



ENVIRONMENTAL
PROTECTION

PORT OF OAKLAND

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June 1, 2000

Mr. Larry Seto
Sr. Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Protection (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

**SUBJECT: 2277 SEVENTH STREET SITE,
OAKLAND, CALIFORNIA
STID #3899**

Dear Mr. Seto:

Please find enclosed the following quarterly monitoring report:

May 30, 2000, *Quarterly Groundwater Monitoring and Product Recovery Report, 1st Quarter of 2000, 2277 Seventh Street, Oakland, California*, Harding Lawson Associates.

If you have any questions, please contact me at 627-1373.

Sincerely,

John Prall, R.G.

Associate Environmental Scientist

Cc: Jeff Jones



May 30, 2000

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Mr. John Prall
Associate Environmental Scientist
Port of Oakland
530 Water Street
Oakland, California 94607

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**Quarterly Groundwater Monitoring
and Product Recovery Report
1st Quarter of 2000
2277 Seventh Street
Oakland, California**

Dear Mr. Prall:

Harding Lawson Associates (HLA) has prepared this Quarterly Groundwater Monitoring and Product Recovery Report on behalf of the Port of Oakland for the groundwater monitoring program and the operation of the product recovery system at 2277 Seventh Street in Oakland, California (Plate 1) between January 1, 2000 and March 31, 2000.

This report summarizes the monitoring of five groundwater monitoring wells, MW-2, MW-4, MW-5, MW-6, and MW-7 and the maintenance activities of the product recovery system during the first quarter of 2000. Wells MW-1 and MW-3 contain product skimmers that recover separate-phase petroleum hydrocarbons from the groundwater surface. Monitoring well MW-8 contains a thick, viscous, tar-like petroleum product. Because of the presence of separate-phase product, HLA did not collect groundwater samples from these three wells. A site map with well locations is presented on Plate 2.

Another consultant to the Port installed the monitoring wells to assess groundwater quality following the removal of underground storage tanks (USTs) from the site in September 1993. The former USTs, located on the south side of Building 401, consisted of two 10,000-gallon gasoline tanks (CF-17 and CF-18), one 500-gallon oil tank (CF-19), and one 300-gallon waste oil tank (CF-20).

GROUNDWATER MONITORING

HLA conducted this quarter's groundwater monitoring at 2277 7th Street on February 11, 2000. Prior to purging and sampling the monitoring wells, HLA measured the depth to groundwater below the top of the well casing with an electric water level indicator. HLA also measured the depth to product and depth to



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groundwater in wells MW-1 and MW-3 to calculate product thickness. The thick product in MW-8 does not allow the measurement of depth to groundwater or product. Groundwater level measurements are summarized in Table 1 and product thickness measurements are summarized on Table 2. Groundwater elevations and the gradient direction are presented on Plate 3. HLA did not use the groundwater level measurements from MW-1 or MW-3 to develop the groundwater gradient because the removal of the product recovery equipment in the wells caused the groundwater levels to be in flux.

After measuring the depth to water, HLA purged MW-2, MW-4, MW-5, MW-6, and MW-7 using a PVC bailer. Conductivity, pH, and temperature were monitored periodically during purging. HLA collected the groundwater samples after removing a minimum of three well-casing volumes of water and the conductivity, pH, and temperature measurements had stabilized. The depths to groundwater and field parameter measurements were recorded on Groundwater Sampling Forms included in Appendix A. The purge water was stored onsite in the treatment system's product recovery tank. The Port's waste disposal contractor, Performance Excavators, Inc. periodically off-hauls and disposes of the purge water along with the product in the tank.

HLA collected groundwater samples from the five monitoring wells using Teflon disposable bailers and then transferred the groundwater into laboratory-provided containers. A duplicate sample was collected from MW-4. Sample containers were labeled with the sample number, date and time of collection, and sampler's initials, then placed in an insulated cooler with blue ice. The samples were accompanied by a laboratory provided trip blank and delivered under chain-of-custody protocol to Curtis and Thompkins, Ltd., a California certified laboratory.

LABORATORY ANALYSIS GROUNDWATER SAMPLES

Curtis and Tompkins, Ltd. performed the chemical analyses of the groundwater samples using the following analytical methods:

- Total petroleum hydrocarbons as gasoline (TPHg) in accordance with EPA Method 8015 modified.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl t-butyl ether (MTBE) in accordance with Method 8020B.
- TPH as diesel (TPHd) in accordance with EPA Method 8015 modified following a silica-gel cleanup procedure.
- TPH as motor oil (TPHmo) in accordance with EPA Method 8015 modified following a silica-gel cleanup procedure.

The trip blank was analyzed for BTEX and MTBE. The laboratory results for the groundwater samples are summarized in Table 3 and are shown on Plate 4. Copies of the laboratory results and chain-of-custody forms are provided in Appendix B.

FINDINGS

Results of the February 11, 2000 groundwater sampling are summarized below:

- HLA recorded no measurable separate-phase hydrocarbons in monitoring well MW-1. Because the well contained the product skimmer, HLA did not collect a groundwater sample this quarter.
- HLA found measurable product in MW-3 and therefore did not collect a groundwater sample.
- TPHg was reported at a concentration of 200 micrograms per liter ($\mu\text{g/l}$) in MW-4 and 270 $\mu\text{g/l}$ in MW-6. TPHg was detected in the sample from MW-4 at 330 $\mu\text{g/l}$ and in MW-6 at 150 $\mu\text{g/l}$ last quarter. TPHg was not detected in MW-2, MW-5 or MW-7.
- Benzene was reported at a concentration of 58 $\mu\text{g/l}$ in MW-4, at 23 $\mu\text{g/l}$ in MW-6, and at 5.4 $\mu\text{g/l}$ in MW-2. Benzene was detected in the sample from MW-4 at 740 $\mu\text{g/l}$, in MW-6 at 27 $\mu\text{g/l}$ and was not detected in MW-2 last quarter. Benzene was not detected in MW-5, or MW-7.
- Toluene was reported at a concentration of 0.73 $\mu\text{g/l}$ in MW-4 and 0.51 $\mu\text{g/l}$ in MW-6. Toluene was not detected above the reporting limit in MW-2, MW-5 and MW-7 or in any of the wells sampled during the previous quarter.
- Ethylbenzene was reported at a concentration of 2.7 $\mu\text{g/l}$ in MW-6 and at 2.2 $\mu\text{g/l}$ last quarter, and was not detected in MW-2, MW-4, MW-5, or MW-7.
- Total xylenes were not detected above the reporting limit in any of the wells sampled.
- MTBE was reported at a concentration of 4.4 $\mu\text{g/l}$ in MW-4, 5.8 $\mu\text{g/l}$ in MW-6, 51 $\mu\text{g/l}$ in MW-7, and was not detected in MW-2 and MW-5. MTBE was detected a concentration of 6.3 $\mu\text{g/l}$ at MW-2, 42 $\mu\text{g/l}$ at MW-4, 5.5 $\mu\text{g/l}$ at MW-5, 13 $\mu\text{g/l}$ at MW-6 and 15 $\mu\text{g/l}$ at MW-7 last quarter.
- TPHd was reported at a concentration of 2,300 $\mu\text{g/l}$ in MW-6 and not detected in MW-2, MW-4, MW-5 and MW-7. During the previous quarter, TPHd was detected at 120 $\mu\text{g/l}$ in MW-2, 840 $\mu\text{g/l}$ in MW-4, 110 $\mu\text{g/l}$ in MW-5, 11,000 $\mu\text{g/l}$ in MW-6, and 600 $\mu\text{g/l}$ in MW-7.
- TPHmo was not detected above the reporting limit in any of the wells sampled. Last quarter, TPHmo was reported at a concentration of 3,000 $\mu\text{g/l}$ in MW-6 and 420 $\mu\text{g/l}$ in MW-7 and was not detected in MW-2, MW-4, or MW-5.

QUALITY ASSURANCE AND QUALITY CONTROL

A duplicate sample was collected from monitoring well MW-4 and submitted to the analytical laboratory to evaluate the precision of the analytical results. Precision is an indication of the reproducibility of results and is assessed by calculating the relative percent difference (RPD) between the primary sample result (X1) and the duplicate sample result (X2), as follows:

$RPD = |X1 - X2| / \{(X1 + X2) / 2\} \times 100$. (For example: A low RPD indicates high precision; a RPD of 67 indicates the two results differ by a factor of two.)

As shown below, the RPD was calculated for chemical compounds detected above the reporting limit in either the duplicate or primary samples.

ANALYTE	X1	X2	X1-X2	(X1+X2)/2	RPD
MTBE	4.4	4.4	0	4.4	0%
B	58	58	0	58	0%
T	0.77	0.73	0.04	0.75	5%
E	ND	ND	--	--	--
X	ND	ND	--	--	--
TPHd	ND	ND	--	--	--
TPHmo	ND	ND	--	--	--
TPHg	200	190	10	195	5%

- The relative percent difference between the analytical results from MW-4 and the duplicate sample was considered within acceptable limits, ranging from zero to 5 percent.
- MTBE was not detected in the trip blank.
- BTEX was not detected in the trip blank.

PRODUCT RECOVERY SYSTEM

The product recovery system consists of an air-actuated (active) product skimmer in MW-3 and a passive product skimmer in MW-1. HLA completed product recovery at MW-6 and removed the passive skimmer on April 19, 1999. The product in MW-3 discharges to a product recovery tank, and HLA removes the product collected in skimmer in MW-1 on a monthly basis. The total volume of product recovered from MW-1 during the fourth quarter of 1999 was 0.4 gallons. The Port's waste disposal contractor, Performance Excavators, Inc., removed product from the product recovery tank on February 23, 2000. According to records provided to the Port, Performance Excavators, Inc removed 470 gallons of product

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and water. Performance Excavators, Inc estimated that of this 470 gallons removed, 125 gallons was free phase product. Table 2 presents a summary of the product removal data. A summary of the activities during the past quarter associated with the operation and maintenance of the product recovery system is presented in Table 4.

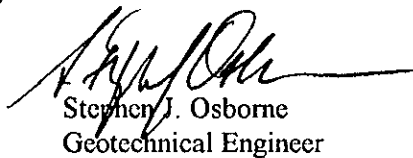
If you have any questions, please contact James McCarty at (510) 628-3220.

Yours very truly,

HARDING LAWSON ASSOCIATES



James G. McCarty
Project Engineer



Stephen J. Osborne
Geotechnical Engineer



JGM/SJO/mlw/42633/037553L

4 copies submitted

- Attachments:
- Table 1 – Groundwater Elevations Data
 - Table 2 – Summary of Product Removal and Product Thickness Data
 - Table 3 – Groundwater Sample Results
 - Table 4 – Summary of Operation and Maintenance Activities
 - Plate 1 – Vicinity Map
 - Plate 2 – Site Plan
 - Plate 3 – Groundwater Elevations, February 11, 2000
 - Plate 4 – Groundwater Sample Results, February 11, 2000
 - Appendix A - Groundwater Sampling Forms
 - Appendix B - Laboratory Reports

TABLES

**Table 1. Groundwater Elevations Data
Port of Oakland
2277 7th Street, Oakland California**

Well ID	Elevation Top of Casing (feet)	Date Of Monitoring	Depth to Water (feet)	Groundwater Elevation (feet)
MW-2	14.36	12/31/97	8.73	5.63
		04/13/98	7.72	6.64
		11/06/98	9.43	4.93
		03/19/99	8.21	6.15
		06/24/99	8.91	5.45
		09/28/99	9.42	4.94
		11/12/99	9.63	4.73
		02/11/00	8.54	5.82
MW-4	13.15	12/31/97	7.09	6.06
		04/13/98	7.71	5.44
		11/06/98	8.69	4.46
		03/19/99	8.00	5.15
		06/24/99	8.45	4.70
		09/28/99	8.73	4.42
		11/12/99	8.83	4.32
		02/11/00	7.71	5.44
MW-5	13.49	12/31/97	6.38	7.11
		04/13/98	5.56	7.93
		11/06/98	6.59	6.90
		03/19/99	6.20	7.29
		06/24/99	6.73	6.76
		09/28/99	6.91	6.58
		11/12/99	7.06	6.43
		02/11/00	7.00	6.49
MW-6	14.00	06/24/99	8.61	5.39
		09/28/99	9.26	4.74
		11/12/99	8.01	5.99
		02/11/00	7.20	6.80
MW-7	14.35	12/31/97	8.88	5.47
		04/13/98	7.86	6.49
		11/06/98	9.55	4.80
		03/19/99	8.41	5.94
		06/24/99	9.08	5.27
		09/28/99	9.60	4.75
		11/12/99	9.77	4.58
		02/11/00	8.67	5.68

¹ Elevation data relative to Port of Oakland datum; well surveys performed on September 12, 1996, and February 4, 1998, by PLS Surveys.

- Data prior to November 6, 1998 taken from *Groundwater Monitoring, Sampling and Product Removal System O&M Report* dated July 21, 1998, by Innovative Technical Solutions, Inc.

**Table 2. Product Removal and Product Thickness Data
Port of Oakland
2277 7th Street, Oakland California**

Well ID	Elevation of Top of Casing ¹ (feet)	Date Of Monitoring	Depth to Free Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Estimated Product Removed (gallons)	Product Removal Method ²
MW-1	14.14	12/31/97	-	-	-	0.2	passive skimmer
		01/29/98	-	-	-	0.2	passive skimmer
		03/02/98	-	-	-	0.018	passive skimmer
		05/11/98	-	-	-	0.02	passive skimmer
		06/15/98	-	-	-	0.2	passive skimmer
		11/06/98	9.34	10.3	0.96	1.2	passive skimmer
		01/07/99	-	-	-	0.2	passive skimmer
		02/11/99	-	-	-	0.2	passive skimmer
		03/12/99	-	-	-	0.2	passive skimmer
		03/19/99	NM	8.45	>0.01	0.07	passive skimmer
		04/14/99	-	-	-	0.2	passive skimmer
		05/11/99	-	-	-	0.2	passive skimmer
		06/24/99	8.88	9.63	0.8	0.2	passive skimmer
		07/15/99	--	--	--	0.2	passive skimmer
		07/16/99	--	--	--	0.2	passive skimmer
		08/27/99	--	--	--	0.2	passive skimmer
		09/28/99	--	--	0.65	0.2	passive skimmer
		10/05/99	--	--	--	0.2	passive skimmer
		11/12/99	9.38	10.27	0.89	0.2	passive skimmer
		12/21/99	--	--	--	0.2	passive skimmer
		01/26/00	--	--	--	0.2	passive skimmer
01/28/00	9.22	9.24	0.02	--	passive skimmer		
02/11/00	--	7.00	0.00	0.2	passive skimmer		
03/01/00	--	7.45	0.00	0.0	passive skimmer		
03/21/00	--	7.34	0.00	0.0	passive skimmer		
MW-3	14.22	12/31/97	-	-	-	30	active skimmer
		01/29/98	-	-	-	10	active skimmer
		04/13/98	-	-	-	240	active skimmer
		05/11/98	-	-	-	1,545	active skimmer
		06/15/98	-	-	-	1,950	active skimmer
		11/06/98	8.84	9.94	1.1	500	active skimmer
		01/05/99	-	-	-	275 ²	active skimmer
		01/14/99	-	-	-	400 ²	active skimmer
		02/03/99	-	-	-	400 ²	active skimmer
		02/26/99	-	-	-	570 ²	active skimmer
		03/19/99	7.52	8.05	0.5	211	active skimmer
		06/16/99	-	-	-	310	active skimmer
		06/24/99	8.38	8.56	0.2	--	active skimmer
		07/14/99	--	--	--	50 ²	active skimmer
		09/28/99	--	--	0.2	--	active skimmer
		10/29/99	--	--	--	125 ²	active skimmer
		11/12/99	9.14	9.23	0.09	--	active skimmer
01/28/00	--	--	--	135	active skimmer		
02/11/00	7.97	8.37	0.40	40	active skimmer		
03/01/00	6.59	7.24	0.65	0.0	active skimmer		
03/21/00	6.50	6.56	0.06	35	active skimmer		

**Table 2. Product Removal and Product Thickness Data
Port of Oakland
2277 7th Street, Oakland California**

Well ID	Elevation of Top of Casing ¹ (feet)	Date Of Monitoring	Depth to Free Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Estimated Product Removed (gallons)	Product Removal Method ²
MW-6	14.00	13/31/97	-	-	-	0.0014	passive skimmer
		01/29/98	-	-	-	0.0014	passive skimmer
		03/02/98	-	-	-	0.0014	passive skimmer
		11/06/98	NM	9.62	>0.01	0.0	passive skimmer
		03/19/99	NM	7.37	>0.01	0.0	passive skimmer
MW-8 ¹	12.94	12/31/97	8.49	8.82	0.33	4.38	-
		11/06/98	9.25	10.3	1.1	3.48	-

- Data prior to November 6, 1998 taken from *Groundwater Monitoring, Sampling and Product Removal System O&M Report* dated July 21, 1998, by Innovative Technical Solutions, Inc.

- Data prior to November 6, 1998 taken from *Groundwater Monitoring, Sampling and Product*

- Product removal volumes from 11/6/98 on represent total product removed during that reporting period.

¹ Free product in well is too viscous to allow product thickness or groundwater level measurements.

² Product removal totals for MW-3 are estimated from documentation of product removal from the treatment system performed by Performance Excavators, Inc.

NM - Well checked for free product but was not able to detect a measurable amount in the well.

Greyed areas indicates data from this reporting period.

**Table 3. Groundwater Sample Result
Port of Oakland
2277 7th Street, Oakland California**

Monitoring Well ID	Date	TPHg (µg/l)	TPHd (µg/l)	TPHmo (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
MW-2	05/27/94	87	470	NA	<0.5	<0.5	<0.5	<0.5	NA
	03/29/95	<50	110	1,400	<0.4	<0.3	<0.3	<0.4	NA
	09/06/95	<50	NA	NA	<0.4	<0.3	<0.3	<0.4	NA
	01/08/96	<50	<50	1200	<0.4	<0.3	<0.3	<0.4	NA
	04/04/96	<50	160	320	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	<50	120	1400	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	230 ^{1,2}	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	<50	714	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	51	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	82	<50	<250	0.56	<0.5	<0.5	<1.0	NA
	12/31/97	<50	<47	<280	1.4	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<50	<300	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	06/24/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	11/12/99	<50	120 ^{2,6}	<300	<0.5	<0.5	<0.5	<0.5	6.3 ^{8,9}
02/11/00	<50	<50	<300	5.4	<0.5	<0.5	<0.5	<2.0	
MW-4	09/11/95	150	<200	500	23	<0.3	<0.3	<0.4	NA
	01/08/96	790	90	400	170	1.2	0.6	0.6	NA
	04/04/96	1,100	180	300	320	1.6	1.1	1.2	NA
	07/10/96	1,200	120	300	470	1.5	0.8	0.8	NA
	12/03/96	990	220 ^{1,2}	<250	350	3.3	1.3	1.3	NA
	03/28/97	440 ²	<50	<250	190	1.2	0.64	<1.0	NA
	06/13/97	1,300	92 ⁵	<250	500	5.5	3.4	2.8	NA
	09/18/97	1,300	150	<250	550	4.9	2.1	2.00	NA
	12/31/97	73 ^{1,2,3}	<47	<280	110 ¹	1.0 ¹	<0.5	<1.0	NA
	04/13/98	150 ^{2,3}	<50	<300	520	2.9	<2.5	<5.0	NA
	11/06/98	<50	<50	<300	250	1.7	<1	<1	<4
	03/19/99	81	<50	<300	250	<1	1.2	<1	<4
	06/24/99	190	<50	<300	360	1.4	2.2	1	24
	09/28/99	750 ^{3,5}	63 ^{3,5}	<300	280	1.5	<1	<1	<4
	11/12/99	330 ³	840 ²	<300	740	<2.5	<2.5	<2.5	42 ⁹
02/11/00	200 ¹	<50	<300	58	0.73	<0.5	<0.5	4.4 ⁸	
MW-5	09/11/95	90	<300	2,500	3.3	<0.3	<0.3	<0.4	NA
	04/04/96	<50	180	520	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	<50	120	1,500	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	200 ^{1,2}	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	12/31/97	<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2

**Table 3. Groundwater Sample Result
Port of Oakland
2277 7th Street, Oakland California**

Monitoring Well ID	Date	TPHg (µg/l)	TPHd (µg/l)	TPHmo (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)
MW-5 (cont.)	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	06/24/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	3.1
	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	11/12/99	<50	110 ^{2,6}	<300	<0.5	<0.5	<0.5	<0.5	5.5 ⁹
	02/11/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
MW-6	11/06/98	120	12,000	1,200	19	0.65	1.8	<0.5	<2
	03/19/99	170	3,800	580	21	0.86	1.5	2.9	<2
	06/24/99	120	1,700 ⁷	<300 ⁷	18	<0.5	1.0	<0.5	54
	09/28/99	130 ^{3,5}	820	<300	20	0.51	2.2	<0.5	<2
	11/12/99	150	11,000 ^{2,6}	3,000 ^{3,6}	27	<0.5	2.2	<0.5	13 ⁹
	02/11/00	270 ³	2,300	<300	23	0.51	2.7	<0.5	5.8
MW-7	09/06/95	<50	<300	800	<0.4	<0.3	<0.3	<0.4	NA
	01/08/96	<50	410	110	<0.4	<0.3	<0.3	<0.4	NA
	04/04/96	<50	530	340	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	80	840	1,700	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	280 ^{1,2}	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	65 ⁶	94 ²	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	<50	100	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	<50	240	<250	<0.5	<0.5	<0.5	<1.0	NA
	12/31/97	<50	53 ^{2,3}	<280	<0.5	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<48	<290	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	5.3
	06/24/99	73	<50	<300	<0.5	<0.5	<0.5	<0.5	12
	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	14
	11/12/99	<50	600 ^{2,6}	420 ³	<0.5	<0.5	<0.5	<0.5	15 ⁹
02/11/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	51	

¹ Analyte found in the associated blank as well as in the sample.

² Hydrocarbons present do not match profile of laboratory standard.

³ Low-boiling-point/lighter hydrocarbons are present in the sample

⁴ Chromatographic pattern matches known laboratory contaminant.

⁵ Hydrocarbons are present in the requested fuel quantification range, but do not resemble pattern of available fuel standard.

⁶ High-boiling-point/heavier hydrocarbons are present in sample.

⁷ Sample did not pass laboratory QA/QC and may be biased low

⁸ Presence of this compound confirmed by second column, however, the confirmation concentration differed from the reported result by more than a factor of two.

⁹ Trip blank contained MTBE at a concentration of 4.2 µg/l

- Data from December 1997 through April 1998 taken from *Groundwater Monitoring, Sampling and Product Removal System O&M Report* dated July 21, 1998, by Innovative Technical Solutions, Inc.

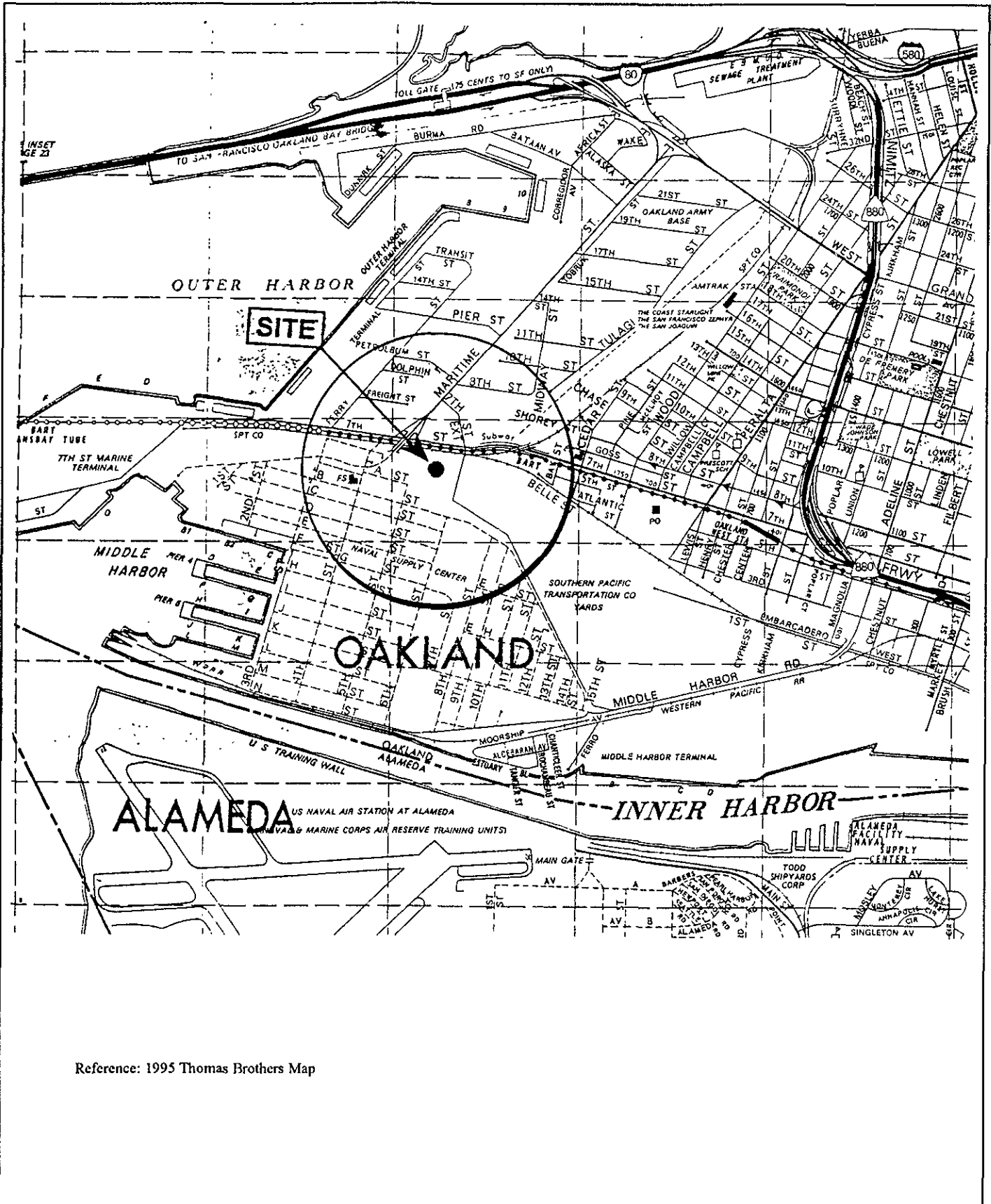
-Data prior to December 1997 taken from *Groundwater Analytical Results, Quarterly Groundwater Monitoring Report: Third Quarter 1997, Building C-401, 2277 7th Street, Oakland, CA*, dated October 24, 1997, by Uribe and Associate

NA Not Analyzed.

**Table 4. Summary of Operation and Maintenance Activities
 Port of Oakland
 2277 7th Street, Oakland California**

Date	System Status	Comments
01/26/00	System Running	Remove product from MW-1, raise passive skimmer 12 inches, active skimmer appears to be removing some water, raise skimmer 20 inches, seems to improve
01/28/00	System Running	Remove product from MW-1, only a small film of product, lower passive skimmer 4 inches, active skimmer appears to be removing product at a slow rate, lower skimmer 12 inches, seems to improve
02/11/00	System Down	Remove product from MW-1, product tank full, 850 gallons of liquid, 175 gallon of which is product
03/01/00	System Down	Remove product from MW-1, only a small film of product, raise passive skimmer 2 inches, restart system resetting the active skimmer to pump only product
03/21/00	System Running	Check for product MW-1, no product in passive skimmer, replace hydrophobic filter in active skimmer in MW-3, measure water/product levels

PLATES



Reference: 1995 Thomas Brothers Map



Harding Lawson Associates
 Engineering and
 Environmental Services

Vicinity Map
Quarterly Groundwater Monitoring Report
2277 Seventh Street
Oakland, California 94607

PLATE

1

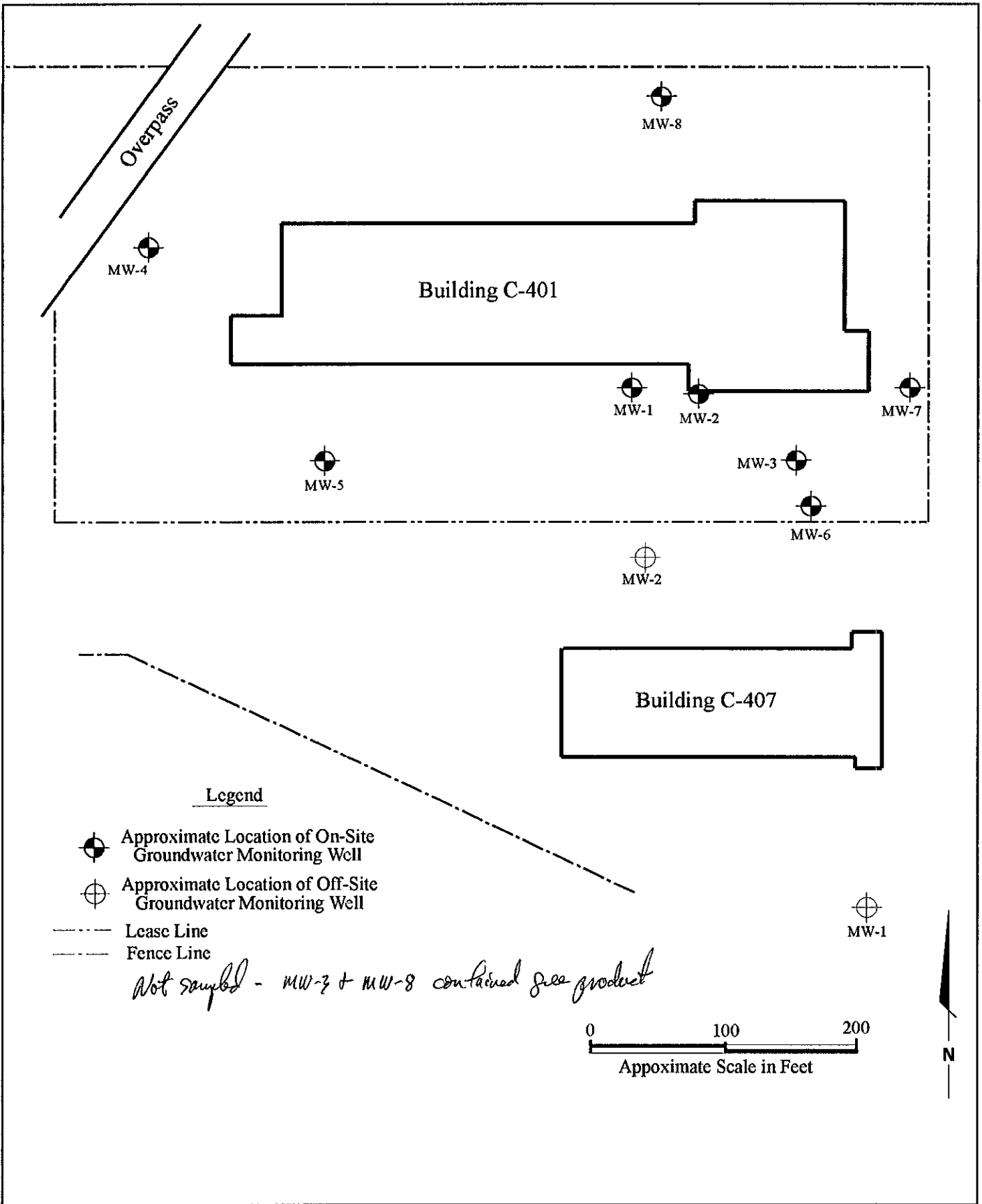
DRAWN
 jgm

PROJECT NUMBER
 42633.1

APPROVED

DATE
 02/29/00

REVISED DATE



Harding Lawson Associates
Engineering and
Environmental Services

Site Plan
Quarterly Groundwater Monitoring Report
2277 Seventh Street
Oakland, California 94607

PLATE

2

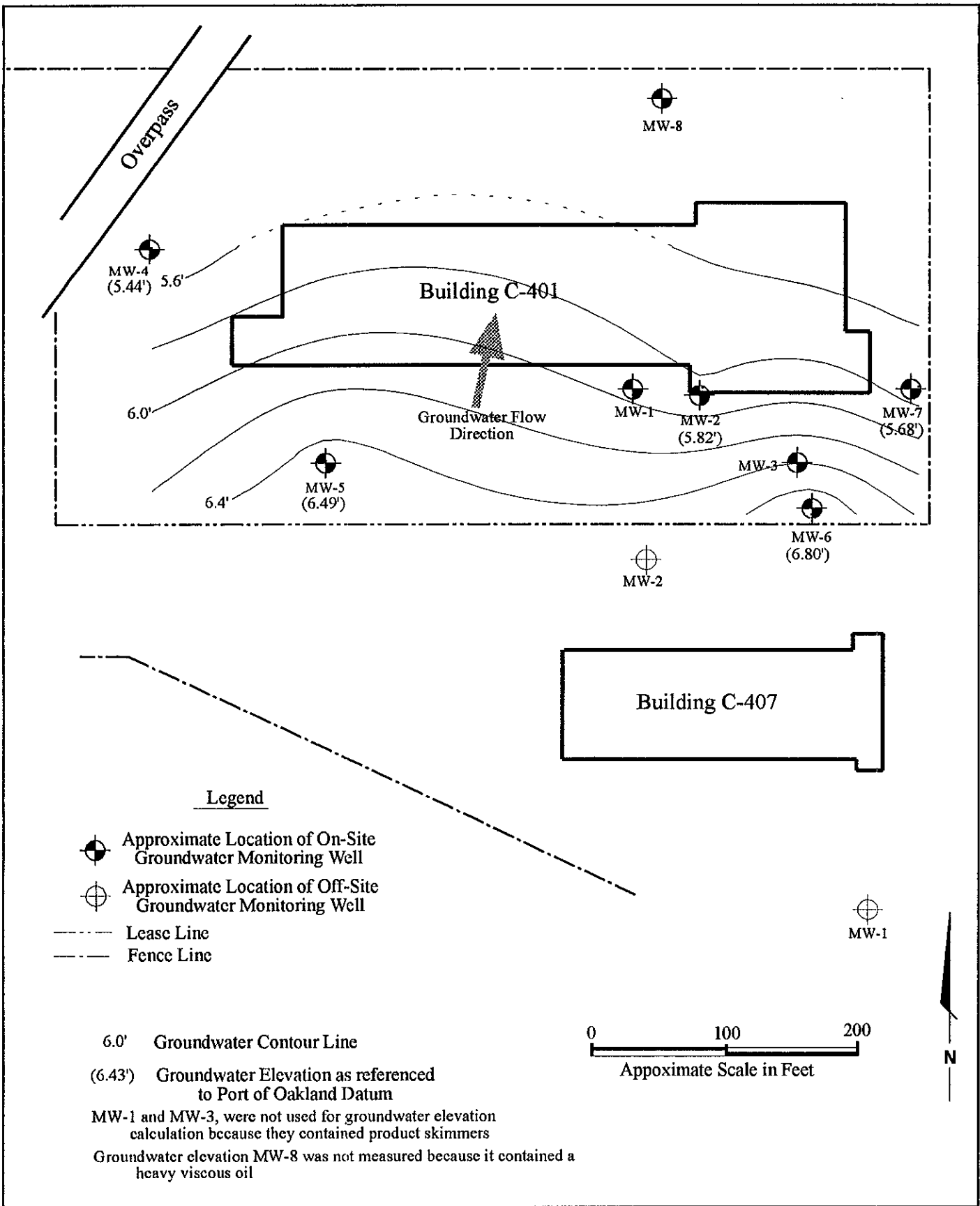
DRAWN
jgm

PROJECT NUMBER
42633.1





APPROVED

DATE
02/29/00

REVISED DATE

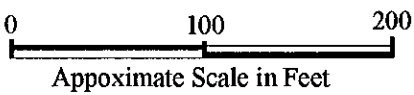


Legend

-  Approximate Location of On-Site Groundwater Monitoring Well
-  Approximate Location of Off-Site Groundwater Monitoring Well
-  Lease Line
-  Fence Line

6.0' Groundwater Contour Line
 (6.43') Groundwater Elevation as referenced to Port of Oakland Datum

MW-1 and MW-3, were not used for groundwater elevation calculation because they contained product skimmers
 Groundwater elevation MW-8 was not measured because it contained a heavy viscous oil

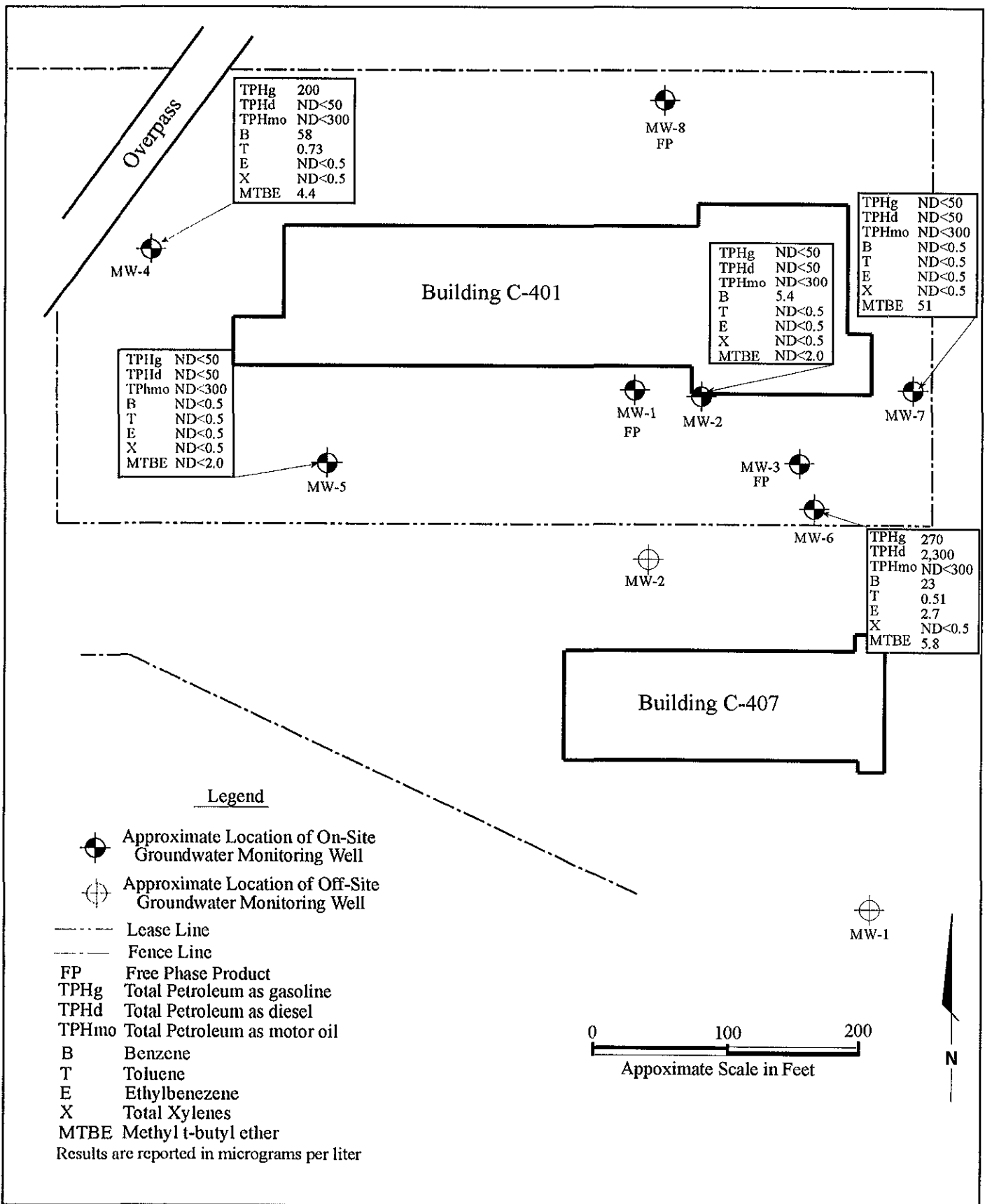


Harding Lawson Associates
 Engineering and Environmental Services

Groundwater Elevation, February 11, 2000
Quarterly Groundwater Monitoring Report
 2277 Seventh Street
 Oakland, California 94607

PLATE
3

DRAWN jgm	PROJECT NUMBER 42633.1	APPROVED	DATE 02/29/00	REVISED DATE
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Harding Lawson Associates
Engineering and Environmental Services

Groundwater Sample Results, February 11, 2000
Quarterly Groundwater Monitoring Report
2277 Seventh Street
Oakland, California 94607

PLATE
4

DRAWN
jgm

PROJECT NUMBER
42633.1

APPROVED

DATE
02/29/00

REVISED DATE

APPENDIX A

GROUNDWATER SAMPLE FORMS



Job Name: 2277 7th Street
 Job Number: 42633.1
 Recorded By: Heath Lee
(Signature)

Well Number: MW- 1
 Well Type: Monitor Extraction Other
 PVC St. Steel Other
 Date: 2/11/2000
 Sampled By: HDL
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): _____
 Total Depth of Casing (TD in ft BTOC): _____
 Water Level Depth (WL in ft BTOC): 7.0'
 No. of Well Volumes to be purged (# V): _____
product begins = 7.00'
product thickness =

PURGE VOLUME CALCULATION

(_____ - _____) X _____² X 3 X 0.0408 = _____ gals
TD (feet) WL (Feet) D (Inches) #V Calculated Purge Volume

PURGE METHOD

Bailer - Type: _____
 Submersible - Type: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
 Depth in feet (BTOC): _____
 Screen Interval in feet (BTOC): _____ from _____ to _____

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. <input checked="" type="checkbox"/> °C <input type="checkbox"/> °F	Turbidity (NTU)
Initial				
Meter S/N				

PURGE TIME

PURGE RATE

Purge Start: _____ GPM: _____
 Purge Stop: _____ GPM: _____
 Elapsed: _____

PURGE VOLUME

Volume: _____ gallons

Observations During Purging (Well Condition, Color, Odor):

empty 0.2 gals of product from passive skimmer

Discharge Water Disposal: Sanitary Sewer
 Storm Sewer Other _____

WELL SAMPLING

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original Sample No.	Dupl. Sample No.	Type	Sample No.	Type	Sample No.



Job Name: 2277 7th Street
 Job Number: 42633.1
 Recorded By: Heath Fee
 (Signature)

Well Number: MW-2
 Well Type: Monitor Extraction Other
 PVC St. Steel Other
 Date: 2/11/2000
 Sampled By: HDL
 (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
 Total Depth of Casing (TD in ft BTOC): 15.27
 Water Level Depth (WL in ft BTOC): 8.54
 No. of Well Volumes to be purged (# V): 3

PURGE METHOD

Bailer - Type: PVC
 Submersible - Type: _____
 Other - Type: _____

PURGE VOLUME CALCULATION

$(15.27 - 8.54) \times 2^2 \times 3 \times 0.0408 = 3.29$ gals

TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
 Depth in feet (BTOC): _____
 Screen Interval in feet (BTOC): _____ from _____ to _____

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. <input checked="" type="checkbox"/> °C <input checked="" type="checkbox"/> °F	Turbidity (NTU)
Initial	7.01	2200	60.2	
	7.04	2210	62.3	
2	7.09	2240	62.8	
3.5	7.12	2260	62.9	
Meter S/N	9510	9510	9510	

PURGE TIME

PURGE RATE

Purge Start: 1010 GPM: _____
 Purge Stop: 1019 GPM: _____
 Elapsed: 9

PURGE VOLUME

Volume: 3.5 gallons

Observations During Purging (Well Condition, Color, Odor):

clear, no odor

Discharge Water Disposal:

Sanitary Sewer
 Storm Sewer Other onsite drum

WELL SAMPLING

Bailer - Type: teflon disposable

Sample Time: 1025

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>MW-2</u>	<u>1 LA</u>	<u>TPHd, TPHmo</u>	<u>none</u>	<u>Curtis & Tomp</u>	<u>w/ filtration and silical gel cleanup</u>
<u>1</u>	<u>4 VOAs</u>	<u>TPHg, BTEX, MTBE</u>	<u>HCl</u>	<u>C&T</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No. Dupl. Sample No.

Blank Samples

Type Sample No.

Other Samples

Type Sample No.



Job Name: 2277 7th Street
Job Number: 42633.1
Recorded By: *Heath J. Fee*
(Signature)

Well Number: MW- 3
Well Type: Monitor Extraction Other
 PVC St. Steel Other
Date: 2/11/2000
Sampled By: HDL
(Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): _____
Total Depth of Casing (TD in ft BTOC): _____
Water Level Depth (WL in ft BTOC): 0.37
No. of Well Volumes to be purged (# V): _____
product begins = 7.97
product thickness =

PURGE VOLUME CALCULATION

() X ² X 3 X 0.0408 = _____ gals
TD (feet) WL (Feet) D (inches) #V Calculated Purge Volume

PURGE METHOD

Bailer - Type: _____
 Submersible - Type: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
Depth in feet (BTOC): _____
Screen Interval in feet (BTOC): from _____ to _____

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp.		Turbidity (NTU)
			<input checked="" type="checkbox"/> °C	<input type="checkbox"/> °F	
Initial					
Meter S/N					

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: _____ gallons

Observations During Purging (Well Condition, Color, Odor):
active skimmer

Discharge Water Disposal: Sanitary Sewer
 Storm Sewer Other _____

WELL SAMPLING

Bailer - Type: _____ Sample Time: _____

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Dupl. Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Job Name: 2277 7th Street
 Job Number: 42633.1
 Recorded By: Heath J. Lee
 (Signature)

Well Number: MW-4
 Well Type: Monitor Extraction Other
 PVC St. Steel Other
 Date: 2/11/2000
 Sampled By: HDL
 (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
 Total Depth of Casing (TD in ft BTOC): 18.84
 Water Level Depth (WL in ft BTOC): 7.71
 No. of Well Volumes to be purged (# V): 3

PURGE METHOD

Bailer - Type: PVC
 Submersible - Type: _____
 Other - Type: _____

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
 Depth in feet (BTOC): _____
 Screen Interval in feet (BTOC): _____ from _____ to _____

PURGE VOLUME CALCULATION

$(18.84 - 7.71) \times 2^2 \times 3 \times 0.0408 = 5.44$ gals

TD (feet) WL (Feet) D (inches) #V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. <input checked="" type="checkbox"/> °C <input checked="" type="checkbox"/> °F	Turbidity (NTU)
Initial	7.05	2380	60.2	
1.5	7.09	2460	62.2	
3.5	7.06	2480	62.7	
5.5	7.07	2450	62.0	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1040
 Purge Stop: 1050
 Elapsed: 10

PURGE RATE

GPM: _____
 GPM: _____

PURGE VOLUME

Volume: 5.5 gallons

Observations During Purging (Well Condition, Color, Odor):

murky brown, no odor, sheer

Discharge Water Disposal: Sanitary Sewer
 Storm Sewer Other onsite drum

WELL SAMPLING

Bailer - Type: teflon disposable

Sample Time: 1056

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>MW-4</u>	<u>1 LA</u>	<u>TPHd, TPHmo</u>	<u>none</u>	<u>Curtis & Tomp</u>	<u>w/ filtration and silical gel cleanup</u>
<u>1</u>	<u>4 VOAs</u>	<u>TPHg, BTEX, MTBE</u>	<u>HCl</u>	<u>C&T</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Dupl. Sample No.
<u>MW-4</u>	<u>DUP0200</u>
<u>(1056)</u>	<u>(1115)</u>

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.



Job Name: 2277 7th Street
 Job Number: 42633 1
 Recorded By: Heath Lee
 (Signature)

Well Number: MW-5
 Well Type: Monitor Extraction Other
 PVC St. Steel Other
 Date: 2/11/2000
 Sampled By: HDL
 (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
 Total Depth of Casing (TD in ft BTOC): 17.68
 Water Level Depth (WL in ft BTOC): 7.00
 No. of Well Volumes to be purged (# V): 3

PURGE METHOD

Bailer - Type: PVC
 Submersible - Type: _____
 Other - Type: _____

PURGE VOLUME CALCULATION

17.68 7 2 ² x 3 x 0.0408 = 5.22 gals
 TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
 Depth in feet (BTOC): _____
 Screen Interval in feet (BTOC): from _____ to _____

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. <input checked="" type="checkbox"/> °C <input checked="" type="checkbox"/> °F	Turbidity (NTU)
Initial	6.71	2112	61.0	
1.5	6.82	2050	60.4	
3.5	6.96	2180	60.3	
5.5	6.98	2180	59.6	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 0930
 Purge Stop: 0941
 Elapsed: 11

PURGE RATE

GPM: _____
 GPM: _____

PURGE VOLUME

Volume: 5.5 gallons

Observations During Purging (Well Condition, Color, Odor):

grey brown, no odor

Discharge Water Disposal: Sanitary Sewer
 Storm Sewer Other onsite drum

WELL SAMPLING

Bailer - Type: teflon disposable

Sample Time: 0950

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>MW-5</u>	<u>1 LA</u>	<u>TPHd, TPHmo</u>	<u>none</u>	<u>Curtis & Tomp</u>	<u>w/ filtration and silical gel cleanup</u>
<u>↓</u>	<u>4 VOAs</u>	<u>TPHg, BTEX, MTBE</u>	<u>HCl</u>	<u>C&T</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No
<u>TRIP</u>	<u>1005</u>

Other Samples	
Type	Sample No



Job Name: 2277 7th Street
 Job Number: 42633.1
 Recorded By: Heath J. Lee
 (Signature)

Well Number: MW- 6
 Well Type: Monitor Extraction Other
 PVC St. Steel Other
 Date: 2/11/2000
 Sampled By: HDL
 (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
 Total Depth of Casing (TD in ft BTOC): 18.05
 Water Level Depth (WL in ft BTOC): 7.20
 No. of Well Volumes to be purged (# V): 3

PURGE METHOD

Bailer - Type: PVC
 Submersible - Type: _____
 Other - Type: _____

PURGE VOLUME CALCULATION

$(18.05 - 7.2) \times 2 \times 3 \times 0.0408 = 5.3$ gals
 TD (feet) WL (feet) D (inches) #V Calculated Purge Volume

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
 Depth in feet (BTOC): _____
 Screen Interval in feet (BTOC): from _____ to _____

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. <input checked="" type="checkbox"/> °C <input checked="" type="checkbox"/> °F	Turbidity (NTU)
Initial	7.12	3900	61.4	
1.5	7.21	4010	63.7	
3.5	7.36	4140	63.6	
5.5	7.42	4170	64.3	
Meter S/N	9510	9510	9510	

PURGE TIME

Purge Start: 1130
 Purge Stop: 1145
 Elapsed: 15

PURGE RATE

GPM: _____
 GPM: _____

PURGE VOLUME

Volume: 5.5 gallons

Observations During Purging (Well Condition, Color, Odor):

strong fuel odor, clear to grey w/ bail
 Discharge Water Disposal: Sanitary Sewer
 Storm Sewer Other onsite drum

WELL SAMPLING

Bailer - Type: teflon disposable

Sample Time: 1151

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-6	1 LA	TPHd, TPHmo	none	Curtis & Tomp	w/ filtration and silical gel cleanup
	4 VOAs	TPHg, BTEX, MTBE	HCl	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.



Job Name: 2277 7th Street
 Job Number: 42633.1
 Recorded By: Heath P. Lee
(Signature)

Well Number: MW-7
 Well Type: Monitor Extraction Other
 PVC St. Steel Other
 Date: 2/11/2000
 Sampled By: HDL
(initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2
 Total Depth of Casing (TD in ft BTOC): 18.16
 Water Level Depth (WL in ft BTOC): 8.67
 No. of Well Volumes to be purged (# V): 3

PURGE METHOD

Bailer - Type: PVC
 Submersible - Type: _____
 Other - Type: _____

PURGE VOLUME CALCULATION

$(18.16 - 8.67) \times 2^2 \times 3 \times 0.0408 = 4.65$ gals

TD (feet) WL (feet) D (inches) # V Calculated Purge Volume

PUMP INTAKE SETTING

Near Bottom Near Top
 Other _____
 Depth in feet (BTOC): _____
 Screen Interval in feet (BTOC): from _____ to _____

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp.		Turbidity (NTU)
			<input type="checkbox"/> °C	<input checked="" type="checkbox"/> °F	
Initial	8.20	2030	60.7		
1.5	7.78	2000	61.8		
3	7.88	2020	62.7		
5	7.90	1970	61.9		
Meter S/N	9510	9510	9510		

PURGE TIME

Purge Start: 1205
 Purge Stop: 1218
 Elapsed: 13

PURGE RATE

GPM: _____
 GPM: _____

PURGE VOLUME

Volume: 5 gallons

Observations During Purging (Well Condition, Color, Odor):
murky brown, no odor

Discharge Water Disposal: Sanitary Sewer
 Storm Sewer Other onsite drum

WELL SAMPLING

Bailer - Type: teflon disposable Sample Time: 1225

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
<u>MW-7</u>	<u>1 LA</u>	<u>TPHd, TPHmo</u>	<u>none</u>	<u>Curtis & Tomp</u>	<u>w/ filtration and silical gel cleanup</u>
<u>↓</u>	<u>4 VOAs</u>	<u>TPHg, BTEX, MTBE</u>	<u>HCl</u>	<u>C&T</u>	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Dupl. Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

APPENDIX B

LABORATORY REPORTS



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

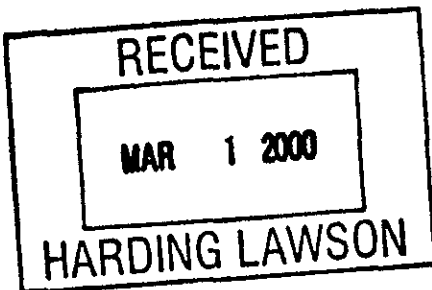
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

A N A L Y T I C A L R E P O R T

Prepared for:

Harding Lawson Associates
383 Fourth Street
Third Floor
Oakland, CA 94607

Date: 24-FEB-00
Lab Job Number: 143956
Project ID: 42633.1
Location: Port of Oakland-2277



Reviewed by:

Anna Payson

Reviewed by:

[Signature]

This package may be reproduced only in its entirety.

Laboratory Number: 143956
Client: Harding Lawson Associates
Location: Port of Oakland-2277 7th Street
Project#: 42633.1

Receipt Date: 02/11/00

CASE NARRATIVE

This hardcopy data package contains sample and QC results for seven water samples that were received on February 11, 2000.

TVH/BTXE: No analytical problems were encountered.

Total Extractable Hydrocarbons: All extracts were treated with silica gel prior to analysis. No analytical problems were encountered.

Anna

CHAIN OF CUSTODY FORM

Nº 2441

Harding Lawson Associates
 383 Fourth Street, Third Floor
 Oakland, California 94607
 (510) 451-1001 - Phone
 (510) 451-3165 - Fax

113956

Lab: C+T

Samplers: _____

Job Number: 42633.1

Name/Location: Port of Oakland - 2277 7th Street

Project Manager: Jim McCarty Recorder: Heather Lee
(Signature Required)

ANALYSIS REQUESTED										
EPA 8010	EPA 8020	EPA 8260	EPA 8270	METALS	EPA 8015M/TPH	EPA 8020/BTEX w/MTBE	EPA 8015M/TPHd.o. TPH _{ins}			
					X	X	X			
						X				
					X	X	X			
					X	X	X			
					X	X	X			
					X	X	X			
					X	X	X			

SOURCE CODE	MATRIX					# CONTAINERS & PRESERV.					SAMPLE NUMBER OR LAB NUMBER			DATE				STATION DESCRIPTION/NOTES
	Water	Sediment	Soil	Oil	Unpres.	H ₂ S	HNO ₃	HCL	Ice	Yr	Wk	Seq	Yr	Mo	Day	Time		
	X				1			4	X				00	02	11	09:50		
	X				1			4	X				00	02	11	10:05		
	X				1			4	X				00	02	11	10:25		
	X				1			4	X				00	02	11	10:56		
	X				1			4	X				00	02	11	11:15		
	X				1			4	X				00	02	11	11:51		
	X				1			4	X				00	02	11	12:25		

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						Standard TAT
						Soilice gel cleanup on TPHd + TPH _{ins}

CHAIN OF CUSTODY RECORD			
RELINQUISHED BY: (Signature) <i>Heather Lee</i>	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE/TIME 02/11/00 1:05	
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
METHOD OF SHIPMENT			
SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY received cold on 2/11/00			

Gasoline by GC/FID CA LUFT

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Analyzed:	02/17/00
Batch#:	53849		

Field ID: MW-5 Lab ID: 143956-001
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	59-135
Bromofluorobenzene (FID)	105	60-140

Field ID: TRIP Lab ID: 143956-002
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	59-135
Bromofluorobenzene (FID)	107	60-140

Field ID: MW-2 Lab ID: 143956-003
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	59-135
Bromofluorobenzene (FID)	114	60-140

Field ID: MW-4 Lab ID: 143956-004
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	200 Y	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	59-135
Bromofluorobenzene (FID)	113	60-140

Gasoline by GC/FID CA LUFT

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Analyzed:	02/17/00
Batch#:	53849		

Field ID:	DUP0200	Lab ID:	143956-005
Type:	SAMPLE		

Analyte	Result	RL
Gasoline C7-C12	190 Y	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	59-135
Bromofluorobenzene (FID)	112	60-140

Field ID:	MW-6	Lab ID:	143956-006
Type:	SAMPLE		

Analyte	Result	RL
Gasoline C7-C12	270 Y	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	59-135
Bromofluorobenzene (FID)	106	60-140

Field ID:	MW-7	Lab ID:	143956-007
Type:	SAMPLE		

Analyte	Result	RL
Gasoline C7-C12	ND	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	59-135
Bromofluorobenzene (FID)	113	60-140

Type:	BLANK	Lab ID:	QC108166
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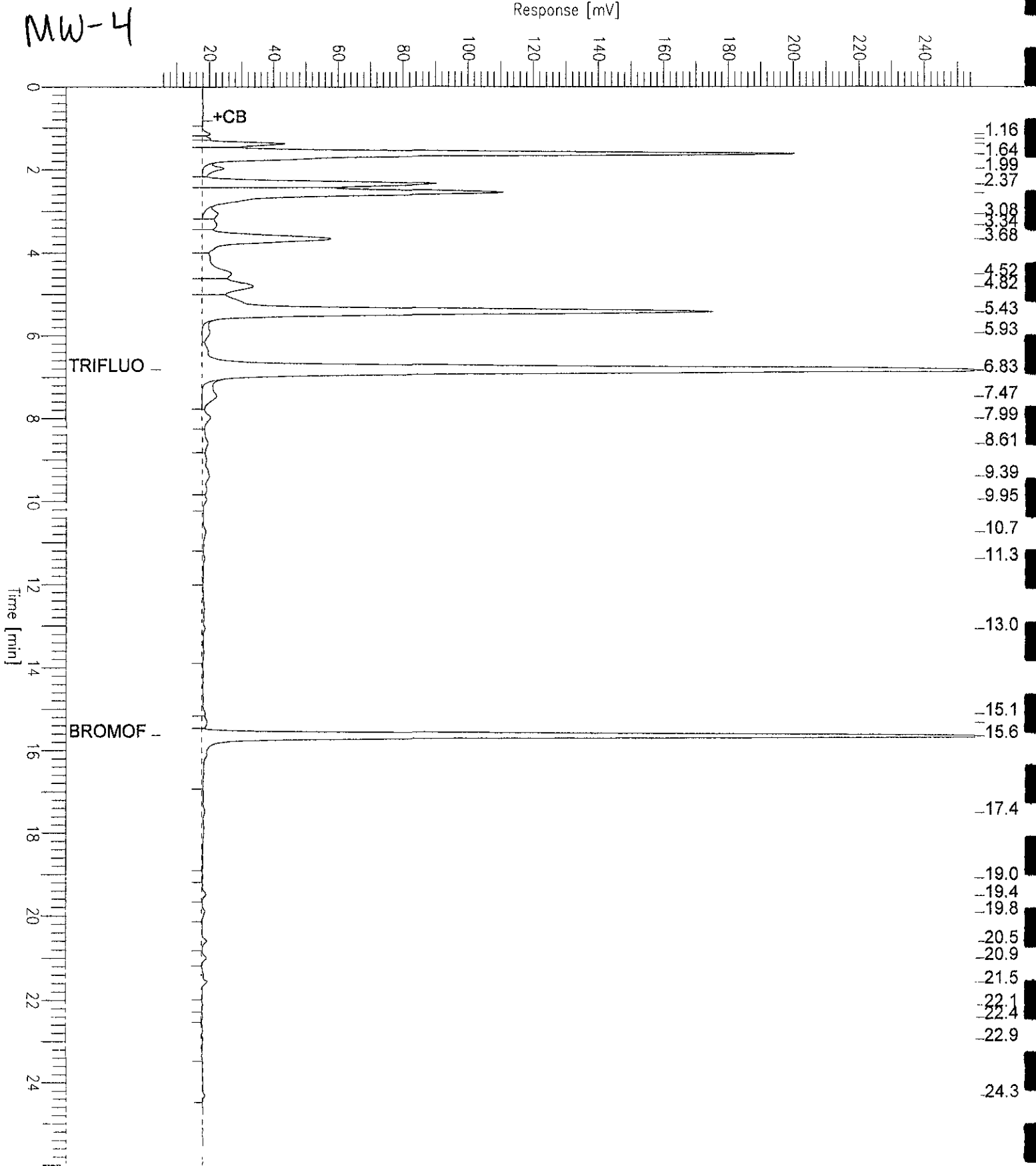
Analyte	Result	RL
Gasoline C7-C12	ND	50
Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	59-135
Bromofluorobenzene (FID)	93	60-140

GC07 TVH 'A' Data File RTX 502

Sample Name : 143956-004,53849
 FileName : G:\GC07\DATA\048A010.raw
 Method : TVHBTXE
 Start Time : 0.00 min
 Scale Factor : -1.0

End Time : 26.00 min
 Plot Offset : 5 mV

Sample # :
 Date : 2/17/00 06:07 PM
 Time of Injection: 2/17/00 05:40 PM
 Low Point : 5.18 mV
 High Point : 255.18 mV
 Plot Scale: 250.0 mV



GC07 TVH 'A' Data File RTX 502

Sample Name : 143956-005,53849

Sample #:

Page 1 of 1

File Name : G:\GC07\DATA\048A011.raw

Date : 2/17/00 06:44 PM

Method : TVHBTXE

Time of Injection: 2/17/00 06:18 PM

Start Time : 0.00 min

End Time : 26.00 min

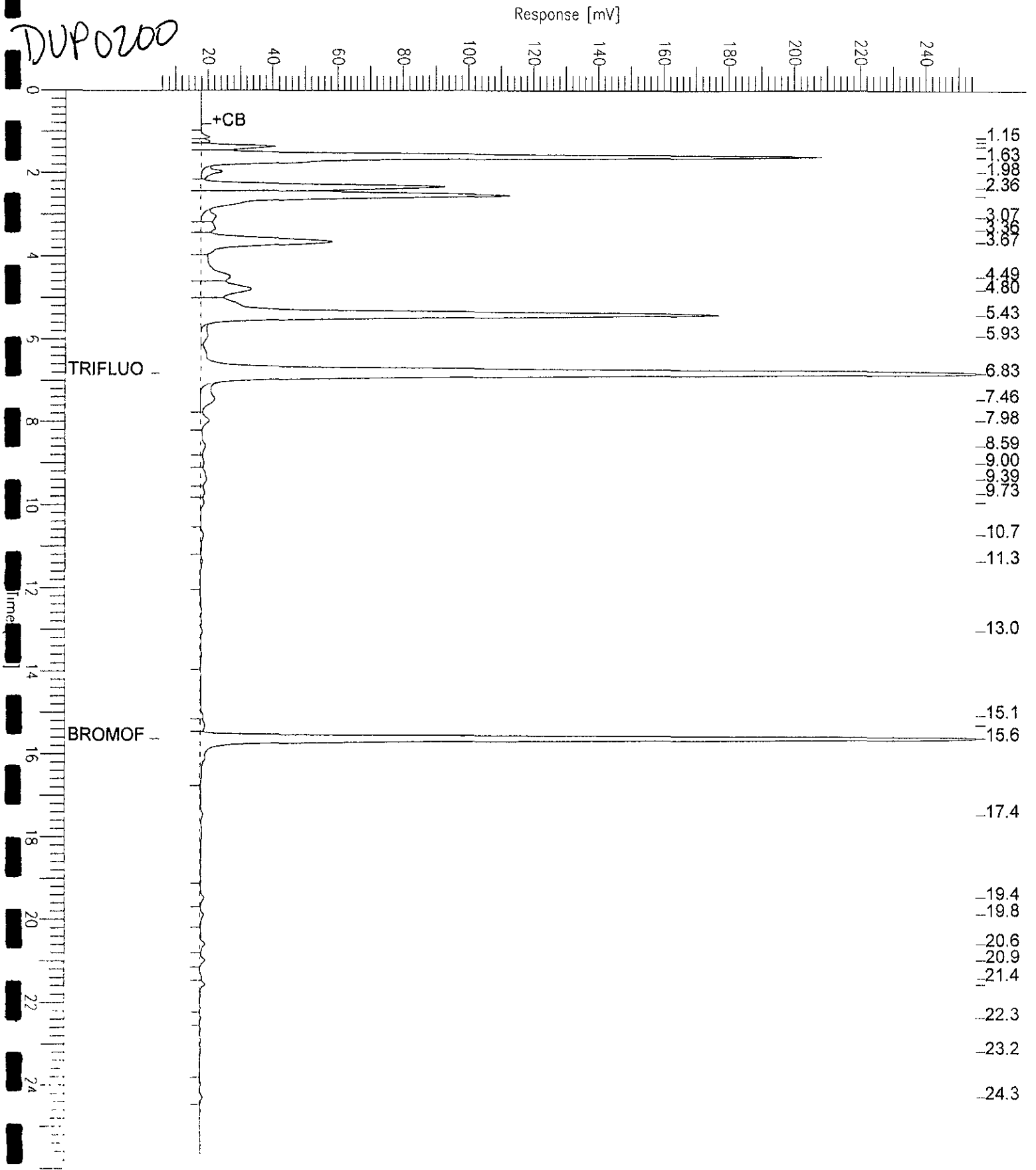
Low Point : 5.25 mV

High Point : 255.25 mV

Scale Factor: -1.0

Plot Offset: 5 mV

Plot Scale: 250.0 mV



GC07 TVH 'A' Data File RTX 502

Sample Name : 143956-006,53849

Sample #:

Page 1 of 1

FileName : G:\GC07\DATA\048A012.raw

Date : 2/18/00 10:36 AM

Method : TVHBTXE

Time of Injection: 2/17/00 06:55 PM

Start Time : 0.00 min

End Time : 26.00 min

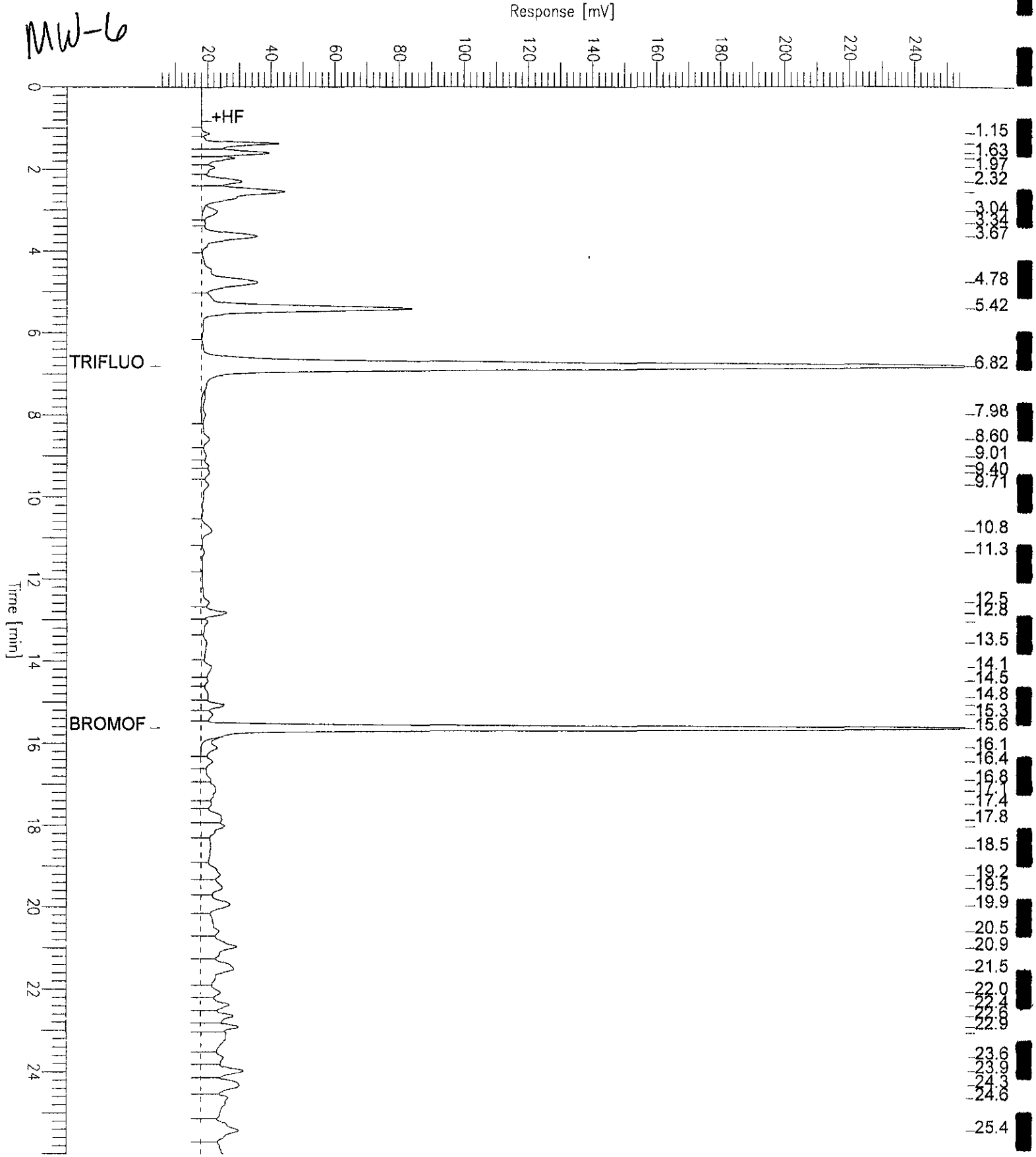
Low Point : 5.49 mV

High Point : 255.49 mV

Scale Factor: -1.0

Plot Offset: 5 mV

Plot Scale: 250.0 mV

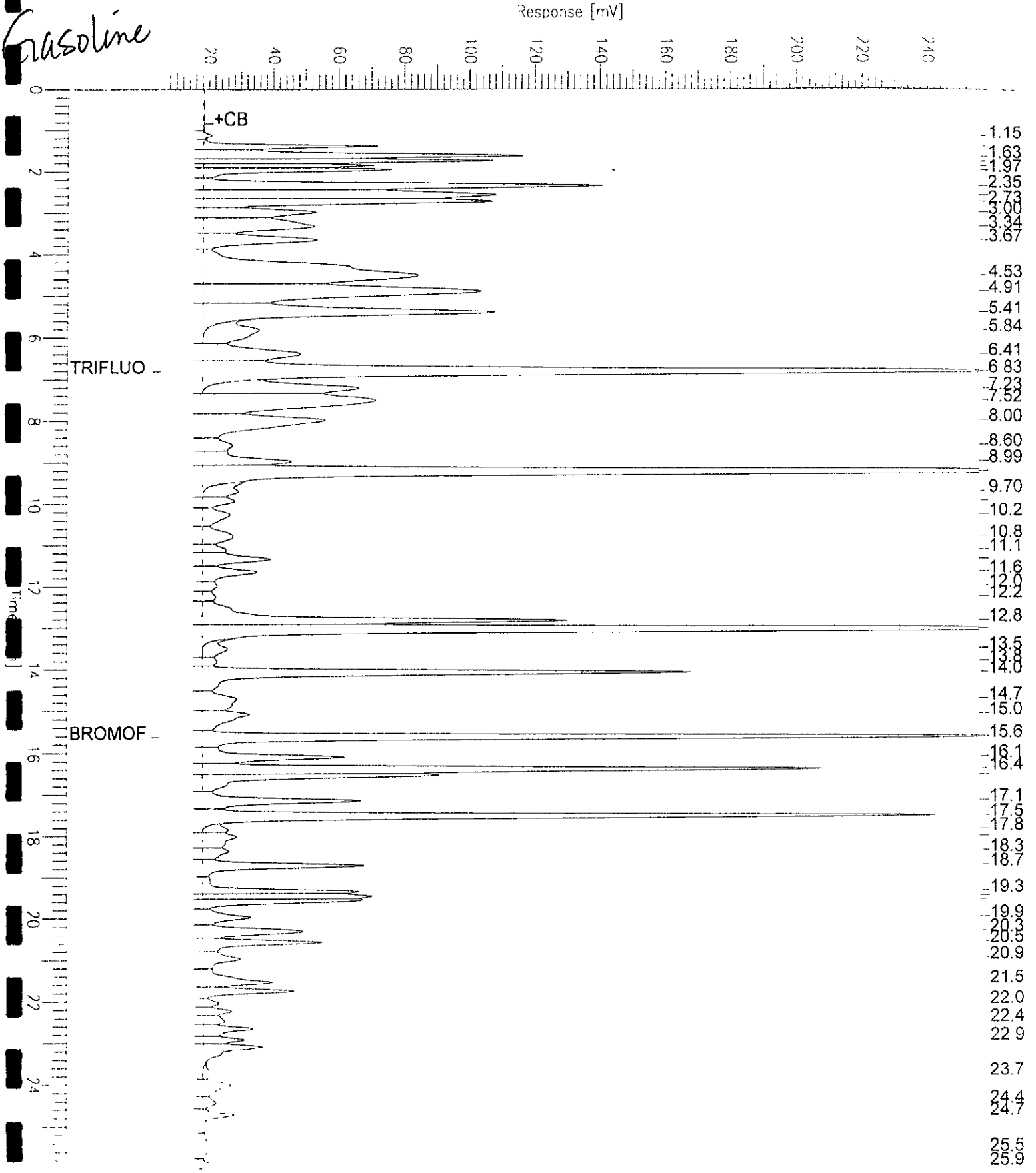


GC07 TVH 'A' Data File RTX 502

Sample Name : CCV/LCS, QC108164, 53849, 00WS8733, 5/5000
 File Name : G:\GC07\DATA\048A002.raw
 Method : TVHBTXE
 Start Time : 0.00 min
 Scale Factor : -1.0

Sample #: GAS
 Date : 2/17/00 12:53 PM
 Time of Injection: 2/17/00 12:27 PM
 Low Point : 5.69 mV
 Plot Scale: 250.0 mV
 End Time : 26.00 min
 Plot Offset: 6 mV
 High Point : 255.69 mV

Gasoline



BTXE Compounds by GC/PID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/17/00
Batch#:	53849		

Field ID:	MW-5	Lab ID:	143956-001
Type:	SAMPLE	Analyzed:	02/17/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m, p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	56-142
Bromofluorobenzene (PID)	104	55-149

Field ID:	TRIP	Lab ID:	143956-002
Type:	SAMPLE	Analyzed:	02/18/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m, p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	104	56-142
Bromofluorobenzene (PID)	107	55-149

Field ID:	MW-2	Lab ID:	143956-003
Type:	SAMPLE	Analyzed:	02/17/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	5.4	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m, p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	108	55-149

BTXE Compounds by GC/PID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/17/00
Batch#:	53849		

Field ID:	MW-4	Lab ID:	143956-004
Type:	SAMPLE	Analyzed:	02/17/00

Analyte	Result	RL
MTBE	4.4 C	2.0
Benzene	58	0.50
Toluene	0.77	0.50
Ethylbenzene	ND	0.50
m, p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	106	56-142
Bromofluorobenzene (PID)	108	55-149

Field ID:	DUP0200	Lab ID:	143956-005
Type:	SAMPLE	Analyzed:	02/17/00

Analyte	Result	RL
MTBE	4.4 C	2.0
Benzene	58	0.50
Toluene	0.73	0.50
Ethylbenzene	ND	0.50
m, p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	108	55-149

Field ID:	MW-6	Lab ID:	143956-006
Type:	SAMPLE	Analyzed:	02/17/00

Analyte	Result	RL
MTBE	5.8	2.0
Benzene	23	0.50
Toluene	0.51	0.50
Ethylbenzene	2.7	0.50
m, p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	104	56-142
Bromofluorobenzene (PID)	102	55-149

BTXE Compounds by GC/PID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/17/00
Batch#:	53849		

Field ID: MW-7 Lab ID: 143956-007
 Type: SAMPLE Analyzed: 02/17/00

Analyte	Result	RL
MTBE	51	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	105	56-142
Bromofluorobenzene (PID)	110	55-149

Type: BLANK Analyzed: 02/17/00
 Lab ID: QC108166

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	56-142
Bromofluorobenzene (PID)	92	55-149

Gasoline by GC/FID CA LUFT

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC108164	Batch#:	53849
Matrix:	Water	Analyzed:	02/17/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,028	101	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	111	59-135
Bromofluorobenzene (FID)	102	60-140

BTXE Compounds by GC/PID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC108165	Batch#:	53849
Matrix:	Water	Analyzed:	02/17/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	17.76	89	51-125
Benzene	20.00	18.81	94	67-117
Toluene	20.00	20.77	104	69-117
Ethylbenzene	20.00	19.71	99	68-124
m,p-Xylenes	40.00	40.78	102	70-125
o-Xylene	20.00	20.46	102	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	100	56-142
Bromofluorobenzene (PID)	99	55-149

Gasoline by GC/FID CA LUFT

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	53849
MSS Lab ID:	143993-007	Sampled:	02/16/00
Matrix:	Water	Received:	02/16/00
Units:	ug/L	Prepared:	02/17/00
Diln Fac:	1.000	Analyzed:	02/18/00

Type: MS Lab ID: QC108167

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<50.00	2,000	2,002	100	65-131
Surrogate	%REC	Limits			
Trifluorotoluene (FID)	115	59-135			
Bromofluorobenzene (FID)	111	60-140			

Type: MSD Lab ID: QC108168

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,870	93	65-131	7	20
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	113	59-135				
Bromofluorobenzene (FID)	112	60-140				



Total Extractable Hydrocarbons, GC/FID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/15/00
Batch#:	53813		

Field ID:	MW-5	Lab ID:	143956-001
Type:	SAMPLE	Analyzed:	02/19/00

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	83	44-121

Field ID:	MW-2	Lab ID:	143956-003
Type:	SAMPLE	Analyzed:	02/19/00

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	80	44-121

Field ID:	MW-4	Lab ID:	143956-004
Type:	SAMPLE	Analyzed:	02/19/00

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	93	44-121

Field ID:	DUP0200	Lab ID:	143956-005
Type:	SAMPLE	Analyzed:	02/19/00

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	73	44-121

Chromatogram

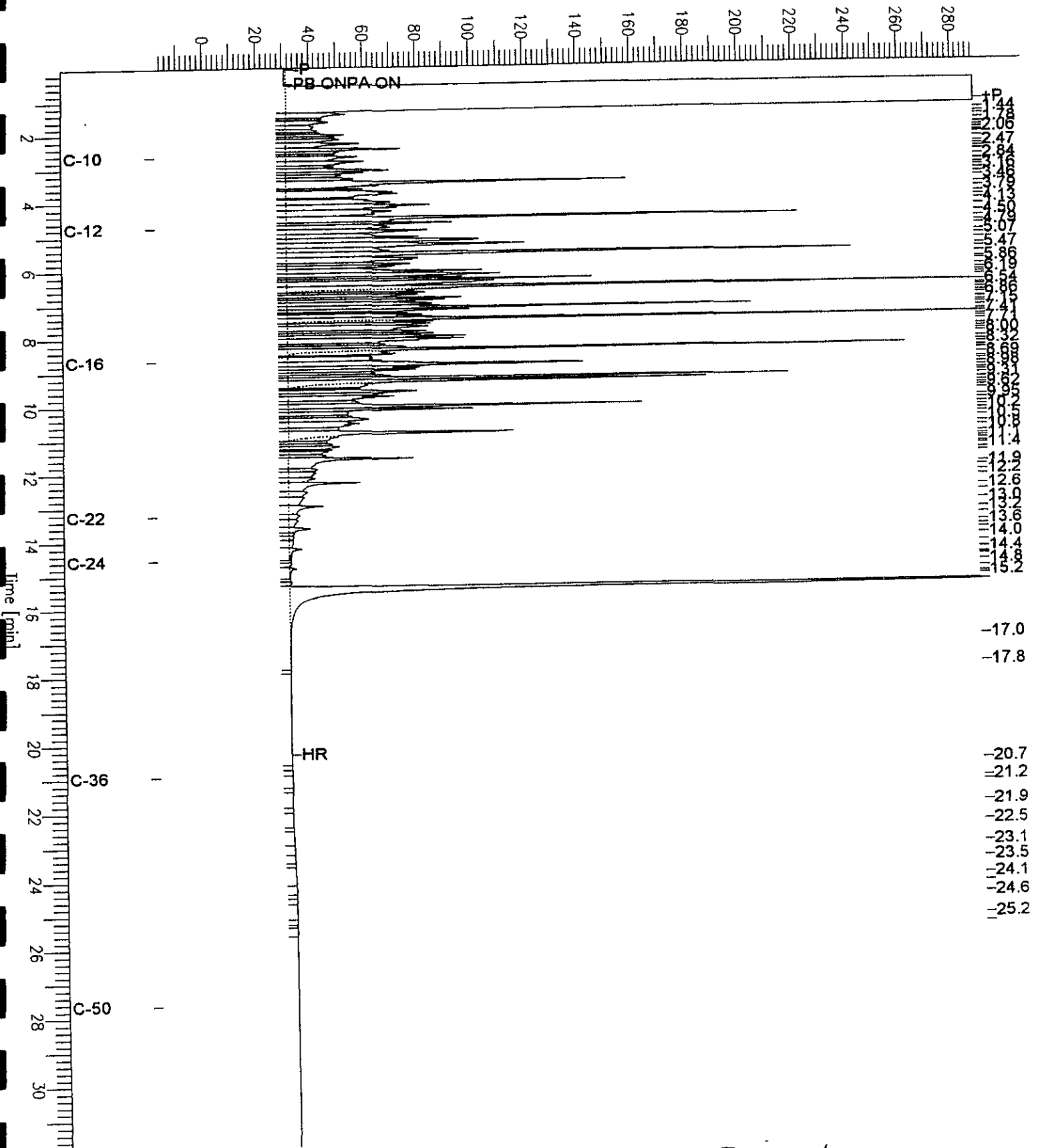
Sample Name : ccv,00ws8795,ds1
FileName : G:\GC15\CHB\047B001.RAW
Method : BTEH041.MTH
Start Time : 0.01 min
Scale Factor : 0.0

End Time : 31.83 min
Plot Offset : -18 mV

Sample #: 500mg/l
Date : 02/16/2000 12:05 PM
Time of Injection: 02/16/2000 11:18 AM
Low Point : -17.68 mV
High Point : 288.73 mV
Plot Scale: 306.4 mV

Page 1 of 1

Response [mV]



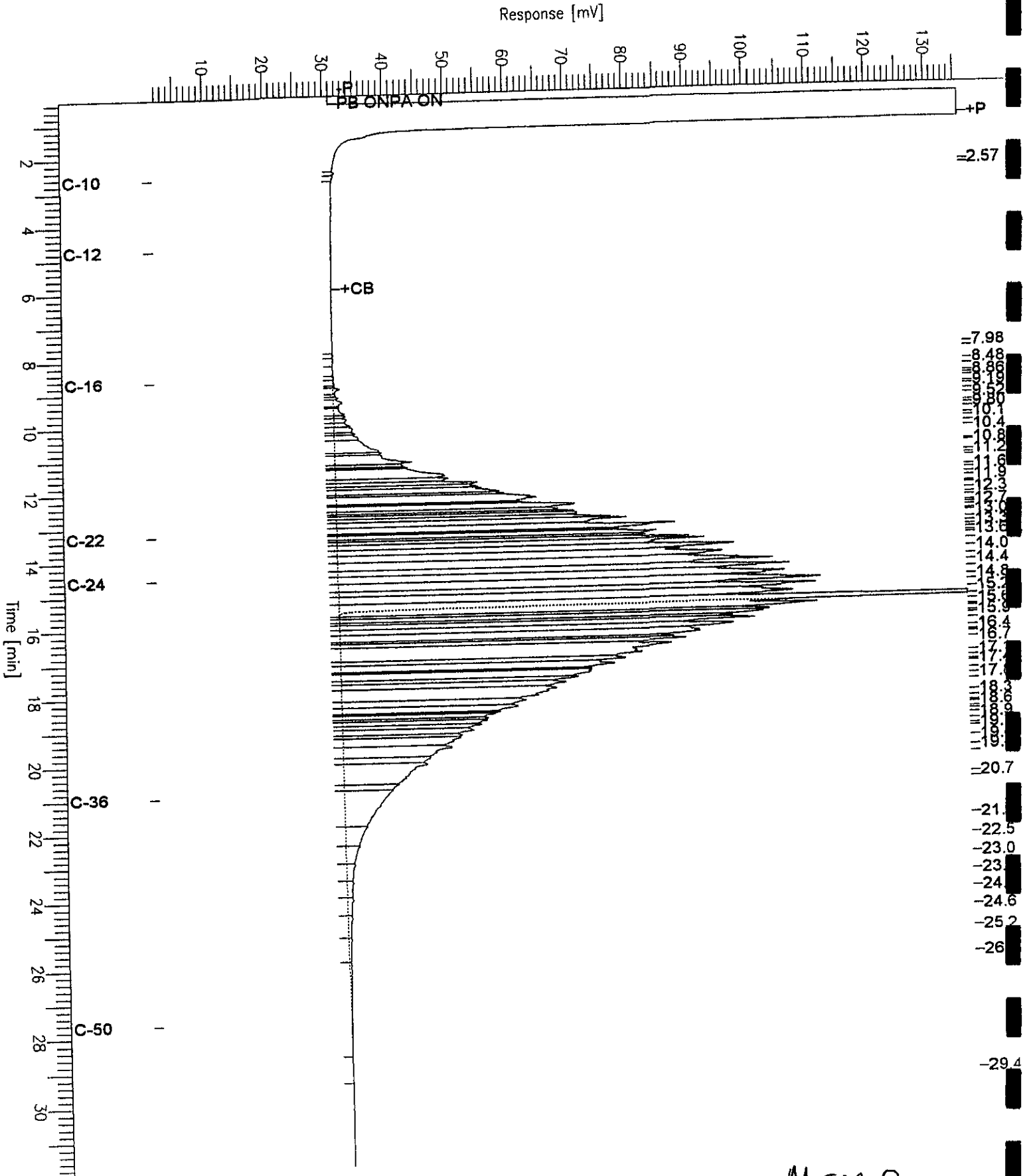
Diesel

Chromatogram

Sample Name : ccv,99ws8570,mo
 FileName : G:\GC15\CHB\047B002.RAW
 Method : BTEHO41.MTH
 Start Time : 0.29 min
 Scale Factor : 0.0

End Time : 31.91 min
 Plot Offset: 2 mV

Sample #: 500mg/l
 Date : 02/16/2000 01:08 PM
 Time of Injection: 02/16/2000 12:01 PM
 Low Point : 1.67 mV
 Plot Scale: 134.0 mV
 High Point : 135.70 mV



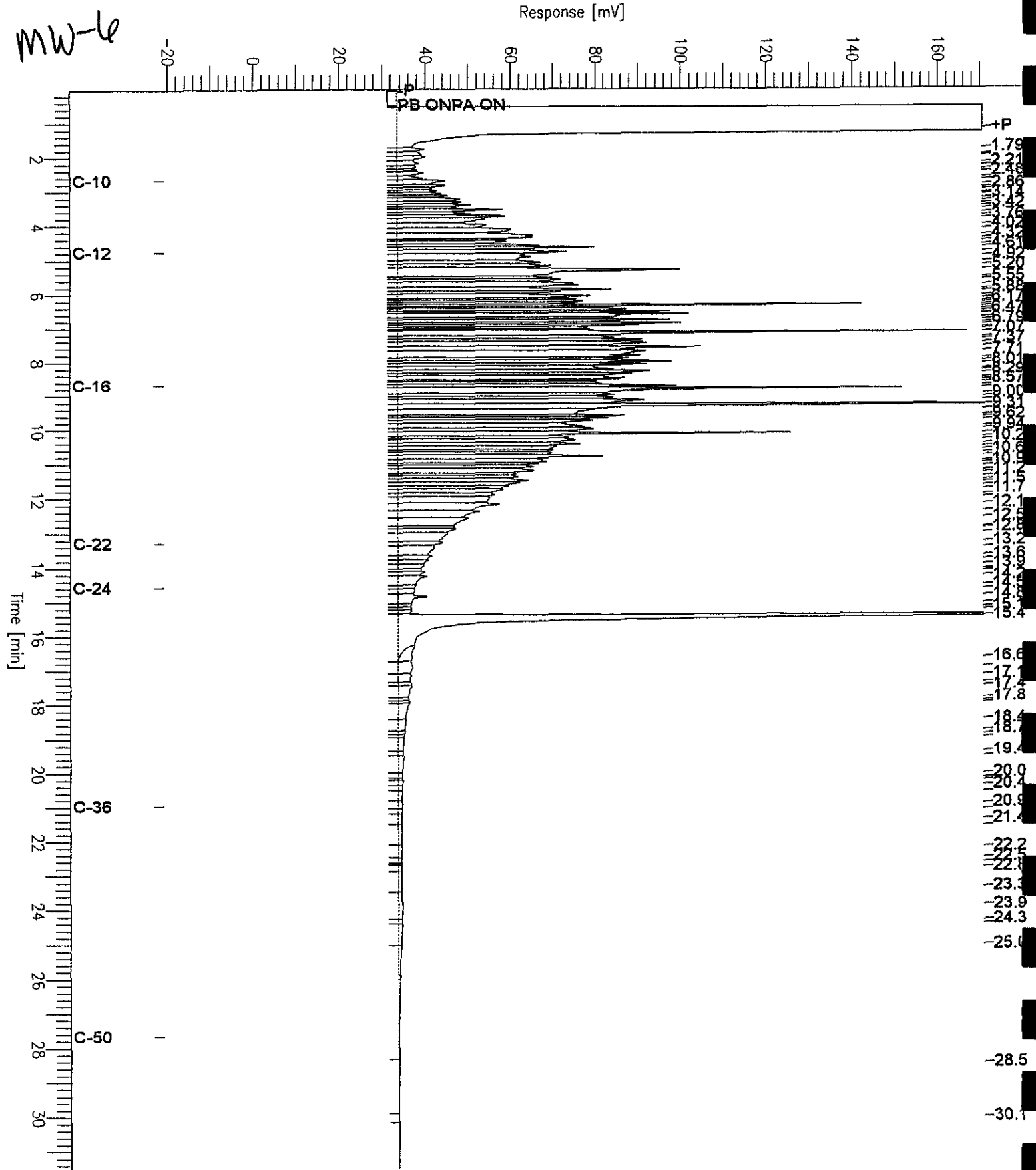
MOTOR OIL

Chromatogram

Sample Name : 143956-006sg,53813
FileName : G:\GC15\CHB\052B057.RAW
Method : BTEH041.MTH
Start Time : 0.01 min
Scale Factor: 0.0

End Time : 31.55 min
Plot Offset: -21 mV

Sample #: Page 1 of 1
Date : 02/23/2000 03:08 PM
Time of Injection: 02/23/2000 01:52 PM
Low Point : -20.97 mV High Point : 170.36 mV
Plot Scale: 191.3 mV



Total Extractable Hydrocarbons, GC/FID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC108045	Batch#:	53813
Matrix:	Water	Prepared:	02/15/00
Units:	ug/L	Analyzed:	02/18/00

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,475	1,858	75	45-110

Surrogate	%REC	Limits
Hexacosane	89	44-121



Total Extractable Hydrocarbons, GC/FID

Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	53813
MSS Lab ID:	143935-001	Sampled:	02/14/00
Matrix:	Water	Received:	02/14/00
Units:	ug/L	Prepared:	02/15/00
Diln Fac:	1.000	Analyzed:	02/18/00

Type: MS Lab ID: QC108046

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	11.75	2,475	1,861	75	38-122
Surrogate	%REC	Limits			
Hexacosane	88	44-121			

Type: MSD Lab ID: QC108047

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,475	1,851	74	38-122	1	28
Surrogate	%REC	Limits				
Hexacosane	88	44-121				