



**Harding ESE**  
A MACTEC COMPANY

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**Alameda County**

**NOV 06 2002**

**Environmental Health**

October 24, 2002

Project 53087.4

Mr. Jeff Christoff  
Blue Print Service Company  
149 Second Street  
San Francisco, California 94105

**Quarterly Groundwater Remediation and Monitoring Report  
June 30 through August 31, 2002  
BPS Reprographic Services Facility  
1700 Jefferson Street  
Oakland, California**

Dear Mr. Christoff:

Harding ESE, Inc. (Harding) presents this quarterly status letter-report on the groundwater monitoring and remedial activities at the BPS Reprographic Services (BPS) facility located at 1700 Jefferson Street in Oakland, California (Plate 1). This letter-report covers the period from June 30 through August 31, 2002, and was prepared to satisfy the quarterly groundwater monitoring requirements of the Alameda County Department of Environmental Health Services (County).

## **BACKGROUND**

Three underground gasoline storage tanks were removed from the property in 1987 and a preliminary soil and groundwater investigation indicated that a release of fuel into the subsurface had occurred. 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 groundwater and to determine the direction of groundwater flow. Free phase hydrocarbon (FPH) was found in MW-1. Groundwater level measurements indicated that the local groundwater gradient was in a north to northwest direction.

In November 1987, monitoring well MW-2 was abandoned to facilitate the construction of the present BPS facility and, in January 1988, two additional wells, MW-1A and MW-4, were installed as groundwater extraction wells. Harding also installed one offsite monitoring well, MW-5, in August 1988 and a second offsite well, MW-6, in April 1996. The monitoring well locations are shown on Plate 1.

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In 1992, a groundwater extraction system was constructed at the site to remove FPH from the groundwater surface. Groundwater was extracted from MW-1A and MW-4 and passed through an oil-water separator that removed the FPH. The water was then drawn into a 3,000-gallon bioreactor tank for treatment by hydrocarbon reducing microbes. Air and nutrients were supplied to the water within the bioreactor to facilitate microbial growth. The treated water from the bioreactor was pumped in batches of approximately 500 gallons through three granular activated carbon vessels before discharge under a wastewater discharge permit from the East Bay Utility District to the sanitary sewer. The treatment system processed approximately 1,385,490 gallons of groundwater and an estimated 5,062 pounds of FPH were recovered.

By 1999, the oil-water separator was no longer recovering FPH and FPH was no longer present in any of the groundwater monitoring wells. Dissolved hydrocarbon concentrations were decreasing and Harding requested approval from The County to terminate groundwater extraction and to modify the remediation technique to *in situ*-bioremediation using an oxygen-releasing compound (ORC™). ORC™ is manufactured and distributed by Regenesis, Inc.; its purpose is to increase the concentration of dissolved oxygen (DO) in the groundwater and to augment the ability of naturally occurring microbial organisms in the groundwater to biodegrade the dissolved petroleum hydrocarbons. The County approved this plan in a letter dated September 28, 1999, following the submittal of an ORC™ calculation sheet and a Groundwater Monitoring Plan, dated September 23, 1999.

Harding implemented the *in situ* remediation technique by placing ORC™ in treatment wells: MW-1A, MW-3, MW-4, and MW-5 on September 29, 1999. The ORC™ is contained in fabric "socks" which release oxygen over time until the compound's oxygen releasing potential is depleted. Harding installed five socks in each treatment well at the approximate depth of the well's screened interval.

The Groundwater Monitoring Plan outlined procedures for groundwater sampling using a non-purge method approved by the Regional Water Quality Control Board in a letter dated January 31, 1997. The first quarter that the new Groundwater Monitoring Plan was implemented, sampling included duplicate sampling using both the purge and non-purge methods (see Harding's quarterly report, dated October 25, 1999).

### **THIRD QUARTER 2002 GROUNDWATER SAMPLING AND ANALYSIS**

In accordance with the Groundwater Monitoring Plan, Harding removed the ORC™ socks approximately two weeks before the scheduled sampling event from Wells MW-3 and MW-5 on June 3, 2002. The dissolved oxygen (DO) was measured *in-situ* in wells MW-3, MW-5, MW-1 and MW-6. The DO measurements are presented in Table 1.

On September 14, 2002, Harding conducted the quarterly groundwater sampling of wells MW-1, MW-3, MW-5, and MW-6 using the non-purge method outlined in the Groundwater Monitoring Plan. Prior to sampling, Harding measured the depth to groundwater from the top of casing (TOC) of each well using an electronic water level indicator. These measurements are displayed on Plate 2 and tabulated in Table 2. To collect the groundwater samples, Harding raised dedicated Teflon tubing contained in each well until the submerged end of the tubing was 2 to 4 feet below the groundwater surface and connected the dry end of the tubing to a peristaltic pump with silicon tubing. New silicon tubing was used to sample each well. After removing the approximate volume of groundwater equal to the volume capacity of the Teflon tubing, Harding measured the groundwater's conductivity, pH, DO, and temperature and collected a sample in laboratory provided 40-milliliter vials. The groundwater parameter measurements are also presented in Table 1.

Immediately after sample collection, Harding labeled and stored the samples in a cooler with ice. The groundwater samples were kept chilled until submitted to Sequoia Analytical Laboratory (Sequoia), a California state-certified laboratory, under chain-of-custody protocol for the following analyses:

- Total petroleum hydrocarbons as gasoline (TPHg) in accordance with EPA Method 8015 modified;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) in accordance with EPA Method 8020.
- Methyl tertiary butyl ether (MTBE) in accordance with EPA Method 8020 with confirmation of detections by EPA Method 8260.

The analytical results are displayed on Plates 3 and 4. The laboratory reports are presented in the Appendix.

Upon completion of the groundwater sampling, Harding installed 5 new ORC™ socks in well MW-3 and MW-5. Harding re-installed the ORC™ socks in wells MW-1A and MW-4 where they will remain until the next quarterly monitoring event. Presently, the ORC™ socks are replaced in the treatment wells on six-month intervals.

## DISCUSSION

As shown in Table 2 and on Plate 5, the groundwater surface elevation decreased an average of 0.31 feet across the site as compared to last quarter's measurements. Using the groundwater elevations from MW-1, MW-3, MW-5, and MW-6 as measured on June 14, 2002, groundwater contours were created and are shown on Plate 2. Based on the groundwater elevations, the groundwater gradient ranges from 0.004 to 0.006 ft/ft from the southwest to the west. At the time MW-5 was constructed, the groundwater flow direction was reportedly north to northwest, and MW-5 was considered a downgradient well. However, presumably because of the construction of new buildings in the immediate vicinity, which extend below the

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groundwater surface, recent groundwater monitoring has indicated the groundwater flow has been in a west to southwest direction.

Table 3 displays a summary of historical groundwater sample results through September 29, 1999, when the typical purge and sample protocol was terminated. Table 4 displays historical groundwater sample results since instituting *in situ* bioremediation and a non-purge sampling protocol. Plate 3 and Plate 4 present the sample results from this quarter's sampling event.

As shown on Table 4 and Plate 3, concentrations of TPH-g, BTEX and MTBE remained within the range of historical values for all the wells sampled. A laboratory provided trip blank consisting of organic free water was transported to and from the sampling site with the samples described above. The trip blank was analyzed for TPH-g, BTEX and MTBE with the groundwater samples using EPA Method 8015M/8020M. The trip blank was found to be free of contamination.

The DO content in the groundwater in wells MW-3 and MW-5 immediately following the removal of the ORC™ socks were 0.28 and 0.40 milligrams per liter (mg/l) respectively. The DO content in both wells two weeks after removal of the ORC™ socks did not change significantly. The low concentration of DO in both wells following ORC™ sock removal coupled with the lack of a decrease in DO concentrations two weeks after the ORC™ socks were removed suggest that the ORC™ socks may not have been fully immersed in the groundwater when they were installed in these wells. It is possible that the ORC™ socks may have become stuck inside the well casing just above groundwater upon installation. Technicians performing ORC™ installation at this site in the future will be informed of this possibility. Steps have been taken to ensure that the technician performing the ORC™ installation verifies that the ORC™ socks are fully immersed upon installation.

## RECOMMENDATIONS

Harding recommends continued quarterly monitoring utilizing the procedures outlined in the Groundwater Monitoring Plan. ORC™ socks will continue to be replaced on six-month intervals to promote biodegradation of the residual petroleum hydrocarbons. Based on this interval, Harding will replace the ORC™ socks in MW-1A and MW-4 next quarter.

Harding recommends that Blue Print Services send a copy of this report to the following address:

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

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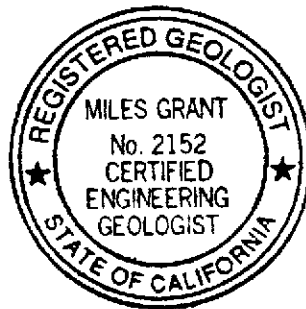
While under contract to BPS, Harding will continue to provide quarterly groundwater monitoring and reporting as required by The County.

If you have any questions, please contact the undersigned at (415) 278-2118.

Sincerely,

**HARDING LAWSON ASSOCIATES**

David S. Nanstad  
Project Engineer



Miles Grant, R.G.  
Senior Geologist

DSN Novmain:/Cityblue/2q02

4 copies submitted

- Attachments:
- Table 1 – Groundwater Parameters
  - Table 2 – Groundwater Elevation Data
  - Table 3 – Historical Groundwater Monitoring Analytical Results - Using Purge Method
  - Table 4 – Groundwater Monitoring Analytical Results – Non-Purge Method
  - Plate 1 – Site Map
  - Plate 2 – Groundwater Contours, August 14, 2002
  - Plate 3 – TPH-g, BTEX and MTBE Concentrations in Groundwater, August 14, 2002
  - Plate 4 – BTEX and DO Results
  - Plate 5 – Groundwater Elevation Data
  - Appendix A – Laboratory Reports
  - Appendix B – Groundwater Sampling Forms
  - Table B1. Sample Location/Sample Description Cross-Reference

**Table 1. Groundwater Parameters  
BPS Reprographic Services Facility  
1700 Jefferson Street  
Oakland, California**

Dissolved Oxygen (mg/l)	MW-1	MW-3	MW-5	MW-6
9/29/99	2.90	1.70	0.40	1.80
11/5/99	4.00	10.40	4.00	2.80
11/22/99	1.80	2.40	2.00	3.20
1/28/00	2.90	3.40	3.60	2.20
2/11/00	2.50	2.30	1.80	3.50
5/12/00	2.00	7.40	2.40	1.70
5/30/00	1.90	2.60	1.80	3.20
9/1/00	2.90	3.40	2.30	2.70
9/15/00	2.00	1.80	2.20	3.80
11/9/00	--	5.00	--	--
11/17/00	3.10	4.20	3.40	6.00
3/15/01	2.00	7.00	1.40	2.10
4/2/01	1.00	0.28	2.00	0.99
6/1/01	0.22	0.24	6.62	0.32
6/28/01	0.32	0.56	0.53	0.71
8/16/01	0.48	6.52	1.61	0.78
8/30/01	0.33	0.40	0.23	0.46
12/14/01	0.03	3.76	2.22	0.16
12/26/01	0.16	0.28	0.19	0.21
4/10/02	0.55	0.63	0.20	0.37
4/23/02	0.30	0.55	0.90	0.45
6/3/02	0.38	5.16	4.32	0.65
6/14/02	0.29	0.34	0.38	0.31
8/5/02	0.33	0.28	0.40	0.39
8/14/02	0.34	0.28	0.42	0.63
<b>REDOX (mvolt)</b>				
5/30/00	-322	197	-128	203
9/15/00	-269	3	-89	206
11/17/00	64	178	296	230
4/2/01	-194	26	-36	102
6/28/01	-310	-283	-360	107
8/30/01	NA	NA	NA	NA
12/26/01	12	11	11	11
4/23/02	3	62	-299	158
6/14/02	0	245	-215	254
8/20/02	-294	-315	-238	228
<b>Temperature (deg F)</b>				
9/29/99	67.0	72.6	67.7	73.8
11/22/99	66.4	82.9	65.0	69.8
2/11/00	61.3	63.2	62.0	68.5
5/30/00	77.7	74.8	76.3	76.2
9/15/00	64.4	64.3	64.7	67.0
11/17/00	54.5	58.1	68.1	65.9
4/2/01	63.5	64.9	66.2	66.4
6/28/01	73.0	71.2	74.7	74.3
8/30/01	74.8	77.5	78.3	78.7
12/26/01	65.7	65.8	65.8	65.1
4/23/02	64.4	69.8	37.1	71.6
6/14/02	66.7	67.5	66.7	68.0
8/20/02	64.6	67.6	66.2	68.0
<b>pH</b>				
9/29/99	8.39	8.53	8.43	8.44
11/22/99	6.86	8.42	6.84	6.79
2/11/00	6.80	6.94	6.83	6.72
5/30/00	7.02	7.35	7.54	7.56
9/15/00	7.06	7.54	6.76	6.62
11/17/00	7.37	7.69	7.12	7.34
4/2/01	6.98	6.61	7.07	6.96
6/28/01	6.90	6.74	6.78	6.83
8/30/01	7.85	7.91	7.9	8.41
12/26/01	6.23	6.91	7.11	6.72
4/23/02	6.90	6.95	6.94	6.86
6/14/02	7.05	7.24	7.08	6.89
8/20/02	NA	6.89	NA	6.91
<b>Specific Conductance (µS/cm)</b>				
9/29/99	976	880	1,577	966
11/22/99	1,004	1,500	1,352	1,038
2/11/00	992	1,327	1,275	1,149
5/30/00	845	1,020	758	924
9/15/00	800	917	989	1,009
11/17/00	785	970	742	886
4/2/01	725	365	839	821
6/28/01	1080	704	876	1021
8/30/01	924	1015	975	931
12/26/01	848	496	333	891
4/23/02	922	601	848	977
6/14/02	932	767	810	961
8/20/02	1015	509	891	985

Note:  
Baseline dissolved oxygen measurement taken on 09/29/99, prior to initial installation of oxygen releasing compound

mg/l = milligrams per liter  
mvolt = millivolt  
deg F = degrees Fahrenheit  
µS/cm = micro-ohms per centimeter  
NA = Not Available

**Table 2. Groundwater Elevation Data  
BPS Reprographic Services Facility  
1700 Jefferson Street  
Oakland, California**

Date Sampled	MW-1 TOC Elev.   32.36		MW-3 TOC Elev.   31.77		MW-5 TOC Elev.   30.56		MW-6 TOC Elev.   31.26		Average Change Since Preceding Quarter
	Water Level	Water Elevation	Water Level	Water Elevation	Water Level	Water Elevation	Water Level	Water Elevation	
3/6/96	NM	--	24.79	6.98	23.53	7.03	NA	--	
6/11/96	FP	--	25.60	6.17	23.78	6.78	25.16	6.10	-0.53
9/19/96	FP	--	26.09	5.68	24.48	6.08	25.76	5.50	-0.60
12/23/96	FP	--	FP	--	24.83	5.73	25.88	5.38	-0.23
3/27/97	FP	--	FP	--	23.82	6.74	24.78	6.48	1.06
6/4/97	26.41	5.95	25.11	6.66	23.92	6.64	24.60	6.66	0.04
9/26/97	26.80	5.56	25.41	6.36	24.29	6.27	24.80	6.46	-0.32
12/22/97	26.00	6.36	24.91	6.86	24.02	6.54	24.71	6.55	0.42
3/31/98	26.06	6.30	24.05	7.72	22.78	7.78	23.75	7.51	0.75
6/18/98	25.60	6.76	23.71	8.06	22.51	8.05	23.22	8.04	0.40
8/28/98	25.45	6.91	23.70	8.07	22.74	7.82	22.23	9.03	0.23
12/2/98	24.92	7.44	23.60	8.17	23.16	7.40	23.72	7.54	-0.32
3/10/99	24.90	7.46	22.65	9.12	22.82	7.74	23.54	7.72	0.37
6/30/99	25.53	6.83	23.07	8.70	22.41	8.15	23.04	8.22	-0.04
9/29/99	24.23	8.13	23.03	8.74	22.81	7.75	23.42	7.84	0.14
11/22/99	24.33	8.03	23.68	8.09	22.88	7.68	23.64	7.62	-0.26
2/11/00	24.38	7.98	23.74	8.03	22.74	7.82	23.67	7.59	0.00
5/30/00	23.57	8.79	22.97	8.80	21.73	8.83	22.82	8.44	0.86
9/15/00	23.85	8.51	23.12	8.65	22.14	8.42	23.10	8.16	-0.28
11/16/00	24.14	8.22	23.40	8.37	22.39	8.17	23.41	7.85	-0.28
4/2/01	23.40	8.96	23.40	8.37	22.07	8.49	23.33	7.93	0.29
6/28/01	23.58	8.78	23.17	8.60	22.15	8.41	23.15	8.11	0.04
8/30/01	24.00	8.36	23.35	8.42	22.35	8.21	23.35	7.91	-0.25
12/26/01	24.18	8.18	23.54	8.23	22.49	8.07	23.27	7.99	-0.11
4/23/02	NA		22.89	8.88	21.07	9.49	22.89	8.37	0.82
6/14/02	23.41	8.95	22.85	8.92	21.80	8.76	22.81	8.45	-0.20
8/20/02	23.85	8.51	23.11	8.66	22.14	8.42	23.15	8.11	-0.31

TOC Elev. = top of casing elevation  
 NM = not monitored  
 FP = free product  
 -- = no data collected  
 NA = not available (MW-6 had not been installed yet)

**Table 3. Historical Groundwater Monitoring Analytical Results - Using Purge Method**  
**BPS Reprintographic Services Facility**  
**1700 Jefferson Street**  
**Oakland, California**

TPH <sub>g</sub> (mg/l)	Date Sampled																										
	8/1/91	9/10/92	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	9/18/96	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	3/10/99	6/30/99	9/29/99	
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	26	18	21	
MW-1A	350	FP	FP	FP	170	95	190	67	53	32	62	200	140	100	FP	66	34	73	66	51	50	15	41	10	18	NA	
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	9.6	7.9	5.0	
MW-4	86	FP	FP	FP	58	16	92	35	13	14	11	110	260	95	FP	37	24	41	48	NA	23	48	10	11	8.8	NA	
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	23	7.7	11	
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)	ND(0.05)	ND(0.05)	ND(0.05)	
<b>Benzene (µg/l)</b>																											
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	8,200	7,000	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	2,300	6,400	NA	
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	86	51	120	
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	2,300	1,800	NA	
MW-5	20,000	15,000	16,000	19,000	14,000	29,000	15,000	15,000	12,000	1,600	13,000	15,000	12,000	12,000	11,000	8,900	7,900	11,000	10,000	9,500	5,400	8,400	14,000	5,200	9,600		
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	
<b>Toluene (µg/l)</b>																											
MW-1	FP	FP	FP	FP	FP	FP	FP	NA	NA	NA	NA	NA	FP	FP	FP	FP	14,000	4,500	3,000	3,000	3,700	3,900	2,300	4,300	5,900	5,800	10,000
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	13,000	12,000	16,000	16,000	11,000	15,000	830	11,000	1,900	7,800	NA	
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	5,500	3,800	1,500	1,100	85	540	340	310	
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	2,100	3,000	NA	
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	300	270	710	
MW-6	--	--	--	--	--	--	--	--	--	--	--	--	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	
<b>Ethylbenzene (µg/l)</b>																											
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	870	950	1,200	
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	1,600	660	NA	
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	250	200	240	
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)	88	150	NA	
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	2,600	2,300	2,700	1,900	1,500	1,500	1,900	2,000	420	1,100	1,500	1,800	1,500	1,100	
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)	ND(0.30)	ND(0.30)	ND(0.30)	
<b>Xylenes (µg/l)</b>																											
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	3,500	2,500	5,500	
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	2,800	4,100	NA	
MW-3	4,300	FP	FP	FP	FP	4,300	95,000	4,300	1,700	500	1,700	440	1,500	300	FP	FP	16,000	5,900	5,900	5,200	3,700	3,800	460	2,400	1,800	1,300	
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	2,400	1,600	2,700	NA	
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	1,100	690	1,100	
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)	ND(0.60)	ND(0.60)	ND(0.60)	
<b>MTBE (µg/l)</b>																											
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)	ND(50)	ND(25)	ND(250)	
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)	ND(50)	ND(25)	NA	
MW-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	FP	FP	ND(500)	ND(500)	ND(500)	350	ND(25)	ND(50)	ND(50)	ND(25)	ND(25)	10	
MW-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400	ND(500)	ND(500)	270	NA	ND(50)	ND(50)	ND(50)	ND(25)	ND(25)	NA	
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)	ND(50)	ND(25)	ND(100)	
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)	ND(1.0)	ND(1.0)	ND(1.0)	

TPH<sub>g</sub> = total petroleum hydrocarbons as gasoline  
 MTBE = methyl-tert-butyl ether  
 (mg/l) milligrams per liter  
 (µg/l) micrograms per liter

ND = Not detected above the reporting limit in parentheses  
 NA = Not analyzed  
 FP = Free Product - well not sampled  
 -- = Well did not exist at date indicated

TPH<sub>g</sub> = total petroleum hydrocarbons as gasoline  
 MTBE = methyl-tert-butyl ether  
 (mg/l) milligrams per liter  
 (µg/l) micrograms per liter

ND = Not detected above the reporting limit in parentheses  
 NA = Not analyzed  
 FP = Free Product - well not sampled  
 -- = Well did not exist at date indicated



**Table 4. Groundwater Monitoring Analytical Results – Non-Purge Method  
BPS Reprographic Services Facility  
1700 Jefferson Street  
Oakland, California**

	9/29/99	11/22/99	2/11/00	5/30/00	9/15/00	11/16/00	4/2/01	6/28/01	8/30/01	12/26/01	4/24/02	6/14/02	8/20/02
<b>TPHg (mg/l)</b>													
MW-1	14	24	19	19	20	18	19	39	31	34	35	35	26
MW-3	4.1	3.1	0.54	0.49	1.5	1.3	0.17	4.9	3.1	0.95	300	4.6	4.9
MW-5	10	30	23	19	24	1.8	15	3.6	34	1.9	9.4	1.7	3.2
MW-6	ND<0.5	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	0.066	ND<0.05	ND<0.05	ND 0.05
<b>Benzene (µg/l)</b>													
MW-1	6,200	4,900	4,100	5,700	4,100	3,500	4,700	5,200	5,600	5,300	4,900	5400	4100
MW-3	180	6.5	8.3	11	28	20	9	150	42	8	11	130	330
MW-5	14,000	11,000	12,000	9,900	3,800	470	7,400	300	8,300	300	2,300	110	320
MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.30	ND<0.50	ND<0.50	3.6	ND<0.50	ND<0.50	ND<0.50
<b>Toluene (µg/l)</b>													
MW-1	5,900	5,000	4,800	8,400	5,700	4,300	5,200	4,200	5,100	5,200	6,000	6,800	4700
MW-3	340	33	20	5.6	14	34	6.2	240	48	5.2	4.8	470	170
MW-5	470	3,400	4,500	6,900	3,000	220	3,000	11	3,000	110	130	ND<2.5	8.6
MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.30	2.9	ND<0.50	3.6	ND<0.50	ND<0.50	ND<0.50
<b>Ethylbenzene (µg/l)</b>													
MW-1	620	730	530	730	540	640	570	660	560	630	740	870	620
MW-3	130	27	2.4	0.45	2.6	25	1.4	38	26	1.1	0.72	91	40
MW-5	1,100	1,500	1,200	1,200	460	39	1000	16	1,400	55	300	7.2	22
MW-6	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<0.30	ND<0.30	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
<b>Xylenes (µg/l)</b>													
MW-1	3,500	3,500	2,800	3,500	2,700	3,200	2,600	3,900	2,500	2,400	3,100	3500	2700
MW-3	580	260	28	17	160	28	8.1	160	210	7	1.4	390	150
MW-5	600	2,500	1,300	2,600	1,200	100	2,200	15	2,600	120	270	ND<2.5	19
MW-6	ND<0.6	ND<0.6	ND<0.6	ND<0.6	ND<0.6	ND<0.60	ND<0.30	2.7	ND<0.50	8.7	ND<0.50	ND<0.50	ND<0.50
<b>MTBE (µg/l) (EPA Method 8020)</b>													
MW-1	ND<250	ND<100	6.6	ND<5.0 <sup>1</sup>	ND<12 <sup>1,2</sup>	ND<40 <sup>1,2</sup>	50 <sup>1</sup>	8.5 <sup>1</sup>	ND<100 <sup>1,2</sup>	ND<120	ND<120	ND<250	ND<120
MW-3	14	ND<1.0	31	ND<5.0 <sup>1</sup>	ND<5 <sup>1</sup>	ND<5 <sup>1</sup>	77 <sup>1</sup>	ND<2 <sup>1</sup>	ND<1.2 <sup>1</sup>	ND<0.50 <sup>1</sup>	ND<0.50 <sup>1</sup>	ND<0.50 <sup>1</sup>	ND<5 <sup>1</sup>
MW-5	ND<100	ND<100	6.6	ND<200	ND<10 <sup>1,2</sup>	ND<5 <sup>1</sup>	ND<50 <sup>1</sup>	4.4 <sup>1</sup>	ND<50 <sup>1</sup>	ND<10 <sup>1</sup>	ND<50	ND<0.50 <sup>1</sup>	ND<0.50 <sup>1</sup>
MW-6	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	5 <sup>1,3</sup>	17 <sup>1</sup>	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5

mg/l = milligrams per liter

µg/l = micrograms per liter

ND = Not detected above the reporting limit following the less than sign



MTBE = methyl t-butyl ether

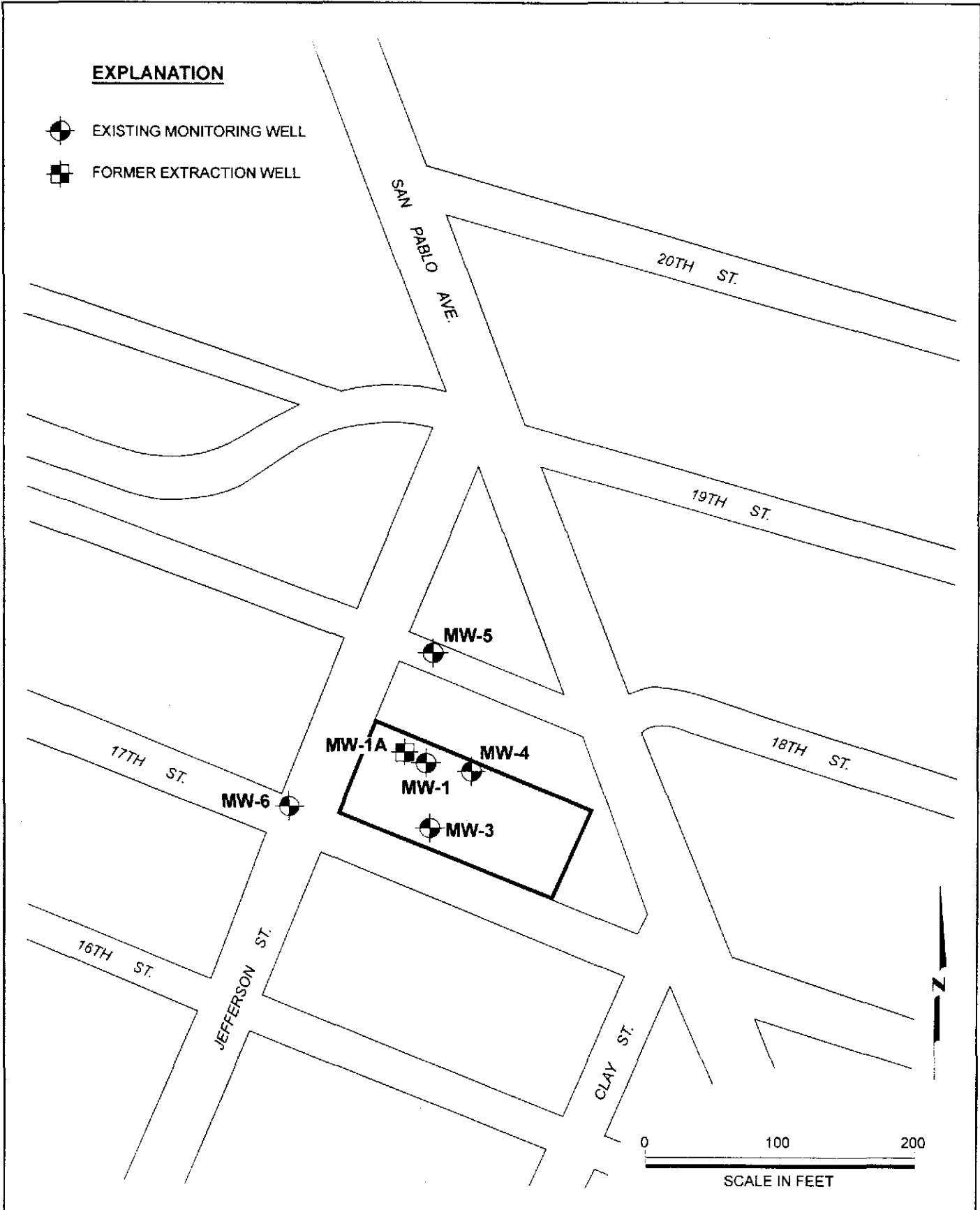
1 Result of MTBE confirmation by EPA Method 8260.

2 Reporting limits have been elevated due to matrix interference.

3 Detection limit = 5 µg/L. Backup sample analyzed after hold time had a result of ND<5 µg/L.

**EXPLANATION**

-  EXISTING MONITORING WELL
-  FORMER EXTRACTION WELL



**Harding ESE**  
A MACTEC COMPANY

Site Map  
August 14, 2002  
1700 Jefferson Street  
BPS Reprographic Services Facility  
Oakland, California

PLATE

**1**

DRAWN CN	PROJECT NUMBER 53087 004	APPROVED	DATE 9/02	REVISED DATE
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**EXPLANATION**



EXISTING MONITORING WELL

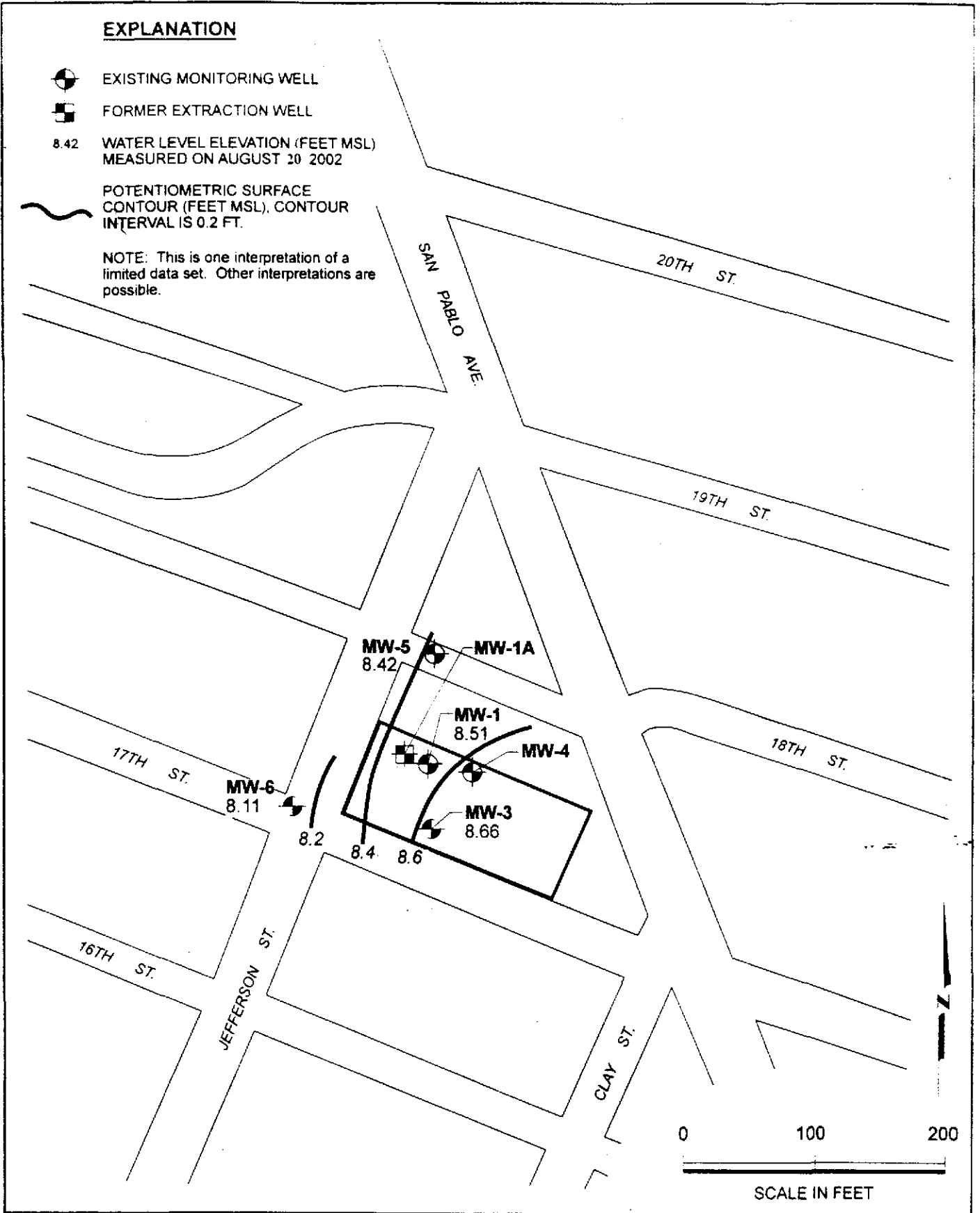


FORMER EXTRACTION WELL

8.42  
WATER LEVEL ELEVATION (FEET MSL)  
MEASURED ON AUGUST 20 2002

POTENTIOMETRIC SURFACE  
CONTOUR (FEET MSL), CONTOUR  
INTERVAL IS 0.2 FT.

NOTE: This is one interpretation of a  
limited data set. Other interpretations are  
possible.



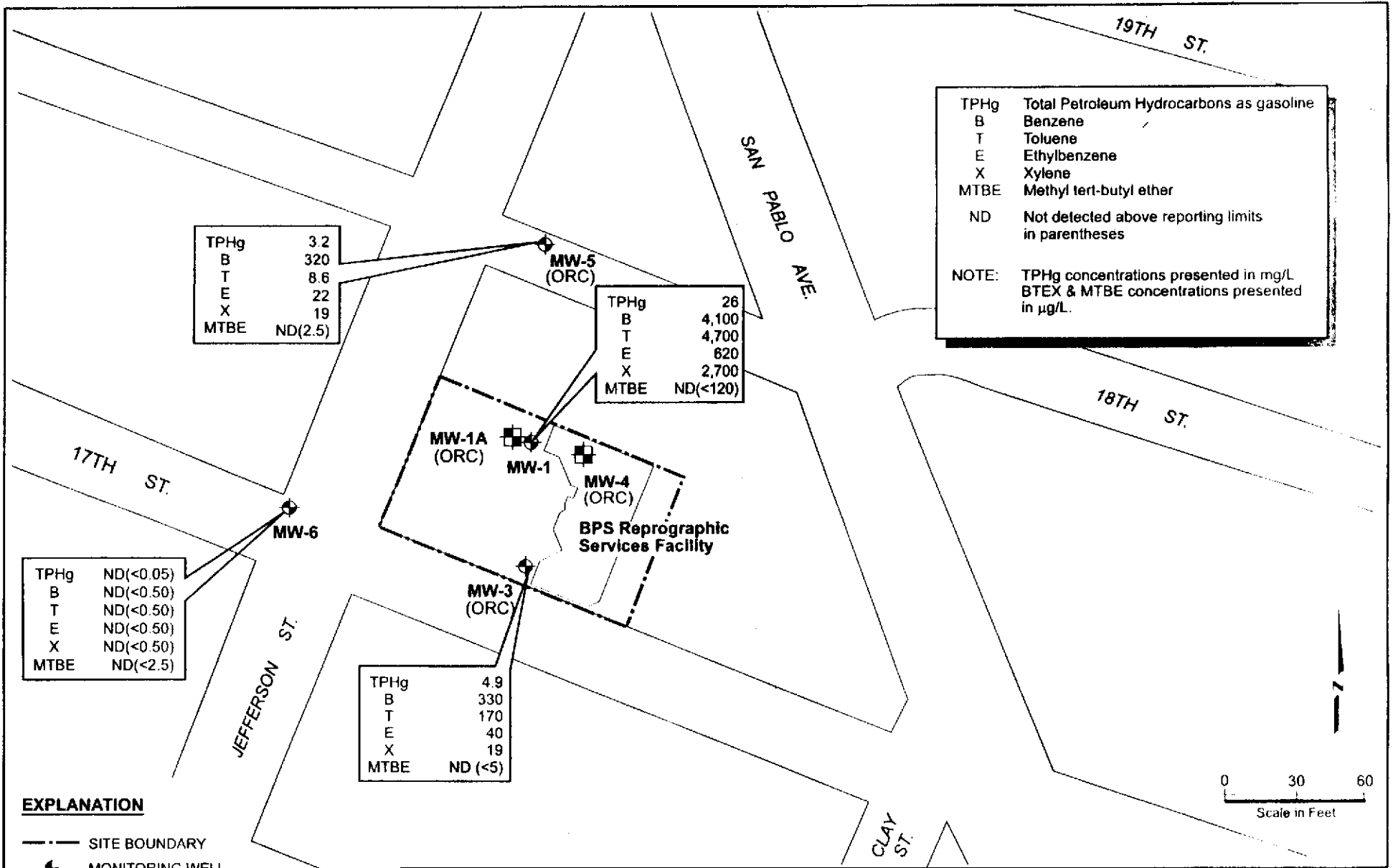
**Harding ESE**  
A MACTEC COMPANY

Groundwater Contours  
August 20 2002  
1700 Jefferson Street  
BPS Reprographic Services Facility  
Oakland, California

PLATE

**2**

DRAWN CN	PROJECT NUMBER 53087 004	APPROVED	DATE 7/02	REVISED DATE
-------------	-----------------------------	----------	--------------	--------------



TPHg Total Petroleum Hydrocarbons as gasoline  
 B Benzene  
 T Toluene  
 E Ethylbenzene  
 X Xylene  
 MTBE Methyl tert-butyl ether  
 ND Not detected above reporting limits in parentheses  
  
 NOTE: TPHg concentrations presented in mg/L  
 BTEX & MTBE concentrations presented in µg/L.

TPHg	3.2
B	320
T	8.6
E	22
X	19
MTBE	ND(2.5)

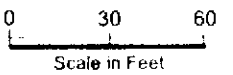
TPHg	26
B	4,100
T	4,700
E	620
X	2,700
MTBE	ND(<120)

TPHg	ND(<0.05)
B	ND(<0.50)
T	ND(<0.50)
E	ND(<0.50)
X	ND(<0.50)
MTBE	ND(<2.5)

TPHg	4.9
B	330
T	170
E	40
X	19
MTBE	ND (<5)

**EXPLANATION**

- SITE BOUNDARY
- ⊕ MONITORING WELL
- ⊞ FORMER EXTRACTION WELL
- (ORC) OXYGEN RELEASING COMPOUND INSTALLATION WELL
- mg/L MILIGRAMS PER LITER
- µg/L MICROGRAMS PER LITER



**Harding ESE**  
A MACTEC COMPANY

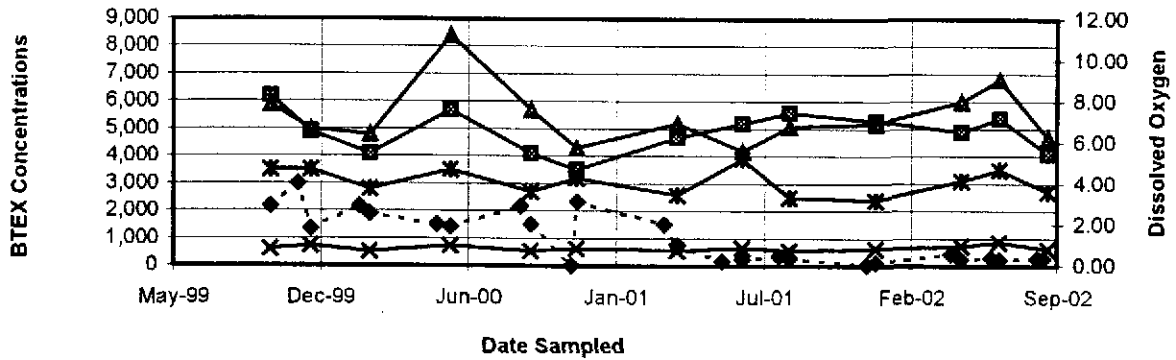
**TPHg, BTEX, and MTBE Concentrations in Groundwater**  
 August 29 2002  
 1700 Jefferson Street  
 BPS Reprographic Services Facility  
 Oakland, California

PLATE

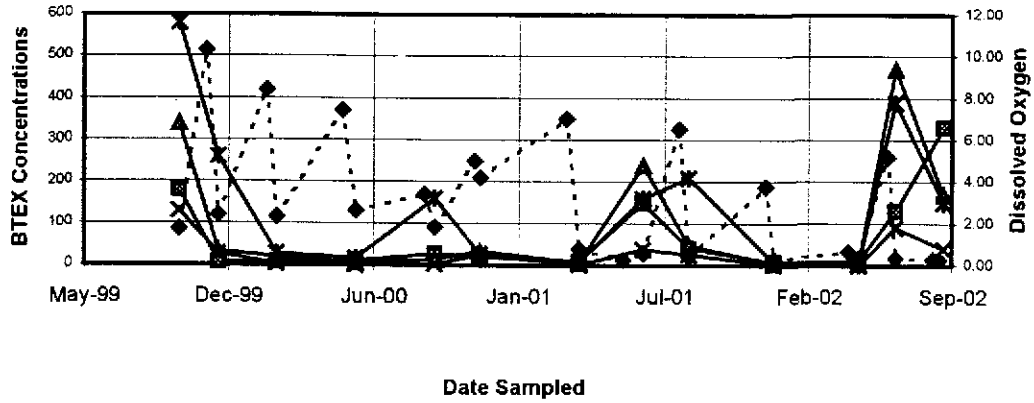
**3**

DRAWN CN	PROJECT NUMBER 53087 004	APPROVED	DATE 9/02	REVISED DATE
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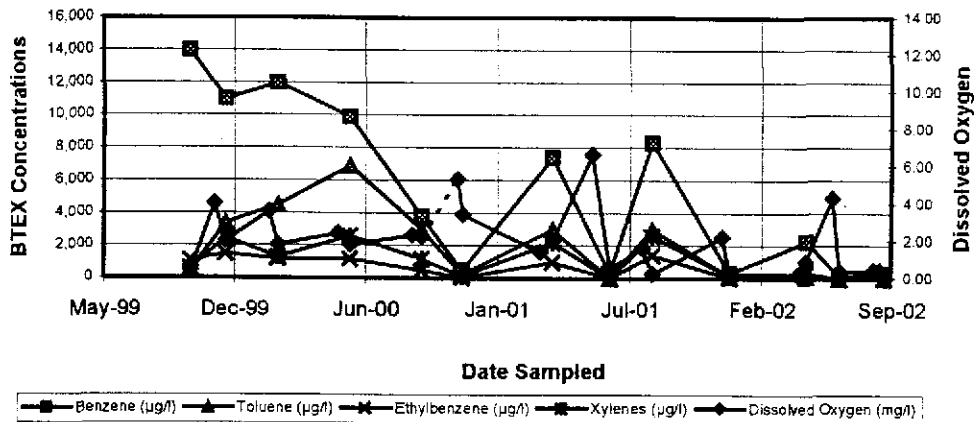
MW-1



MW-3



MW-5



**BTEX and DO Results**  
 Quarterly Groundwater Monitoring Report  
 BPS Reprographic Services Facility  
 1700 Jefferson Steet  
 Oakland, California

Plate  
**4**

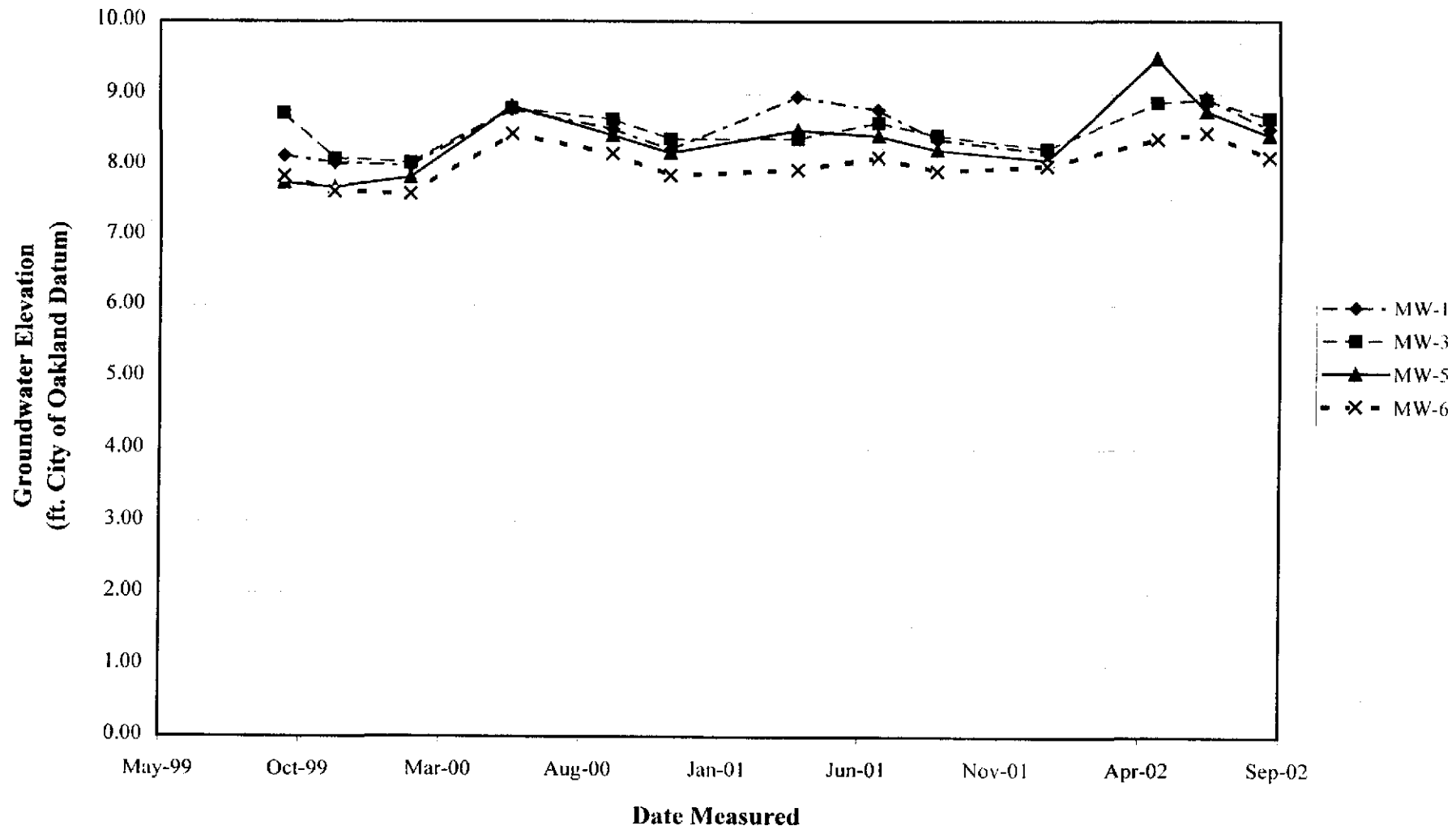
Drawn by  
 DSN

JOB NUMBER  
 53087.004

APPROVED

DATE  
 9/10/02

REVISED DATE



**Groundwater Elevation Data**  
 Quarterly Groundwater Monitoring Report  
 BPS Reprographic Services Facility  
 1700 Jefferson Street  
 Oakland, California

Plate

**5**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
DSN	53087.004		9/10/02	

**APPENDIX A**  
**LABORATORY REPORTS**



**Sequoia  
Analytical**

1455 McDowell Blvd, North Ste. 1  
Petaluma, CA 94954  
(707) 792-1865  
FAX (707) 792-0342  
[www.sequoialabs.com](http://www.sequoialabs.com)

6 September, 2002

David Nanstad  
Harding ESE - SF  
28 2nd Street, Suite 700  
San Francisco, CA 94105

RE: City Blue  
Sequoia Work Order: P208373

Enclosed are the results of analyses for samples received by the laboratory on 08/21/02 17:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Michelle M. Wiita  
Project Manager

CA ELAP Certificate #2374





Harding ESE - SF  
28 2nd Street, Suite 700  
San Francisco CA, 94105

Project: City Blue  
Project Number: 53087.004  
Project Manager: David Nanstad

P208373  
Reported:  
09/06/02 16:08

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
53087-4	P208373-01	Water	08/20/02 08:45	08/21/02 17:15
53087-2	P208373-02	Water	08/20/02 09:30	08/21/02 17:15
53087-3	P208373-03	Water	08/20/02 10:15	08/21/02 17:15
53087-1	P208373-04	Water	08/20/02 11:17	08/21/02 17:15
53087-5	P208373-05	Water	08/20/02 11:30	08/21/02 17:15



Harding ESE - SF  
28 2nd Street, Suite 700  
San Francisco CA, 94105

Project: City Blue  
Project Number: 53087.004  
Project Manager: David Nanstad

P208373  
Reported:  
09/06/02 16:08

**Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M**  
**Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>53087-4 (P208373-01) Water</b> Sampled: 08/20/02 08:45 Received: 08/21/02 17:15									
Gasoline (C6-C12)	ND	50	ug/l	1	2080609	08/23/02	08/23/02	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		98 %	65-135		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96 %	65-135		"	"	"	"	
<b>53087-2 (P208373-02) Water</b> Sampled: 08/20/02 09:30 Received: 08/21/02 17:15									
Gasoline (C6-C12)	4900	500	ug/l	10	2080609	08/23/02	08/23/02	EPA 8015M/8020M	
Benzene	330	5.0	"	"	"	"	"	"	
Toluene	170	5.0	"	"	"	"	"	"	
Ethylbenzene	40	5.0	"	"	"	"	"	"	
Xylenes (total)	150	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	47	25	"	"	"	"	"	"	QR-04
Surrogate: a,a,a-Trifluorotoluene		97 %	65-135		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96 %	65-135		"	"	"	"	
<b>53087-3 (P208373-03) Water</b> Sampled: 08/20/02 10:15 Received: 08/21/02 17:15									
Gasoline (C6-C12)	3200	500	ug/l	10	2080609	08/23/02	08/23/02	EPA 8015M/8020M	
Benzene	320	5.0	"	"	"	"	"	"	
Toluene	8.6	5.0	"	"	"	"	"	"	
Ethylbenzene	22	5.0	"	"	"	"	"	"	
Xylenes (total)	19	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	25	25	"	"	"	"	"	"	QR-04
Surrogate: a,a,a-Trifluorotoluene		100 %	65-135		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96 %	65-135		"	"	"	"	



Harding ESE - SF  
 28 2nd Street, Suite 700  
 San Francisco CA, 94105

Project: City Blue  
 Project Number: 53087.004  
 Project Manager: David Nanstad

P208373  
**Reported:**  
 09/06/02 16:08

**Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M**  
**Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>53087-1 (P208373-04) Water Sampled: 08/20/02 11:17 Received: 08/21/02 17:15</b>									
Gasoline (C6-C12)	26000	2500	ug/l	50	2080609	08/23/02	08/23/02	EPA 8015M/8020M	
Benzene	4100	25	"	"	"	"	"	"	
Toluene	4700	25	"	"	"	"	"	"	
Ethylbenzene	620	25	"	"	"	"	"	"	
Xylenes (total)	2700	25	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	120	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		103 %	65-135		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94 %	65-135		"	"	"	"	
<b>53087-5 (P208373-05) Water Sampled: 08/20/02 11:30 Received: 08/21/02 17:15</b>									
Gasoline (C6-C12)	ND	50	ug/l	1	2080609	08/23/02	08/23/02	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		101 %	65-135		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98 %	65-135		"	"	"	"	



Harding ESE - SF  
 28 2nd Street, Suite 700  
 San Francisco CA, 94105

Project: City Blue  
 Project Number: 53087.004  
 Project Manager: David Nanstad

P208373  
**Reported:**  
 09/06/02 16:08

**Volatile Organic Compounds by EPA Method 8260B**  
**Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>53087-2 (P208373-02) Water Sampled: 08/20/02 09:30 Received: 08/21/02 17:15</b>									
Methyl tert-butyl ether	ND	5.0	ug/l	10	2080817	08/30/02	08/30/02	EPA 8260B	R-05
Surrogate: Dibromofluoromethane		118 %	84-122		"	"	"	"	
<b>53087-3 (P208373-03) Water Sampled: 08/20/02 10:15 Received: 08/21/02 17:15</b>									
Methyl tert-butyl ether	ND	0.50	ug/l	1	2080817	08/30/02	08/30/02	EPA 8260B	
Surrogate: Dibromofluoromethane		120 %	84-122		"	"	"	"	



1455 McDowell Blvd, North Ste 7  
 Petaluma, CA 94954  
 (707) 792-1555  
 FAX (707) 792-0342  
 www.sequoialabs.com

Harding ESE - SF  
 28 2nd Street, Suite 700  
 San Francisco CA, 94105

Project: City Blue  
 Project Number: 53087.004  
 Project Manager: David Nanstad

P208373  
 Reported:  
 09/06/02 16:08

**Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control**  
**Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2080609 - EPA 5030, waters**

**Blank (2080609-BLK1)**

Prepared & Analyzed: 08/23/02

Gasoline (C6-C12)	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	297		"	300		99	65-135			
<i>Surrogate: 4-Bromofluorobenzene</i>	290		"	300		97	65-135			

**Blank (2080609-BLK3)**

Prepared & Analyzed: 08/30/02

Gasoline (C6-C12)	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	298		"	300		99	65-135			
<i>Surrogate: 4-Bromofluorobenzene</i>	291		"	300		97	65-135			

**Laboratory Control Sample (2080609-BS1)**

Prepared & Analyzed: 08/23/02

Gasoline (C6-C12)	2420	50	ug/l	2750		88	65-135			
Benzene	41.6	0.50	"	33.5		124	65-135			
Toluene	209	0.50	"	202		103	65-135			
Ethylbenzene	44.1	0.50	"	47.5		93	65-135			
Xylenes (total)	222	0.50	"	240		92	65-135			
Methyl tert-butyl ether	55.2	2.5	"	54.5		101	65-135			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	332		"	300		111	65-135			
<i>Surrogate: 4-Bromofluorobenzene</i>	310		"	300		103	65-135			

Sequoia Analytical - Petaluma

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.*



Harding ESE - SF  
28 2nd Street, Suite 700  
San Francisco CA, 94105

Project: City Blue  
Project Number: 53087.004  
Project Manager: David Nanstad

P208373  
Reported:  
09/06/02 16:08

**Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control**  
**Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2080609 - EPA 5030, waters**

**Laboratory Control Sample (2080609-BS3)**

Prepared & Analyzed: 08/30/02

Gasoline (C6-C12)	2370	50	ug/l	2750		86	65-135			
Benzene	40.3	0.50	"	33.5		120	65-135			
Toluene	205	0.50	"	202		101	65-135			
Ethylbenzene	43.4	0.50	"	47.5		91	65-135			
Xylenes (total)	221	0.50	"	240		92	65-135			
Methyl tert-butyl ether	58.8	2.5	"	54.5		108	65-135			
Surrogate: a,a,a-Trifluorotoluene	330		"	300		110	65-135			
Surrogate: 4-Bromofluorobenzene	307		"	300		102	65-135			

**Matrix Spike (2080609-MS1)**

Source: P208373-01

Prepared & Analyzed: 08/23/02

Gasoline (C6-C12)	2400	50	ug/l	2750	18	87	65-135			
Benzene	41.6	0.50	"	33.5	ND	124	65-135			
Toluene	212	0.50	"	202	0.32	105	65-135			
Ethylbenzene	44.7	0.50	"	47.5	ND	94	65-135			
Xylenes (total)	224	0.50	"	240	0.48	93	65-135			
Methyl tert-butyl ether	55.6	2.5	"	54.5	0.99	100	65-135			
Surrogate: a,a,a-Trifluorotoluene	330		"	300		110	65-135			
Surrogate: 4-Bromofluorobenzene	301		"	300		100	65-135			

**Matrix Spike Dup (2080609-MSD1)**

Source: P208373-01

Prepared & Analyzed: 08/23/02

Gasoline (C6-C12)	2350	50	ug/l	2750	18	85	65-135	2	20	
Benzene	40.1	0.50	"	33.5	ND	120	65-135	4	20	
Toluene	207	0.50	"	202	0.32	102	65-135	2	20	
Ethylbenzene	43.5	0.50	"	47.5	ND	92	65-135	3	20	
Xylenes (total)	222	0.50	"	240	0.48	92	65-135	0.9	20	
Methyl tert-butyl ether	52.8	2.5	"	54.5	0.99	95	65-135	5	20	
Surrogate: a,a,a-Trifluorotoluene	329		"	300		110	65-135			
Surrogate: 4-Bromofluorobenzene	304		"	300		101	65-135			



Harding ESE - SF  
28 2nd Street, Suite 700  
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Project: City Blue  
Project Number: 53087.004  
Project Manager: David Nanstad

P208373  
Reported:  
09/06/02 16:08

**Volatile Organic Compounds by EPA Method 8260B - Quality Control  
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2080817 - EPA 5030 waters</b>									
<b>Blank (2080817-BLK1)</b>					Prepared & Analyzed: 08/30/02				
Methyl tert-butyl ether	ND	0.50	ug/l						
<i>Surrogate: Dibromofluoromethane</i>	4.92		"	4.20		117 84-122			
<b>Laboratory Control Sample (2080817-BS1)</b>					Prepared & Analyzed: 08/30/02				
Methyl tert-butyl ether	5.40	0.50	ug/l	5.00		108 79-118			
<i>Surrogate: Dibromofluoromethane</i>	5.09		"	4.20		121 84-122			
<b>Laboratory Control Sample Dup (2080817-BSD1)</b>					Prepared & Analyzed: 08/30/02				
Methyl tert-butyl ether	5.54	0.50	ug/l	5.00		111 79-118	3	20	
<i>Surrogate: Dibromofluoromethane</i>	5.12		"	4.20		122 84-122			



Harding ESE - SF  
28 3rd Street, Suite 700  
San Francisco CA, 94105

Project: City Blue  
Project Number: 53087.004  
Project Manager: David Nanstad

P208373  
**Reported:**  
09/06/02 16:08

### Notes and Definitions

- QR-04 Primary and confirmation results varied by greater than 40% RPD. The results may still be useful for their intended purpose.
- R-05 The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference





### CHAIN OF CUSTODY FORM

Seq. No.: **No 10405**Lab: **SEQUOIA**Job Number: 53087.004  
Name/Location: CITY BLUE  
Project Manager: D. NANSTADSamplers: M HUCKSRecorder: Milton Hucks  
(Signature Required)

MATRIX		# CONTAINERS & PRESERV.				SAMPLE NUMBER		DATE					
SOLVENT	A	Unpres	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	YR	SEQ	YR	MO	DAY	TIME	STATION DESCRIPTION	
												DEPTH	
X					3		53087-4	02	08	20	0845	P208373-01	
					3		53087-2	02	08	20	0930		2
					3		53087-3	02	08	20	1015		3
					3		53087-1	02	08	20	1117		4
					1		53087-5	02	08	20	1130		5
COOLER CUSTODY SEALS INTACT <input type="checkbox"/>													
NOT INTACT <input type="checkbox"/>													
COOL TEMPERATURE 43 °C													

ANALYSIS REQUESTED									
Gasoline Range Organics 8015B	Diesel Range Organics 8015B	BTEX plus MTBE 8220	CCR Title 22 Metals (17)	EPA 8021B	EPA 8260B	EPA 8270C	TPH-G 8215		
X	X	X	X	X	X	X	X		

ADDITIONAL INFORMATION													
SAMPLE NUMBER				TURNAROUND TIME/REMARKS									
YR	SEQ												
				IF MTBE IS FOUND, GUN FILLED BY EPA 8260									
				STANDARD TAT									

CHAIN OF CUSTODY RECORD			
Relinquished By (signature)	(Print Name)	(Company)	Date/Time
Brent Dostert	BRENT DOSTERT	HARDING	4/18/20
Received By (signature)	(Print Name)	(Company)	Date/Time
Gail Herrmann	GAIL HERRMANN	SEQUOIA	8/21/17
Relinquished By (signature)	(Print Name)	(Company)	Date/Time
Received By (signature)	(Print Name)	(Company)	Date/Time
Received By (signature)	(Print Name)	(Company)	Date/Time
Received By (signature)	(Print Name)	(Company)	Date/Time
Method of Shipment:			

**APPENDIX B**

**GROUNDWATER SAMPLING FORMS**

**Table B1. Sample Location/Sample Description Cross-Reference  
BPS Reprographic Services Facility  
1700 Jefferson Street  
Oakland, California**

Well/Sample Number	Client Sample ID
MW-1	53087-1
MW-3	53087-2
MW-5	53087-3
MW-6	53087-4
Trip Blank	53087-5

Project: \_\_\_\_\_ Job No.: \_\_\_\_\_  
 Subject: FIELD INVESTIGATION DAILY REPORT Date: \_\_\_\_\_  
 Equipment Rental: \_\_\_\_\_ Company: \_\_\_\_\_ To: \_\_\_\_\_  
 Equipment Hours: \_\_\_\_\_ F.E. Time from: \_\_\_\_\_ to: \_\_\_\_\_ By: \_\_\_\_\_

(Outside service and expense record must be attached for any outside costs)

M6 W1= 23.15 RX 228 DO= 0.63 TE= 19.96

PH-6291 CON 985 M6-00845  
#53087-4

M3- W1= 23.11 RX- 315 DO= 0.28 TE= 19.8

PH- 6.89 CON- 809 M3 @ 0930  
#53087-2

M5- W1= 22.14 RX- 238 DO= 0.42 TE= 19.0

CON 896 M3 @ 1015  
#53087-3

MW-1 W1= 23.85 RX= -294 DO= 0.34 TE= 18.1

CON 1015 M1 @ 1117  
#53087-1

Attachments:

Initial

Project: \_\_\_\_\_ Job No.: \_\_\_\_\_  
 Subject: FIELD INVESTIGATION DAILY REPORT Date: \_\_\_\_\_  
 Equipment Rental: \_\_\_\_\_ Company: \_\_\_\_\_ To: \_\_\_\_\_  
 Equipment Hours: \_\_\_\_\_ F.E. Time from: \_\_\_\_\_ to: \_\_\_\_\_ By: \_\_\_\_\_

(Outside service and expense record must be attached for any outside costs)

	PH	TEMP	FC	DO
L 7 =	7.15	19.4	6.90	6.79
	7.35	20.1	262	
IP =	7.35	20.1	2660	7.55
			3 <sup>6</sup>	
L-1 =	6.41	21.4	3570	7.01
		20.4	-	
L-3 =	6.90	20.6	3130	5.01
WP SD =	7.28	20.7	3248	1.52

Attachments: \_\_\_\_\_

Initial \_\_\_\_\_