Harding Lawson Associates

HLA

5510
41948

January 7, 1999

40910 1

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

Quarterly Report
October 1, 1998 through December 31, 1998
Groundwater Remediation and Monitoring
Blue Print Service Facility
1700 Jefferson Street
Oakland, California

Dear Mr. Christoff:

Harding Lawson Associates (HLA) presents this quarterly monitoring report of the groundwater monitoring wells and treatment system at the Blue Print Service facility at 1700 Jefferson Street, Oakland, California. This report covers the period of October 1, 1998, through December 31, 1998. It was prepared to satisfy quarterly groundwater monitoring requirements of the Alameda County Health Care Services Agency (Alameda County). The report also satisfies the reporting requirements of the East Bay Municipal Utilities District (EBMUD) for treatment system discharge.

BACKGROUND

Three underground gasoline storage tanks were removed from the property in 1987. A preliminary investigation indicated that there had been a release of fuel into the soil and groundwater. Three groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed on the property to evaluate the distribution of petroleum hydrocarbons in the soil and groundwater and to determine the direction of groundwater flow. Monitoring of these wells revealed free phase gasoline floating on the surface of the groundwater in MW-1. Initial groundwater level measurements indicated that groundwater flows in a north to northwest direction at the site.

In November 1987, monitoring well MW-2 was abandoned to facilitate the construction of the present structures. In January 1988 two additional wells (MW-1A and MW-4) were installed at the facility to be used as groundwater extraction wells. One downgradient monitoring well, MW-5, was installed offsite in August 1988 and in April 1996, monitoring well MW-6 was installed offsite in an upgradient location to improve understanding of groundwater flow at the site. The locations of the monitoring wells are shown on Plate 1.

In 1992 a groundwater extraction system was constructed at the site to remove free phase product from the groundwater surface. Groundwater is extracted from MW-1A and MW-4 and passes through an oil-water separator that 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 activated carbon (GAC) vessels before being discharged to the sanitary sewer. Since 1992, the three-phase treatment system has processed approximately 1,353,970 gallons of groundwater and discharged the treated effluent to the sanitary sewer. An estimated 5,062 pounds of gasoline have been recovered. Groundwater discharge to the sanitary sewer is authorized under the EBMUD Wastewater Discharge Permit (Account No. 500-68191).

TREATMENT SYSTEM STATUS

During the fourth quarter of 1998, the treatment system processed approximately 55,910 gallons of groundwater. The average daily discharge flow rate for the treatment system was approximately 635 gallons per day (gpd). Average combined extraction rate for the two extraction wells was 0.44 gallons per minute (gpm). Operation and maintenance records show that 0.3 liters or 0.5 pounds of free phase gasoline were recovered from the groundwater by the oil water separator. This amount of gasoline does not include dissolved concentrations treated by the bioreactor or the amount of dissolved concentrations adsorbed by the GAC. Flow totalizer readings and system maintenance activities are summarized in Table 1.

TREATMENT SYSTEM SAMPLING AND ANALYSIS

On December 2, 1998, HLA collected samples from the two extraction wells, the separator effluent, the bioreactor effluent and the treatment system effluent. The two extraction wells are sampled from sample ports prior to entering the separator. The separator effluent was sampled by collecting a grab sample with a Teflon bailer directly from the downstream end of the oil-water separator. The bioreactor effluent sample was collected from a sampling port upstream of the GAC vessels. The system effluent sample was collected from a sample port downstream of the third and final GAC vessel. These water samples, consisting of 40-milliliter volatile analysis vials (VOAs), were placed in ice-chilled coolers and submitted to California Laboratory Services of Rancho Cordova, California, under chain-of-custody protocol for analysis. The samples were analyzed by EPA Test Method 8015 for total petroleum hydrocarbons as gasoline (TPHg) and by EPA Test Method 8020 for benzene, toluene, ethylbenzene and total xylenes (BTEX).

Results of the chemical analyses of these samples indicate that treatment system effluent concentrations were below the EBMUD discharge limitations of 5 micrograms per liter (µg/l) for each individual BTEX components.

HLA's treatment system sampling results are presented in Table 2. The laboratory reports are presented in the Appendix A.

GROUNDWATER SAMPLING AND ANALYSIS

On December 2, 1998, HLA measured the water levels in wells MW-1, MW-3, MW-5 and MW-6. Groundwater surface elevations are presented on Plate 1. The monitoring wells were sampled after purging at least three well volumes from each and allowing the water level to recover to at least 80 percent of the pre-purge level. HLA monitored the pH, conductivity, and temperature of the groundwater removed during purging. Sampling was not performed until these parameters had stabilized. Three 40-milliliter VOAs of water were collected from each well with a disposable Teflon bailer. Purge water was discharged to the treatment system bioreactor.

HLA collected samples from the two extraction wells, MW-1A and MW-4, at individual sampling ports upstream of the oil-water separator.

All of the water samples were placed in ice-chilled coolers and submitted to California Laboratory Services of Rancho Cordova, California under chain-of-custody protocol. The samples were analyzed by EPA Test Method 8015 (modified) for TPHg and by EPA Test Method 8020 for BTEX and MTBE. The historical analytical results are summarized in Table 3. Plate 2 presents the TPHg and BTEX results for this reporting period. The laboratory reports are presented in the Appendix A.

DISCUSSION

The treatment system continues to be effective in removing and treating TPHg and BTEX in the groundwater as evidenced by product collected in the oil/water separator and the reduction of the petroleum hydrocarbon concentrations in the bioreactor. The small amount of free phase product recovered in the oil/water separator indicated source removal in the form on free product is nearly complete. The results of effluent sampling by HLA during this quarter show compliance with EBMUD permit discharge limitations.

The groundwater elevations on Plate 1 show a depression in the groundwater surface elevation at the site of the two extraction wells. Using the groundwater elevations measured from MW-3, MW-5, and MW-6, the groundwater gradient direction appears to be toward the northwest at approximately 0.006 ft/ft. However, the groundwater extraction at MW-1A and MW-4 may be artificially depressing the groundwater elevation at MW-3.

Comparison of this quarter's sample results with historical data indicates declining TPHg and BTEX concentrations in monitoring well MW-3 and extraction well MW-4. The low concentrations detected in MW-3 indicate a reduction in the size of the hydrocarbon plume. TPHg and BTEX concentrations in the other wells remained relatively stable. The groundwater sample from MW-6, the offsite upgradient well did not contain any detectable concentrations of TPHg or BTEX. MTBE was not detected in any of the samples collected.

HLA recommends that Blue Print Services send a copy of this report to the following addresses:

Mr. Thomas Peacock
Alameda County
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California, 94502-6577

Ms. Trish Maguire
East Bay Municipal Utility District
P.O. Box 24055
Oakland, California, 94623-1055

Following approval of Blue Print Services, HLA will continue to perform the treatment system monitoring, quarterly groundwater monitoring and reporting as required by Alameda County, and treatment system discharge monitoring reporting as required by EBMUD. The next groundwater sampling will be performed during the first quarter of 1999 and monitoring of the system effluent will continue to be performed as required by the EBMUD permit.

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

REGISTERED PROFESSIONAL ENGINEER
STEPHEN J. OSBORNE
No. GE 656
Exp. 3/31/99
GEOTECHNICAL
STATE OF CALIFORNIA

JGM/SJO/mlw 40910\037085L

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, December 2, 1998
Plate 2 - Groundwater Surface Elevations, December 2, 1998
Appendix A- 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
09/30/98	1,298,060			Check on system
10/04/98	1,299,470	353	0.24	Check on system, recycle line plugged, clear line backwash carbon 1 & 2, and sand filters, remove 0.3 liter gas
10/07/98	1,302,200	910	0.63	Met EBMUD Rep/collects sample from sys-eff
10/10/98	1,305,695	1165	0.81	Check on system
10/13/98	1,307,777	694	0.48	Check on system
10/21/98	1,314,880	888	0.62	Check on system, backwash carbon 1 & 2, and sand filters
10/24/98	1,318,278	1133	0.79	System down, clean recycle line and backwash carbon
11/01/98	1,323,890	702	0.49	System down from rain in containment, compressor not working
11/08/98	1,326,106	317	0.22	Burnt out fuse in control box
11/11/98	1,326,106	0	0.00	Replace fuses, tightened compressor belt
11/13/98	1,326,106	0	0.00	Met EBMUD Rep/collects sample from sys-eff, system down due to high containment, discharge pump not primed
11/14/98	1,327,176	1070	0.74	Pump rainwater from comtainment into bioreactor, restart system
11/18/98	1,331,950	1194	0.83	Check on system
11/20/98	1,334,352	1201	0.83	Check on system, add two bags of nutrient and 135 gallons of water to nutient tank
11/29/98	1,338,640	476	0.33	Check on system, clear recycle line, backwash sand filters
12/02/98	1,339,840	400	0.28	Sample monitoring wells, system eff, bio-eff and sep-eff
12/06/98	1,344,130	1073	0.74	Check system
12/19/98	1,348,660	348	0.24	Check system, cleared recycle line
12/27/98	1,353,970	664	0.46	Backwash carbon vessels and sand filters

Total (gallons)	Average (gpd)	Average (gpm)
55,910	635	0.44

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
16-Jun-92					
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	—
19-Jun-92					
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	—
2-Jul-92					
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	—
20-Aug-92					
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	—
15-Sep-92					
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	—
3-Mar-94					
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	—
7-Apr-94					
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	—

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	9,300	2	ND <0.5	NA	—
13-May-94					
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	—
29-Sep-94					
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	—
19-Dec-94					
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	—
5-Jan-95					
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	—
14-Apr-95					
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	—
18-May-95					
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	—
7-Sep-95					
TPHg	NA	4	1.1	0.2	—
Benzene	NA	400	120	15	—
Toluene	NA	300	75	9	—

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
Ethylbenzene	NA	12	2	ND<0.5	—
Xylene	NA	320	82	9	—
16-Nov-95					
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	—
22-Dec-95					
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	—
29-Dec-95					
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	—
17-Jan-96					
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	—
16-Feb-96					
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	—
19-Mar-96					
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	—
18-Apr-96					
TPHg	NA	NA	1.3	0.17	0.09
Benzene	NA	NA	37	1.4	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
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
5-Jun-96					
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
9-Aug-96					
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
4-Oct-96					
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
11-Dec-96					
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
16-Dec-96					
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
23-Dec-96					
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
18-Feb-97					
TPHg	NA	2.0	NA	0.12	ND<0.05

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
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
6-May-97					
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
21-Jun-97					
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
13-Aug-97					
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
Xylene	NA	5	NA	ND<2	ND<2
3-Oct-97					
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
23-Dec-97					
TPHg	NA	NA	NA	0.26	ND<0.05
Benzene	NA	NA	NA	ND<0.5	ND<0.5
Toluene	NA	NA	NA	0.8	ND<0.5
Ethylbenzene	NA	NA	NA	0.6	ND<0.5
Xylene	NA	NA	NA	2	ND<2
9-Feb-98					
TPHg	NA	NA	NA	NA	ND<0.05
Benzene	NA	NA	NA	NA	ND<0.5
Toluene	NA	NA	NA	NA	ND<0.5
Ethylbenzene	NA	NA	NA	NA	ND<0.5
Xylene	NA	NA	NA	NA	ND<2
24-Mar-98					

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

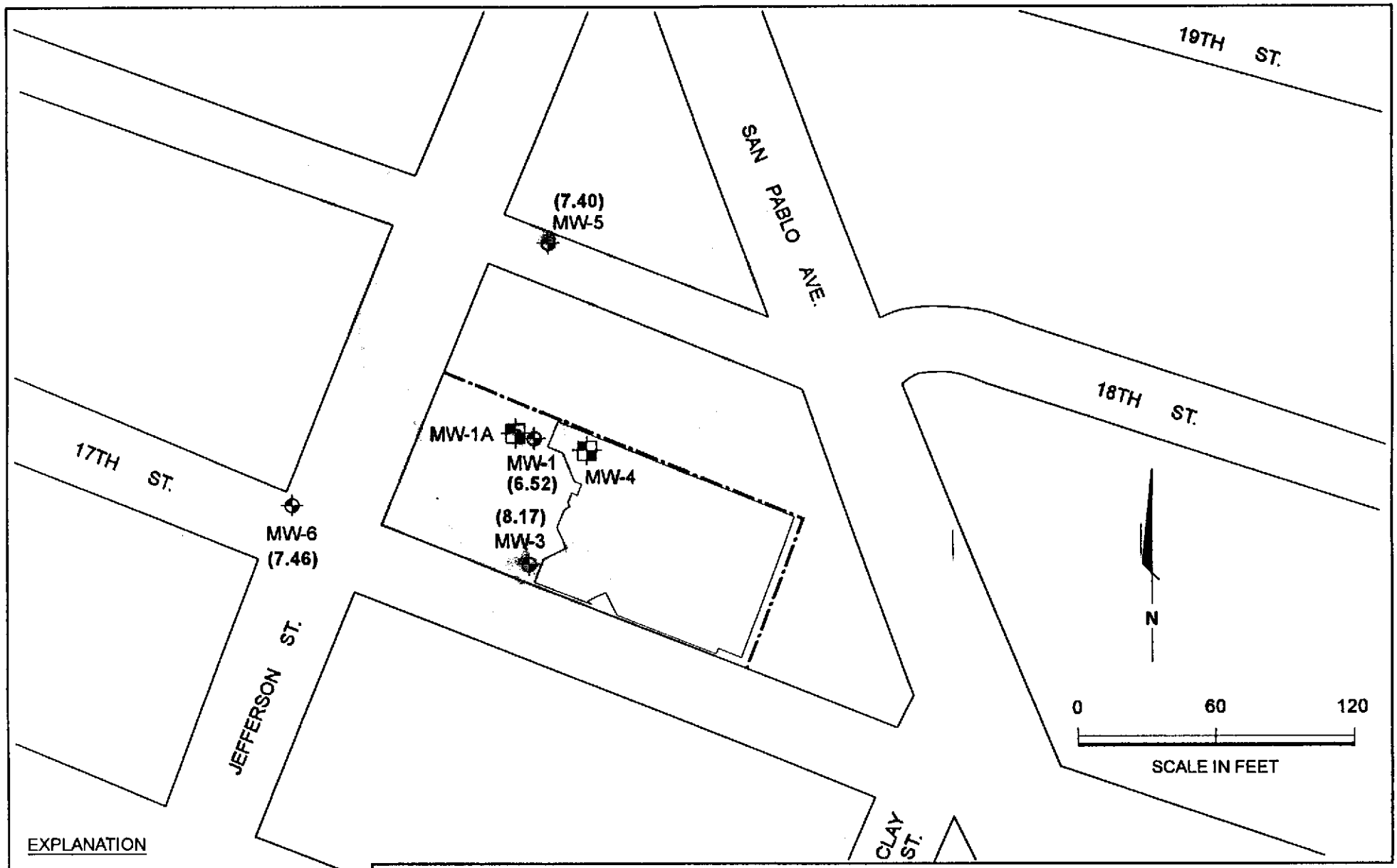
Date/Analytes	Bioreactor Influent	Bioreactor Effluent	First Carbon Bed Effluent	Second Carbon Bed Effluent	Third* Carbon Bed Effluent
TPHg	NA	NA	NA	NA	ND<0.05
Benzene	NA	NA	NA	NA	ND<0.5
Toluene	NA	NA	NA	NA	ND<0.5
Ethylbenzene	NA	NA	NA	NA	ND<0.5
Xylene	NA	NA	NA	NA	ND<2
31-Mar-98					
TPHg	51	0.44	NA	NA	NA
Benzene	5,800	17	NA	NA	NA
Toluene	9,200	11	NA	NA	NA
Ethylbenzene	700	ND(0.5)	NA	NA	NA
Xylene	9,000	6	NA	NA	NA
18-Jun-98					
TPHg	26	ND(0.05)	NA	NA	ND(0.05)
Benzene	4,100	ND(0.30)	NA	NA	ND(0.30)
Toluene	1,900	ND(0.30)	NA	NA	ND(0.30)
Ethylbenzene	ND(15)	ND(0.30)	NA	NA	ND(0.30)
Xylene	4,700	ND(0.60)	NA	NA	ND(0.60)
28-Aug-98					
TPHg	31	ND(0.05)	NA	NA	ND(0.05)
Benzene	3,800	0.46	NA	NA	ND(0.30)
Toluene	3,900	0.37	NA	NA	ND(0.30)
Ethylbenzene	220	ND(0.30)	NA	NA	ND(0.30)
Xylene	5,700	1.8	NA	NA	ND(0.60)
2-Dec-98					
TPHg	31	ND(0.05)	NA	NA	ND(0.05)
Benzene	1,100	ND(0.30)	NA	NA	ND(0.30)
Toluene	610	ND(0.30)	NA	NA	ND(0.30)
Ethylbenzene	23	ND(0.30)	NA	NA	ND(0.30)
Xylene	3,000	ND(0.60)	NA	NA	ND(0.60)

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 in-line December 29, 1996

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

	Date Sampled																						
TPHg (mg/l)	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	12/13/95	3/6/96	6/11/96	9/19/96	12/23/96	3/27/97	6/4/97	9/26/97	12/23/97	3/31/98	6/18/98	8/28/98	12/2/98
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	68	59	41	44	32	26	26
MW-1A	350	FP	FP	FP	170	95	190	67	53	52	62	200	140	100	FP	86	54	73	66	51	50	15	41
MW-3	74	FP	FP	FP	FP	39	4,600	51	20	6.2	19	7	16	6	FP	FP	85	47	32	32	16	17	3.2
MW-4	86	FP	FP	FP	58	16	92	35	13	14	11	110	260	95	FP	37	24	41	48	NA	25	48	10
MW-5	120	51	74	80	63	64	59	51	41	50	45	51	48	48	45	44	35	36	39	48	17	16	15
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Benzene (µg/l)																							
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	2,200	6,000	6,800	8,300	1,100	8,600	9,200
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	10,000	9,100	11,000	1,100	8,500
MW-3	1,600	FP	FP	FP	FP	3,200	1,500	1,100	270	70	220	120	170	45	FP	FP	8,500	610	640	690	180	84	39
MW-4	1,500	FP	FP	FP	1,500	1,300	1,700	1,200	1,300	2,200	630	2,600	6,600	9,900	FP	2,600	2,600	2,900	6,000	NA	2,000	9,700	1,700
MW-5	20,000	13,000	16,000	19,000	14,000	29,000	13,000	15,000	12,000	1,600	13,000	15,000	12,000	12,000	12,000	11,000	8,900	7,900	13,000	10,000	9,500	5,400	8,400
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)
Toluene (µg/l)																							
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	14,000	4,500	3,000	3,000	3,700	3,800	2,300	4,300
MW-1A	31,000	FP	FP	FP	31,000	21,000	21,000	13,000	9,900	9,200	11,000	22,000	28,000	22,000	FP	15,000	12,000	16,000	16,000	11,000	15,000	830	11,000
MW-3	4,600	FP	FP	FP	FP	2,900	4,200	2,300	550	140	480	170	270	30	FP	FP	13,000	6,000	5,300	3,800	1,500	1,100	85
MW-4	6,200	FP	FP	FP	2,500	790	4,100	3,400	1,600	2,100	470	3,600	19,000	19,000	FP	6,900	3,200	5,000	11,000	NA	460	11,000	610
MW-5	14,000	5,900	5,000	8,200	3,500	5,400	3,800	2,200	2,100	2,700	2,100	2,800	2,900	4,500	2,200	1,100	560	270	500	400	310	160	120
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)
Ethylbenzene (µg/l)																							
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	1,500	1,600	1,400	1,100	550	730	820
MW-1A	3,000	FP	FP	FP	2,100	1,500	1,400	910	500	710	790	2,700	2,800	2,100	FP	1,400	1,000	1,400	1,400	1,100	870	31	720
MW-3	670	FP	FP	FP	FP	580	6,000	580	190	68	140	49	68	15	FP	FP	2,400	930	800	870	490	430	25
MW-4	1,000	FP	FP	FP	520	51	310	280	77	110	14	780	3,700	2,000	FP	540	140	350	580	NA	ND(15)	890	ND(15)
MW-5	1,900	1,400	1,800	1,400	1,500	2,800	1,800	2,800	1,400	2,000	16,000	2,000	2,000	2,300	2,700	1,900	1,500	1,500	1,900	2,000	420	1,100	1,500
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.5	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)
Xylenes (µg/l)																							
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	11,000	8,600	6,600	4,300	3,000	2,100	2,800
MW-1A	22,000	FP	FP	FP	14,000	12,000	11,000	9,800	6,300	6,800	5,300	22,000	19,000	14,000	FP	100	7,200	8,500	12,000	6,800	5,800	3,000	6,700
MW-3	4,300	FP	FP	FP	FP	4,300	95,000	4,800	1,700	500	1,700	440	1,500	300	FP	FP	16,000	5,900	5,900	5,200	3,700	3,800	360
MW-4	7,300	FP	FP	FP	3,200	3,400	5,400	5,800	1,800	2,100	1,800	10,000	28,000	13,000	FP	5,500	3,500	4,800	8,200	NA	6,400	5,000	2,300
MW-5	4,900	2,600	2,700	2,700	2,100	4,500	2,900	4,500	1,600	2,100	1,900	2,400	2,700	4,000	6,500	2,800	1,700	1,300	1,700	2,200	850	900	840
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(0.60)	ND(0.60)	ND(0.60)
MTBE (µg/l)																							
MW-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	ND(500)	ND(500)	300	420	ND(50)	ND(50)	ND(50)
MW-1A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,800	ND(500)	ND(500)	1,900	300	ND(50)	ND(50)	ND(50)
MW-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	ND(500)	ND(100)	ND(300)	350	ND(25)	ND(50)	ND(50)
MW-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400	ND(300)	ND(500)	270	NA	ND(50)	ND(50)	ND(50)
MW-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	600	300	ND(100)	ND(500)	ND(1000)	350	ND(10)	ND(50)	ND(50)
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	NA	NA	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(1.0)	ND(1.0)	ND(1.0)

TPHg = total petroleum hydrocarbons as gasoline
MTBE = methyl t-butyl ether
(mg/l) milligrams per liter
(µg/l) micrograms per liter
ND = Not detected above the reporting limit in parenthesis
NA = Not analyzed
FP = Free Product
-- = Well did not exist at date indicated



EXPLANATION

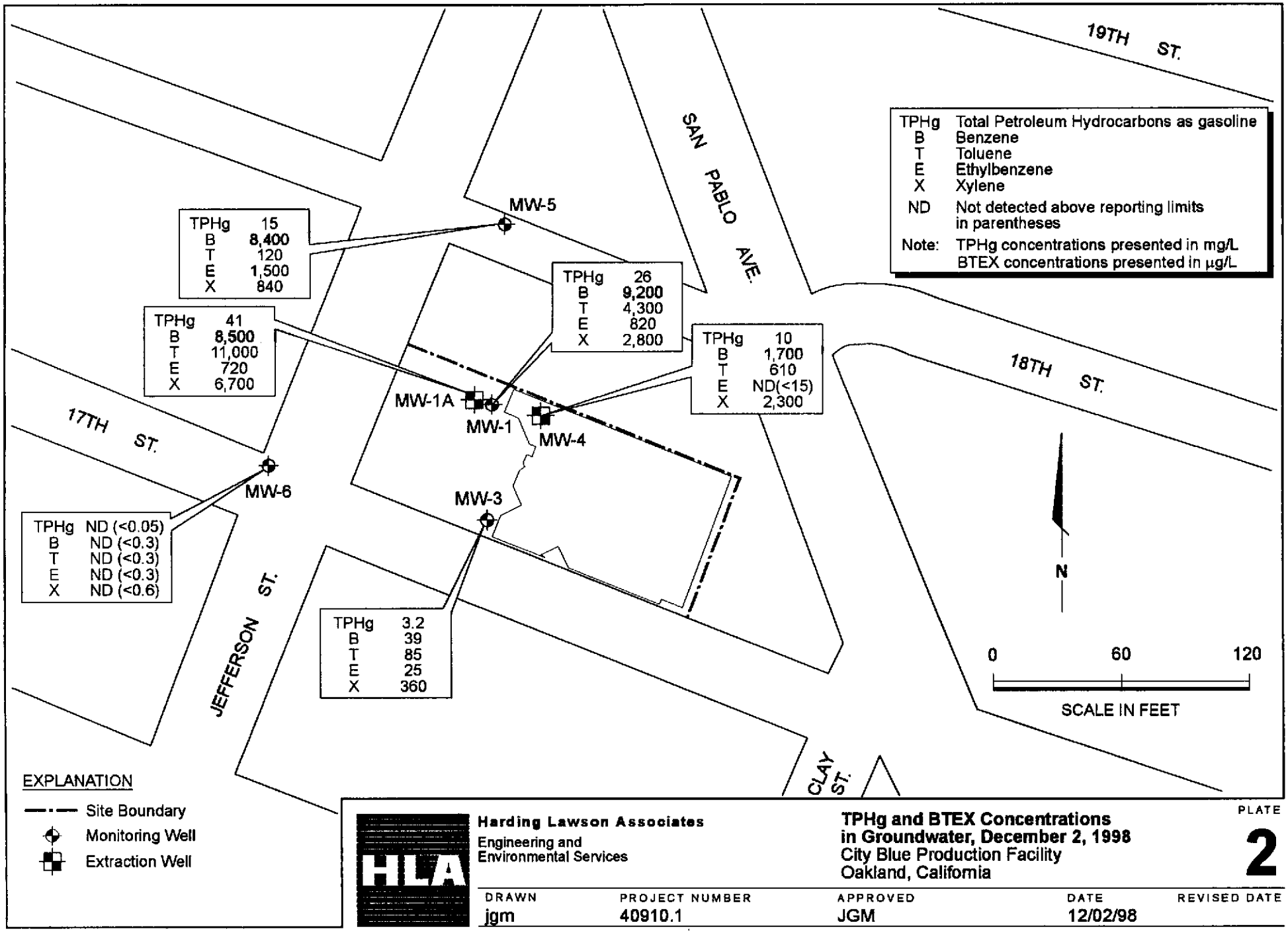
- Site Boundary
- Monitoring Well
- Extraction Well
- (5.03) Groundwater Elevation (in feet based on City of Oakland datum)

Harding Lawson Associates
Engineering and Environmental Services

Groundwater Surface Elevations
December 2, 1998
City Blue Production Facility
Oakland, California

PLATE **1**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	40910.1	JGM	12/02/98	



Harding Lawson Associates
Engineering and Environmental Services

TPHg and BTEX Concentrations in Groundwater, December 2, 1998
City Blue Production Facility
Oakland, California

PLATE **2**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
jgm	40910.1	JGM	12/02/98	

APPENDIX A

LABORATORY REPORTS

CLS Labs

Harding Lawson Associates
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

12/24/98

Attention: **Jim McCarty**

Reference: **Analytical Results**

Project Name: **City Blue**
Project No.: **40910-1**
Date Received: **12/03/98**
Chain Of Custody: **2029**

CLS ID No.: **P8579**
CLS Job No.: **818579**

The following analyses were performed on the above referenced project:

No. of Samples	*Turnaround Time*	*Analysis Description*
6	10 Days	TPH as Gasoline, BTEX and MTBE
3	10 Days	TPH Gasoline and BTXE (water)

These samples were received by CLS Labs in a chilled, intact state and accompanied by a valid chain of custody document.

Calibrations for analytical testing have been performed in accordance to and pass the EPA's criteria for acceptability.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

3249 Fitzgerald Road Rancho Cordova, CA 95742 (916) 638-7301 Fax (916) 638-4510

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-1**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-1A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1.00	100

***Sample:* MW-1**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	26	2.5	50

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-1A**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-2A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1.00	93

***Sample:* MW-1A**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	41	2.5	50

ND = Not detected at or above indicated Reporting Limit

CA DOHS ELAP Accreditation/Registration Number 1233

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-3**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-3A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.100	118

***Sample:* MW-3**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	3.2	0.25	5.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-4**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-4A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.200	64 MA

***Sample:* MW-4**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	10	0.50	10

MA = Recovery data is outside standard QC limits due to matrix interference. LCS recovery data validates methodology.

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-5**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-5A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.200	114

***Sample:* MW-5**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	15	0.50	10

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-6**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-6A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.0200	94

***Sample:* MW-6**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	ND	0.050	1.0

ND = Not detected at or above indicated Reporting Limit

CA DOHS ELAP Accreditation/Registration Number 1233

3249 Fitzgerald Road Rancho Cordova, CA 95742 (916) 638-7301 Fax (916) 638-4510

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	MB Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.0200	103

METHOD BLANK

Analyte	CAS No.	Results (mg/L)	Reporting Limit (mg/L)
TPH as Gasoline	N/A	ND	0.050

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-1**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-1A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1000	107

***Sample:* MW-1**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634-04-4	ND	50	50
Benzene	71-43-2	9200	150	500
Toluene	108-88-3	4300	150	500
Ethylbenzene	100-41-4	820	15	50
Xylenes, total	1330-20-7	2800	30	50

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-1A**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-2A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1000	99

***Sample:* MW-1A**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634-04-4	ND	50	50
Benzene	71-43-2	8500	150	500
Toluene	108-88-3	11000	150	500
Ethylbenzene	100-41-4	720	15	50
Xylenes, total	1330-20-7	6700	30	50

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-3**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-3A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	100	107

***Sample:* MW-3**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634-04-4	ND	5.0	5.0
Benzene	71-43-2	39	1.5	5.0
Toluene	108-88-3	85	1.5	5.0
Ethylbenzene	100-41-4	25	1.5	5.0
Xylenes, total	1330-20-7	360	3.0	5.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-4**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-4A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1000	98

***Sample:* MW-4**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634-04-4	ND	50	50
Benzene	71-43-2	1700	15	50
Toluene	108-88-3	610	15	50
Ethylbenzene	100-41-4	ND	15	50
Xylenes, total	1330-20-7	2300	30	50

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/07/98**
Date Reported: **12/08/98**
Client ID No.: **MW-5**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-5A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	2000	108

***Sample:* MW-5**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634-04-4	ND	100	100
Benzene	71-43-2	8400	150	500
Toluene	108-88-3	120	30	100
Ethylbenzene	100-41-4	1500	30	100
Xylenes, total	1330-20-7	840	60	100

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**
Client ID No.: **MW-6**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-6A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	106

***Sample:* MW-6**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Methyl t-butyl ether	1634-04-4	ND	1.0	1.0
Benzene	71-43-2	ND	0.30	1.0
Toluene	108-88-3	ND	0.30	1.0
Ethylbenzene	100-41-4	ND	0.30	1.0
Xylenes, total	1330-20-7	ND	0.60	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	MB Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	109

METHOD BLANK

Analyte	CAS No.	Results (ug/L)	Reporting Limit (ug/L)
Methyl t-butyl ether	1634-04-4	ND	1.0
Benzene	71-43-2	ND	0.30
Toluene	108-88-3	ND	0.30
Ethylbenzene	100-41-4	ND	0.30
Xylenes, total	1330-20-7	ND	0.60

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

MS SURROGATE

Analyte	CAS No.	MS Surr. Conc. (ug/L)	MS Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	102

MATRIX SPIKE

Analyte	CAS No.	MS Conc. (ug/L)	MS Recovery (percent)
Benzene	71-43-2	20.0	113
Toluene	108-88-3	20.0	105
Ethylbenzene	100-41-4	20.0	109
Xylenes, total	1330-20-7	60.0	106

MSD SURROGATE

Analyte	CAS No.	Surr. Conc. (ug/L)	MSD Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	101

MATRIX SPIKE DUPLICATE

Analyte	CAS No.	MSD Conc. (ug/L)	MSD Recovery (percent)
Benzene	71-43-2	20.0	104
Toluene	108-88-3	20.0	101
Ethylbenzene	100-41-4	20.0	101
Xylenes, total	1330-20-7	60.0	101

RELATIVE % DIFFERENCE

Analyte	CAS No.	Relative Percent Difference (percent)

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

RELATIVE % DIFFERENCE(cont.)

Analyte	CAS No.	Relative Percent Difference (percent)
Benzene	71-43-2	8
Toluene	108-88-3	4
Ethylbenzene	100-41-4	8
Xylenes, total	1330-20-7	5

CA DOHS ELAP Accreditation/Registration Number 1233

CLS Labs

Analysis Report: **EPA 8020, BTEX and MTBE**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/04/98**
Date Analyzed: **12/04/98**
Date Reported: **12/08/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24021**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

LCS SURROGATE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	98

LAB CONTROL SAMPLE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Recovery (percent)
Benzene	71-43-2	20.0	97
Toluene	108-88-3	20.0	99
Ethylbenzene	100-41-4	20.0	109
Xylenes, total	1330-20-7	60.0	99

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**
Client ID No.: **Bio-eff**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-7A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	111

***Sample:* BIO-EFF**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Benzene	71-43-2	ND	0.30	1.0
Toluene	108-88-3	ND	0.30	1.0
Ethylbenzene	100-41-4	ND	0.30	1.0
Xylenes, total	1330-20-7	ND	0.60	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**
Client ID No.: **Sep-eff**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-8A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1000	99

Sample: SEP-EFF

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Benzene	71-43-2	1100	15	50
Toluene	108-88-3	610	15	50
Ethylbenzene	100-41-4	23	15	50
Xylenes, total	1330-20-7	3000	30	50

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**
Client ID No.: **Sys-eff**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-9A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	109

***Sample:* SYS-EFF**

Analyte	CAS No.	Results (ug/L)	Rep. Limit (ug/L)	Dilution (factor)
Benzene	71-43-2	ND	0.30	1.0
Toluene	108-88-3	ND	0.30	1.0
Ethylbenzene	100-41-4	ND	0.30	1.0
Xylenes, total	1330-20-7	ND	0.60	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (ug/L)	MB Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	108

METHOD BLANK

Analyte	CAS No.	Results (ug/L)	Reporting Limit (ug/L)
Benzene	71-43-2	ND	0.30
Toluene	108-88-3	ND	0.30
Ethylbenzene	100-41-4	ND	0.30
Xylenes, total	1330-20-7	ND	0.60

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

MS SURROGATE

Analyte	CAS No.	MS Surr. Conc. (ug/L)	MS Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	99

MATRIX SPIKE

Analyte	CAS No.	MS Conc. (ug/L)	MS Recovery (percent)
Benzene	71-43-2	20.0	104
Toluene	108-88-3	20.0	104
Ethylbenzene	100-41-4	20.0	105
Xylenes, total	1330-20-7	60.0	105

MSD SURROGATE

Analyte	CAS No.	Surr. Conc. (ug/L)	MSD Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	100

MATRIX SPIKE DUPLICATE

Analyte	CAS No.	MSD Conc. (ug/L)	MSD Recovery (percent)
Benzene	71-43-2	20.0	105
Toluene	108-88-3	20.0	105
Ethylbenzene	100-41-4	20.0	105
Xylenes, total	1330-20-7	60.0	106

RELATIVE % DIFFERENCE

Analyte	CAS No.	Relative Percent Difference (percent)

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

RELATIVE % DIFFERENCE(cont.)

Analyte	CAS No.	Relative Percent Difference (percent)
Benzene	71-43-2	1
Toluene	108-88-3	1
Ethylbenzene	100-41-4	0
Xylenes, total	1330-20-7	1

CA DOHS ELAP Accreditation/Registration Number 1233

CLS Labs

Analysis Report: **BTEX, EPA Method 602**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

LCS SURROGATE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	20.0	98

LAB CONTROL SAMPLE

Analyte	CAS No.	LCS Conc. (ug/L)	LCS Recovery (percent)
Benzene	71-43-2	20.0	97
Toluene	108-88-3	20.0	98
Ethylbenzene	100-41-4	20.0	109
Xylenes, total	1330-20-7	60.0	101

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**
Client ID No.: **Bio-eff**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-7A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.0200	81

***Sample:* BIO-EFF**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	ND	0.050	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**
Client ID No.: **Sep-eff**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-8A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	1.00	90

***Sample:* SEP-EFF**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	15	2.5	50

ND = Not detected at or above indicated Reporting Limit

CA DOHS ELAP Accreditation/Registration Number 1233

3249 Fitzgerald Road Rancho Cordova, CA 95742 (916) 638-7301 Fax (916) 638-4510

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Sampled: **12/02/98**
Date Received: **12/03/98**
Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**
Client ID No.: **Sys-eff**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579-9A**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.0200	92

***Sample:* SYS-EFF**

Analyte	CAS No.	Results (mg/L)	Rep. Limit (mg/L)	Dilution (factor)
TPH as Gasoline	N/A	ND	0.050	1.0

ND = Not detected at or above indicated Reporting Limit

CLS Labs

Analysis Report: **Total Petroleum Hydrocarbons, EPA Method 8015**
Purge and Trap, EPA Method 5030

Client: **Harding Lawson Associates**
Engineering and Environmental
383 4th Street, Third Floor
Oakland, CA 94607

Project: **City Blue**

Date Extracted: **12/08/98**
Date Analyzed: **12/08/98**
Date Reported: **12/09/98**

Project No.: **40910-1**
Contact: **Jim McCarty**
Phone: **(510)451-1001**

Lab Contact: **James Liang**
Lab ID No.: **P8579**
Job No.: **818579**
COC Log No.: **2029**
Batch No.: **24048**
Instrument ID: **GC007**
Analyst ID: **SCOTTF**
Matrix: **WATER**

MB SURROGATE

Analyte	CAS No.	Surr Conc. (mg/L)	MB Surrogate Recovery (percent)
o-Chlorotoluene	95-49-8	0.0200	93

METHOD BLANK

Analyte	CAS No.	Results (mg/L)	Reporting Limit (mg/L)
TPH as Gasoline	N/A	ND	0.050

ND = Not detected at or above indicated Reporting Limit

3249 Fitzgerald Road Rancho Cordova, CA 95742 (916) 638-7301 Fax (916) 638-4510

Harding Lawson Associates
383 Fourth Street, Third Floor
Oakland California 94607
(510) 451-1001

CHAIN OF CUSTODY FORM

P8579

Lab: Nº 2029 CLS

Samplers: JGM

Job Number: 40910-1

Name/Location: City Blue

Project Manager: Jim McCarty

Recorder: James McCarty (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	# CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCL	Ice	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Day	Time	STATION DESCRIPTION/ NOTES
	X							3		MW-1			98	12	02	0900	
										MW-1A						0920	
										MW-3						0830	
										MW-4						0922	
										MW-5						0745	
										MW-6						0710	
										Bio-eff						0935	
										sep-eff						0930	
										sys-eff						0940	

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	METALS	EPA 8015M/TPHg	EPA 8020/BTEX	EPA 8015M/TPHd.o	TPHg/BTEX	MTBE
								X	X
								X	X
								X	X
								X	X
								X	X
								X	X
								X	
								X	
								X	

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE

MISCELLANEOUS

Std TAT

FAx # 510 451-3165

E-mail jmccarty@harding.com

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) James McCarty	RECEIVED BY: (Signature)	DATE/TIME 12/3/98 1300
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME 12/3/98 1400

METHOD OF SHIPMENT

SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink