70-130	20
Toluene	100	88	9	70-130	20
Ethylbenzene	100	89	9	70-130	20
Total Xylenes	300	82	10	70-130	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

\*\*\* END OF REPORT \*\*\*



**Harding Lawson Associates**  
 1855 Gateway Boulevard, Suite 500  
 Concord, California 94520  
 (910) 687-9660

383 Earth St.  
 # 3100  
 Oakland CA 94607

# CHAIN OF CUSTODY FORM

9710059  
 Lab: AEN 1693

R-3, S-3

Samplers: JGM

Job Number: 11295-012

Name/Location: City Blue Oakland CA

Project Manager: James McCarty

Recorder: James McCarty  
 (Signature Required)

SOURCE CODE	MATRIX					# CONTAINERS & PRESERV.				SAMPLE NUMBER OR LAB NUMBER			DATE			
	Water	Sediment	Soil	Oil	Unpres.	H <sub>2</sub> S	HNO <sub>3</sub>	HCL	Ice	Yr	Wk	Seq	Yr	Mo	Day	Time
PA-C	X							3				B10-EFF	97	10	03	
PA-C	X							3				C2-EFF				
PA-C	X							3				C3-EFF				

STATION DESCRIPTION/NOTES

bio-reactor effluent  
 Carbon 2 effluent  
 System effluent

totalizes = 995810  
 gal

ANALYSIS REQUESTED									
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	METALS	EPA 8015M/TPHg	EPA 8020/BTEX	EPA 8015M/TPHc.o	TPHg/BTEX	
								X	X
								X	X
								X	X

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						std JAT
						Fax Result to Oakland to Mike Brink's attention (510) 451-3165

CHAIN OF CUSTODY RECORD			
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
James McCarty	Michael Etchells	10/3/97 1615	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
Michael Etchells	James McCarty	10/3/97 1750	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
METHOD OF SHIPMENT			
SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY			



# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

HARDING ASSOC.

PAGE 1

OCT 23 1997

HARDING LAWSON ASSOCIATES  
383 FOURTH ST., STE. 300  
OAKLAND, CA 94607

REPORT DATE: 10/21/97

DATE(S) SAMPLED: 09/26/97

DATE RECEIVED: 09/26/97

ATTN: JAMES McCARTY  
CLIENT PROJ. ID: 34467.1  
CLIENT PROJ. NAME: CITY BLUE/OAKL  
C.O.C. NUMBER: 1657

AEN WORK ORDER: 9709381

### PROJECT SUMMARY:

On September 26, 1997, this laboratory received 6 water sample(s).

Client requested sample(s) be analyzed for chemical parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

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

  
Larry Klein  
Laboratory Director

## HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-1  
AEN LAB NO: 9709381-01  
AEN WORK ORDER: 9709381  
CLIENT PROJ. ID: 34467.1

DATE SAMPLED: 09/26/97  
DATE RECEIVED: 09/26/97  
REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	6,000 *	50	ug/L	10/09/97
Toluene	108-88-3	4,500 *	50	ug/L	10/09/97
Ethylbenzene	100-41-4	1,600 *	50	ug/L	10/09/97
Xylenes, Total	1330-20-7	8,600 *	200	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	59 *	5	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	500	ug/L	10/09/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-1A  
 AEN LAB NO: 9709381-02  
 AEN WORK ORDER: 9709381  
 CLIENT PROJ. ID: 34467.1

DATE SAMPLED: 09/26/97  
 DATE RECEIVED: 09/26/97  
 REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	10,000 *	50	ug/L	10/09/97
Toluene	108-88-3	16,000 *	50	ug/L	10/09/97
Ethylbenzene	100-41-4	1,400 *	50	ug/L	10/09/97
Xylenes, Total	1330-20-7	8,500 *	200	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	73 *	5	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	500	ug/L	10/09/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-6  
AEN LAB NO: 9709381-03  
AEN WORK ORDER: 9709381  
CLIENT PROJ. ID: 34467.1

DATE SAMPLED: 09/26/97  
DATE RECEIVED: 09/26/97  
REPORT DATE: 10/21/97

---

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/09/97
Toluene	108-88-3	ND	0.5	ug/L	10/09/97
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/09/97
Xylenes, Total	1330-20-7	ND	2	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	5	ug/L	10/09/97

---

ND = Not detected at or above the reporting limit  
\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-5  
 AEN LAB NO: 9709381-04  
 AEN WORK ORDER: 9709381  
 CLIENT PROJ. ID: 34467.1

DATE SAMPLED: 09/26/97  
 DATE RECEIVED: 09/26/97  
 REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	7,900 *	50	ug/L	10/09/97
Toluene	108-88-3	270 *	50	ug/L	10/09/97
Ethylbenzene	100-41-4	1,500 *	50	ug/L	10/09/97
Xylenes, Total	1330-20-7	1,300 *	200	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	36 *	5	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	500	ug/L	10/09/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-4  
AEN LAB NO: 9709381-05  
AEN WORK ORDER: 9709381  
CLIENT PROJ. ID: 34467.1

DATE SAMPLED: 09/26/97  
DATE RECEIVED: 09/26/97  
REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	2,900 *	50	ug/L	10/09/97
Toluene	108-88-3	5,000 *	50	ug/L	10/09/97
Ethylbenzene	100-41-4	350 *	50	ug/L	10/09/97
Xylenes, Total	1330-20-7	4,800 *	200	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	41 *	5	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	500	ug/L	10/09/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

## HARDING LAWSON ASSOCIATES

SAMPLE ID: MW-3  
 AEN LAB NO: 9709381-06  
 AEN WORK ORDER: 9709381  
 CLIENT PROJ. ID: 34467.1

DATE SAMPLED: 09/26/97  
 DATE RECEIVED: 09/26/97  
 REPORT DATE: 10/21/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	610 *	10	ug/L	10/10/97
Toluene	108-88-3	6,000 *	10	ug/L	10/10/97
Ethylbenzene	100-41-4	930 *	10	ug/L	10/10/97
Xylenes, Total	1330-20-7	5,900 *	40	ug/L	10/10/97
Purgeable HCs as Gasoline	5030/GCFID	47 *	1	mg/L	10/10/97
Methyl t-Butyl Ether	1634-04-4	ND	100	ug/L	10/10/97

Reporting limits elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit

\* = Value at or above reporting limit

AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9709381

CLIENT PROJECT ID: 34467.1

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.



QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9709381  
 INSTRUMENT: F  
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery
			Fluorobenzene
10/09/97	MW-1	01	93
10/09/97	MW-1A	02	92
10/09/97	MW-6	03	94
10/09/97	MW-5	04	100
10/09/97	MW-4	05	93
10/10/97	MW-3	06	86
QC Limits:			70-130

DATE ANALYZED: 10/09/97  
 SAMPLE SPIKED: LCS  
 INSTRUMENT: F

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	100	88	4	70-130	20
Toluene	100	92	5	70-130	20
Ethylbenzene	100	92	5	70-130	20
Total Xylenes	300	86	7	70-130	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

\*\*\* END OF REPORT \*\*\*



Harding Lawson Associates  
1855 Gateway Boulevard, Suite 500  
Concord, California 94520  
(510) 687-9660

383 4th St. #300  
Oakland, CA  
94607

# CHAIN OF CUSTODY FORM

Lab: AEN No 1657 9709381

Job Number: 34467-1  
Name/Location: City Blue, Oakland  
Project Manager: James McCarty

Samplers: JGM / AFK  
Recorder: James McCarty  
(Signature Required)

SOURCE ID	MATRIX					# CONTAINERS & PRESERV.				SAMPLE NUMBER OR LAB NUMBER			DATE				STATION DESCRIPTION NOTES	
	Water	Sediment	Soil	Oil		Unpres.	H <sub>2</sub> S	HNO <sub>3</sub>	HCL	Ice	Yr	Wk	Seq	Yr	Mo	Day		Time
01A-C	x								3	x				97	09	26	0935	
02A-C	x								3	x							1000	
03A-C	x								3	x							0730	
04A-C	x								3	x							0815	
05A-C	x								3	x							0955	
06A-C	x								3	x							0938	*

ANALYSIS REQUESTED												
EPA 801/8010		EPA 802/8020		EPA 824/8240		EPA 825/8270		METALS	EPA 8015M/TPHig	EPA 8020/BTEX	EPA 8015M/TPHid.o	TPH, BTEX & MTBE

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						Ad TAT
						* one VOA has a bubble, use only if necessary

CHAIN OF CUSTODY RECORD			
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
<i>James McCarty</i>	<i>Rick Gilmore</i>	9-26-97 16:45	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
<i>Rick Gilmore</i>	<i>Paul Hunt</i>	9/26/97 17:55	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME	
DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
		<i>Paul Hunt</i>	9/26/97 17:55
METHOD OF SHIPMENT			
SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY			