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42633.4

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

Second Quarter of 2001 Quarterly Groundwater Monitoring and Product Recovery Report
2277 Seventh Street
Oakland, California

Semi-Annual 2001 Groundwater Monitoring
2225 Seventh Street
Oakland, California

Dear Mr. Prall:

Harding ESE, Inc. (Harding), has prepared this report on behalf of the Port of Oakland for the groundwater monitoring and sampling programs at 2277 7th Street and 2225 7th Street in Oakland, California (Plate 1). This report summarizes the quarterly monitoring of five groundwater monitoring wells (MW-2, MW-4, MW-5, MW-6, and MW-7) at 2277 7th Street and the semi-annual monitoring of three groundwater monitoring wells (MW-1, MW-2, and MW-3) at 2225 7th. The locations of these wells are shown on Plates 2 through 5.

This report also summarizes the operation of the product recovery system at the 2277 7th Street site during the second quarter of 2001. Monitoring well MW-3 at 2277 7th Street contains an active product skimmer that recovers separate-phase petroleum hydrocarbons from the groundwater surface; Harding did not collect a groundwater sample from this well. Monitoring well MW-1 contains a passive product skimmer, and, therefore, Harding did not collect a sample from this well either.

BACKGROUND

2277 7th Street

Monitoring wells were installed 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 C-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).

2225 7th Street

Monitoring wells were installed at the adjacent site to assess groundwater quality following the removal of underground storage tanks (USTs) from the site in 1989 and 1992. The former USTs consisted of seven diesel USTs and one bulk oil UST located on the east side of Building C-407 and one waste oil UST located north of Building C-407.

GROUNDWATER MONITORING

Harding used the following procedures during groundwater monitoring at the two sites. Prior to purging and sampling the monitoring wells, Harding measured the depth to groundwater below the top of the well casing with an electric water level indicator. After measuring the depth to water, Harding purged the wells using a PVC bailer. Conductivity, pH, and temperature were monitored periodically during purging. Harding collected the groundwater samples after removing a minimum of three well-casing volumes of water and when 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, Foss Environmental Services Company, Inc. periodically off-hauls and disposes of the purge water along with the product in the tank.

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

2277 7th Street

Harding conducted this quarter's groundwater monitoring at 2277 7th Street on July 10, 2001. In addition to measuring depth to groundwater, Harding measured the depth to product in MW-1 and MW-3 to

calculate product thickness. Groundwater level measurements are summarized in Table 1 and product thickness measurements are summarized on Table 2. Groundwater gradient direction are presented on Plate 3. Harding did not use the groundwater measurements from MW-1 and MW-3 to develop the groundwater gradient because of the product recovery equipment in the well.

2225 7th Street

Harding also conducted this quarter's groundwater monitoring at 2225 7th Street on July 10, 2001. Groundwater level measurements are summarized in Table 3. Groundwater elevations and the gradient direction are presented on Plate 3.

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 EPA Method 8021B (note: detections of MTBE at the 2277 7th Street site were checked by analysis of the samples in accordance with EPA Test Method 8260).
- 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.

Harding included a trip blank, which accompanied the samples from time of collection until delivery to the analytical laboratory and was analyzed for BTEX and MTBE. The laboratory results for 2277 7th Street are summarized in Table 4 and are shown on Plate 5 and those for 2225 7th Street are summarized in Table 5 and shown on Plate 6. Copies of the laboratory results and chain-of-custody forms are provided in Appendix B.

FINDINGS

During this monitoring event, the groundwater measurements at both sites were conducted on July 10, 2001. The water levels are presented in Tables 1 and 3. Harding used the computer program Surfer to create the contours on Plate 3 using the Kriging method. According to these contours, the groundwater appears to be moving towards the north from Building C-407 toward Building C-401. The groundwater

flow direction observed during the second quarter 2001 closely matched that observed during the previous two quarters.

2277 7th Street

Results of the July 10, 2001 groundwater sampling at 2277 7th Street are summarized below:

- Harding found measurable product in MW-1 and MW-3 and therefore did not collect a groundwater sample from either well.
- TPHg was reported at a concentration of 120 µg/L in MW-6. TPHg was not detected in MW-2, MW-5, or MW-7. Last quarter TPHg was detected in the sample from MW-4 at 450 µg/L and in MW-6 at 120 µg/L.
- Benzene was reported at a concentration of 620 in MW-4, and at 29 µg/L in MW-6. Benzene was not detected in MW-2, MW-5 or MW-7. Last quarter benzene was detected in the sample MW-4 at 120 µg/L and in MW-6 at 21 µg/L.
- Toluene was reported at 2.6 µg/L in MW-4. Toluene was not detected above the reporting limit in MW-2, MW-5, MW-6 or MW-7. Last quarter toluene was not detected above the reporting limit in MW-4.
- Ethylbenzene was reported at a concentration of 2.9 in MW-4, 0.99 µg/L in MW-6 and was not detected in MW-2, MW-5, or MW-7. Ethylbenzene was detected at a concentration of 0.96 µg/L in MW-6 during the previous quarter.
- Total xylenes were not detected above the reporting limit in MW-2, MW-4, MW-5, MW-6, or MW-7 this quarter or last quarter.
- MTBE was reported at a concentration of 11 µg/L in MW-4, and 77 and 71 µg/L in MW-7 and was not detected in MW-2, MW-5 and MW-6. Confirmation samples of MTBE detections by EPA Test Method 8260 did not confirm the presence of MTBE in the sample from MW-4. It did confirm MTBE in the sample from MW-7 at concentrations of 75 and 76 µg/L.
- TPHd was reported at a concentration of 110 µg/L in MW-4, 560 µg/l in MW-6, and 51 µg/L in the MW-7 duplicate sample. TPHd was not detected in MW-2 or MW-5. During the previous quarter, TPHd was detected at 440 µg/l in MW-6.
- TPHmo was not detected above the reporting limit in any of the wells sampled this quarter or last.

2225 7th Street

Results of the July 10, 2001 groundwater sampling at 2225 7th Street are summarized below:

- MTBE was not reported above the detection limit in any of the groundwater samples.
- TPHg, TPHd, benzene, toluene, ethylbenzene, and total xylenes were not detected above the reporting limit in any of the wells sampled.
- TPHmo was detected in the duplicate sample collected from MW-1 at a concentration of 310 ug/L. The original sample from MW-1 did not have a detected concentration of TPHmo at the reporting limit of 300 ug/L.

QUALITY ASSURANCE AND QUALITY CONTROL

A duplicate sample was collected from monitoring well MW-7 (2277 7th Street) and from MW-1 (2225 7th Street) on July 10 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 percent 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 sample.

2277 7th St. MW-7 7/10/01	ANALYTE	X1	X2	X1-X2	(X1+X2)/2	RPD
	MTBE	75	76	1	75.5	1%
	B	ND	ND	--	--	--
	T	ND	ND	--	--	--
	E	ND	ND	--	--	--
	X	ND	ND	--	--	--
	TPHd	ND(50)	51	--	--	200%
	TPHmo	ND	ND	--	--	--
	TPHg	ND	ND	--	--	--

these samples w/ low to ND results are not good for determining RPD. the samples should have detectable conc.

2225 7th St. MW-1 7/10/01	ANALYTE	X1	X2	X1-X2	(X1+X2)/2	RPD
	MTBE	ND	ND	--	--	--
	B	ND	ND	--	--	--
	T	ND	ND	--	--	--
	E	ND	ND	--	--	--
	X	ND	ND	--	--	--
	TPHd	ND	ND	--	--	--
	TPHmo	ND(300)	310	--	--	200%
	TPHg	ND	ND	--	--	--

- The relative percent difference between the analytical results from MW-7 and MW-4 and their duplicate samples were considered within acceptable limits at 1 percent. The RPD of 200% indicates that the original sample was reported as non-detect but the analyte was detected in the duplicate sample. In each of these cases, the detected value was only slightly over the reporting limit, indicating that the actual RPD is more than likely much lower than 200%.
- BTEX was not detected in the trip blank.
- TPHd, TPHmo, and TPHg were not detected in the trip blank.

PRODUCT RECOVERY SYSTEM AT 2277 7TH STREET

The product recovery system at 2277 7th Street consists of an air-actuated (active) product skimmer in MW-3. Since MW-1 contained no measurable product, the passive product skimmer was removed on May 22, 2000. However in the following months, product was measured in the well and skimmer was replaced. Harding 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 Harding conducts monthly inspections of the treatment system. The Port's waste disposal contractor, Foss Environmental Services Company, Inc., removes product from the product recovery tank at various times throughout the quarter. The Port has reported to Harding that Foss Environmental disposed of 800 gallons of non-hazardous wastewater to Seaport Petroleum (Redwood City) on February 6, 2001. Table 2 presents a summary of the product thickness 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 6.

If you have any questions, please contact Luis Fraticelli at (510) 451-1001.

Yours very truly,

HARDING ESE, INC.

Trish A. Eliasson
Staff Engineer

Luis Fraticelli
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Attachments:
Table 1 – Groundwater Elevations Data, 2277 7th Street
Table 2 – Summary of Product Removal and Product Thickness, 2277 7th Street
Table 3 – Groundwater Elevations Data, 2225 7th
Table 4 – Groundwater Sample Results, 2277 7th Street
Table 5 – Groundwater Sample Results, 2225 7th Street
Table 6 – Summary of Operation and Maintenance Activities

Plate 1 – Vicinity Map
Plate 2 – Site Plan
Plate 3 – Groundwater Elevations, 2277 and 2225 7th Street, July 10, 2001
Plate 4 – Groundwater Sample Results, 2277 7th Street, July 10, 2001
Plate 5 – Groundwater Sample Results, 2225 7th Street, July 10, 2001

Appendix A - Groundwater Sampling Forms
Appendix B - Laboratory Reports

TABLES

Table 1. Groundwater Elevations Data, 2277 7th Street
Port of Oakland
2277 and 2225 7th Street, Oakland California

Well ID	Elevation Top of Casing (feet)	Date Of Monitoring	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	14.14	4/18/2000	8 21	5.93
		5/22/2000	8.17	5 97
		7/10/2001	10 00	4 14
MW-2	14.36	12/31/1997	8.73	5.63
		4/13/1998	7.72	6 64
		11/6/1998	9.43	4 93
		3/19/1999	8 21	6 15
		6/24/1999	8 91	5 45
		9/28/1999	9.42	4 94
		11/12/1999	9.63	4 73
		2/11/2000	8.54	5 82
		5/22/2000	8 10	6 26
		9/6/2000	8.79	5 57
		12/19/2000	9 19	5.17
		2/21/2001	7 99	6.37
		4/3/2001	8 23	6 13
		7/10/2001	8.70	5 66
MW-4	13.15	12/31/1997	7.09	6 06
		4/13/1998	7.71	5 44
		11/6/1998	8 69	4.46
		3/19/1999	8 00	5 15
		6/24/1999	8 45	4.70
		9/28/1999	8 73	4.42
		11/12/1999	8.83	4.32
		2/11/2000	7 71	5.44
		5/22/2000	8 09	5 06
		9/6/2000	8.32	4 83
		12/19/2000	8 47	4.68
		2/21/2001	7.51	5 64
		4/3/2001	8 13	5 02
		7/10/2001	8 12	5 03
MW-5	13 49	12/31/1997	6 38	7.11
		4/13/1998	5 56	7 93
		11/6/1998	6.59	6.90
		3/19/1999	6 20	7 29
		6/24/1999	6 73	6.76
		9/28/1999	6 91	6 58
		11/12/1999	7 06	6.43
		2/11/2000	7 00	6 49
		5/22/2000	6 21	7 28
		9/6/2000	6 56	6 93
		12/19/2000	6.68	6.81
		2/21/2001	6 08	7.41
		4/3/2001	6 38	7 11
		7/10/2001	6.58	6 91
MW-6	14 00	6/24/1999	8 61	5.39
		9/28/1999	9.26	4 74
		11/12/1999	8.01	5 99
		2/11/2000	7 20	6 80
		5/22/2000	7 13	6 87
		9/6/2000	7.12	6.88
		12/19/2000	7.57	6 43
		2/21/2001	7 50	6 50
		4/3/2001	6.88	7.12
		7/10/2001	7.15	6.85
MW-7	14 35	12/31/1997	8 88	5.47
		4/13/1998	7.86	6.49
		11/6/1998	9.55	4 80
		3/19/1999	8.41	5 94
		6/24/1999	9 08	5.27
		9/28/1999	9.60	4 75
		11/12/1999	9.77	4 58
		2/11/2000	8 67	5.68
		5/22/2000	8.43	5 92
		9/6/2000	8.88	5 47
		12/19/2000	9 21	5.14
		2/21/2001	8 13	6.22
		4/3/2001	8.45	5 90
		7/10/2001	8.87	5 48

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, 2277 7th Street
Port of Oakland
2277 and 2225 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	12/31/1997	-	-	-	0.2	passive skimmer
		1/29/1998	-	-	-	0.2	passive skimmer
		3/2/1998	-	-	-	0.018	passive skimmer
		5/11/1998	-	-	-	0.02	passive skimmer
		6/15/1998	-	-	-	0.2	passive skimmer
		11/6/1998	9.34	10.3	0.96	1.2	passive skimmer
		1/7/1999	-	-	-	0.2	passive skimmer
		2/11/1999	-	-	-	0.2	passive skimmer
		3/12/1999	-	-	-	0.2	passive skimmer
		3/19/1999	NM	8.45	>0.01	0.07	passive skimmer
		4/14/1999	-	-	-	0.2	passive skimmer
		5/11/1999	-	-	-	0.2	passive skimmer
		6/24/1999	8.88	9.63	0.8	0.2	passive skimmer
		7/15/1999	--	--	--	0.2	passive skimmer
		7/16/1999	--	--	--	0.2	passive skimmer
		8/27/1999	--	--	--	0.2	passive skimmer
		9/28/1999	--	--	0.65	0.2	passive skimmer
		10/5/1999	--	--	--	0.2	passive skimmer
		11/12/1999	9.38	10.27	0.89	0.2	passive skimmer
		12/21/1999	--	--	--	0.2	passive skimmer
		1/26/2000	--	--	--	0.2	passive skimmer
		1/28/2000	9.22	9.24	0.02	--	passive skimmer
		2/11/2000	--	7.00	0.00	0.2	passive skimmer
		3/1/2000	--	7.45	0.00	0.0	passive skimmer
		3/21/2000	NM	7.34	0.00	0.0	passive skimmer
		4/18/2000	NM	8.21	0.00	0.0	passive skimmer
		5/22/2000 [3]	NM	8.51	0.00	0.0	passive skimmer
		9/6/2000 [4]	8.52	9.24	0.72	0.0	passive skimmer
		9/21/2000	8.71	9.26	0.55	0.0	passive skimmer
		10/11/2000	--	--	--	0.0	passive skimmer
		11/30/2000	--	--	--	0.0	passive skimmer
		12/19/2000	9 5	9.89	0.39	0.0	passive skimmer
		2/22/2001	8.3	8.4	0.13	0.0	passive skimmer
		4/3/2001	8.3	8.55	0.25	0.0	passive skimmer
		4/23/2001	--	--	--	0.0	passive skimmer
		5/11/2001	--	--	--	0.0	passive skimmer
		5/30/2001	8.5	8.9	0.40	0.0	passive skimmer
		6/14/2001	--	--	--	0.0	passive skimmer
		7/10/2001	8.8	10	1.20	0.0	passive skimmer
MW-3	14.22	12/31/1997	-	-	-	30	active skimmer
		1/29/1998	-	-	-	10	active skimmer
		4/13/1998	-	-	-	240	active skimmer
		5/11/1998	-	-	-	1,545	active skimmer
		6/15/1998	-	-	-	1,950	active skimmer
		11/6/1998	8.84	9.94	1.1	500	active skimmer
		1/5/1999	-	-	-	275[2]	active skimmer
		1/14/1999	-	-	-	400[2]	active skimmer
		2/3/1999	-	-	-	400[2]	active skimmer
		2/26/1999	-	-	-	570[2]	active skimmer
		3/19/1999	7.52	8.05	0.5	211	active skimmer
		6/16/1999	-	-	-	310	active skimmer
		6/24/1999	8.38	8.56	0.2	--	active skimmer

Table 2. Product Removal and Product Thickness Data, 2277 7th Street
Port of Oakland
2277 and 2225 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]
		7/14/1999	--	--	--	50[2]	active skimmer
		9/28/1999	--	--	0.2	--	active skimmer
		10/29/1999	--	--	--	125[2]	active skimmer
		11/12/1999	9.14	9.23	0.09	--	active skimmer
		1/28/2000	--	--	--	135	active skimmer
		2/11/2000	7.97	8.37	0.40	40	active skimmer
		3/1/2000	6.59	7.24	0.65	0.0	active skimmer
		3/21/2000	6.50	6.56	0.06	35	active skimmer
		4/18/2000	--	--	--	--	active skimmer
		5/22/2000	7.51	8.05	0.54	40	active skimmer
MW-3		6/26/2000	7.82	8.2	0.38	90	active skimmer
		7/25/2000	7.90	8.92	1.02	20	active skimmer
		8/31/2000	8.15	9.5	1.35	30	active skimmer
		9/6/2000	8.21	9.42	1.21	--	active skimmer
		9/21/2000	8.30	8.88	0.58	115	active skimmer
		10/11/2000	--	--	--	170	active skimmer
		11/30/2000	--	--	--	105	active skimmer
		12/19/2000	8.60	9.65	1.05	10	active skimmer
		2/22/2001	6.36	8.15	1.79	--	active skimmer
		4/3/2001	7.48	8.88	1.40	--	active skimmer
		4/23/2001	7.85	9.1	1.25		active skimmer
		5/11/2001	--	--	--		active skimmer
		5/30/2001	7.75	9.1	1.35		active skimmer
		6/14/2001	--	--	--		active skimmer
		7/10/2001	8.10	9.6	1.50		active skimmer
MW-6	14.00	13/31/97	-	-	-	0.0014	passive skimmer
		1/29/1998	-	-	-	0.0014	passive skimmer
		3/2/1998	-	-	-	0.0014	passive skimmer
		11/6/1998	NM	9.62	>0.01	0.0	passive skimmer
		3/19/1999	NM	7.37	>0.01	0.0	passive skimmer
MW-8 [1]	12.94	12/31/1997	8.49	8.82	0.33	4.38	-
		11/6/1998	9.25	10.3	1.1	3.48	

What about MW 2, 4, 5 + 7 data? Table 4 didn't answer whether there was more than one event @ MW8

- 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.

[3] The passive skimmer was removed from MW-1 on 5/22/00.

[4] The passive skimmer replaced MW-1 on 9/6/00.

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

Shaded areas indicate data from this reporting period.

Table 3. Groundwater Elevations Data, 2225 7th Street
Port of Oakland
2277 and 2225 7th Street, Oakland California

Well ID	Elevation Top of Casing (feet)	Date Of Monitoring	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	13.72	1/15/1993	5.21	8.51
		9/12/1994	6.37	7.35
		11/30/1994	5.76	7.96
		3/29/1995	4.57	9.15
		5/25/1995	5.14	8.58
		6/21/1995	5.41	8.31
		6/23/1995	5.44	8.28
		11/20/1995	6.28	7.44
		12/27/1995	5.86	7.86
		3/25/1996	5.21	8.51
		6/26/1996	5.58	8.14
		10/14/1996	6.22	7.50
		3/19/1997	5.48	8.24
		6/26/2000	5.19	8.53
		9/6/2000	5.62	8.10
		12/19/2000	5.57	8.15
		4/3/2001	5.03	8.69
		7/10/2001	5.57	8.15
MW-2	13.8	1/15/1993	6.21	7.59
		9/12/1994	6.47	7.33
		11/30/1994	6.34	7.46
		3/29/1995	5.51	8.29
		5/25/1995	5.60	8.20
		6/21/1995	5.72	8.08
		6/23/1995	5.72	8.08
		9/28/1995	6.15	7.65
		11/20/1995	6.42	7.38
		12/27/1995	6.31	7.49
		3/25/1996	5.74	8.06
		6/26/1996	5.85	7.95
		10/14/1996	6.36	7.44
		3/19/1997	5.90	7.90
		6/26/2000	5.37	8.43
		9/6/2000	5.62	8.18
		12/19/2000	5.81	7.99
		4/3/2001	5.38	8.42
		7/10/2001	5.80	8.00
MW-3	15.06	1/15/1993	6.44	8.62
		9/12/1994	7.35	7.71
		11/30/1994	7.12	7.94
		3/29/1995	6.31	8.75
		5/25/1995	6.75	8.31
		6/21/1995	6.87	8.19
		6/23/1995	6.88	8.18
		9/28/1995	7.28	7.78
		11/20/1995	7.51	7.55
		12/27/1995	7.20	7.86
		3/25/1996	6.64	8.42
		6/26/1996	6.98	8.08
		10/14/1996	7.47	7.59
		3/19/1997	6.99	8.07
		6/26/2000	6.82	8.24
		9/6/2000	6.82	8.24
		12/19/2000	7.10	7.96
		4/3/2001	6.66	8.40
		7/10/2001	7.00	8.06

[1] Elevation data relative to Port of Oakland datum; well surveys performed on December 6, 1994
- Data prior to June 26, 2000 taken from *First Quarter 1997 Groundwater Monitoring and Sampling report* dated May 6, 1999, by Fluor Daniel GTI.

Table 4. Groundwater Sample Result, 2277 7th Street
Port of Oakland
2277 and 2225 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-1	05/22/00	3,600	41,000	<3,000	100	13 [8]	2.9	2.05	3 2 [8]
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
	05/22/00	<50	<50	<300	<0 5	<0 5	<0 5	<0 5	<2
	09/06/00	<50	<50	<300	0 76 [8]	<0.5	<0 5	<0 5	<0.5 [10]
	12/19/00	200 [3,11]	<50	<300	39	1 8	<0.5	2 6	<0 5 [10,12]
	02/21/01	<50	<50	<300	<0 5	<0 5	<0 5	<0 5	<2 0
	07/10/01	<50	<50	<300	<0 5	<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 [2]	<50	<300	58	0 73	<0 5	<0.5	4.4 [8]
	05/22/00	240	<50	<300	500	<2 5	<2.5	<2 5	17
	09/06/00	530 [2,3]	<50	<300	190	0 93	0 6	0 57	<0.5 [10]
	12/19/00	960 [3,11]	70 [5]	<300	420	<2.5	<2 5	<2.5	<0.5 [10,12]
Dup	12/19/00	1,200 [3,11]	<50	<300	440	<2 5	<2 5	<2.5	<0.5 [10,12]
	02/21/01	450 [13]	<50	<300	120	<0 5	<0.5	<0 5	<0 5 [10]
	07/10/01	<250	110 [2,13]	<300	620	2.6	2.9	<2 5	<0.5 [8,10]
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 4. Groundwater Sample Result, 2277 7th Street
Port of Oakland
2277 and 2225 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	03/19/99	<50	<50	<300	<0 5	<0 5	<0 5	<0.5	<2
(cont)	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
	05/22/00	<50	<50	<300	<0 5	<0.5	<0.5	<0.5	<2
	09/06/00	<50	<50	<300	<0 5	<0 5	<0 5	<0 5	<2
	12/19/00	<50	<50	<300	<0.5	<0 5	<0 5	<0 5	<2
	02/21/01	<50	<50	<300	<0 5	<0.5	<0 5	<0.5	<2
	07/10/01	<50	<50	<300	<0 5	<0 5	<0 5	<0.5	<2
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 [2]	2,300	<300	23	0 51	2.7	<0.5	5 8
	05/22/00	350	3,000	<300	18	0 51	<0 5	<0 5	7 7
	09/06/00	190	610	<300	26	<0 5	1 7	<0 5	<0 5 [10]
	12/19/00	130 [3,11]	620	<300	24	<0 5	1 6	<0.5	<2
	02/21/01	120 [13]	440	<300	21	<0.5	0.96	<0 5	<2
	07/10/01	120	560	<300	29	<0 5	0.99	<0.5	<2
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
	05/22/00	110	53 [2]	<300	<0.5	<0.5	<0 5	<0 5	75
	09/06/00	50 [6]	<50	<300	<0.5	<0.5	<0.5	<0 5	40 [10]
	12/19/00	54 [11]	51 [5]	<300	<0 5	<0 5	<0.5	<0 5	47 [10,12]
	02/21/01	<50	<50	<300	<0 5	<0.5	<0.5	<0 5	66 [10]
Dup	02/21/01	<50	<50	<300	<0.5	<0.5	<0 5	<0.5	60 [10]
	07/10/01	<50	51 [2]	<300	<0 5	<0 5	<0.5	<0 5	76 [10]
Dup	07/10/01	<50	<50	<300	<0 5	<0 5	<0 5	<0.5	75 [10]

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 or two
9 Trip blank contained MTBE at a concentration of 4.2 µg/l
10 MTBE detections confirmed by EPA Test Method 8260 8260 results displayed.
11 Sample exhibits unknown single peak or peaks
12 EPA Method 8260 confirmation analyzed past holding time
13 Lighter hydrocarbons contributed to the quantitation
- 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 5. Groundwater Sample Results, 2225 7th Street
Port of Oakland
2277 and 2225 7th Street, Oakland California

Monitoring Well ID	Date	TPHg (µg/l)	TPHd (µg/1)	TPHmo (µg/1)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/1)	MTBE (µg/1)
MW-1	1/15/1993	<50	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	9/12/1994	<10 [1]	10,000	NA	0.5	<0.3	<0.3	<0.3	NA
	11/30/1994	<10	2,800	NA	<0.3	<0.3	<0.3	<0.3	NA
	3/29/1995	<50	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	6/21/1995	<50	<50 [2]	NA	<0.3	<0.3	<0.3	<0.3	NA
	9/28/1995	<50	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	12/27/1995	<50	<50	<100	<0.3	<0.3	<0.3	<0.3	NA
	3/25/1996	<50	<50	<100	<0.3	<0.3	<0.3	<0.3	NA
	6/26/1996	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	10/14/1996	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	3/19/1997	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	6/26/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 [5]
	12/19/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
Dup.	12/19/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	7/10/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
Dup.	7/10/2001	<50	<50	310	<0.5	<0.5	<0.5	<0.5	<2
MW-2	1/15/1993	<50	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	9/12/1994	34 [1]	<50	NA	0.5	<0.3	<0.3	<0.3	NA
	11/30/1994	<10	81	NA	0.9	<0.3	<0.3	<0.3	NA
	3/29/1995	<50 [3]	75	NA	0.3	<0.3	<0.3	<0.3	NA
	6/21/1995	<50 [3]	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	9/28/1995	250 [1]	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	12/27/1995	220 [1]	<50	<100	<0.3	<0.3	<0.3	<0.3	NA
	3/25/1996	200 [1]	<50	<100	<0.3	<0.3	<0.3	<0.3	NA
	6/26/1996	77 [4]	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	10/14/1996	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	3/19/1997	150	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	6/26/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 [5]
	12/19/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	7/10/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
MW-3	1/15/1993	<50	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	9/12/1994	<50	<50	NA	0.3	<0.3	<0.3	<0.3	NA
	11/30/1994	110	150	NA	<0.3	<0.3	<0.3	<0.3	NA
	3/29/1995	<50	<50	NA	<0.3	<0.3	<0.3	<0.3	NA
	6/21/1995	<50 [3]	<50 [2]	NA	<0.3	<0.3	<0.3	<0.3	NA
	9/28/1995	51 [1]	<50	NA	<0.3	<0 3	<0.3	<0.3	NA
	12/27/1995	55 [1]	<50	<100	<0.3	<0.3	<0.3	<0.3	NA
	3/25/1996	53	<50	<100	<0.3	<0.3	<0.3	<0.3	NA
	6/26/1996	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	10/14/1996	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	3/19/1997	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0
	6/26/2000	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 [5]
	12/19/2000	<50	50 [2]	<300	<0.5	<0.5	<0.5	<0.5	<2
	7/10/2001	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2

NA Not Analyzed

[1] Hydrocarbon pattern is not characterstic of gasoline

[2] Hydrocarbon pattern present in sample is not characterstic of diesel

[3] Uncategorized compound not included in the gasoline concentration

[4] Product is not typical gasoline

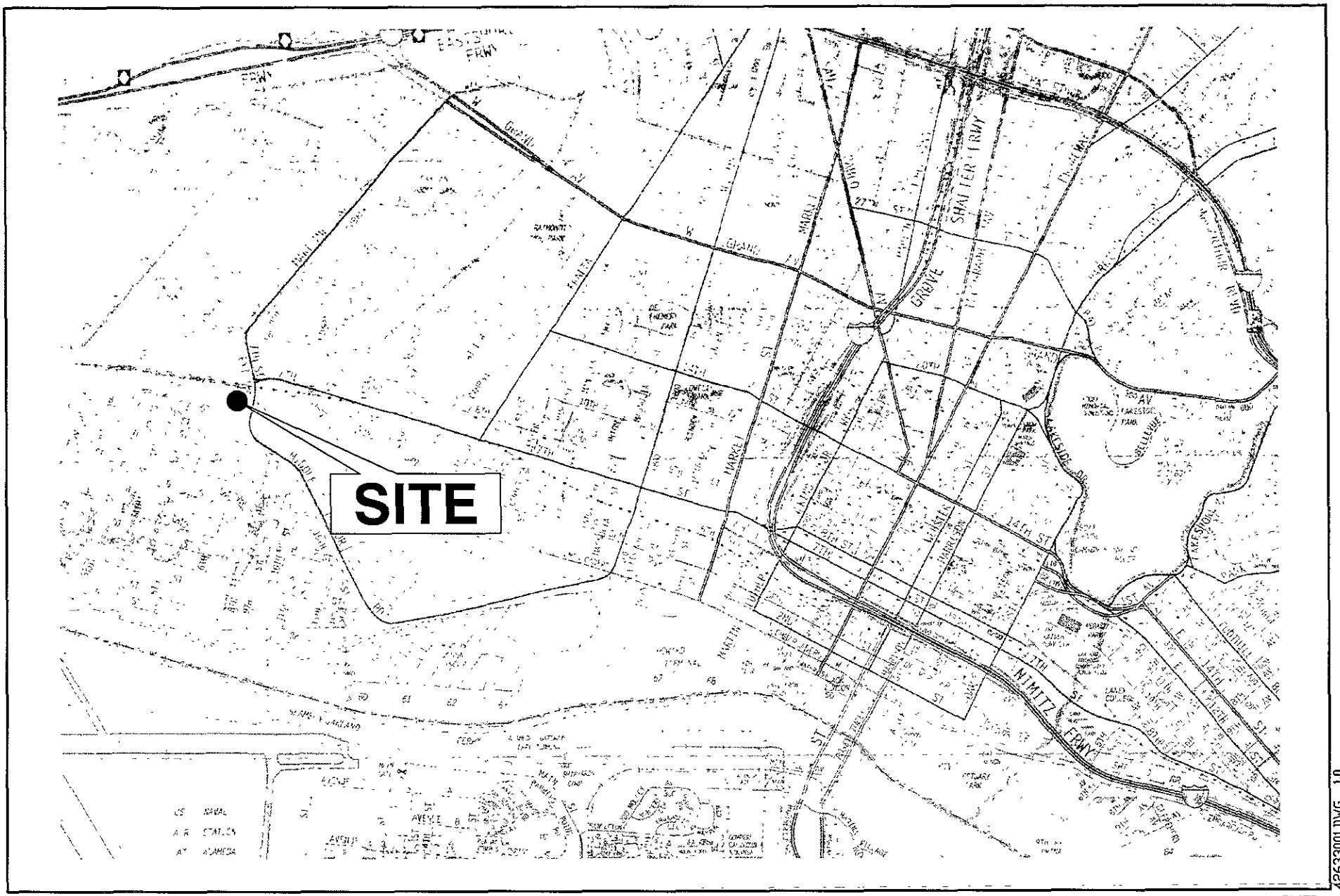
[5] MTBE detected by EPA Test Method 8021B but reported as ND<0 5 by EPA Test Method 8260

- Data prior to June 26, 2000 taken from *First Quarter 1997 Groundwater Monitoring and Sampling report* dated May 6, 1999, by Fluor Daniel GTI

Table 6. Summary of Operation and Maintenance Activities
Port of Oakland
2277 and 2225 7th Street, Oakland California

Date	System Status	Comments
4/3/2001	System not running.	Check active skimmer in MW-3 and passive skimmer at MW-1. Some product on outside of skimmer. Lower active skimmer and system began running. No product in tank at treatment system. Measured water levels at 2277 and 2225 wells.
4/23/2001	System running	No product in tank at treatment system. Active skimmer at MW-3 set at correct depth. Passive skimmer at MW-1 had no product in reservoir.
5/11/2001	System not running.	Approximately 100 gallons in recovery tank. Checked active skimmer depth. Truck parked over passive skimmer in MW-1.
5/30/2001	System not running.	Checked power breaker in building, it was on. Active & passive skimmers set at correct depth.
6/14/2001	System not running.	Met service technician from Clean Environment Equipment to check system, he concluded that the air compressor is not getting power. Checked circuit breakers and they were "on".
7/10/2001	System not running.	Collected 2nd quarter GW samples. Checked product depth at MW-1 and MW-3. Need electrician to check power to air compressor.

PLATES



42633001.DWG 1.0
20010808.1037

PLATE

1

Harding ESE
A MACTEC COMPANY

Vicinity Map
Quarterly Groundwater Monitoring Report
2277 and 2225 Seventh Street
Oakland, California 94607

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
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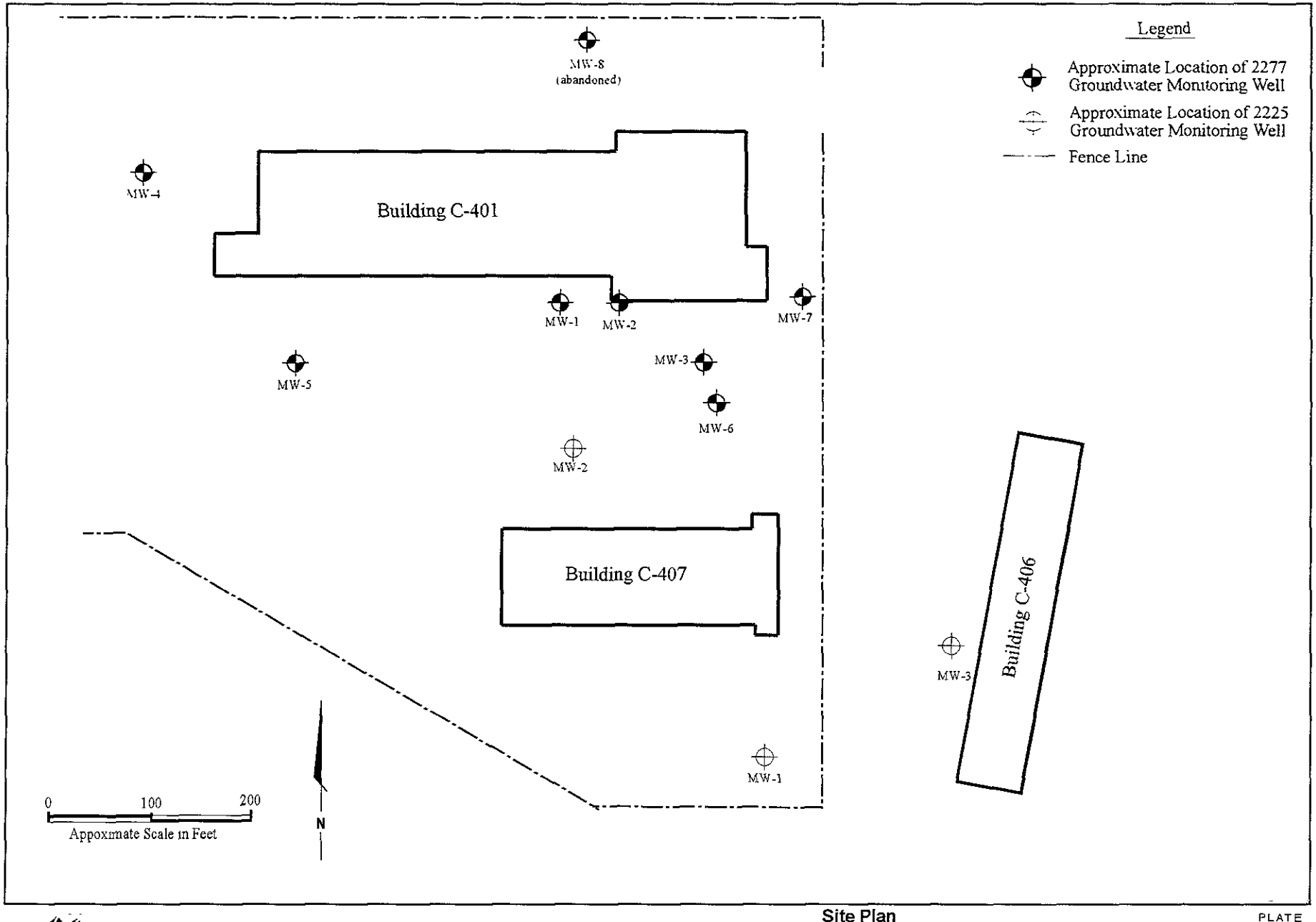
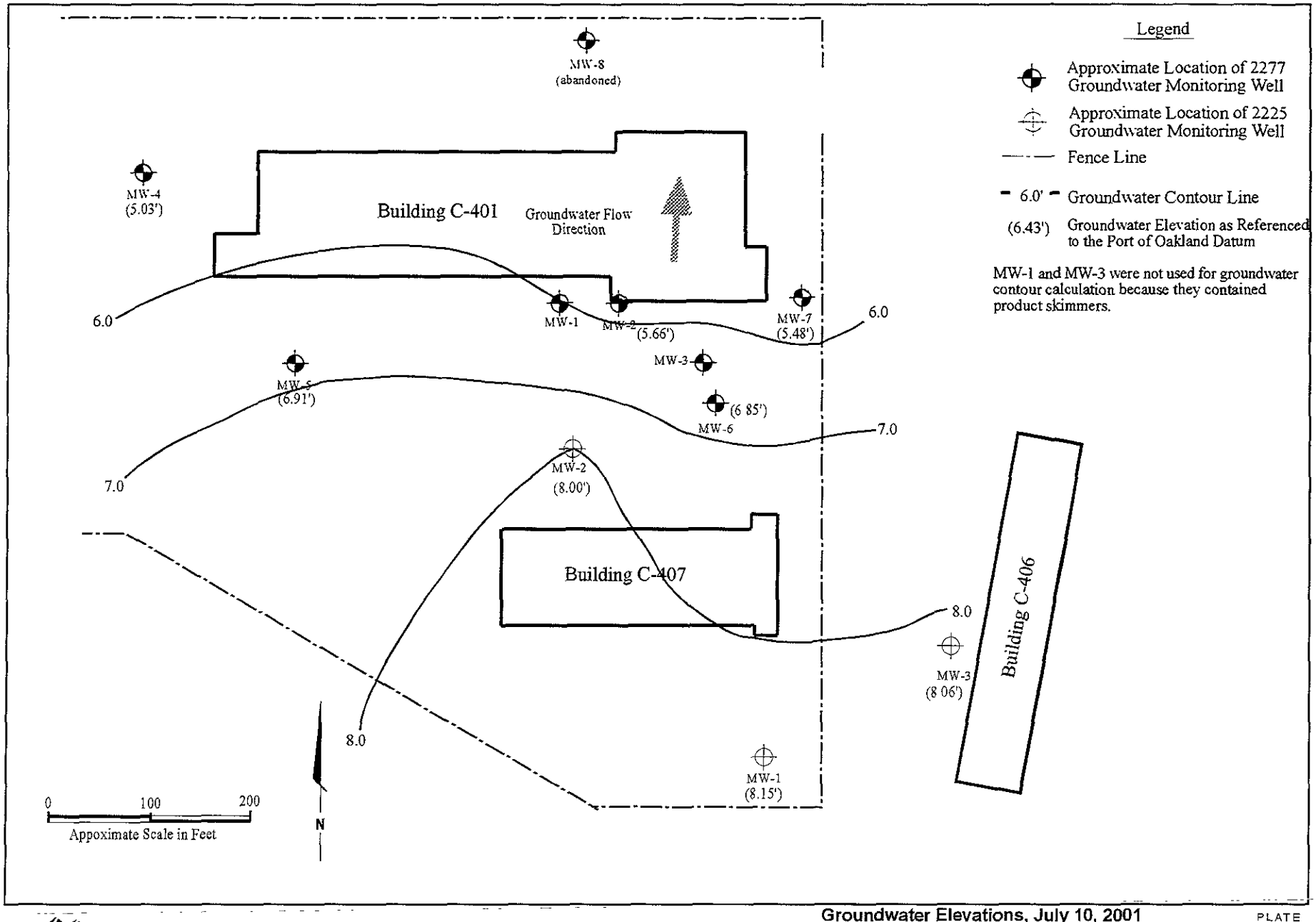


Harding ESE
A MACTEC COMPANY

Site Plan
Quarterly Groundwater Monitoring Report
2277 and 2225 Seventh Street
Oakland, California 94607

PLATE **2**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
tae	42633.1		7/24/01	



Harding ESE
A MACTEC COMPANY

Groundwater Elevations, July 10, 2001
Quarterly Groundwater Monitoring Report
2277 and 2225 Seventh Street
Oakland, California 94607

PLATE **3**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
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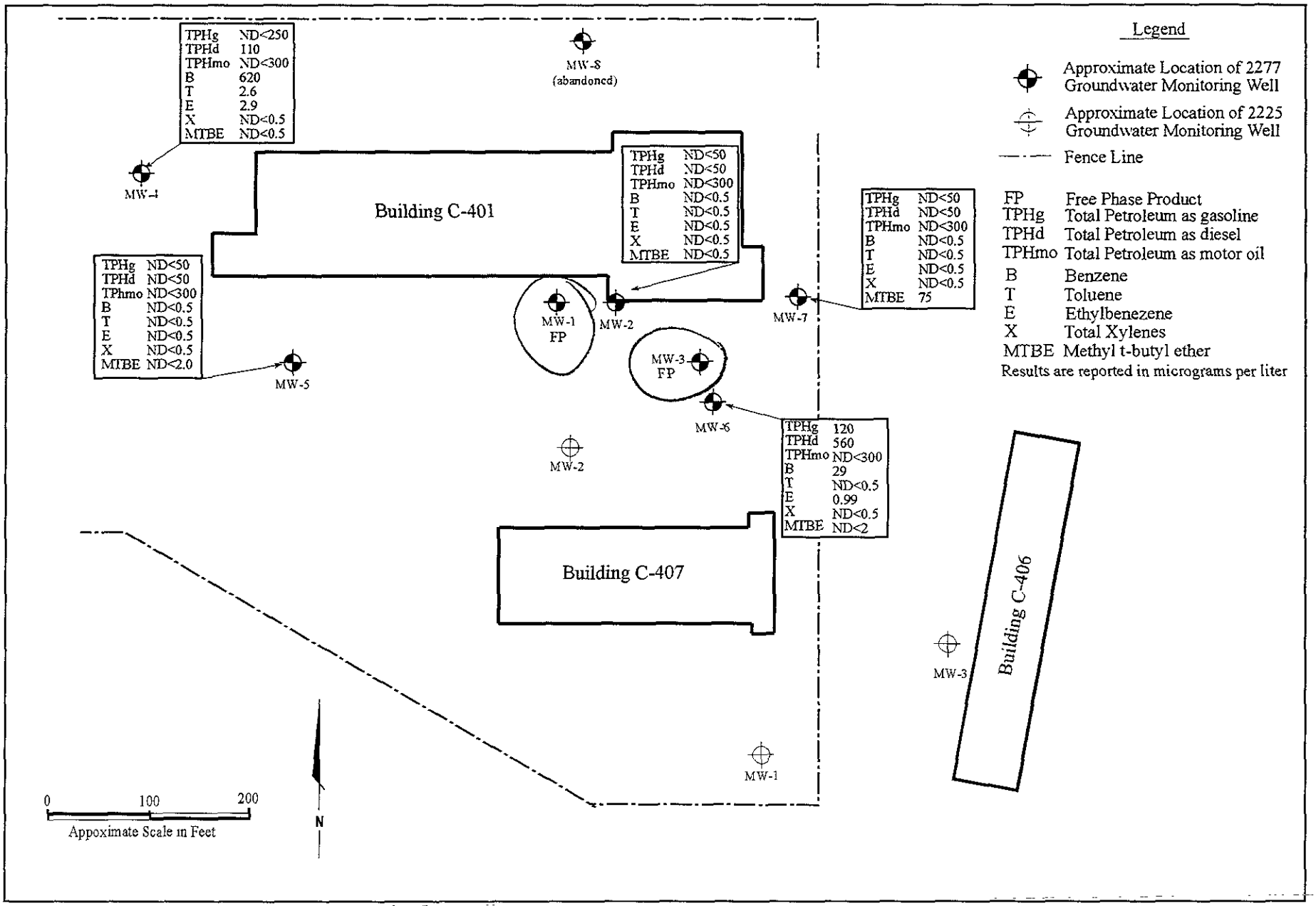

Harding ESE
A MACTEC COMPANY

Groundwater Sample Results, July 10, 2001
Quarterly Groundwater Monitoring Report
2277 and 2225 Seventh Street
Oakland, California 94607

PLATE **4**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
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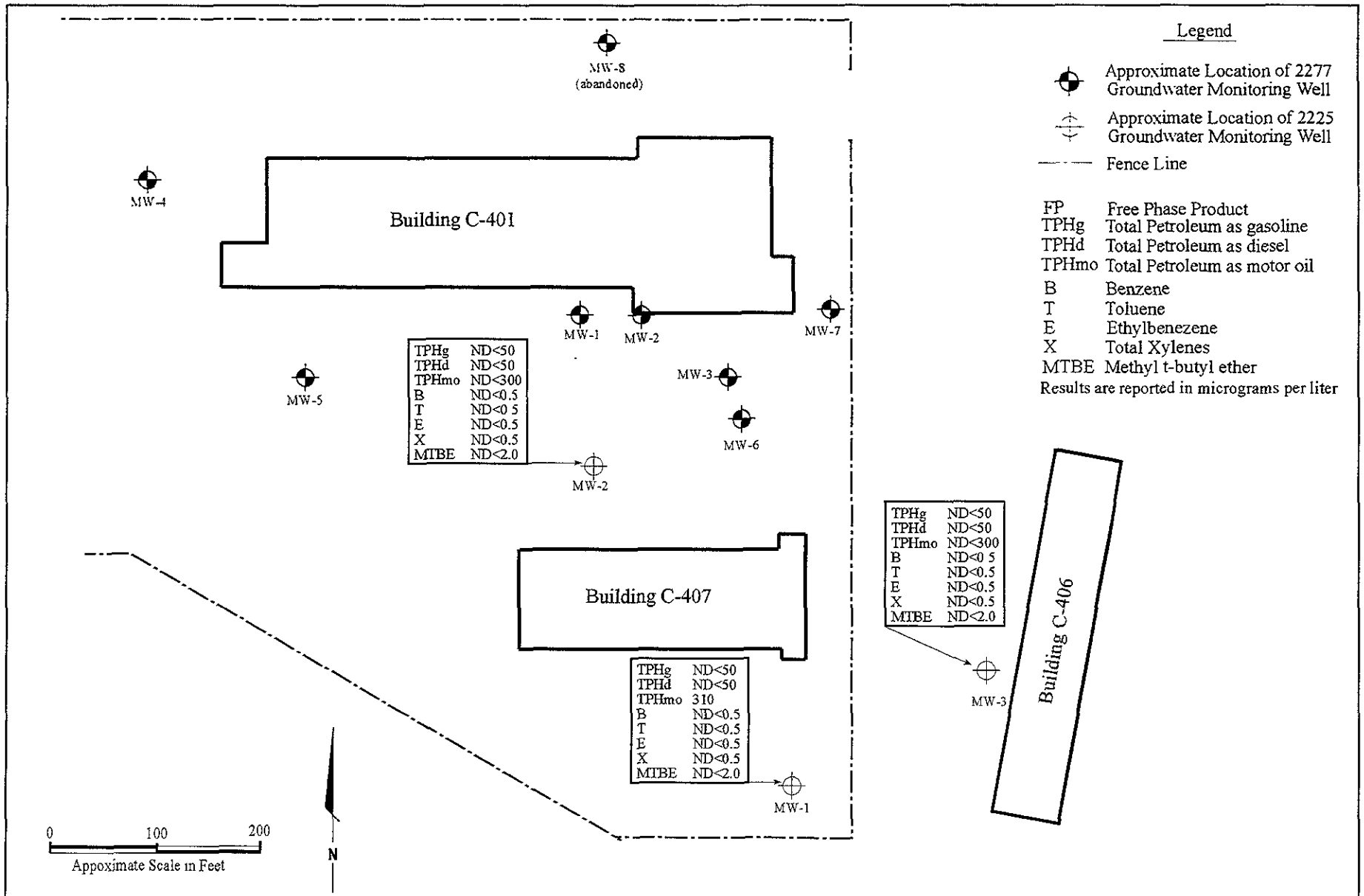


Harding ESE
A MACTEC COMPANY

Groundwater Sample Results, July 10, 2001
Semi Annual Groundwater Monitoring Report
2277 and 2225 Seventh Street
Oakland, California 94607

PLATE **5**

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
tae	42633.1		7/24/01	

APPENDIX A

GROUNDWATER SAMPLE FORMS

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-6

Well Type: [x] Monitor [ ] Extraction [ ] Other ___ [x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633.2

Date: 7/ 0/01

Recorded By: Tish Eliason (Signature)

Sampled By: TAE (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): 7.15
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

(18.05 - 7.15) x 2 ² x 3 x 0.0408 = 5.3 gals

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

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ] °C [x] °F	Turbidity (NTU)
Initial	7.73	2480	66.8	
1	7.51	3280	66.3	
3	7.26	3330	65.6	
4	7.25	3320	65.4	
FINAL	7.29	3320	65.5	
Meter S/N				

PURGE TIME

Purge Start: ___ GPM: ___
Purge Stop: ___ GPM: ___
Elapsed: ___

PURGE RATE

PURGE VOLUME

Volume: 5.3 gallons

Observations During Purging (Well Condition, Color, Odor):
sheen on water surface
odor

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 0930

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-2277-6	1 LA	TEPH	none	C&T	
	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-7

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (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): 8.87
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] Submersible - Type: _____
[ ] Other - Type: _____

PURGE VOLUME CALCULATION

(18.16 - 8.87) X 2 ² X 3 X 0.0408 = 4.5 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. [ ]°C [x]°F	Turbidity (NTU)
Initial	8.68	1436	66.8	
2	8.14	1376	66.7	
3	7.95	1479	66.3	
FINAL	7.82	1484	66.0	
Meter S/N				

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: 4.5 gallons

Observations During Purging (*Well Condition, Color, Odor*):
turbid, no color

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 1015

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
~~MW-~~	1 LA	TEPH	none	C&T	
2277-7	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.
2277-7 @ 1015	2277-7D @ 1010

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-4

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (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): 8.12
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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 - 8.12) x 2 ² x 3 X 0.0408 = 5.2 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: _____ gallons

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ] °C [x] °F	Turbidity (NTU)
Initial	8.53	1623	6.94	
2	8.09	1503	70.1	
3	7.80	1538	70.1	
4	8.23	1517	69.4	
FINAL	7.87	1526	69.9	
Meter S/N				

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

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 1055

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
~~MW-~~	1 LA	TEPH	none	C&T	
2277--4	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Dupl. Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-2

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633 2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (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): 8.7
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

(15.27 - 8.70) x 2 ² x 3 X 0.0408 = 3.2 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: 3.5 gallons

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ] °C [x] °F	Turbidity (NTU)
Initial	8.23	1995	72.7	
1	8.07	2050	72.8	
2	7.90	2050	72.1	
3	8.0	2060	71.3	
FINAL	7.91	2050	70.5	
Meter S/N				

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

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 1140

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
~~MW-~~	1 LA	TEPH	none	C&T	
2277-2	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-3

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (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): _____ DTP=8.1
No.of Well Volumes to be purged (# V): _____ DTW=9.6

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

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

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ] °C [x] °F	Turbidity (NTU)
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):

_____

_____

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: N/A

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-	1 LA	TEPH	none	C&T	
	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-1

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 2 DTP = 8.8
Total Depth of Casing (TD in ft BTOC): DTW = ~~8.8~~ 10.0
Water Level Depth (WL in ft BTOC): _____
No.of Well Volumes to be purged (# V): _____ Lowered Skimmer

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

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

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ]°C [x]°F	Turbidity (NTU)
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):

_____

_____

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type Disposable

Sample Time: N/A

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-	1 LA	TEPH	none	C&T	
	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-3

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2225 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 4
Total Depth of Casing (TD in ft BTOC): 11.15
Water Level Depth (WL in ft BTOC): 7.00
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

(11.15 - 7.00) X 4 ² X 3 X 0.0408 = 8.1 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ]°C [x]°F	Turbidity (NTU)
Initial	7.67	1474	72.3	
3	7.53	1542	74.2	
6	7.56	1591	75.2	
8.5	7.48	1600	75.1	
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).
black flecks in clear water no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 1510

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-	1 LA	TEPH	none	C&T	
~~2225-3~~ MW-3	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-2

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2225 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: _____ (Signature)

Sampled By: TAE (initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 4
Total Depth of Casing (TD in ft BTOC): 14.6
Water Level Depth (WL in ft BTOC): _____
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

(14.6 - 5.80) x 4 ² x 3 x 0.0408 = 17.3 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ]°C [x]°F	Turbidity (NTU)
Initial	8.34	2110	73.2	
5	7.89	2110	72.1	
10	7.91	2160	73.6	
15	7.67	2150	73.7	
20	7.62	2270	72.0	
FINAL	7.59	2090	71.6	
Meter S/N				

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: 17.5 gallons

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

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 1320

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
MW-2225-2	1 LA	TEPH	none	C&T	
	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	Dupl. Sample No.

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-1

Well Type: [x] Monitor [ ] Extraction [ ] Other ___
[x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2225 7th St.

Job Number: 42633.2

Date: 7/19/01

Recorded By: _____ (Signature)

Sampled By: TAE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches): 4
Total Depth of Casing (TD in ft BTOC): 14.90
Water Level Depth (WL in ft BTOC): _____
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

(14.90 - 5.57) x 4 ² x 3 x 0.0408 = 18.3 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

PURGE TIME

Purge Start: _____
Purge Stop: _____
Elapsed: _____

PURGE RATE

GPM: _____
GPM: _____

PURGE VOLUME

Volume: 18.5 gallons

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ] °C [x] °F	Turbidity (NTU)
Initial	8.83	720	79.6	
6	8.28	709	77.9	
12	8.29	746	78	
15	8.15	707	78.1	
18.5	8.21	688	77.4	
Meter S/N				

Observations During Purging (Well Condition, Color, Odor).
orange flecks @ first 2 gallons purged. Becomes clear, no odor

Discharge Water Disposal: [ ] Sanitary Sewer
[ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 1415

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
~~MW-~~	1 LA	TEPH	none	C&T	
~~2225-1~~ MW-1	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original Sample No.	*Dupl. Sample No.*
MW-1 @ 1415	MW-1D @ 1420

Blank Samples	
Type	Sample No.

Other Samples	
Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUNDWATER SAMPLING FORM

Well Number: MW-5

Well Type: [x] Monitor [ ] Extraction [ ] Other ___ [x] PVC [ ] St. Steel [ ] Other ___

Job Name: 2277 7th St.

Job Number: 42633.2

Date: 7/10/01

Recorded By: (Signature)

Sampled By: TAE (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): ____
No.of Well Volumes to be purged (# V): 3

PURGE METHOD

[x] Bailer - Type: disposable
[ ] 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

(17.68 - 12.58) X 2 ² X 3 X 0.0408 = 5.4 gals
TD (feet) WL (Feet) D (inches) # V Calculated Purge Volume

Field Parameter Measurement

Minutes	pH	Conductivity (µS)	Temp. [ ]°C [x]°F	Turbidity (NTU)
Initial	7.45	1402	71.1	
2 GAL	6.83	1837	70.4	
3	6.78	1810	70.9	
4	6.80	1896	70.3	
FINAL	7.02	1817	70.4	
Meter S/N				

PURGE TIME

Purge Start: ____
Purge Stop: ____
Elapsed: ____

PURGE RATE

GPM: ____
GPM: ____

PURGE VOLUME

Volume: 5.5 gallons

Observations During Purging (Well Condition, Color, Odor):
slightly turbid, no odor

Discharge Water Disposal: [ ] Sanitary Sewer [ ] Storm Sewer [x] Other 2277 System

WELL SAMPLING

[x] Bailer - Type: Disposable

Sample Time: 0845

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
~~MW-~~ 2277-5	1 LA	TEPH	none	C&T	
	3 voas	TPHg, MTBE, BTEX	HCL	C&T	

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

ANALYTICAL REPORT

Prepared for:

Harding Lawson Associates
600 Grand Ave.
Suite 300
Oakland, CA 94610

Date: 06-AUG-01
Lab Job Number: 153052
Project ID: 42633.2
Location: 2277 Seventh St.

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: 153052 **Receipt Date:** 07/11/01
Client: Harding ESE
Location: 2277 7th Street
Project#: 42633.2

CASE NARRATIVE

This hardcopy data package contains sample and QC results for seven water samples that were received on July 11, 2001. The samples were received cold and intact at 3.0 degrees Celsius.

TVH/BTXE: No analytical problems were encountered.

Total Extractable Hydrocarbons: No analytical problems were encountered.

MTBE by 8260: At the client's request, MTBE confirmation was performed on samples **2277-7D, 2277-7,** and **2277-4** (CT#153052-003, -004, and –005). No analytical problems were encountered.

1530SR

Harding ESE
A MACTEC COMPANY
600 Grand Ave, Suite 300
Oakland, CA 94610
(510) 451-1001

CHAIN OF CUSTODY FORM

Seq. No.: № 10537
Lab: C&T

Samplers: Trish Eliasson
Job Number: 42633.2
Name/Location: 2277 7th St.
Project Manager: Luis Fraticelli
Recorder: Trish Eliasson (Signature Required)

	Water	Soil	Air	Unpres	H_2SO_4	HNO_3	HCL	Sample Number (YR / SEQ)	Date YR	MO	DAY	TIME	Station Description	Depth	Gasoline Range Organics 8015B	Diesel Range Organics 8015B	BTEX plus MTBE	CCR Title 22 Metals (17)	EPA 8021B	EPA 8260B	EPA 8270C
-1				1			3	2277-5	01	07	10	0845			X	X	X				
-2				1			3	2277-6	01	07	10	0930			X	X	X				
3				1			3	2277-7D	01	07	10	1010			X	X	X				
4				1			3	2277-7	01	07	10	1015			X	X	X				
5				1			3	2277-4	01	07	10	1055			X	X	X				
-6							3	2277-TB	01	07	10	1110					X				
7				1			3	2277-2	01	07	10	1140			X	X	X				

Received ☐ On Ice ☐ Cold ☐ Ambient ☐ Intact

Preservation Correct? ☐ Yes ☐ No ☐ N/A

ADDITIONAL INFORMATION

Sample Number YR	SEQ	Turnaround Time/Remarks
		Standard TAT
		Silica gel cleanup for TPHd & TPHmo
		MTBE confirmation by 8260

CHAIN OF CUSTODY RECORD

Role	Signature	Print Name	Company	Date/Time
Relinquished By	Trish Eliasson	Trish Eliasson	Harding	7/11/01 0830
Received By	James E Taylor	James E Taylor	Harding ESE	7/11/01 0830
Relinquished By	James E Taylor	James E Taylor	Harding ESE	7/11/01 1300
Received By	Tony Rojas	Tony Rojas	C&T	7/11/01 1300
Relinquished By				
Received By				
Received By				

Method of Shipment:

Laboratory Copy Project Office Copy Field or Office Copy

00291 1

CURTIS & TOMPKINS, LTD. BERKELEY   LOGIN CHANGE FORM

Reason for change: X Client Request: By: Valeri Harris Date/Time: 7/17/01 Initials: TB

___ Login Review

Current Lab ID	Previous Lab ID	Client ID	Matrix	Add/Cancel	Analysis	Duedate
153052-003		2277-7D	H_2O	Add	mtbe by 8260	7
-004		2277-7		↓	↓	
-005		2277-4	H_2O	Add	mtbe by 8260	24

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Batch#:	64996		

Field ID:	2277-5	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-001		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	59-135
Bromofluorobenzene (FID)	108	60-140

Field ID:	2277-6	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-002		

Analyte	Result	RL
Gasoline C7-C12	120	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	59-135
Bromofluorobenzene (FID)	108	60-140

Field ID:	2277-7D	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-003		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	59-135
Bromofluorobenzene (FID)	108	60-140

Field ID:	2277-7	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-004		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	59-135
Bromofluorobenzene (FID)	108	60-140

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Batch#:	64996		

ield ID:	2277-4	Diln Fac:	5.000
Type:	SAMPLE	Analyzed:	07/17/01
Lab ID:	153052-005		

Analyte	Result	RL
Gasoline C7-C12	ND	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	59-135
Bromofluorobenzene (FID)	104	60-140

ield ID:	2277-TB	Diln Fac:	1.000
ype:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-006		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	59-135
Bromofluorobenzene (FID)	105	60-140

ield ID:	2277-2	Diln Fac:	1.000
ype:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-007		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	59-135
Bromofluorobenzene (FID)	106	60-140

ype:	BLANK	Diln Fac:	1.000
ab ID:	QC150532	Analyzed:	07/16/01

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	59-135
Bromofluorobenzene (FID)	101	60-140

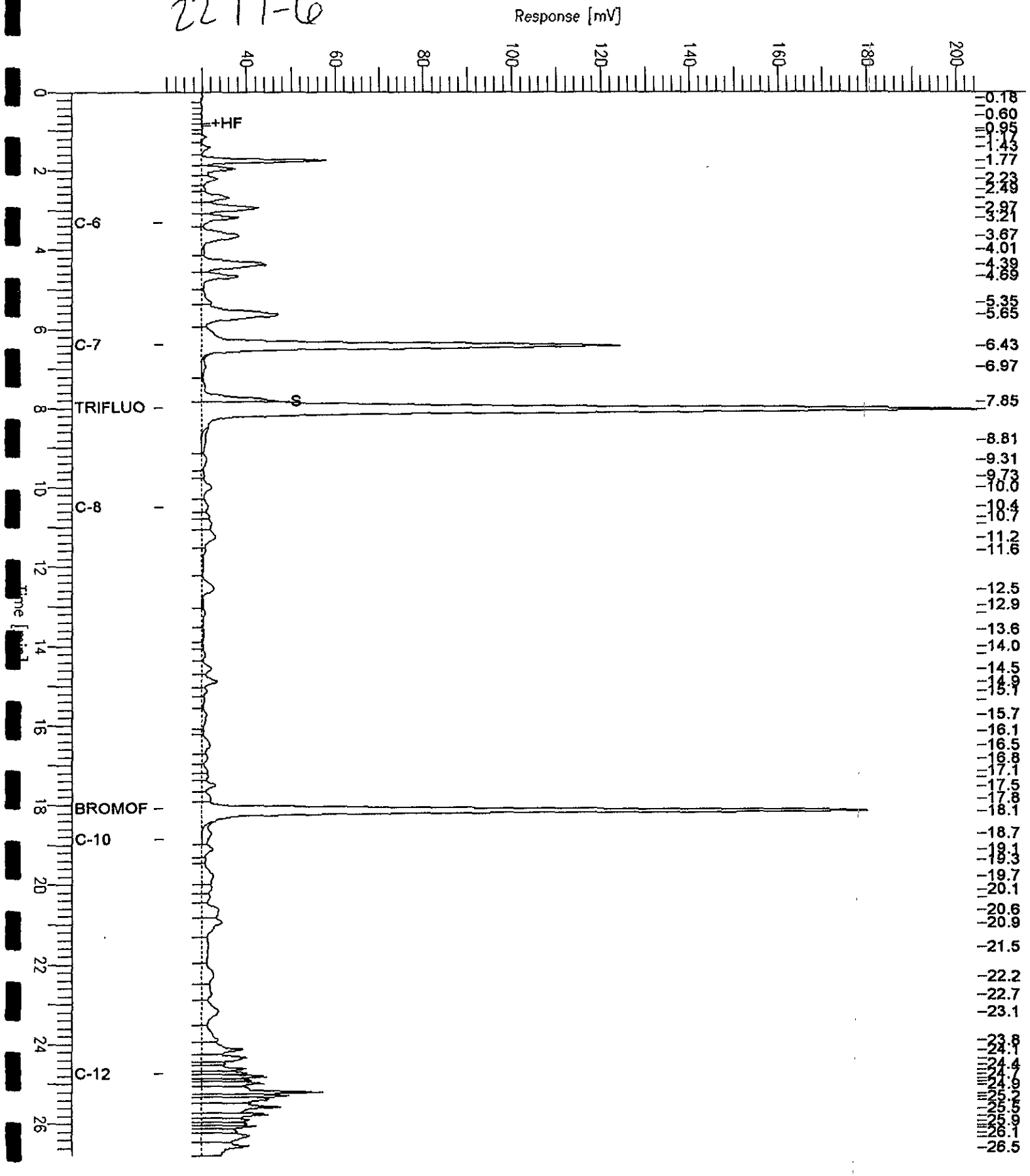
D= Not Detected
L= Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : 153052-002,64996
FileName : G:\GC19\DATA\197X007.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 21 mV

Sample #: A1 Page 1 of 1
Date : 7/17/01 02:04 PM
Time of Injection: 7/16/01 09:07 PM
Low Point : 21.06 mV High Point : 204.34 mV
Plot Scale: 183.3 mV

2277-6



GC19 TVH 'X' Data File (FID)

[redacted] Name : CCV/LCS,QC150530,64996,01WS1268,5/5000
[redacted] Name : G:\GC19\DATA\197X002.raw
[redacted]od : TVHBTXE
Start Time : 0.00 min
Scale Factor: 1.0

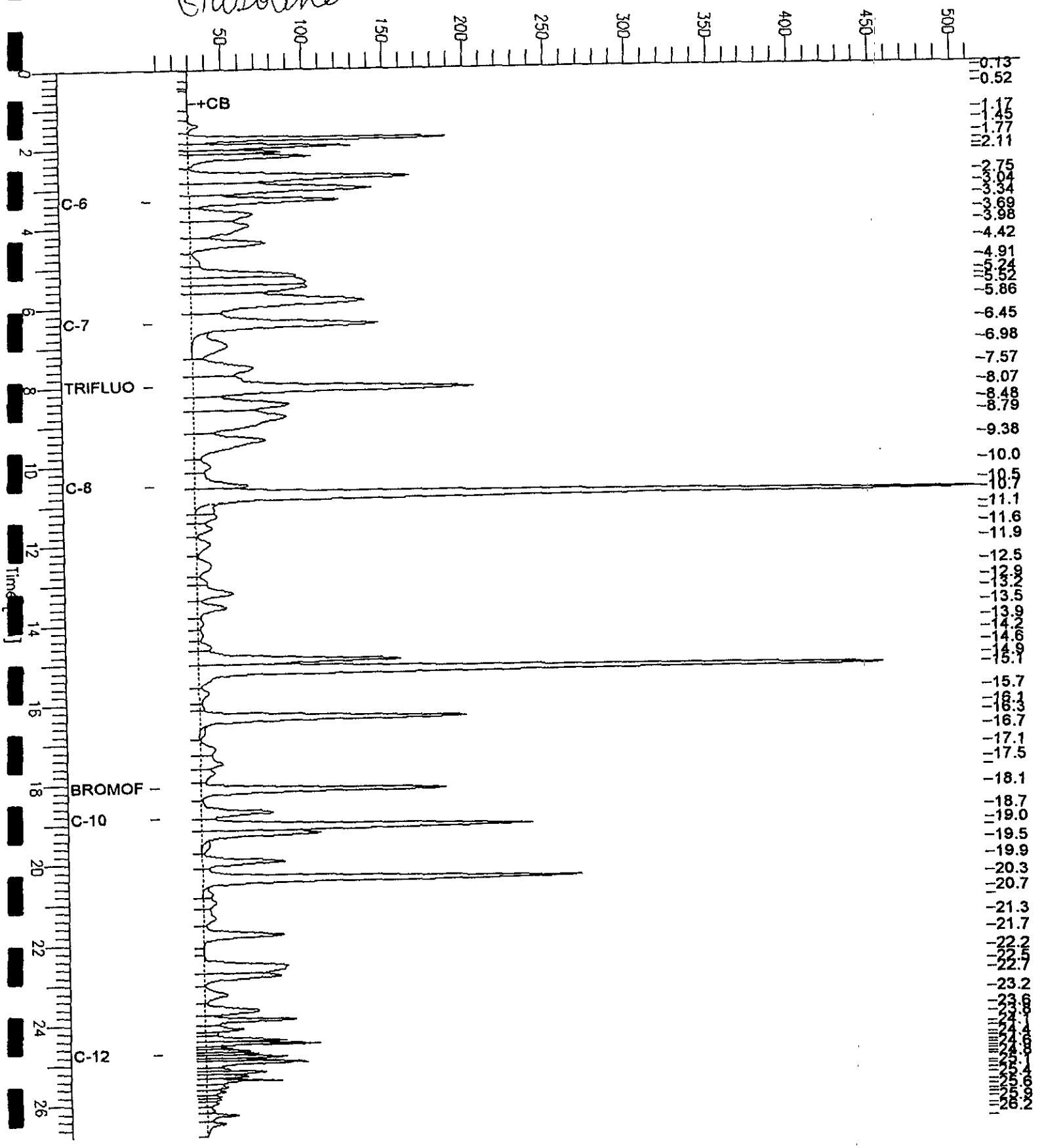
End Time : 26.80 min
Plot Offset: 5 mV

Sample #:
Date : 7/16/01 06:25 PM
Time of Injection: 7/16/01 05:41 PM
Low Point : 5.16 mV
Plot Scale: 508.1 mV

High Point : 513.30 mV

Gasoline

Response [mV]



Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Batch#:	64996		

Field ID:	2277-5	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-001		

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)	105	56-142
Bromofluorobenzene (PID)	110	55-149

Field ID:	2277-6	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-002		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	29	0.50
Toluene	ND	0.50
Ethylbenzene	0.99	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	112	56-142
Bromofluorobenzene (PID)	110	55-149

Field ID:	2277-7D	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/16/01
Lab ID:	153052-003		

Analyte	Result	RL
MTBE	77	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)	106	56-142
Bromofluorobenzene (PID)	111	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Batch#:	64996		

Field ID: 2277-7
Type: SAMPLE
Lab ID: 153052-004
Diln Fac: 1.000
Analyzed: 07/16/01

Analyte	Result	RL
MTBE	71	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)	106	56-142
Bromofluorobenzene (PID)	111	55-149

Field ID: 2277-4
Type: SAMPLE
Lab ID: 153052-005
Diln Fac: 5.000
Analyzed: 07/17/01

Analyte	Result	RL
MTBE	11 C	10
Benzene	620	2.5
Toluene	2.6	2.5
Ethylbenzene	2.9	2.5
m,p-Xylenes	ND	2.5
o-Xylene	ND	2.5

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

Field ID: 2277-TB
Type: SAMPLE
Lab ID: 153052-006
Diln Fac: 1.000
Analyzed: 07/16/01

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)	106	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Batch#:	64996		

ield ID:	2277-2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	07/17/01
Lab ID:	153052-007		

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)	103	55-149

ype:	BLANK	Diln Fac:	1.000
Lab ID:	QC150532	Analyzed:	07/16/01

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)	99	56-142
Bromofluorobenzene (PID)	102	55-149

C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC150530	Batch#:	64996
Matrix:	Water	Analyzed:	07/16/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,740	87	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	124	59-135
Bromofluorobenzene (FID)	102	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC150531	Batch#:	64996
Matrix:	Water	Analyzed:	07/16/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.60	103	51-125
Benzene	20.00	19.67	98	67-117
Toluene	20.00	19.78	99	69-117
Ethylbenzene	20.00	19.69	98	68-124
m,p-Xylenes	40.00	40.47	101	70-125
o-Xylene	20.00	19.27	96	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	106	55-149

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	64996
MSS Lab ID:	153039-007	Sampled:	07/12/01
Matrix:	Water	Received:	07/13/01
Units:	ug/L	Analyzed:	07/17/01
Diln Fac:	1.000		

ype: MS Lab ID: QC150533

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,689	84	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	112	60-140

ype: MSD Lab ID: QC150534

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,562	78	65-131	8	20

Surrogate	%REC	Limits
..fluorotoluene (FID)	125	59-135
Bromofluorobenzene (FID)	110	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.2	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Diln Fac:	1.000	Prepared:	07/16/01
Batch#:	64999		

Field ID: 2277-5
Type: SAMPLE
Lab ID: 153052-001
Analyzed: 07/18/01
Cleanup Method: EPA 3630C

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

Surrogate	%REC	Limits
Hexacosane (SGCU)	75	44-121

Field ID: 2277-6
Type: SAMPLE
Lab ID: 153052-002
Analyzed: 07/18/01
Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24 (SGCU)	560	50
Motor Oil C24-C36 (SGCU)	ND	300

Surrogate	%REC	Limits
Hexacosane (SGCU)	90	44-121

Field ID: 2277-7D
Type: SAMPLE
Lab ID: 153052-003
Analyzed: 07/18/01
Cleanup Method: EPA 3630C

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

Surrogate	%REC	Limits
Hexacosane (SGCU)	76	44-121

Field ID: 2277-7
Type: SAMPLE
Lab ID: 153052-004
Analyzed: 07/18/01
Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24 (SGCU)	51 Y	50
Motor Oil C24-C36 (SGCU)	ND	300

Surrogate	%REC	Limits
Hexacosane (SGCU)	77	44-121

L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.2	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Diln Fac:	1.000	Prepared:	07/16/01
Batch#:	64999		

Field ID:	2277-4	Analyzed:	07/18/01
Type:	SAMPLE	Cleanup Method:	EPA 3630C
Lab ID:	153052-005		

Analyte	Result	RL
Diesel C10-C24 (SGCU)	110 L Y	50
Motor Oil C24-C36 (SGCU)	ND	300

Surrogate	%REC	Limits
Hexacosane (SGCU)	80	44-121

Field ID:	2277-2	Analyzed:	07/18/01
Type:	SAMPLE	Cleanup Method:	EPA 3630C
Lab ID:	153052-007		

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

Surrogate	%REC	Limits
Hexacosane (SGCU)	94	44-121

Type:	BLANK	Analyzed:	07/17/01
Lab ID:	QC150539	Cleanup Method:	EPA 3630C

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

Surrogate	%REC	Limits
Hexacosane (SGCU)	83	44-121

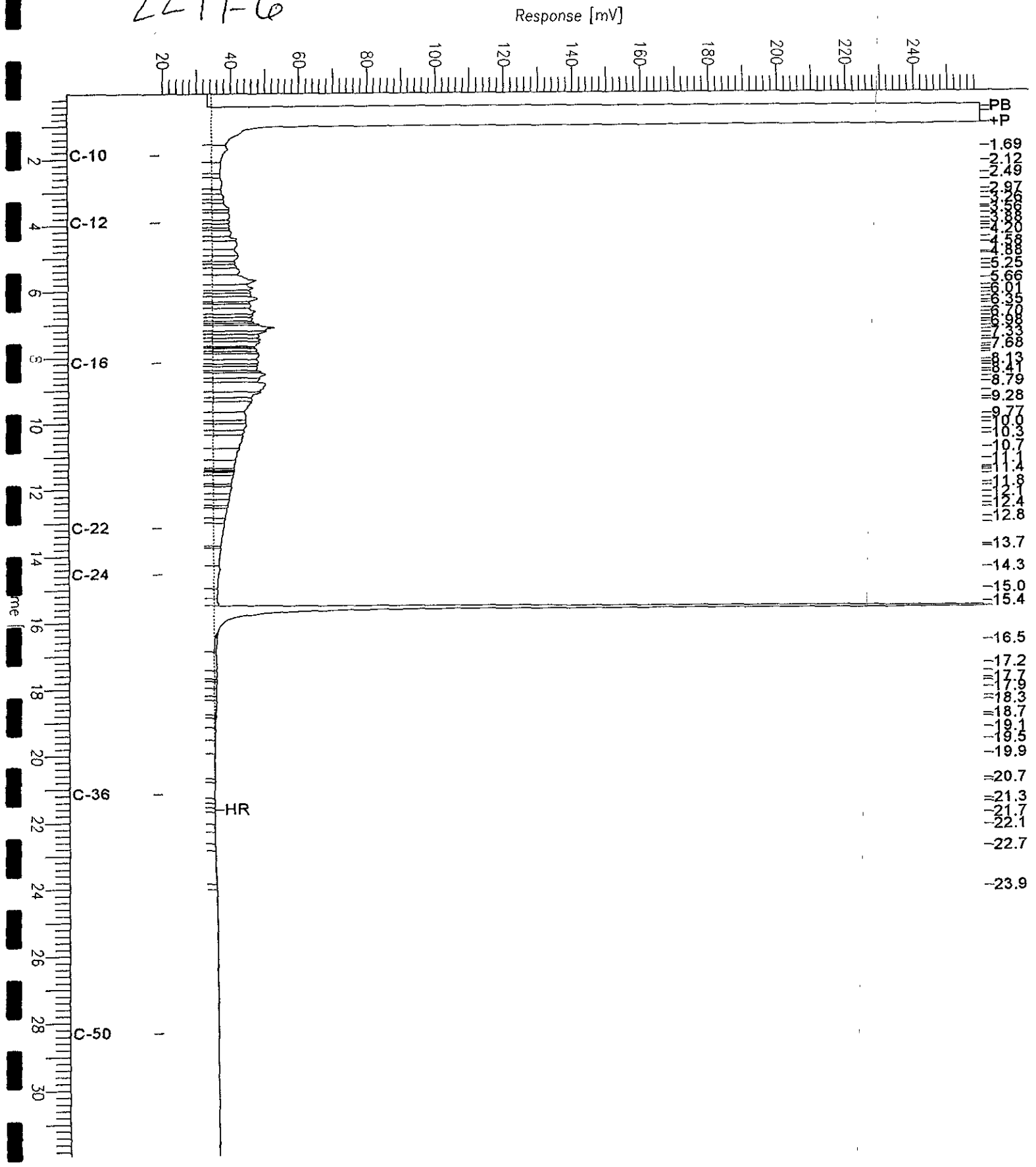
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
SGCU= Silica gel cleanup

Chromatogram

Sample Name : 153052-002sg,64999
FileName : G:\GC15\CHB\197B055.RAW
Method : BTEH162.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 19 mV

Sample #: 64999 Page 1 of 1
Date : 07/18/2001 08:49 AM
Time of Injection: 07/18/2001 01:36 AM
Low Point : 19.14 mV High Point : 259.79 mV
Plot Scale: 240.6 mV

2277-6

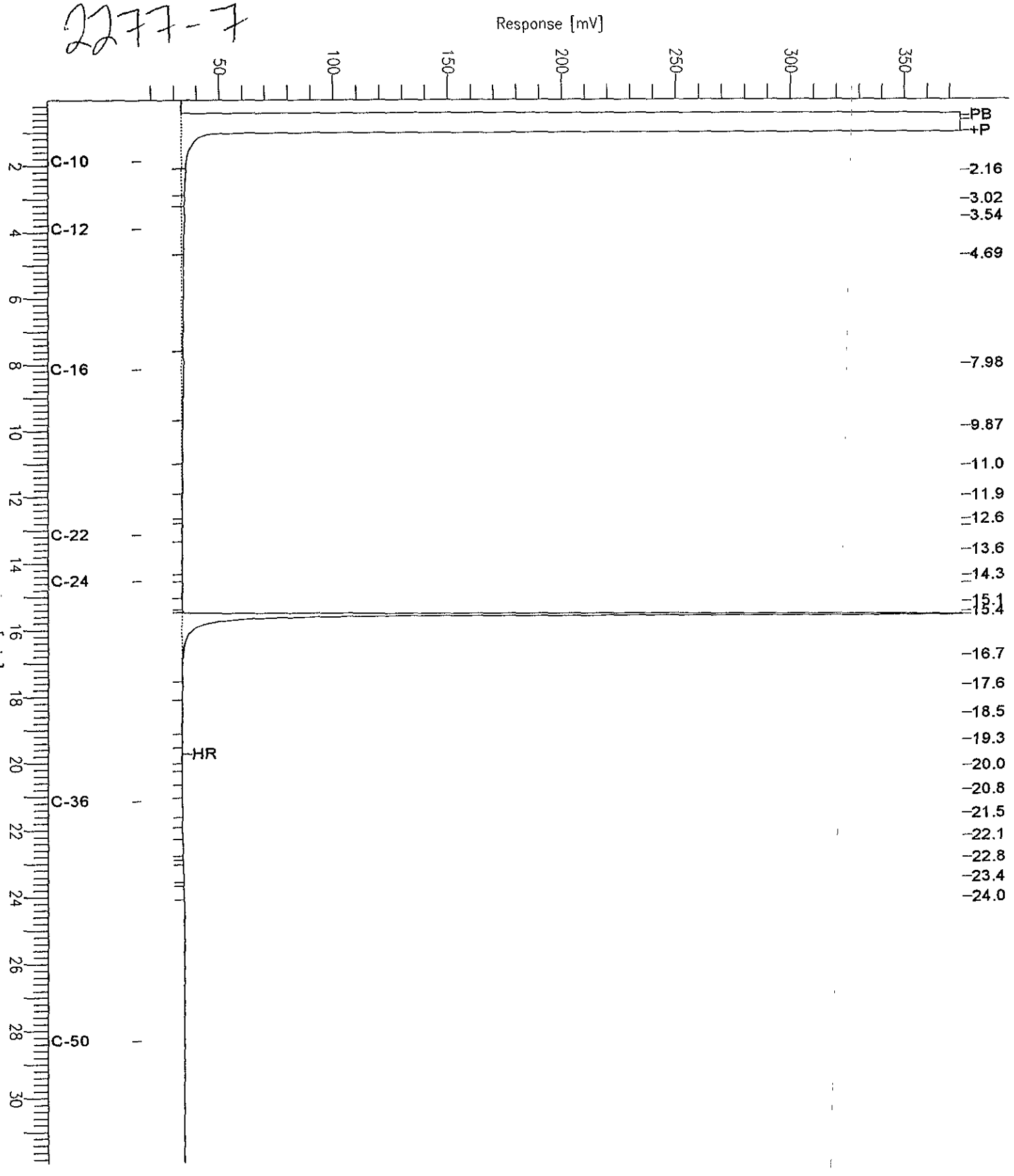


Chromatogram

Sample Name : 153052-004sg,64999
leName : G:\GC15\CHB\197B057.RAW
thod : BTEH162.MTH
art Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 16 mV

Sample #: 64999 Page 1 of 1
Date : 07/18/2001 08:51 AM
Time of Injection: 07/18/2001 02:58 AM
Low Point : 15.63 mV High Point : 374.61 mV
Plot Scale: 359.0 mV

2277-7

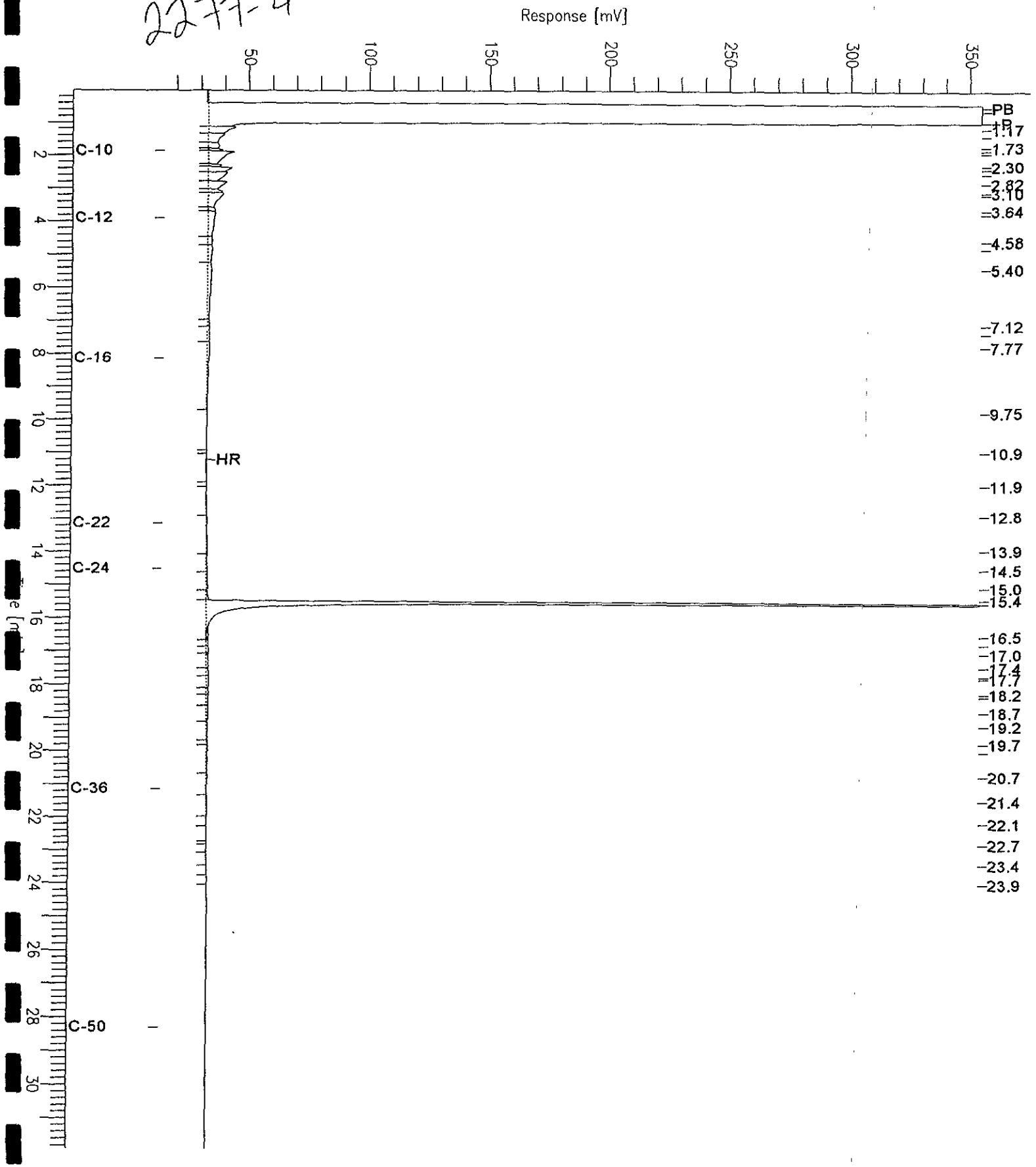


Chromatogram

Sample Name : 153052-005sg,64999
FileName : G:\GC15\CHB\197B058.RAW
ethod : BTEH162.MTH
tart Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 15 mV

Sample #: 64999 Page 1 of 1
Date : 07/18/2001 08:51 AM
Time of Injection: 07/18/2001 03:39 AM
Low Point : 14.61 mV High Point : 354.83 mV
Plot Scale: 340.2 mV

2277-4

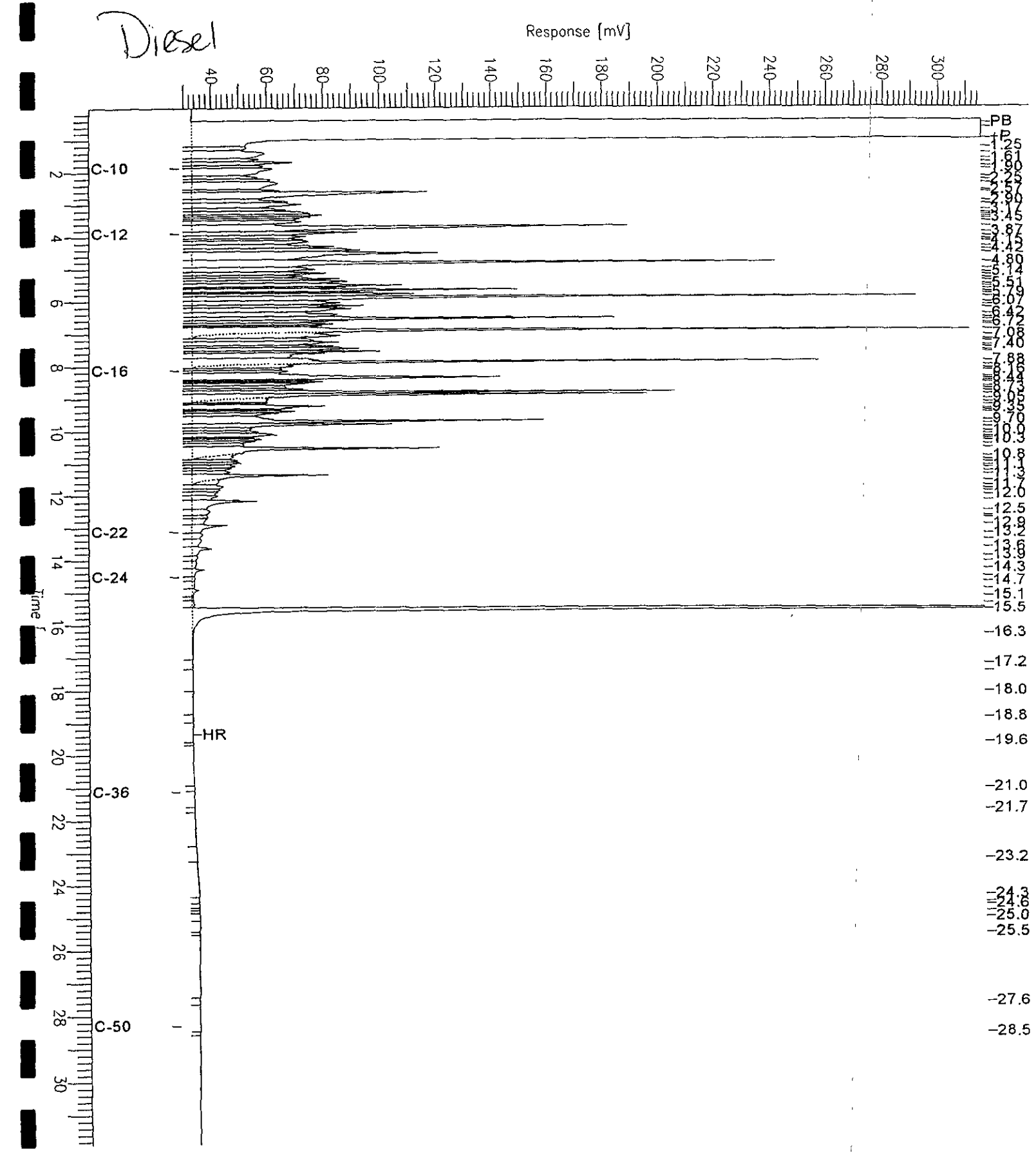


Chromatogram

Sample Name : ccv,01ws1178,dsl
FileName : G:\GC15\CHB\197B002.RAW
Method : BTEH162.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 28 mV

Sample #: 500mg/L Page 1 of 1
Date : 07/16/2001 11:57 AM
Time of Injection: 07/16/2001 09:15 AM
Low Point : 28.37 mV High Point : 315.44 mV
Plot Scale: 287.1 mV

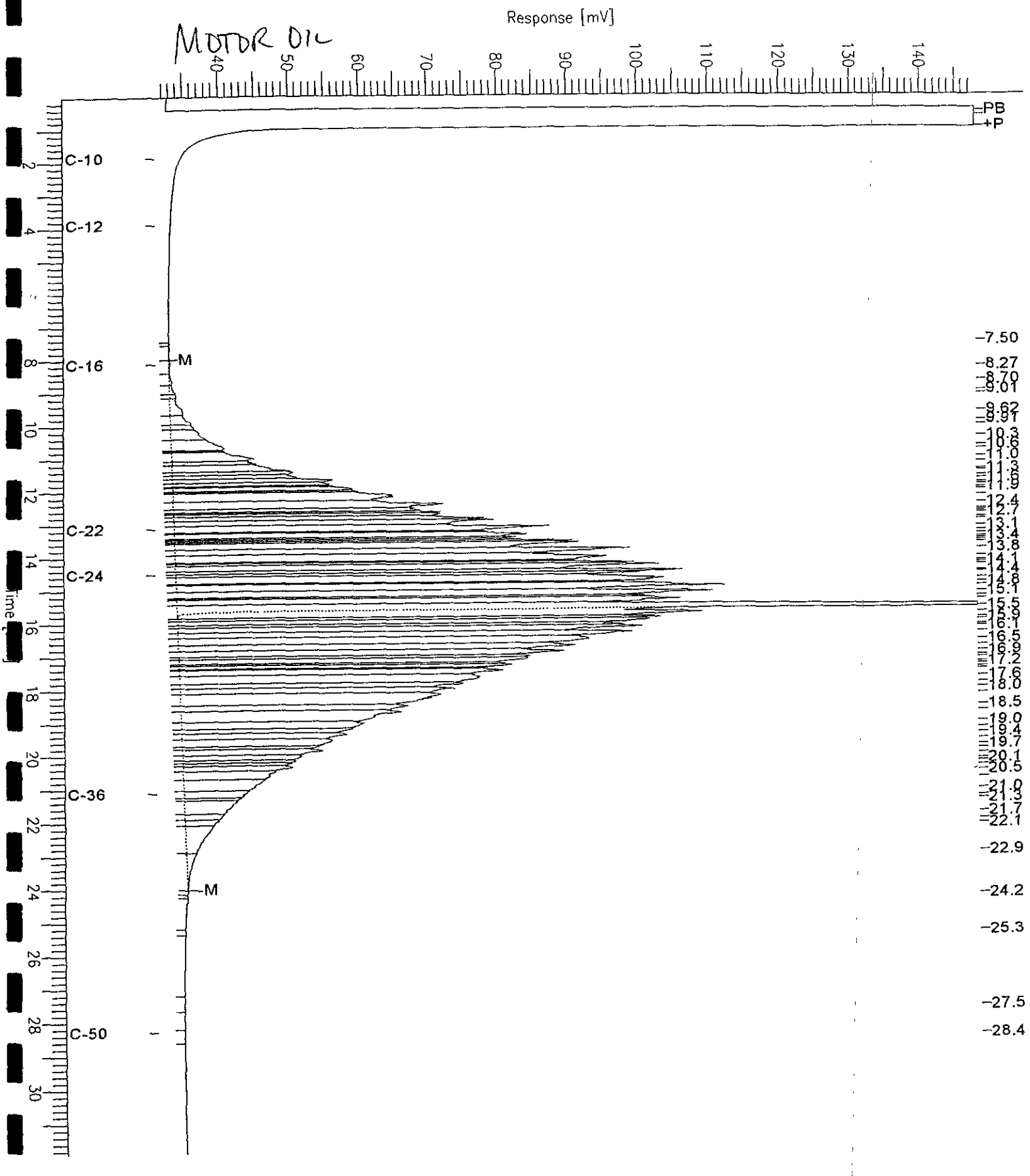
Diesel



Chromatogram

Sample Name : ccv,01ws1389,mo
FileName : G:\GC15\CHB\197B003.RAW
Method : BTEH162.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 31 mV

Sample #: 500mg/L Page 1 of 1
Date : 07/16/2001 11:58 AM
Time of Injection: 07/16/2001 09:56 AM
Low Point : 31.12 mV High Point : 147.85 mV
Plot Scale: 116.7 mV



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.2	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	64999
Units:	ug/L	Prepared:	07/16/01
Dil'n Fac:	1.000	Analyzed:	07/17/01

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC150540

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	2,339	1,609	69	45-110

Surrogate	%REC	Limits
Hexacosane (SGCU)	87	44-121

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC150541

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,339	1,581	68	45-110	2	22

Surrogate	%REC	Limits
Hexacosane (SGCU)	81	44-121

RPD= Relative Percent Difference
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Field ID:	2277-7D	Batch#:	65148
Lab ID:	153052-003	Sampled:	07/10/01
Matrix:	Water	Received:	07/11/01
Units:	ug/L	Analyzed:	07/21/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	75	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	111	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	101	80-115

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Field ID:	2277-7	Batch#:	65148
Lab ID:	153052-004	Sampled:	07/10/01
Matrix:	Water	Received:	07/11/01
Units:	ug/L	Analyzed:	07/21/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	76	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	112	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	104	80-115

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Field ID:	2277-4	Batch#:	65165
Lab ID:	153052-005	Sampled:	07/10/01
Matrix:	Water	Received:	07/11/01
Units:	ug/L	Analyzed:	07/23/01
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	100	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC151094	Batch#:	65148
Matrix:	Water	Analyzed:	07/21/01
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	107	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	97	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC151161	Batch#:	65165
Matrix:	Water	Analyzed:	07/23/01
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	101	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	65148
Units:	ug/L	Analyzed:	07/21/01
Diln Fac:	1.000		

Type: BS Lab ID: QC151092

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	47.63	95	75-125

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	96	80-115

Type: BSD Lab ID: QC151093

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	52.38	105	75-125	10	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	97	80-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	153052	Location:	2277 Seventh St.
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.2	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	65165
Units:	ug/L	Analyzed:	07/23/01
Diln Fac:	1.000		

Type: BS Lab ID: QC151159

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	43.44	87	75-125

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	95	80-115

Type: BSD Lab ID: QC151160

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	44.23	88	75-125	2	20

Surrogate	%REC	Limits
-Dichloroethane-d4	101	78-123
ene-d8	96	80-110
Bromofluorobenzene	95	80-115

PD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Harding Lawson Associates
600 Grand Ave.
Suite 300
Oakland, CA 94610

Date: 20-JUL-01
Lab Job Number: 152987
Project ID: 42633.1
Location: Port of Oakland-2277

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____ for JG
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: **152987**
Client: **Harding ESE**
Project Name: **2225 7th St.**

Receipt Date: **07/11/01**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for four water samples received from the above referenced project. The samples were received cold and intact.

Total Volatile Hydrocarbons: The trifluorotoluene surrogate recovery for sample MW-2 (152987-001) was above acceptance limits due to coelution of the surrogate peak with a single peak. The associated bromofluorobenzene surrogate recovery was acceptable, therefore, there is no affect on the quality of the sample results. No other analytical problems were encountered.

BTXE: No analytical problems were encountered.

Total Extractable Hydrocarbons: No analytical problems were encountered.

T52187

Harding ESE
A MACTEC COMPANY
600 Grand Ave, Suite 300
Oakland, CA 94610
(510) 451-1001

CHAIN OF CUSTODY FORM

Seq. No.: Nº 10536

Lab: C&T

Samplers: Trish Eliasson

Job Number: 42633.1

Name/Location: 2225 7th St.

Project Manager: Luis Fraticelli

Recorder: Trish Eliasson (signature)
(Signature Required)

	Matrix: Water	Soil	Air	#Containers & Preserv.: Unpres	H_2SO_4	HNO_3	HCL	Sample Number: YR	SEQ	Date: YR	MO	DAY	TIME	Station Description	Depth	Gasoline Range Organics 8015B	Diesel Range Organics 8015B	BTEX plus MTBE ~~EPA~~ 8020	CCR Title 22 Metals (17)	EPA 8021B	EPA 8260B	EPA 8270C
1	X			1			3		MW-2	01	07	10	1320			X	X	X				
2	X			1			3		MW-1	01	07	10	1415			X	X	X				
3	X			1			3		MW-1D	01	07	10	1420			X	X	X				
4	X			1			3		MW-3	01	07	10	1510			X	X	X				

Received ☐ On Ice ☒ Cold ☐ Ambient ☒ Intact

Preservation Correct? ☒ Yes ☐ No ☐ N/A

ADDITIONAL INFORMATION

Sample Number: YR	SEQ	Turnaround Time/Remarks
		Standard TAT
		Silica gel cleanup for TPHd, TPHmo
		MTBE confirmation by EPA 8260

CHAIN OF CUSTODY RECORD

	(signature)	(Print Name)	(Company)	Date/Time
Relinquished By	Trish Eliasson (signature)	Trish Eliasson	Harding	7/11/01 0830
Received By	(signature)	James E Taylor	Harding ESE	7/11/01 0830
Relinquished By	(signature)	James E Taylor	Harding ESE	7/11/01 1300
Received By	(signature)	Tony Rojas	C&T	7/11/01 1300
Relinquished By				
Received By				
Received By				

Method of Shipment:

Laboratory Copy Project Office Copy Field or Office Copy

00291 1

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Diln Fac:	1.000	Analyzed:	07/12/01
Batch#:	64901		

Field ID: MW-2 Lab ID: 152987-001
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	172 *	59-135
Bromofluorobenzene (FID)	106	60-140

Field ID: MW-1 Lab ID: 152987-002
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	59-135
Bromofluorobenzene (FID)	106	60-140

Field ID: MW-1D Lab ID: 152987-003
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

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

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Diln Fac:	1.000	Analyzed:	07/12/01
Batch#:	64901		

Field ID: MW-3 Lab ID: 152987-004
Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	59-135
Bromofluorobenzene (FID)	108	60-140

Type: BLANK Lab ID: QC150175

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	100	60-140

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Diln Fac:	1.000	Analyzed:	07/12/01
Batch#:	64901		

Field ID: MW-2 Lab ID: 152987-001
Type: SAMPLE

Analyte	Result	RL
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)	108	56-142
Bromofluorobenzene (PID)	111	55-149

Field ID: MW-1 Lab ID: 152987-002
Type: SAMPLE

Analyte	Result	RL
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)	109	55-149

Field ID: MW-1D Lab ID: 152987-003
Type: SAMPLE

Analyte	Result	RL
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)	106	56-142
Bromofluorobenzene (PID)	109	55-149

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Diln Fac:	1.000	Analyzed:	07/12/01
Batch#:	64901		

Field ID: MW-3 Lab ID: 152987-004
Type: SAMPLE

Analyte	Result	RL
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)	108	56-142
Bromofluorobenzene (PID)	113	55-149

Type: BLANK Lab ID: QC150175

Analyte	Result	RL
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)	99	56-142
Bromofluorobenzene (PID)	102	55-149

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	152987	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:	QC150176	Batch#:	64901
Matrix:	Water	Analyzed:	07/12/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,839	92	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	59-135
Bromofluorobenzene (FID)	106	60-140

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	64901
Units:	ug/L	Analyzed:	07/12/01
Diln Fac:	1.000		

Type: BS Lab ID: QC150179

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	20.27	101	67-117
Toluene	20.00	20.71	104	69-117
Ethylbenzene	20.00	19.96	100	68-124
m,p-Xylenes	40.00	41.89	105	70-125
o-Xylene	20.00	20.03	100	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	106	55-149

Type: BSD Lab ID: QC150180

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	20.00	19.94	100	67-117	2	20
Toluene	20.00	20.41	102	69-117	1	20
Ethylbenzene	20.00	20.16	101	68-124	1	20
m,p-Xylenes	40.00	40.67	102	70-125	3	20
o-Xylene	20.00	19.70	98	65-129	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	106	55-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	64901
MSS Lab ID:	152975-002	Sampled:	07/11/01
Matrix:	Water	Received:	07/11/01
Units:	ug/L	Analyzed:	07/12/01
Diln Fac:	1.000		

ype: MS Lab ID: QC150177

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<33.00	2,000	1,860	93	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	131	59-135
Bromofluorobenzene (FID)	114	60-140

ype: MSD Lab ID: QC150178

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,853	93	65-131	0	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	129	59-135
Bromofluorobenzene (FID)	112	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Dil'n Fac:	1.000	Prepared:	07/12/01
Batch#:	64921	Analyzed:	07/17/01

Field ID: MW-2 Lab ID: 152987-001
Type: SAMPLE Cleanup Method: EPA 3630C

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

Surrogate	%REC	Limits
Hexacosane	83	44-121

Field ID: MW-1 Lab ID: 152987-002
Type: SAMPLE Cleanup Method: EPA 3630C

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

Surrogate	%REC	Limits
Hexacosane	85	44-121

Field ID: MW-1D Lab ID: 152987-003
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	310	300

Surrogate	%REC	Limits
Hexacosane	94	44-121

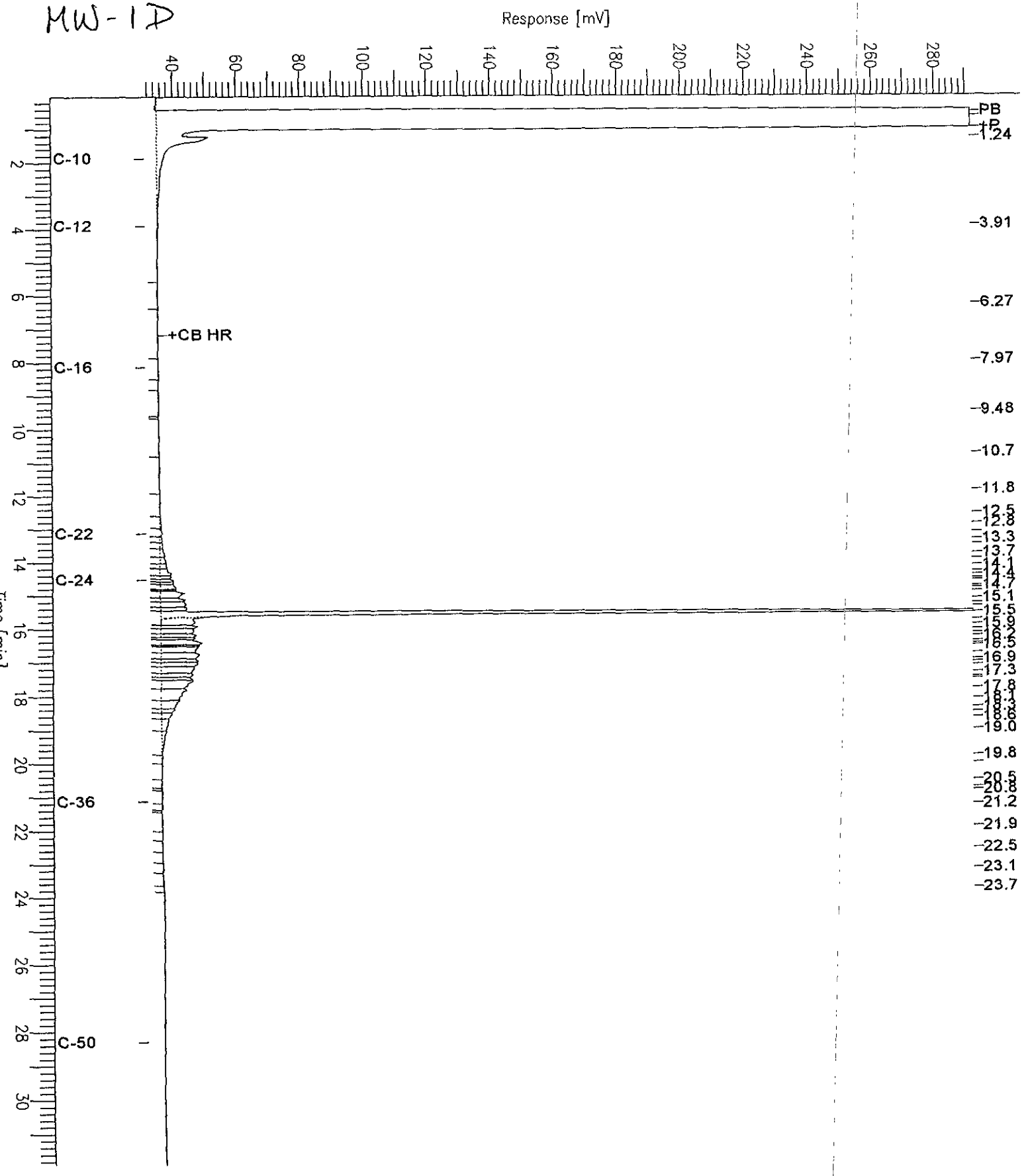
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 152987-003sg,64921
leName : G:\GC15\CHB\197B035.RAW
ethod : BTEH162.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 31 mV

Sample #: 64921 Page 1 of 1
Date : 07/17/2001 12:11 PM
Time of Injection: 07/17/2001 11:05 AM
Low Point : 31.00 mV High Point : 291.67 mV
Plot Scale: 260.7 mV

MW-1D



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	07/10/01
Units:	ug/L	Received:	07/11/01
Dil'n Fac:	1.000	Prepared:	07/12/01
Batch#:	64921	Analyzed:	07/17/01

Field ID: MW-3 Lab ID: 152987-004
Type: SAMPLE Cleanup Method: EPA 3630C

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

Surrogate	%REC	Limits
Hexacosane	97	44-121

Type: BLANK Cleanup Method: EPA 3630C
Lab ID: QC150250

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

Surrogate	%REC	Limits
Hexacosane	101	44-121

ND= Not Detected
RL= Reporting Limit

Chromatogram

ample Name : ccv,01ws1178,dsl
Name : G:\GC13\CHB\193B002.RAW
od : BTEH191.MTH
tart Time : 0.01 min
cale Factor: 0.0

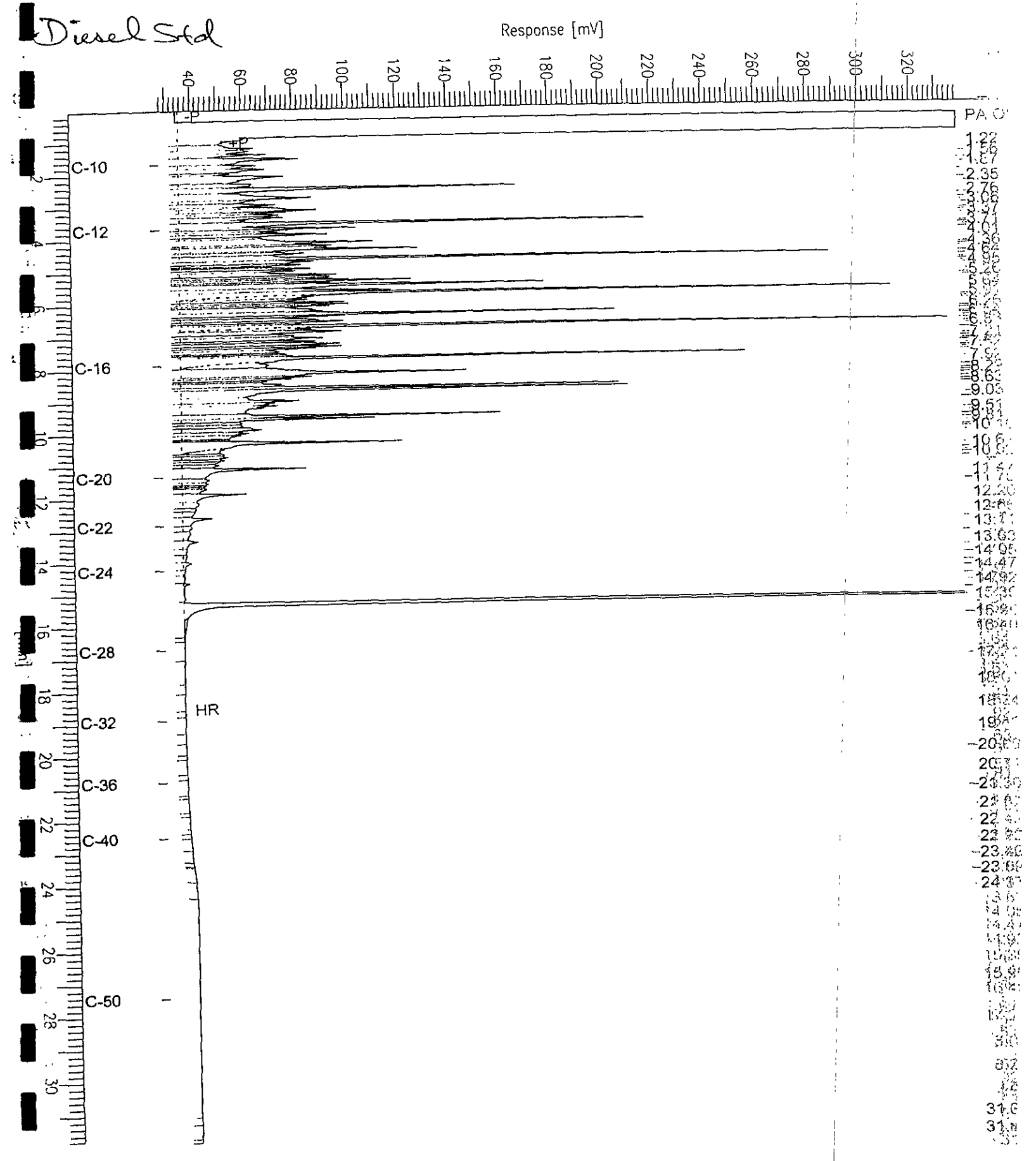
End Time : 31.91 min
Plot Offset: 28 mV

Sample #: 500mg/L
Date : 07/12/2001 10:54 AM
Time of Injection: 07/12/2001 10:18 AM
Low Point : 27.93 mV
Plot Scale: 310.6 mV

Page 1 of 1

High Point : 338.56 mV

Diesel Std



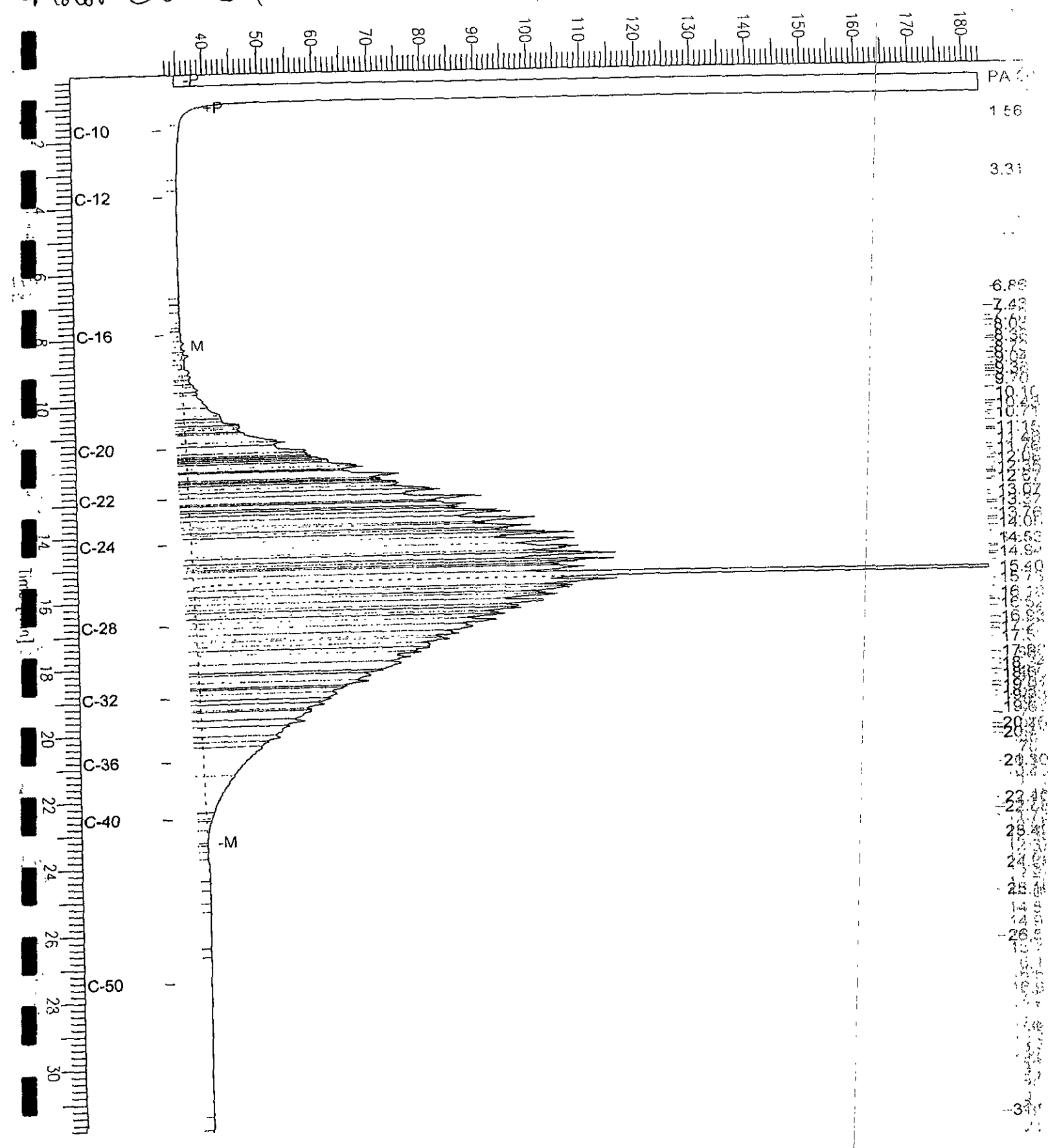
Chromatogram

[redacted]ple Name : ccv,01ws1389,mo
[redacted]Name : G:\GC13\CHB\193B003.RAW
[redacted]od : BTEH191.MTH
tart Time : 0.01 min
cale Factor: 0.0

End Time : 31.91 min
Plot Offset: 32 mV

Sample #: 500mg/l
Date : 07/12/2001 11:32 AM
Time of Injection: 07/12/2001 10:57 AM
Low Point : 32.29 mV
High Point : 183.01 mV
Plot Scale: 150.7 mV

Motor Oil Std



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	152987	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	64921
Units:	ug/L	Prepared:	07/12/01
Dil'n Fac:	1.000	Analyzed:	07/17/01

Type: BS
Lab ID: QC150251

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,339	1,664	71	45-110

Surrogate	%REC	Limits
Hexacosane	87	44-121

Type: BSD
Lab ID: QC150252

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,339	1,675	72	45-110	1	22

Surrogate	%REC	Limits
Hexacosane	92	44-121

RPD= Relative Percent Difference

Harding ESE
A MACTEC COMPANY
90 Digital Drive
Novato, CA 94949
(415) 883-0112

CHAIN OF CUSTODY FORM

Seq. No.: 19536

Lab:

Samplers:

Job Number:

Name/Location:

Project Manager:

Recorder: *(Signature Required)*

MATRIX				#CONTAINERS & PRESERV.						SAMPLE NUMBER		DATE				STATION DESCRIPTION	
Water	Soil	Air		Unpres	H_2SO_4	HNO_3	HCL			YR	SEQ	YR	MO	DAY	TIME		DEPTH
X				1			3										
X				1			3										
X				1			3										
X				1			3										

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

ADDITIONAL INFORMATION

SAMPLE NUMBER		TURNAROUND TIME/REMARKS
YR	SEQ	
		Standard TAT

CHAIN OF CUSTODY RECORD

			Date/Time
Relinquished By *(signature)*	*(Print Name)*	*(Company)*	Date/Time
Received By: *(signature)*	*(Print Name)*	*(Company)*	Date/Time
Relinquished By *(signature)*	*(Print Name)*	*(Company)*	Date/Time
Received By *(signature)*	*(Print Name)*	*(Company)*	Date/Time
Relinquished 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:

Laboratory Copy Project Office Copy Field or Office Copy

00291 1

Harding ESE
A MACTEC COMPANY
90 Digital Drive
Novato, CA 94949
(415) 883-0112

CHAIN OF CUSTODY FORM

Seq. No.: [illegible]0537
Lab: [illegible]

Samplers: [illegible]

Job Number: [illegible]
Name/Location: [illegible]
Project Manager: [illegible]
Recorder: [illegible] (Signature Required)

Water	Soil	Air		Unpres	H_2SO_4	HNO_3	HCL			Sample Number YR	Sample Number SEQ	Date YR	MO	DAY	TIME	Station Description	Depth	Gasoline Range Organics 8015B	Diesel Range Organics 8015B	BTEX plus MTBE	CCR Title 22 Metals (17)	EPA 8021B	EPA 8260B	EPA 8270C
				1						[illegible]	[illegible]-5	[illegible]	[illegible]	[illegible]	[illegible]			X	X	X				
				1						[illegible]	[illegible]-6	[illegible]	[illegible]	[illegible]	[illegible]			X	X	X				
				1			[illegible]			[illegible]	[illegible]-7D	[illegible]	[illegible]	[illegible]	[illegible]			X	X	X				
				1						[illegible]	[illegible]-7	[illegible]	[illegible]	[illegible]	[illegible]			X	X	X				
				1						[illegible]	[illegible]-4	[illegible]	[illegible]	[illegible]	[illegible]			X	X	X				
							2			22	[illegible]-TB	[illegible]	[illegible]	[illegible]	[illegible]					X				
				1			[illegible]			[illegible]	[illegible]-2	[illegible]	[illegible]	[illegible]	[illegible]			X	X	X				

ADDITIONAL INFORMATION

Sample Number YR	Sample Number SEQ	Turnaround Time/Remarks
		Standard TAT
		[illegible]
		[illegible]
		[illegible]

CHAIN OF CUSTODY RECORD

Signature	Print Name	Company	Date/Time
[illegible]	[illegible]	[illegible]	[illegible]
Relinquished By (signature)	(Print Name)	(Company)	Date/Time
Received By (signature)	(Print Name)	(Company)	Date/Time
Relinquished By (signature)	(Print Name)	(Company)	Date/Time
[illegible]	[illegible]	[illegible]	[illegible]
Received By: (signature)	(Print Name)	(Company)	Date/Time
Relinquished 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:

Laboratory Copy   Project Office Copy   Field or Office Copy

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