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CITY OF OAKLAND

DALZIEL BUILDING • 250 FRANK H. OGAWA PLAZA, SUITE 5301 • OAKLAND, CALIFORNIA 94612-2034

Public Works Agency
Environmental Services

FAX (510) 238-7286
TDD (510) 238-7644

September 11, 2002

RO093

Mr. Barney Chan
Alameda County Environmental Health Services
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Subject: Second Quarter 2002 Monitoring Report -
City of Oakland Municipal Service Center
7101 Edgewater Drive Oakland, California

Dear Mr. Chan:

Enclosed are copies of the *Second Quarter 2002 Monitoring Report* prepared by our consultants, Uribe & Associates for the City of Oakland Municipal Service Center at 7101 Edgewater Drive.

Please call me at 238-6259, if you have any questions or require additional information.

Sincerely,

Joseph A. Cotton, R.G.
Environmental Program Specialist

cc: Diane Heinz, Port of Oakland, 530 Water St., Oakland, CA 94604
Dr. Xinggang Tong, URS Corporation, 500 12th St., Suite 200, Oakland, CA 94607

R0293

Final

Second Quarter 2002 Monitoring Report

City of Oakland, Municipal Service Center
7101 Edgewater Drive
Oakland, California

September 4, 2002

Prepared for:

City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Suite. 5301
Oakland, California 94612-2034

Prepared by:

Uribe & Associates
447 29th Street
Oakland, CA 94609

U&A Project 291-08

Second Quarter 2002 Monitoring Report
City of Oakland, Municipal Service Center
7101 Edgewater Drive
Oakland, California

Limitations and Professional Certification

This report is intended for use by the City of Oakland for evaluation of the groundwater conditions at the Municipal Service Center site. The professional services provided have been performed in accordance with current practices accepted by environmental professionals practicing under similar conditions in California.

The following Uribe & Associates professional is a Registered Geologist with the State of California and was responsible for the preparation of this report within the purview of the Geologist and Geophysicist Act of the California Code of Regulations.

Stephanie Knott, R.G.
California Registration No. 5841
Senior Project Manager

Second Quarter 2002 Monitoring Report
City of Oakland, Municipal Service Center
7101 Edgewater Drive
Oakland, California

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Second Quarter 2002 Monitoring Report
City of Oakland, Municipal Service Center
7101 Edgewater Drive
Oakland, California

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1 Introduction

As required by the Alameda County Department of Environmental Health (ACDEH), Uribe & Associates (U&A) has prepared this second quarter 2002 groundwater monitoring report for the City of Oakland Municipal Services Center. Described below are the second quarter 2002 monitoring activities, monitoring results, contaminant distributions in groundwater, corrective action activities, conclusions, recommendations, and anticipated third quarter 2002 activities.

2 Second Quarter 2002 Monitoring Activities

2.1 Field Activities

On June 20 and 21, 2002, U&A collected groundwater samples from wells MW-5, MW-7, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, and MW-17. In addition, U&A gauged and inspected site monitoring and tank pit backfill wells for separate-phase hydrocarbons (SPH) in accordance with the ACDEH-approved monitoring protocol shown in Table A. One exception was the gauging of well TBW-2 instead of TBW-1, which was inaccessible because of an immovable secondary containment unit on top of it at the time of field activities. Monitoring wells MW-6 and MW-16 were not sampled due to the presence of SPH. Monitoring well locations are shown on Figure 1. Field data sheets are included as Appendix A.

2.2 Sample Analyses

The groundwater samples were analyzed for the following parameters:

- Total petroleum hydrocarbons (TPH) as gasoline (TPH-g), diesel (TPH-d), motor oil (TPH-mo) and as kerosene (TPH-k) by United States Environmental Protection Agency (USEPA) Method 8015B. A silica gel cleanup was performed for TPH-d, TPH-mo, and TPH-k (USEPA Method 3630C).

- Benzene, toluene, ethylbenzene, total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by USEPA Method 8021.

Curtis & Tompkins Laboratory of Berkeley, California, a California Department of Health Services-certified environmental laboratory, performed the chemical analyses. This quarter, samples exhibiting detected MTBE using EPA Method 8021 were inadvertently not confirmed using EPA Method 8260. Project requirements have been updated in U&A's project file to assure future confirmation analyses.

Table A – Well Sampling Protocol
Second Quarter 2002
City of Oakland Municipal Service Center

Well	2002 Quarter				Gauge (Every Quarter)	DO (field meter)	TPHg / BTEX / MTBE (8015B / 8021)	TPH diesel (8015B) silica gel	VOC (8260)	SVOC (8270)	Metals	Comments
	1	2	3	4								
MW-1	X				X	X	X	X				
MW-2	X				X	X	X	X				
MW-5	X	X			X	X	X	X				
MW-6					X	X	X	X				SPH present
MW-7	X	X			X	X	X	X				
MW-8	X				X	X	X	X				
MW-9	X	X			X	X	X	X				
MW-10	X	X			X	X	X	X				
MW-11	X	X			X	X	X	X				
MW-12	X	X			X	X	X	X				
MW-13	X	X			X	X	X	X				
MW-14	X	X			X	X	X	X				
MW-15	X	X			X	X	X	X				
MW-16					X	X	X	X				SPH present
MW-17	X	X			X	X	X	X				
MW-18	Developed to monitor a utility trench, not sampled to date											
TBW-1	X				Substituted TBW-2 for this well							
TBW-2	X	X			Gauge thickness of separate-phase hydrocarbons							
TBW-3	X	X			Gauge thickness of separate-phase hydrocarbons							
TBW-4	X	X			Gauge thickness of separate-phase hydrocarbons							
TBW-5	X	X			Gauge thickness of separate-phase hydrocarbons							
TBW-6	X	X			Gauge thickness of separate-phase hydrocarbons							
Trip Blank	X	X			NA	NA	X					

DO = Dissolved Oxygen
Prior to analysis, the laboratory will run the sample extracts through a silica gel column per EPA Method 3630C.
Wells MW-3 and MW-4 were destroyed during the first quarter 1999.
Metals: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc.

3 Monitoring Results

3.1 Shallow Groundwater Topography

Groundwater contours indicate flow towards San Leandro Bay and Damon Slough (Figure 1). Apparent groundwater flow directions are consistent with historical measurements. The magnitude of the gradient ranged from 0.009 feet/foot in the north to 0.011 feet/foot in the southern portion of the site. Depth-to-water and groundwater elevation data are presented in Table 1.

3.2 Occurrence of Separate-Phase Hydrocarbons

SPH were observed and thickness measured in on-site monitoring wells MW-6 (0.19 ft.) and TBW-5 (0.03 ft). Historically, SPH has also been measured in wells TBW-1, TBW-3, and TBW-6, but was not encountered during this sampling round. SPH was also observed in monitoring well MW-16. The thickness of the SPH in this well could not be measured due to its high viscosity.

SPH thickness measurements in wells are frequently not representative of true thicknesses in the formation(s) screened by the wells, but rather are typically several to many times thicker than those actually occurring in the deposits or formation(s) intercepted by the well screens[1, 2]. This phenomenon can be exaggerated by fluctuating water tables. The lateral extent of SPH is defined in the downgradient direction for each of these areas by other site wells. SPH removal activities are described below in the corrective action section.

3.3 Contaminant Distribution in Groundwater

The second quarter 2002 analytical results are summarized in Table 1. The laboratory analytical data reports are included as Appendix B. Historical data for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Leaking Underground Fuel Tank (LUFT) metals, and other metals are provided in Table 2, Table 3, Table 4, and Table 5, respectively.

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[1] Wagner, R.B., Hampton, D.R., and Howell, J.A., *A New Tool to Determine The Actual Thickness of Free Product in a Shallow Aquifer*, Proceedings of the Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection and Restoration, 1989. Published by the National Water Well Association.

[2] Yaniga, P. M., *Hydrocarbon Retrieval and Apparent Hydrocarbon Thickness: Relationship to Recharging/Discharging Aquifer Conditions*, presented to the National Water Well Association and the American Petroleum Institute, Houston, TX, 1984.

at 280 µg/l, and MW-12 at 180 µg/l. The concentrations are generally consistent with historic data; however, TPH-g was detected for the first time in MW-10 since 145 µg/l was detected in May 2000.

With the exception of MW-5, the TPH-g concentrations are below the San Francisco Airport Ecological Protection Zone Tier I Standard acceptable threshold of 3,700 µg/l.[6]

3.3.4 TPH-d in Groundwater

TPH-d was detected in six of the ten wells for which it was sampled. The maximum reported TPH-d concentration during this quarter was 1,100 µg/l in wells MW-10 and MW-12. This concentration exceeds the San Francisco Airport Ecological Protection Zone Tier I Standard of 640 µg/l for middle distillates[7] and represents an increase in detected TPH-d concentrations compared to the past three quarters. The TPH-d concentration in MW-15 (670 µg/l) also exceeded the Tier 1 standard. TPH-d concentrations detected in the three remaining wells were below the Tier 1 standard: wells MW-5 (200 µg/l), MW-13 (270 µg/l), MW-17 (99 µg/l). TPH-d concentrations have decreased over the last two quarters in wells MW-13, MW-15, and MW-17, while the concentration in MW-5 is consistent with historical data. The laboratory indicated that the results for all samples do not match the laboratory diesel standard.

3.3.5 TPH-mo in Groundwater

TPH-mo was detected in six of the ten wells for which it was sampled. The maximum TPH-mo concentration detected this quarter was 6,200 µg/L in off site perimeter well MW-10. This concentration is above the San Francisco Airport Ecological Protection Zone Tier I Standard of 640 µg/l for residual fuels.[8] The other wells with TPH-mo concentrations above the Tier 1 standard include MW-12 (3,000 µg/l), MW-13 (1,500 µg/l), MW-15 (2,700 µg/l), and MW-17 (650 µg/l). TPH-mo below the San Francisco Airport Ecological Protection Zone Tier I Standard was detected in well MW-14 (310 µg/l). The laboratory indicated that the results for these samples do not match the laboratory motor oil standard and represent hydrocarbons in the front part of the kerosene range.

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[6] RWQCB-SFBR *Order No. 99-045* for a similar situation at the San Francisco International Airport. Staff comments dated July 16, 1998, signed by Mr. Steven Morse, Chief of the Toxics Cleanup Division, addressed to the SFIA Consolidated Tenant Group.

[7] Ibid.

[8] Ibid.

3.3.6 TPH-k in Groundwater

TPH-k was detected in three of the ten wells for which it was sampled. The highest TPH-k concentration was reported at 640 µg/l in on-site monitoring well MW-12. This concentration is equal to the San Francisco Airport Ecological Protection Zone Tier I Standard of 640 µg/l for residual fuels. This concentration is the first reportable quantity in this well since 66 µg/l was detected during the February 2001 sampling event. Concentrations of TPH-k were also detected in MW-5 (190 µg/l) and MW-15 (95 µg/l). TPH-k was not included in the analytical suite for the 1st quarter sampling event of 2002.

4 Laboratory Quality Assurance and Quality Control

A laboratory Quality Assurance and Quality Control (QA/QC) review was performed on the analytical data to evaluate the quality and usability of the analytical results. The QA/QC review was performed in accordance with USEPA guidelines[9]. The QA/QC review found the analytical data to be of acceptable quality with no limitations for use. The results of the QA/QC review are summarized below.

4.1 Method Holding Times

Extraction and analysis holding times were reviewed to evaluate exceedances. No method holding times were exceeded.

4.2 Blanks

Trip blank and laboratory method blank results were reviewed for detections of target analytes. There were no target analytes detected in the trip or method blanks, indicating that sample transportation and laboratory procedures were not a source of sample contamination.

4.3 Laboratory Control Samples

Matrix Spike (MS) and MS duplicate (MSD) recoveries were reviewed to evaluate analytical accuracy. The recovery for TPH-d/mo/k analysis was 103%. MS recovery for TPH-g was 91%. The MS recoveries were within the laboratory control limits and indicate acceptable analytical accuracy.

MS duplicate (MSD) analyses were performed by the laboratory to evaluate analytical precision using RPDs. The RPD for TPH-d/mo/k was 1.0%. The RPD for TPH-g was 1.0%. The RPDs

9 USEPA. 1999. Contract Laboratory Program National Functional Guidelines for Organic Data Review. October.

indicate acceptable analytical precision.

4.4 Surrogates

Surrogate recoveries were reviewed to evaluate sample-specific accuracy. Surrogate recoveries for TPH-d/mo/k standard analyses ranged from 50% to 97%. Surrogate recoveries for TPH-g, BTEX, and MTBE ranged from 76% to 108%. The surrogate recoveries were within laboratory control limits and indicate acceptable sample-specific accuracy.

4.5 False-Positive Petroleum Hydrocarbon Identification

The laboratory reported that the TPH-d and TPH-mo detected in some groundwater samples included the presence of heavier or lighter hydrocarbons contributing to the quantitation. Upon review of the sample chromatograms by the laboratory, many samples were found to exhibit a pattern not resembling the diesel or motor oil standard. Fuels exposed to a natural environment are subject to biodegradation processes and tend to degrade over time; the presence of degraded fuels in a sample can lead to difficulty in interpreting the resultant chomatograms. A summary of the chromatogram interpretations is provided in Table B; copies of the sample chromatograms are included with the analytical data reports in Appendix B.

Table B: Evaluation of Chromatograms for TPH-Extractables
Second Quarter 2002

Sample I.D.	Chromatogram Interpretation
MW-5	Lighter and heavier fuels contributed to the quantitation of diesel-range hydrocarbons. Diesel fuel pattern does not resemble the standard.
MW-10	Heavier fuels contributed to quantitation of diesel-range hydrocarbons. Diesel fuel pattern does not resemble the standard.
MW-12	Lighter and heavier fuels contributed to the quantitation of diesel-range hydrocarbons; heavier fuels contributed to the quantitation of motor oil-range hydrocarbons. Diesel fuel pattern does not resemble the standard.
MW-13	Heavier fuels contributed to quantitation of diesel-range and motor oil-range hydrocarbons. Diesel fuel pattern did not resemble the standard.
MW-14	Heavier fuels contributed to the quantitation of motor oil-range hydrocarbons.
MW-15	Heavier fuels contributed to the quantitation of kerosene, motor oil, and diesel range hydrocarbons. Diesel and kerosene fuel patterns did not resemble the standards.
MW-17	Heavier fuels contributed to the quantitation of diesel and motor oil range hydrocarbons. Diesel fuel pattern did not resemble the standard.

5 Corrective Action Activities

The dual phase extraction (DPE) pilot test commenced at the site on May 13, 2002. Three groundwater storage units, each with a storage capacity of 21,000 gallons, were placed at free-product plumes B, C, and D to store effluent groundwater and free product generated during the pilot tests. The water generated during the pilot test will be removed, transported, and disposed of by Morgan Environmental Services, Inc. Subsequent groundwater will likely be treated by passage through three 2,000-pound (6,000 pounds total) carbon chambers placed in series and then discharged to the storm sewer system, in accordance with applicable regulatory requirements. There will be two sets of three carbon units. The first set is for plumes A and B, and the second set is for plumes C&D. If necessary, free product will be skimmed directly from the storage tank and recycled to minimize carbon loading and prolong the life of the carbon treatment vessels. Extracted vapors generated during the pilot test were treated through two 400-pound carbon vessels placed in series or by thermal oxidizer. Both National Pollutant Discharge Elimination System (NPDES) and Bay Area Air Quality Management District (BAAQMD) discharge permits were obtained for the site prior to DPE pilot test activities.

6 Conclusions and Recommendations

- SPH was only observed in three monitoring wells this quarter: MW-6, MW-16 and TBW-5. Historical data show that SPH had previously been detected in TBW-1, TBW-3, and TBW-6.

- The maximum TPH-g concentration of 4,600 µg/l was detected in well MW-5. This concentration exceeds the San Francisco Airport Ecological Protection Zone Tier I Standard acceptable threshold of 3,700 µg/l for TPH-g. The concentration of TPH-g in well MW-9 dropped to less than a quarter of the concentration measured in the 1st quarter sampling event of 2002 (to 430 µg/l) and is well below the San Francisco Airport Ecological Protection Zone Tier I Standard.

- The maximum benzene concentration detected this quarter was in MW-9 (180 µg/l), exceeding the San Francisco Airport Ecological Protection Zone Tier I Standard of 71 µg/l; the City of Oakland Risk-Based Tier I Standard for inhalation of indoor air vapors (110 µg/l); and the acceptable risk threshold ecological toxicity established by the USEPA (46 µg/l). Although the detected concentration in well MW-9 is half of the concentration detected in the previous quarter's sampling (367 µg/l), it remains higher than historic concentrations.

- MTBE was only detected in wells MW-5, MW-7, and MW-11. Confirmation analyses using EPA Method 8260 were inadvertently not performed.

- The maximum TPH-d concentration detected this quarter occurred in two wells, MW-10 and MW-12 (1,100 µg/l). Wells MW-10, MW-12, and MW-15 exhibited TPH-d concentrations exceeding the Ecological Protection Zone Tier I Standard of 640 µg/l for middle distillates and residual fuels. The TPH-d concentration detected during this second quarter sampling event in well MW-10 was higher than exhibited during any of the previous events. Concentrations in wells MW-12 and MW-15 were higher than those detected in the recent sampling events, but less than those detected in sampling conducted during 2000.

- The maximum TPH-mo concentration detected this quarter occurred in MW-10 (6,200 µg/l). Wells MW-10, MW-12, MW-13, and MW-15 exhibited TPH-mo concentrations exceeding the Ecological Protection Zone Tier I Standard of 640 µg/l for middle distillates and residual fuels. As with TPH-d, well MW-10 exhibited a detected TPH-mo concentration during this sampling event that was higher than exhibited during any of the previous events. Wells MW-12, MW-13, and MW-15 exhibited TPH-mo concentrations higher than those detected in the previous quarter's sampling event, but lower than the maximum concentrations detected in sampling conducted during 2000.

- The maximum TPH-k concentration detected this quarter was in MW-12 (640 µg/l). This concentration matches the Ecological Protection Zone Tier I Standard. Well MW-12 exhibited a TPH-k concentration higher than detected in the previous quarter's sampling event, but lower than concentrations detected in sampling conducted during 2000.

- Historical analytical results indicate that hydrocarbon attenuation is occurring at the site with evidence that both aerobic and anaerobic biodegradation are taking place. Hydrocarbon attenuation was described in prior monitoring reports. It is recommended that planned quarterly sampling activities be used to monitor the decreasing concentrations of contaminants over time as a result of this attenuation.

7 Anticipated Third Quarter 2002 Activities

The City of Oakland's consultant will gauge, measure observed SPH, and collect groundwater samples from site wells in accordance with the protocol presented in Appendix C. Following field activities and laboratory analysis, the consultant will tabulate the analytical data and prepare the quarterly monitoring report.

Groundwater Elevation Contour Map and Hydrocarbon Concentrations

June 21, 2002

EXPLANATION

MW-1	Monitoring Well Location
RW-2	Remediation Well Location
TBW-1	Tank Backfill Well
MW-3	Abandoned Well
NM	Not Measured
NS	Not Sampled
NSV	Not Surveyed
SPH	Separate phase hydrocarbons detected in well, well not sampled
*	Anomalous groundwater elevation, not used in contouring

Well — Monitoring Well Designation

ELEV — Groundwater Elevation, Feet above mean sea level (msl)

TPHg / TPHd / TPHmo / BENZ — Second Quarter 2002 TPHg, TPHd, TPHmo and benzene concentrations in micrograms per liter

0.011 — Approximate groundwater flow direction and gradient

Fence

1.0 — Groundwater elevation contour, dashed where inferred

MW-4

MW-3

EDGEWATER DRIVE

DAMON SLOUGH

SAN LEANDRO BAY

Public Works Building

911 Center

Admin.

Crafts and Storage

Building No. 5

Storage

Active USTs

Former USTs

Former UST

Above Ground Storage Tanks
NGV Fueling Station

RW-1

	MW-2	MW-10	MW-1	TBW-6	MW-12	MW-13	TBW-5	TBW-1	MW-5	MW-11	MW-7	TBW-3	TBW-4	MW-6	MW-8	TBW-2	MW-14	MW-9	MW-15	MW-16	MW-17
ELEV	2.40	2.49	5.13	5.91	3.33	0.59	2.35	NM	5.14	5.43	4.76	7.55*	NSV	3.93	2.51	NSV	2.53	2.50	2.12	NM	0.07
TPHg	NS	120	NS	NS	180	<50	SPH	NS	4,600	280	<50	NS	NS	SPH	NS	NS	<50	430	<50	SPH	99
TPHd		1,100			1,100	270			200	<50	<50						<50	<50	670		650
TPHmo		6,200			3,000	1,500			<300	<300	<300						310	<300	2,700		<0.5
BENZ		34			<0.5	<0.5			130	16	<0.5						<0.5	180	0.83		<0.5

0 75 150 300

Scale (ft)

FIGURE **1**

Municipal Service Center
7101 Edgewater Drive
Oakland, California

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Table 1. Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA

Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						µg/l								
MW-1														
10/4/89	10.20	---	---	8020		---	---	---	540	65	26	14	22	---
10/4/89	10.20	---	---	8240		---	---	---	---	120	46	43	78	---
4/27/93	10.20	---	---	8020		---	---	---	<1,000	<1.0	<1.0	<1.0	<1.0	---
4/19/95	10.20	---	---	8020		---	---	---	3,200	880	15	23	21	---
7/27/95	10.20	4.62	5.58	8020		---	---	---	980	130	3.6	1.4	5.6	---
11/20/95	10.20	6.08	4.12	8020		---	---	---	400	99	2.8	1.1	4.6	---
2/21/96	10.20	4.62	5.58	8020		---	---	---	1,700	340	8.4	5.3	16	---
5/13/96	10.20	4.33	5.87	8020		---	---	---	7,300	2,000	30	42	38	---
8/27/96	10.20	5.25	4.95	8020		---	---	---	380	61	2.4	<0.5	4.2	---
2/23/98	10.20	1.75	8.45	8020		<50	<500	<50	820	160	4.9	3	9.7	---
8/19/98	10.20	4.78	5.42	8020	SGC	1,200	---	---	780	69	4.1	0.84	8.5	<5.0
11/11/98	10.20	5.64	4.56	---		---	---	---	---	---	---	---	---	---
2/23/99	10.20	3.41	6.79	8020	SGC	1,200	1,600	<50	1,100	190	5	3	12	<5.0
5/27/99	10.20	3.96	6.24	---		---	---	---	---	---	---	---	---	---
8/24/99	10.20	4.92	5.28	8020	SGC	640	1,900	<50	370	37	0.9	<0.5	1.9	<5.0
11/22/99	10.20	5.46	4.74	---		---	---	---	---	---	---	---	---	---
1/18/00	10.05	5.41	4.64	---		---	---	---	---	---	---	---	---	---
1/19/00	---	---	---	8020	SGC	50	<200	<50	660	43	2.3	1.1	6	<5.0
5/11/00	10.05	4.63	5.42	---		---	---	---	---	---	---	---	---	---
8/24/00	10.05	5.07	4.98	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	340	<250	290	480	53	1.4	<0.5	2.9	<5.0
11/28/00	10.05	5.60	4.45	---		---	---	---	---	---	---	---	---	---
2/27/01	10.05	3.95	6.10	8020	Filtered+SGC	270	<250	<61	1,500	110	6.3	<1.5	9.9	<15
5/17/01	10.05	4.00	6.05	---		---	---	---	---	---	---	---	---	---
8/16/01	10.05	4.17	5.88		Filtered+SGC	280	<B200	<100	4,000	640	9.7	5.7	13	<5.0
12/15/01	10.05	5.52	4.53	---		---	---	---	---	---	---	---	---	---
4/9/02	10.05	3.78	6.27	8021	SGC	1,100	1,000	---	2,000	320	5.38	3.08	6.24	<5
6/21/02	**10.05**	**4.92**	**5.13**	---		---	---	---	---	---	---	---	---	---
MW-2														
10/4/89	10.47	---	---	8020		---	---	---	<30	<0.3	<0.3	<0.3	<0.3	---
10/4/89	10.47	---	---	8240		---	---	---	---	2	<2.0	<2.0	<2.0	---
4/27/93	10.47	---	---	8020		---	---	---	<1,000	<1.0	<1.0	<1.0	<1.0	---
4/19/95	10.47	---	---	8020		---	---	---	<50	1.8	<0.5	<0.5	<0.5	---
7/27/95	10.47	6.22	4.25	8020		---	---	---	<50	2.3	<0.5	<0.5	<0.5	---
11/20/95	10.47	7.49	2.98	8020		---	---	---	<50	2.2	<0.5	<0.5	<0.5	---
2/21/96	10.47	6.68	3.79	8020		---	---	---	<50	1.7	<0.5	<0.5	0.5	---
5/13/96	10.47	6.32	4.15	8020		---	---	---	---	2	<0.5	<0.5	<0.5	---
8/27/96	10.47	6.84	3.63	8020		---	---	---	---	2.4	<0.5	<0.5	<0.5	---
2/24/98	10.47	5.44	5.03	8020		<50	<500	<50	---	1.6	<0.5	<0.5	<0.5	---
8/19/98	10.47	6.56	3.91	8020	SGC	330	---	---	<50	4.1	3.4	0.8	2.6	<5.0
11/11/98	10.47	7.37	3.10	---		---	---	---	---	---	---	---	---	---

Table 1.	Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA												
Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						µg/l								
2/23/99	10.47	8.68	1.79	8020	SGC	200	900	<50	<50	3.5	0.6	0.6	1.2	<5.0
5/27/99	10.47	5.20	5.27	---		---	---	---	---	---	---	---	---	---
8/24/99	10.47	6.75	3.72	8020	SGC	140	700	<50	<50	2.6	<0.5	<0.5	<0.5	<5.0
11/22/99	10.47	7.58	2.89	---		---	---	---	---	---	---	---	---	---
1/18/00	10.47	7.41	3.06	8020	SGC	60 a	660	<50	<50	2.1	<0.5	<0.5	<0.5	<5.0
5/11/00	10.47	6.43	4.04	---		---	---	---	---	---	---	---	---	---
8/24/00	10.47	8.91	1.56	8020	SGC	170	440	130	<50	2.4	<0.5	<0.5	<0.5	<5.0
11/28/00	10.47	7.35	3.12	---		---	---	---	---	---	---	---	---	---
2/27/01	10.47	6.70	3.77	8020	Filtered+SGC	<59	<240	<59	<50	3.6	<0.5	<0.5	<0.5	<5
5/17/01	10.47	6.90	3.57	---		---	---	---	---	---	---	---	---	---
8/16/01	10.47	6.95	3.52		Filtered+SGC	<50	B200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	10.47	7.21	3.26	---		---	---	---	---	---	---	---	---	---
4/5/02	10.47	6.02	4.45	8021	SGC	200	400	---	<50	2.9	<0.5	<0.5	<0.5	<5
6/21/02	**10.47**	**8.07**	**2.40**	**---**		---	---	---	---	---	---	---	---	---
MW-3														
10/4/89	---	---	---	8020		---	---	---	<30	<0.3	<0.3	<0.3	<0.3	---
10/4/89	---	---	---	8240		---	---	---	---	<2.0	<2.0	<2.0	<2.0	---
2/23/98	---	---	---	---		<50	<500	<50	---	---	---	---	---	---
11/11/98	---	5.83	---	---		---	---	---	---	---	---	---	---	---
2/23/99	---	---	---	---	Submerged	---	---	---	---	---	---	---	---	---
5/27/99	---	1.68	---	---		---	---	---	---	---	---	---	---	---
8/24/99	---	4.76	---	---		---	---	---	---	---	---	---	---	---
11/22/99	---	6.46	---	---		---	---	---	---	---	---	---	---	---
11/22/99	---	---	---	---	Destroyed	---	---	---	---	---	---	---	---	---
MW-4														
10/4/89	7.89	---	---	8020		---	---	---	<30	<0.3	<0.3	<0.3	<0.3	---
10/4/89	7.89	---	---	8240		---	---	---	---	<2.0	<2.0	<2.0	<2.0	---
11/11/98	7.89	6.25	1.64	---		---	---	---	---	---	---	---	---	---
2/23/99	7.89	3.10	4.79	---		---	---	---	---	---	---	---	---	---
5/27/99	7.89	4.03	3.86	---		---	---	---	---	---	---	---	---	---
8/24/99	7.89	5.07	2.82	---		---	---	---	---	---	---	---	---	---
11/22/99	7.89	6.32	1.57	---		---	---	---	---	---	---	---	---	---
11/22/99	---	---	---	---	Destroyed	---	---	---	---	---	---	---	---	---
MW-5														
12/13/91	11.15	---	---	8020		1,900	---	---	13,000	1,500	190	970	2,500	---
12/13/91	---	---	---	8020	Dup	---	---	---	16,000	1,400	180	870	2,500	---
12/13/91	11.15	---	---	8240		---	---	---	---	1,800	<250	1,000	3,800	---
12/13/91	---	---	---	8240	Dup	---	---	---	---	1,600	<250	980	3,500	---
4/27/93	11.15	---	---	8240		12,000	---	---	35,000	2,100	<1.0	1,800	2,700	---
4/19/95	11.15	---	---	8240		880	4,700	---	14,000	490	51	610	1,200	---

Table 1. Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA

Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						µg/l								
7/27/95	11.15	6.29	4.86	8240		590	5,000	---	22,000	1,300	54	1,500	2,400	---
11/20/95	11.15	6.98	4.17	8020		<50	<50	<50	8,900	430	31	610	880	---
2/21/96	11.15	5.97	5.18	8020		480	<50	<50	1,000	540	65	700	970	---
5/13/96	11.15	6.25	4.90	8020		<50	<50	<50	5,900	430	26	580	760	---
5/13/96	---	---	---	8020	Dup	<50	<50	<50	7,300	360	22	49	640	---
8/27/96	11.15	6.40	4.75	8020		2,000	<51	<51	6,600	430	27	600	650	---
8/27/96	---	---	---	8020	Dup	6,600	<51	<51	6,300	410	25	580	620	---
2/23/98	11.15	4.22	6.93	8020		<50	<500	<50	740	19	1.4	41	34	---
8/19/98	11.15	6.14	5.01	8020		1,400	<250	1700	5,800	500	25	730	300	5,900
8/19/98	11.15	6.14	5.01	8260	SGC	---	---	---	---	---	---	---	---	6,700
11/11/98	11.15	6.51	4.64	---		---	---	---	---	---	---	---	---	---
2/23/99	11.15	3.59	7.56	8020	SGC	2,000	700	<50	6,700	300	26	800	690	1,600
5/27/99	11.15	5.71	5.44	---		---	---	---	---	---	---	---	---	---
8/24/99	11.15	6.02	5.13	8020	SGC	220	2,000	<50	2,100 e	190 e	5.5	340 e	78	380 e
11/22/99	11.15	6.16	4.99	---		---	---	---	---	---	---	---	---	---
1/18/00	11.15	6.60	4.55	---		---	---	---	---	---	---	---	---	---
1/19/00	---	---	---	8020	SGC	100	320	<50	3,000	66 e	6.3	400 e	90	300 E (1,300)
5/11/00	11.15	5.62	5.53	---		---	---	---	---	---	---	---	---	---
8/24/00	11.15	6.32	4.83	8020	SGC	4,800	560	6,600	12,000	220	21	430	91	1,200 (1,400)
11/28/00	11.15	6.47	4.68	---		---	---	---	---	---	---	---	---	---
2/27/01	11.15	4.40	6.75	8020	Filtered+SGC	230	<250	<61	6,300	150	7	350	55	830
5/17/01	11.15	5.77	5.38	8020	Filtered+SGC	190	<200	<50	7,500	140	7	580	101	170
8/16/01	11.15	4.87	6.28		Filtered+SGC	320	B500	<100	2,300	46	<5	110	24	850
12/15/01	11.15	5.50	5.65	---		---	---	---	---	---	---	---	---	---
4/9/02	11.15	5.15	6.00	8021	SGC	480	260	---	8,000	110	5.95	650	53.9	166
6/21/02	**11.15**	**6.01**	**5.14**	**8021**	**SGC**	**200 a,b,c**	**<300**	**190**	**4,600**	**130**	**33**	**380**	**56**	**440**
MW-6														
12/13/91	10.98	---	---	8020		520	---	---	780	110	2.7	<2.5	5.5	---
12/13/91	10.98	---	---	8240		---	---	---	---	95	5	<5	<5	---
4/27/93	10.98	---	---	8020		<1,000	---	---	<1,000	430	4	5	10	---
4/19/95	10.98	---	---	8020		6,700	---	---	5,700	40	<0.8	3.9	29	---
4/19/95	---	---	---	8020	Dup	3,700	---	---	3,000	310	3.1	2.7	100	---
7/27/95	10.98	7.09	3.89	8020		3,900	---	---	6,100	430	15	200	600	---
7/27/95	---	---	---	8020	Dup	2,600	---	---	6,300	420	15	200	600	---
11/20/95	10.98	7.89	3.09	8020		850	---	---	6,800	160	4.6	8	240	---
11/20/95	---	---	---	8020	Dup	---	---	---	3,600	130	11	4.4	200	---
2/21/96	10.98	7.40	3.58	8020	Filtered+SGC	1,700	---	---	2,800	230	2.8	3.8	44	---
2/21/96	---	---	---	8020	Dup	2,500	---	---	2,200	280	3	4	4.6	---
5/13/96	10.98	7.10	3.88	8020		400	<50	<50	3,100	430	12	5.2	67	---
8/27/96	10.98	7.42	3.56	8020		3,100	---	---	4,200	300	9.3	110	110	---
8/19/98	10.98	---	---	---	SPH: 0.125 ft	---	---	---	---	---	---	---	---	---
11/11/98	10.98	7.09	3.93	---	SPH: 0.05 ft	---	---	---	---	---	---	---	---	---

Table 1. Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA

Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						← µg/l →								
2/23/99	10.98	7.31	3.67	---	SPH: NM	---	---	---	---	---	---	---	---	---
5/27/99	10.98	6.91	4.25	---	SPH: 0.20 ft	---	---	---	---	---	---	---	---	---
8/24/99	10.98	7.46	3.72	---	SPH: 0.03 ft	---	---	---	---	---	---	---	---	---
11/22/99	10.98	7.96	3.15	---	SPH: 0.16 ft	---	---	---	---	---	---	---	---	---
1/18/00	10.98	8.08	3.05	---	SPH: 0.19 ft	---	---	---	---	---	---	---	---	---
5/11/00	10.98	7.52	4.47	---	SPH: 0.01 ft	---	---	---	---	---	---	---	---	---
8/24/00	10.98	7.50	3.53	---	SPH: 0.06 ft	---	---	---	---	---	---	---	---	---
11/28/00	10.98	6.39	4.62	---	SPH: 0.04 ft	---	---	---	---	---	---	---	---	---
2/26/01	10.98	7.80	3.50	8020	SPH: 0.40 ft, f	820	<240	<60	6,100	181	<5	14.2	<5	<50
2/26/01	---	---	---	8260B		---	---	---	---	270	3	9	3	(19)
5/17/01	10.98	7.57	3.66	---	SPH: 0.32 ft	---	---	---	---	---	---	---	---	---
8/16/01	10.98	7.75	3.49		SPH: 0.32 ft, f	740	B200	<100	4,200	360	4.6	13	12	14
12/15/01	10.98	7.58	3.40	---	SPH: 0.07 ft	---	---	---	---	---	---	---	---	---
4/3/02	10.98	6.92	4.06	---	SPH: 0.11 ft	---	---	---	---	---	---	---	---	---
6/21/02	**10.98**	**7.05**	**3.93**	---	SPH: 0.19 ft	---	---	---	---	---	---	---	---	---
MW-7														
12/13/91	11.51	---	---	8020		<50	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
12/13/91	11.51	---	---	8240		---	---	---	---	<5	<5	<5	<5	---
4/27/93	11.51	---	---	8240		<1,000	---	---	<1,000	<1.0	<1.0	<1.0	<1.0	---
4/19/95	11.51	---	---	8240		<50	<1,000	---	<50	<2.0	<2.0	<2.0	<2.0	---
7/27/95	11.51	6.87	4.64	8240		<50	<1,000	---	<50	<2.0	<2.0	<2.0	<2.0	---
11/20/95	11.51	8.48	3.03	8020		<50	---	---	<50	<0.5	<0.5	<0.5	1.5	---
2/21/96	11.51	6.29	5.22	8020		<50	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
5/13/96	11.51	6.95	4.56	8020		<50	---	---	---	<0.5	<0.5	<0.5	<0.5	---
8/27/96	11.51	6.80	4.71	8020		---	---	---	---	<0.5	<0.5	<0.5	<0.5	---
8/19/98	11.51	6.88	4.63	---		---	---	---	---	---	---	---	---	---
11/11/98	11.51	7.40	4.11	---		---	---	---	---	---	---	---	---	---
2/23/99	11.51	5.57	5.94	8020		<50	<200	<50	80	<0.5	<0.5	<0.5	1	<5.0
5/27/99	11.51	6.56	4.95	---		---	---	---	---	---	---	---	---	---
8/24/99	11.51	6.29	5.22	8020	SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	5
11/22/99	11.51	6.80	4.71	---		---	---	---	---	---	---	---	---	---
1/18/00	11.51	7.31	4.20	---		---	---	---	---	---	---	---	---	---
1/19/00	11.51	---	---	8020	SGC	<50	<200	<50	54	1.5	1.5	2.4	3.8	<5.0
5/11/00	11.51	6.41	5.10	---		---	---	---	---	---	---	---	---	---
8/24/00	11.51	7.11	4.40	8020		<50	<250	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	11.51	7.30	4.21	---		---	---	---	---	---	---	---	---	---
2/27/01	11.51	5.75	5.76	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5
5/17/01	11.51	6.65	4.86	---		---	---	---	---	---	---	---	---	---
8/16/01	11.51	5.97	5.54		Filtered+SGC	<50	B600	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	11.51	6.43	5.08	---		---	---	---	---	---	---	---	---	---
4/8/02	11.51	6.17	5.34	8021	SGC	80	<200	---	<50	<0.5	0.5	0.60	<0.5	<5
6/21/02	**11.51**	**6.75**	**4.76**	**8021**	**SGC**	**<50**	**<300**	**<50**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**3.3**

Table 1. Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA

Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						µg/l								
MW-8														
11/20/96	12.22	---	---	8020		880	---	---	<50	0.66	<0.5	<0.5	<0.5	---
11/20/97	12.22	9.59	2.63	8020		200	---	---	<50	<0.5	<0.5	<0.5	<0.5	2
2/24/98	12.22	8.42	3.80	8020		<50	<500	<50	<50	<0.5	<0.5	<0.5	<0.5	---
6/8/98	12.22	9.57	2.65	8020		1,200	1,000	<50	<50	<0.5	<0.5	<0.5	<0.5	---
8/19/98	12.22	9.49	2.73	8020	SGC	<50	<250	<50	<50	1.6	3.4	1	2.8	<5.0
11/11/98	12.22	9.64	2.58	8020	SGC	<50	<200	<50	<50	0.9	0.8	0.6	2.3	<5.0
2/23/99	12.22	11.53	0.69	8020		700	1,500	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/27/99	12.22	9.65	2.57	8020		<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/24/99	12.22	9.62	2.60	8020	SGC	70	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/22/99	12.22	9.64	2.58	8020	SGC	57	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
1/18/00	12.22	8.31	3.91	8020	SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	12.22	9.69	2.53	8020	SGC	<50	<200	<50	<50	<0.5	1.3	<0.5	2.1	<5.0
8/24/00	12.22	9.40	2.82	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	85	<250	<50	<50					
11/28/00	12.22	9.40	2.83	8020	SGC	<50	910	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/27/01	12.22	9.50	2.72	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	12.22	9.71	2.51	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	12.22	9.80	2.42		Filtered+SGC	<50	<200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	12.22	9.28	2.94	8021	SGC	390	1,300	<50	<50	<0.5	<0.5	<0.5	<0.5	<5
4/8/02	12.22	9.55	2.67	8021	SGC	440	800	---	<50	<0.5	<0.5	<0.5	<0.5	<5
6/21/02	**12.22**	**9.71**	**2.51**	**---**		---	---	---	---	---	---	---	---	---
MW-9														
11/20/96	10.77	---	---	8020		1,900	---	---	240	21	0.81	1.8	2.2	---
11/20/97	10.77	7.91	2.86	8020		---	---	---	300	20	<0.5	<0.5	1.8	<1.0
2/24/98	10.77	6.11	4.66	8020		<50	<500	<50	2,200	540	5.6	1.6	4.9	---
6/8/98	10.77	7.14	3.63	8020		1,800	890	<50	840	450	6.1	3.3	5.3	---
8/19/98	10.77	7.88	2.89	8020	SGC	190	<250	160	740	370	8.6	0.99	7.3	<5.0
11/11/98	10.77	8.23	2.54	8020	SGC	<50	230	<50	700	130	4.3	<0.5	3.9	<5.0
2/23/99	10.77	6.65	4.12	8020		1,100	3,700	<50	1,100	620	9.7	1.5	7.7	<5.0
5/27/99	10.77	7.70	3.07	8020	SGC	70	300	<50	950	470	11	1.5	9.2	<5.0
8/24/99	10.77	8.12	2.65	8020	SGC	890	1,700	<50	290	45	2.8	<0.5	3	<5.0
11/22/99	10.77	8.33	2.44	8020	SGC	1,000	6,000	<50	170	12	1.8	<0.5	2	<5.0
1/18/00	10.77	8.63	2.14	8020	SGC	200 a	2,300	<50	160	5.7	1.9	0.6	4.2	<5.0
5/11/00	10.77	7.70	3.07	8020	SGC	180 a	980	<100	1,050	280	7.0	<2.5	5.9	<25
8/24/00	10.77	8.31	2.46	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	580	2,200	170	180	23	2.4	<0.5	2.7	<5.0
11/28/00	10.77	8.45	2.32	8020	SGC	200	1,600	<50	130	1.9	<0.5	<0.5	<0.5	<5.0
11/28/00	10.77	8.45	2.32	---	Filtered+SGC	<50	<200	<50	---	---	---	---	---	---
2/26/01	10.77	6.40	4.37	8020	Filtered+SGC	120	<200	<50	142	33	1.8	<0.5	<0.5	<5.0

Table 1.	Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA													
Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						µg/l								
5/17/01	10.77	9.88	0.89	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	<50	<200	<50	74	4.6	<0.5	<0.5	<0.5	<5.0
8/16/01	10.77	8.05	2.72		Filtered+SGC	<50	<200	<100	70	0.62	<0.5	<0.5	<0.5	<5
12/16/01	10.77	7.75	3.02	8021	SGC	1,400	4,100	<50	210	15	1.6	<0.5	2.2	<5
4/5/02	10.77	7.50	3.27	8021	SGC	870	1,000	---	1,498	367	11	2.1	7.8	<5
6/20/02	**10.77**	**8.27**	**2.50**	**8021**	**SGC**	**<50**	**<300**	**<50**	**430**	**180**	**5.7**	**2.4**	**4.15**	**<2**
MW-10														
11/20/96	10.59	---	---	8020		940	---	---	<50	49	0.59	0.54	1.2	---
11/20/97	10.59	7.70	2.89	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
2/24/98	10.59	4.39	6.20	8020		<50	<500	<50	<50	<0.5	<0.5	<0.5	<0.5	---
6/8/98	10.59	6.94	3.65	8020		500	<500	<50	<50	7.3	<0.5	<0.5	<0.5	---
8/19/98	10.59	6.99	3.60	8020	SGC	240	520	110	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/11/98	10.59	7.57	3.02	8020	SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/23/99	10.59	5.51	5.08	8020		170	1,200	<50	<50	1.3	<0.5	<0.5	<0.5	<5.0
5/27/99	10.59	6.72	3.87	8020	SGC	<50	<200	<50	350	170	1.5	0.5	2.3	<5.0
8/24/99	10.59	7.27	3.32	8020	SGC	140	300	<50	380	160 e	<0.5	<0.5	2.6	<5.0
11/22/99	10.59	7.71	2.88	8020	SGC	570	3,400	<50	110	5.1	<0.5	<0.5	0.72	<5.0
1/18/00	10.59	7.77	2.82	---		---	---	---	---	---	---	---	---	---
1/19/00	---	---	---	8020	SGC	120 a,b	1,200	<50	100	<0.5	<0.5	0.8	<0.5	<5.0
5/11/00	10.59	7.00	3.59	8020	SGC	110 a	990	<50	145	1.62	0.5	0.5	0.9	<5.0
8/24/00	10.59	7.31	3.28	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	430	1,300	110	<50	1.0	<0.5	<0.5	<0.5	<5.0
11/28/00	10.59	7.90	2.69	8020	SGC	220	1,500	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/27/01	10.59	5.80	4.79	8020	Filtered+SGC	85	<230	<57	<50	1.3	<0.5	<0.5	<0.5	<5.0
5/17/01	10.59	6.27	4.32	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	<50	<200	<50	<50	0.7	<0.5	<0.5	<0.5	<5.0
8/16/01	10.59	8.75	1.84		Filtered+SGC	<50	<200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/16/01	10.59	6.97	3.62	8021	SGC	410	2,100	<50	<50	2.4	<0.5	<0.5	<0.5	<5
4/8/02	10.59	6.51	4.08	8021	SGC	220	300	---	<50	1.1	<0.5	<0.5	<0.5	<5
6/20/02	**10.59**	**8.10**	**2.49**	**8021**	**SGC**	**1,100 a,c**	**6,200**	**<50**	**120**	**34**	**<0.5**	**<0.5**	**<0.5**	**<2**
MW-11														
1/18/00	11.60	7.08	4.52	---		---	---	---	---	---	---	---	---	---
1/19/00	---	---	---	8020	SGC	<50	500	<50	220	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	11.60	5.95	5.65	8020	SGC	<50	430	<50	600	23	2.1	18	15	<5.0
8/24/00	11.60	6.58	5.02	8020		<50	<250	<50	110	5.9	<0.5	0.73	0.64	<5.0
11/28/00	11.60	6.91	4.69	8020	SGC	<50	<200	<50	180	4	<0.5	1.9	<0.5	<5.0
2/27/01	11.60	5.65	5.95	8020	Filtered+SGC	86	<240	<60	720	29	5.2	38	36	<5.0
5/17/01	11.60	6.85	4.75	8020	Filtered+SGC	<50	<200	<50	720	36	3.4	15	18	9.7
8/16/01	11.60	6.01	5.59		Filtered+SGC	<50	B500	<100	110	4.8	<0.5	1.4	<0.5	<5
12/15/01	11.60	6.26	5.34	8021	SGC	200	300	<50	170	1.7	0.6	2.4	1.8	<2
4/5/02	11.60	5.47	6.13	8021	SGC	160	<200	---	330	8.9	2.0	6.9	8.7	<5

Table 1.	Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA												
Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						µg/l								
6/21/02	**11.60**	**6.17**	**5.43**	**8021**	**SGC**	**<50**	**<300**	**<50**	**280**	**16**	**1.8**	**8.7**	**9.6**	**3.6**
MW-12														
1/18/00	10.43	8.11	2.32	---		---	---	---	---	---	---	---	---	---
1/19/00	---	---	---	8020	SGC	1,800 a	11,000	<50	200	<0.5	3.4	1.5	8.4	<5.0
5/11/00	10.43	6.78	3.65	8020	SGC	2,400 a	4,900	<100	370	<0.5	<0.5	<0.5	0.9	<5.0
8/24/00	10.43	7.56	2.87	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	3,500	5,000	3,700	170	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	10.43	8.13	2.30	8020	SGC	2,100	14,000	<50	290	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	10.43	8.13	2.30	---	Filtered+SGC	50	<200	<50	---	---	---	---	---	---
2/27/01	10.43	6.00	4.43	8020	Filtered+SGC	320	<250	66	110	1.4	<0.5	<0.5	<0.5	<5.0
5/17/01	10.43	7.01	3.42	8020	Filtered+SGC	<50	<200	<50	220	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	10.43	8.47	1.96	8020	Filtered+SGC	200	B300	<100	160	<0.5	<0.5	<0.5	<0.5	<5
4/8/02	10.43	6.65	3.78	8021	SGC	500	500	---	180	<0.5	<0.5	0.7	<1.5	<5
6/21/02	**10.43**	**7.10**	**3.33**	**8021**	**SGC**	**1,100 a,b,c**	**3,000 h**	**640**	**180**	**<0.5**	**<0.5**	**0.63**	**1.62**	**<2**
MW-13														
1/18/00	11.34	9.63	1.71	8020	SGC	8,800 a	120,000	<50	<50	<0.5	0.8	<0.5	<0.5	<5.0
5/11/00	11.34	10.12	1.22	8020	SGC	11,000 a	110,000	<500	70	1.6	5.4	1.2	7.6	<5.0
8/24/00	11.34	10.22	1.12	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	3,100	13,000	1,200	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	11.34	10.50	0.84	8020	SGC	2,400	36,000	<1300	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	11.34	10.50	0.84	---	Filtered+SGC	280	1,100	<50	---	---	---	---	---	---
2/26/01	11.34	9.60	1.74	8020	Filtered+SGC	100	<260	<64	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	11.34	10.10	1.24	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	11.34	10.50	0.84		Filtered+SGC	<50	B300	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/16/01	11.34	9.43	1.91	8021	SGC	1,900	18,000	<250	<50	<0.5	<0.5	<0.5	<0.5	<5
4/8/02	11.34	10.24	1.10	8021	SGC	440	900	---	<50	<0.5	<0.5	<0.5	<0.5	<5
6/20/02	**11.34**	**10.75**	**0.59**	**8021**	**SGC**	**270 a,c**	**1,500 h**	**<50**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2**
MW-14														
1/18/00	10.05	7.37	2.68	8020	SGC	1,700 a	22,000	<50	120	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	10.05	6.73	3.32	8020	SGC	360 a	4,300	<100	120	<0.5	<0.5	0.5	<0.5	<5.0
8/24/00	10.05	7.30	2.75	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	1,000	3,100	460	90	6.3	<0.5	<0.5	<0.5	<5.0
11/28/00	10.05	7.40	2.65	8020	SGC	380	6,400	<250	140	7.4	<0.5	<0.5	<0.5	<5.0
11/28/00	10.05	7.40	2.65	---	Filtered+SGC	<50	<200	<50	---	---	---	---	---	---
2/26/01	10.05	6.20	3.85	8020	Filtered+SGC	150	<230	<58	73	2.3	<0.5	<0.5	<0.5	<5.0
5/17/01	10.05	7.74	2.31	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	120	<200	<50	100	11	<0.5	<0.5	<0.5	<5.0
8/16/01	10.05	7.85	2.20		Filtered+SGC	<50	<200	<100	60	<0.5	<0.5	<0.5	<0.5	<5
12/16/01	10.05	6.60	3.45	8021	SGC	1,110	3,000	<50	<50	<0.5	<0.5	<0.5	<0.5	<5

Table 1.	Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA													
Sample ID/ Date	**TOC Elev.**	**DTW**	**GW Elev.**	**BTEX Method**	**Notes**	**TPHd**	**TPHmo**	**TPHk**	**TPHg**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes**	**MTBE**
						← µg/l →								
4/9/02	10.05	6.58	3.47	8021	SGC	870	1,100	---	250	<0.5	<0.5	<0.5	<0.5	<5
6/20/02	**10.05**	**7.52**	**2.53**	**8021**	**SGC**	**<50**	**310 h**	**<50**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2**
MW-15														
1/18/00	12.36	10.56	1.80	8020	SGC	12,000 a	89,000	<50	110	3.8	2.1	1	4.6	<5.0
5/11/00	12.36	10.03	2.33	8020	SGC	120 a	590	<50	90	0.9	0.9	<0.5	3.3	<5.0
8/24/00	12.36	10.22	2.14	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	1,900	8,600	1,000	<50	1.9	<0.5	<0.5	1.5	<5.0
11/28/00	12.36	10.30	2.06	8020	SGC	2,500	36,000	<1300	80	1.7	<0.5	<0.5	1.6	<5.0
11/28/00	12.36	10.30	2.06	---	Filtered+SGC	73	<200	<50	---	---	---	---	---	---
2/26/01	12.36	9.30	3.06	8020	Filtered+SGC	190	<240	<60	55	0.6	<0.5	<0.5	0.5	<5.0
5/17/01	12.36	10.09	2.27	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	210	<230	<57	66	1.5	<0.5	<0.5	2.1	<5.0
8/16/01	12.36	10.20	2.16		Filtered+SGC	<50	B500	<100	<50	<0.5	<0.5	<0.5	2.4	<5
12/16/01	12.36	9.80	2.56	8021	SGC	3,800	15,000	<250	<50	<0.5	<0.5	<0.5	2	<5
4/5/02	12.36	9.58	2.78	8021	SGC	1,000	1,400	---	<50	<0.5	<0.5	<0.5	2.3	<5
6/20/02	**12.36**	**10.24**	**2.12**	**8021**	**SGC**	**670 a,c**	**2,700 h**	**95 c,I**	**<50**	**0.83**	**<0.5**	**<0.5**	**2.20**	**<2**
MW-16														
1/18/00	13.57	10.22	3.43	---	SPH: 0.1 ft	---	---	---	---	---	---	---	---	---
5/11/00	13.57	13.31	0.27	---	SPH: 0.01 ft	---	---	---	---	---	---	---	---	---
8/24/00	13.57	8.91	4.66	---	SPH: NM	---	---	---	---	---	---	---	---	---
11/28/00	13.57	13.05	0.86	---	SPH: 0.42 ft	---	---	---	---	---	---	---	---	---
2/26/01	13.57	13.10	0.79	---	SPH: 0.40 ft	---	---	---	---	---	---	---	---	---
5/17/01	13.57	12.62G	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
8/16/01	13.57	11.94G	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
12/15/01	13.57	NM	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
4/3/02	13.57	12.88	0.69	---		---	---	---	---	---	---	---	---	---
6/21/02	**12.22**	**NM**	---	**---**	SPH: NM	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
MW-17														
1/18/00	9.86	5.35	4.51	8020	SGC	850 a	21,000	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/11/00	9.86	9.85	0.01	8020	SGC	150 a	2,900	<100	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/24/00	9.86	8.59	1.27	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	190	610	71	<50	0.58	<0.5	<0.5	<0.5	<5.0
11/28/00	9.86	9.25	0.61	8020	SGC	<250	2,400	<250	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	9.86	9.25	0.61	---	Filtered+SGC	<50	<200	<50	---	---	---	---	---	---
2/26/01	9.86	9.40	0.46	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	9.86	8.32	1.54	---		---	---	---	---	---	---	---	---	---
5/18/01	---	---	---	8020	Filtered+SGC	<50	<200	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
8/16/01	9.86	10.35	-0.49		Filtered+SGC	<50	B400	<100	<50	<0.5	<0.5	<0.5	<0.5	<5.0
12/16/01	9.86	8.01	1.85	8021	SGC	940	1,000	<50	<50	<0.5	<0.5	<0.5	<0.5	<5.0
4/9/02	9.86	9.76	0.10	8021	SGC	590	880	---	60	<0.5	<0.5	1.6	<0.5	<5.0

Table 1.	Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA													
Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						← µg/l →								
6/21/02	**9.86**	**9.79**	**0.07**	**8021**	**SGC**	**99 a,c**	**650 h**	**<50**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<2**
TBW-1														
2/23/99	---	6.25	---	---	SPH: 0.10 ft	---	---	---	---	---	---	---	---	---
5/27/99	---	5.29	---	---	SPH: 0.01 ft	---	---	---	---	---	---	---	---	---
8/24/99	---	6.99	---	---	SPH: 0.18 ft	---	---	---	---	---	---	---	---	---
11/22/99	---	---	---	---	Inaccessible	---	---	---	---	---	---	---	---	---
1/18/00	---	---	---	---	Inaccessible	---	---	---	---	---	---	---	---	---
5/11/00	---	6.90	---	---	SPH: 0.10 ft	---	---	---	---	---	---	---	---	---
8/24/00	---	7.12	---	---	SPH: NM	---	---	---	---	---	---	---	---	---
11/28/00	---	7.75	---	---	SPH: 0.36 ft	---	---	---	---	---	---	---	---	---
2/27/01	---	9.06	---	---	SPH: 0.51 ft	---	---	---	---	---	---	---	---	---
5/17/01	---	6.98	---	---	SPH:0.28 ft	---	---	---	---	---	---	---	---	---
8/16/01	---	6.62	---	---	SPH:0.66 ft, f	1,100	B700	<100	17,000	2,100	75	730	850	<1
12/15/01	---	6.86	---	---	SPH:0.35 ft	---	---	---	---	---	---	---	---	---
4/3/02	**---**	**6.14**	**---**	**---**	**SPH: None**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
TBW-2														
6/21/02	**---**	**8.28**	**---**	**---**		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
TBW-3														
8/19/98	---	2.67	---	8020	SGC	810,000	---	---	920	3.2	<0.5	<0.5	0.77	<10
8/19/98	---	2.67	---	8260		---	---	---	---	---	---	---	---	<5.0
2/23/99	---	1.25	---	8020		3,800	3,000	<50	110	1.6	<0.5	<0.5	<0.5	<5.0
5/27/99	---	---	---	---	DTW: NM	---	---	---	---	---	---	---	---	---
8/24/99	---	3.25	---	---	SPH globules	---	---	---	---	---	---	---	---	---
11/22/99	---	3.68	---	---		---	---	---	---	---	---	---	---	---
1/18/00	9.92	3.73	6.19	---	SPH globules	---	---	---	---	---	---	---	---	---
5/11/00	9.92	2.07	7.85	---		---	---	---	---	---	---	---	---	---
8/24/00	9.92	2.82	7.10	---	SPH: sheen	44,000	13,000	34,000	570	4.7	<0.5	<0.5	<0.5	<5.0
11/28/00	---	---	---	---		---	---	---	---	---	---	---	---	---
2/27/01	9.92	1.29	8.63	8020	Filtered+SGC	560	<230	<57	120	1.5	<0.5	<0.5	<0.5	<5.0
5/17/01	9.92	2.47	7.45	---		---	---	---	---	---	---	---	---	---
8/16/01	9.92	1.81	8.11		Filtered+SGC	1,500	B400	<100	180	<0.5	<0.5	<0.5	<0.5	<1
12/15/01	---	2.52	---	---	SPH: 0.02 ft	---	---	---	---	---	---	---	---	---
4/3/02	---	1.5	---	---	SPH: None	---	---	---	---	---	---	---	---	---
6/21/02	**9.92**	**2.37**	**7.55**	**---**	**SPH: None**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
TBW-4														
2/27/01	---	1.35	---	8020	Filtered+SGC	410	<230	<57	250	1.9	<0.5	<0.5	<0.5	<5.0
5/17/01	---	2.52	---	---		---	---	---	---	---	---	---	---	---
8/16/01	---	1.88	---	---	Filtered+SGC	2,600	B700	<100	390	<0.5	<0.5	<0.5	<0.5	<5
6/21/02	**---**	**2.32**	**---**	**---**		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**

Table 1.	Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA													
Sample ID/ Date	**TOC Elev.**	**DTW**	**GW Elev.**	**BTEX Method**	**Notes**	**TPHd**	**TPHmo**	**TPHk**	**TPHg**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes**	**MTBE**
						← µg/l →								
TBW-5														
2/23/99	---	9.72	---	---	SPH: 1.45 ft	---	---	---	---	---	---	---	---	---
5/27/99	---	7.03	---	---	SPH: 1.13 ft	---	---	---	---	---	---	---	---	---
8/24/99	---	6.52	---	---	SPH: 1.33 ft	---	---	---	---	---	---	---	---	---
11/22/99	---	8.31	---	---	SPH: 1.29 ft	---	---	---	---	---	---	---	---	---
1/18/00	10.22	6.20	4.74	---	SPH: 0.90 ft	---	---	---	---	---	---	---	---	---
5/11/00	10.22	9.41	1.05	---	SPH: 0.30 ft	---	---	---	---	---	---	---	---	---
8/24/00	10.22	9.62	0.81	---	SPH: 0.26 ft	---	---	---	---	---	---	---	---	---
11/28/00	10.22	10.25	0.34	---	SPH: 0.46 ft	---	---	---	---	---	---	---	---	---
2/27/01	10.22	9.06	1.45	---	SPH: 0.36 ft	---	---	---	---	---	---	---	---	---
5/17/01	10.22	8.75	1.47	---	SPH: 0.67 ft	---	---	---	---	---	---	---	---	---
8/16/01	10.22	8.32	2.51	8,020.00	SPH: 0.76 ft, f	550	B400	<100	30,000	2,900	100	1,500	5,100	<1
12/15/01	10.22	9.09	1.13	---	SPH: 0.36 ft	---	---	---	---	---	---	---	---	---
4/3/02	Well has active remediation unit/recovery													
6/21/02	**10.22**	**7.87**	**2.35**	**---**	**SPH: 0.03 ft**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
TBW-6														
2/23/99	---	2.09	---	8020		160	600	<50	60	<0.5	<0.5	<0.5	<0.5	<5.0
5/27/99	---	3.31	---	---		---	---	---	---	---	---	---	---	---
8/24/99	---	7.29	---	8020	SGC	180	400	<50	130	<0.5	<0.5	<0.5	<0.5	<5.0
11/22/99	---	4.37	---	---		---	---	---	---	---	---	---	---	---
1/18/00	9.49	3.83	5.66	---		---	---	---	---	---	---	---	---	---
1/19/00	---	---	---	8020	SGC	55 c	<200	<50	170	0.6	<0.5	<0.5	<0.5	<5.0
5/11/00	9.49	2.51	6.98	---		---	---	---	---	---	---	---	---	---
8/24/00	9.49	4.34	5.15	---		---	---	---	---	---	---	---	---	---
8/25/00	---	---	---	8020	SGC	320	<250	200	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	9.49	4.74	4.75	---		---	---	---	---	---	---	---	---	---
2/27/01	9.49	2.30	7.19	8020	Filtered+SGC	<57	<230	<57	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	9.49	3.35	6.14	---		---	---	---	---	---	---	---	---	---
8/16/01	9.49	3.85	5.64		Filtered+SGC	<50	<200	<100	<50	<0.5	<0.5	<0.5	<0.5	<5
12/15/01	9.49	3.96	5.53	---		---	---	---	---	---	---	---	---	---
4/3/02	9.49	2.51	6.98	---		---	---	---	---	---	---	---	---	---
6/21/02	**9.49**	**3.58**	**5.91**	**---**		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
Trip Blank														
8/19/98	---	---	---	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/22/99	---	---	---	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
11/28/00	---	---	---	8020		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
2/27/01	---	---	---	8020	Filtered+SGC	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
5/17/01	---	---	---	8020	SGC	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
12/16/01	---	---	---	8021		---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5.0
4/5/02	---	---	---	8021	Trip Blank 1	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5

Table 1. Groundwater Elevation Data and Analytical Results - Hydrocarbons - City of Oakland Municipal Services Center, Oakland, CA

Sample ID/ Date	TOC Elev.	DTW	GW Elev.	BTEX Method	Notes	TPHd	TPHmo	TPHk	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
						← µg/l →								
4/5/02	---	---	---	8021	Trip Blank 2	---	---	---	<50	<0.5	<0.5	<0.5	<0.5	<5
6/21/02	---	---	---	**8021**	**Trip Blank1**	---	---	---	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5**

Notes

All concentrations in micrograms per liter (µg/l)

--- = not measured/analyzed

TOC = Top of casing

DTW = Depth to water

DTP = Depth to product (SPH)

Filtered = 0.45 micron glass membrane filter

GW = Groundwater

Groundwater Elevation corrected for the presence of free product according to the calculation: GW Elevation = TOC - DTW + (0.8 x SPH thickness)

BTEX = Benzene, toluene, ethylbenzene, and xylenes - analyzed by EPA Method 8020 or 8240/8260

TPHd = Total petroleum hydrocarbons quantitated as diesel - analyzed by EPA Method 8015B

TPHmo = Total petroleum hydrocarbons quantitated as motor oil - analyzed by EPA Method 8015B

TPHk = Total petroleum hydrocarbons quantitated as kerosene - analyzed by EPA Method 8015B

TPHg = Total petroleum hydrocarbons quantitated as gasoline - analyzed by EPA Method 8015B

MTBE = methyl tert-butyl ether - analyzed by EPA Method 8020 or 8260. Confirmation 8260 results shown in parentheses

DUP = Duplicate sample

SPH = Separate-phase hydrocarbons; measured thickness

SGC = Silica gel cleanup based on Method 3630B prior to TPHd, TPHk, or TPHmo analysis, following CRWQCB February 16, 1999 memorandum

NM = Not measured

TBW = Tank backfill well

a = The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the diesel range actually resemble heavier fuels at the front end of the motor oil pattern

b = The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the diesel range actually resemble lighter fuels; the response looks like lower carbon chain compounds close to the gasoline range

c = The analytical laboratory reviewed the data and noted that there is no pattern related to diesel range; the peaks are small and random

e = Results are estimated due to concentrations exceeding the calibration ranged

f = Filtration with 0.45 micron glass membrane filter and silica gel treatment

g = Depth to product, depth to water could not be determined

h = The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the motor oil range are actually from the front end of the kerosene oil pattern

i = The analytical laboratory reviewed the data and noted that petroleum hydrocarbons quantified in the motor oil range are actually from the back end of the kerosene oil pattern

B = Results flagged with "**B**" indicate motor oil was detected in the method blank

Table 2. Groundwater Analytical Results - VOCs by EPA Method 8260 - City of Oakland Municipal Services Center, Oakland, California

Sample ID/ Date	Benzene	n-Butyl-benzene	sec-Butyl-benzene	tert-Butyl-benzene	Chloro-ethane	Chloro-form	Methyl Chloride	1,2-DCA	cis-1,2-DCE	1,2-DCP	Ethyl-benzene	Isopropyl-benzene	p-Isopropyl-toluene	MTBE	Napthalene	n-Propyl-benzene	Toluene	1,2,4-TMB	1,3,5-TMB	Xylenes
MW-5																				
2/27/01	180	9	4	ND	3	ND	ND	7	ND	3	260	23	6	1,100	43	68	7	1	11	53
MW-6																				
2/27/01	270	11	3	ND	<1	ND	ND	7	ND	<1	9	6	1	19	62	21	3	1	<1	3
8/20/01	E280	14	<1	<1	<1	3	2	<1	<1	<1	11	4	<1	14	E82	14	4	<1	<1	9
TBW-1																				
8/20/01	E530	30	<1	54	<1	4	10	<1	2	<1	E540	36	54	<1	E300	E120	79	E430	<1	E790
TBW-3																				
8/20/01	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	6	<1	<1	<1	5	<1	<1	<1	<1	3
TBW-5																				
8/20/01	E620	<1	<1	E160	<1	3	<1	<1	<1	<1	E730	40	E160	<1	E450	E140	E110	<1	<1	E3100

Notes
All concentrations in micrograms per liter (µg/l)
E = estimated concentration
µg/l = micrograms per liter
MTBE = methyl tertiary-butyl ether
VOCs = Volatile organic compounds by EPA Method 8260. Sample not subject to SCG or filtration prior to analysis.
1,2-DCA = 1,2-dichloroenthane
1,2-DCP = 1,2-dichloropropane
1,2,4-TMB = 1,2,4-trimethylbenzene
1,3,5-TMB = 1,3,5-trimethylbenzene

[File]

Table 3. Groundwater Analytical Results - SVOCs by EPA Method 8270
City of Oakland Municipal Services Center, Oakland, California

Sample ID/ Date	Naphthalene	Pyrene	Other SVOCs
	<---------- µg/L ---------->		
MW-6			
2/27/01	19	ND	ND
8/20/01	52	<5	39
MW-9			
11/28/00	ND	ND	ND
MW-13			
11/28/00	ND	10	ND
MW-17			
11/28/00	ND	ND	ND
TBW-1			
8/20/01	140	8	387
TBW-3			
8/20/01	<5	<5	5
TBW-5			
8/20/01	220	<5	73

Notes
All concentrations in micrograms per liter (µg/l)
SVOCs = Semi-volatile organic compounds by EPA Method 8270.
Samples not subject to filtration or silica gel cleanup prior to analysis.

Table 4. Groundwater Analytical Results - LUFT Metals - City of Oakland Municipal Services Center, Oakland, California

Sample ID/ Date	Cadmium	Chromium	Lead	Nickel	Zinc	Notes
	<----------	----------	mg/l ----------	----------	---------->	
MW-2						
8/19/98	---	---	<100	---	---	a
MW-6						
2/28/01	<0.001	0.035	0.23	0.046	0.19	non-filtered
8/16/01	<0.001	0.020	0.12	0.032	0.11	
TBW-1						
8/16/01	<0.001	0.017	0.042	0.034	0.10	
TBW-3						
8/16/01	<0.001	0.008	0.01	0.019	<0.02	
TBW-5						
8/16/01	<0.001	<0.005	0.01	0.008	0.03	

Abbreviations and Notes:

LUFT metals by EPA Method 6010. Samples filtered in lab prior to analysis, unless noted otherwise.

mg/l = milligrams per liter

--- = not measured/analyzed

a = Analyzed for organic lead

Table 5. Groundwater Analytical Results - Additional Metals - City of Oakland Municipal Services Center, Oakland, California

Sample ID/ Date	Antimony	Arsenic	Beryllium	Copper	Selenium	Silver	Thallium
	<---------- mg/l ---------->						
MW-6							
8/16/01	<0.01	0.033	<0.001	0.025	<0.01	<0.003	<0.01
TBW-1							
8/16/01	<0.01	0.015	<0.001	0.017	<0.01	<0.003	<0.01
TBW-3							
8/16/01	<0.01	0.009	<0.001	0.008	<0.01	<0.003	<0.01
TBW-5							
8/16/01	<0.01	0.020	<0.001	<0.005	<0.01	<0.003	<0.01

Abbreviations and Notes:

metals by EPA Method 6010. Samples filtered in lab prior to analysis, unless noted otherwise.

mg/l = milligrams per liter

Appendix A

Field Data Sheets

Uribe and Associates

GROUNDWATER SAMPLING LOG

Project/Site: ~~Alameda~~ MSC

Chain of Custody No.: 1666

Date: 6/20/02

Well Diameter (inches): (2) / 3 / 4

Monitoring Well Number: MW-15

Water Column (ft): 10.32

Well Volume: (2-inch well) = water column x 0.163 gal/ft

3-inch well = water column x 0.367 gal/ft

4-inch well = water column x 0.652 gal/ft

Depth to Well Bottom (ft btoc): 20.24

Depth to Water Level (ft btoc): 9.92

Screen Interval (ft btoc): _____

Well Volume Calculation: 1.68

Method of Purging: (Bailer) / Submersible Pump / Micro-Purge

Minimum Purge Volume (Well Volume x 3): 16

Total Volume Purged (gal / liters): 16.50

Purged Dry? Yes (No)

6/20/02 PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Date:	6/20									
Time:	1440	1443	1446							
Vol. Purged (gal/liter):	16	16.25	16.5							
Water Level										
Dissolved Oxygen:	2.47	2.78	2.36							
Temperature (C):	18.49	18.30	18.37							
pH:	7.16	7.11	7.11							
Conductivity (ms/cm):	924	907	905							
Turbidity	1126.7	1125.7	1126.9							
Redox	-113.7	-113	-109.6							

Sampling Method: (Bailer) / Micro Purge

Date/Time of Sample Collection: 6/20/02

Sample ID: MW15-1450

Sample Analytes: TPH-g, BTEX, MTBE, TPH-d, k, mo

QA/QC Sample Collected?

MS/MSD? Yes/(No), MS/MSD Sample Analytes: _____

Duplicate? Yes/(No), Sample ID of Duplicate Sample: _____

Water Description (color, clarity, odor): DARK GREY, HIGH TURBIDITY, EMULSION.

Additional Comments: _____

Samples collected by: MC

Uribe and Associates

GROUNDWATER SAMPLING LOG

Project/Site: MSC

Chain of Custody No.: 1666

Date: 6/20/02

Well Diameter (inches): (2) / 3 / 4

Monitoring Well Number: MW-19

Water Column (ft): 7.35'

Well Volume: (2-inch well = water column x 0.163 gal/ft)
3-inch well = water column x 0.367 gal/ft
4-inch well = water column x 0.652 gal/ft

Depth to Well Bottom (ft btoc): 14.84

Depth to Water Level (ft btoc): 7.49

Screen Interval (ft btoc): _____

Well Volume Calculation: 1.19

Method of Purging: (Bailer) / Submersible Pump / Micro-Purge

Minimum Purge Volume (Well Volume x 3): _____

Total Volume Purged (gal / liters): 5.5 GALLONS

Purged Dry? (Yes) / No

6/20/02 PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Date: ~~5/20/02~~	6/21/02									
Time:	1459									
Vol. Purged (gal/liter):										
Water Level										
Dissolved Oxygen:	1.51									
Temperature (C):	18.32									
pH:	7.42									
Conductivity (ms/cm):	0587									
Turbidity	1129.8									
Redox	-48.6									

Sampling Method: (Bailer) / Micro Purge

Date/Time of Sample Collection: 6/20/02 6/21/02 - 1500

Sample ID: MW-14-1500

Sample Analytes: TPH-g, k, mo, d, BTEX, MTBE

QA/QC Sample Collected?

MS/MSD? Yes (No) **MS/MSD Sample Analytes:** _____

Duplicate? Yes (No) **Sample ID of Duplicate Sample:** _____

Water Description (color, clarity, odor): DARK GREY, NO ODOR, TURBID, SLIGHT SHEEN

Additional Comments: _____

Samples collected by: KTZ

Uribe and Associates

GROUNDWATER SAMPLING LOG

Project/Site: MSC

Date: 6/20/02

Monitoring Well Number: MW13

Chain of Custody No.: 1666

Well Diameter (inches): (2) 3 / 4

Water Column (ft): 10.26

Well Volume: (2-inch well) = water column x 0.163 gal/ft
3-inch well = water column x 0.367 gal/ft
4-inch well = water column x 0.652 gal/ft

Well Volume Calculation: 1.67 →

Depth to Well Bottom (ft btoc): 20.30

Depth to Water Level (ft btoc): 10.04

Screen Interval (ft btoc): _____

Method of Purging: (Bailer) / Submersible Pump / Micro-Purge

Minimum Purge Volume (Well Volume x 3): 16 gallons 67 bailers

Total Volume Purged (gal / liters): _____

Purged Dry? Yes (No)

6/20/02 PHYSIO-CHEMICAL PARAMETERS DURING PURGING

Date:	6/20	6/20	6/20							
Time:	1120	1122	1124							
Vol. Purged (gal/liter):	16	16.25	16.50							
Water Level										
Dissolved Oxygen:	2.62	2.65	2.67							
Temperature (C):	17.76	17.76	17.81							
pH:	6.90	6.94	6.93							
Conductivity (ms/cm):	6925	6970	6928							
Turbidity	1127.8	1123	1123.9							
Redox	-59.1	-55.6	-58.7							

Sampling Method: (Bailer) / Micro Purge

Date/Time of Sample Collection: 6/20/02 1120

Sample ID: MW13 - 1120

Sample Analytes: TPHg / MTBE / BTEX / TPHd / K / mo / silica gel extraction

QA/QC Sample Collected?

MS/MSD? Yes (No) **MS/MSD Sample Analytes:** _____

Duplicate? Yes (No) **Sample ID of Duplicate Sample:** _____

Water Description (color, clarity, odor): dark grey, turbid, no odor

Additional Comments: _____

Samples collected by: MTC

Uribe and Associates

GROUNDWATER SAMPLING LOG

Project/Site: MSC

Chain of Custody No.: 1666

Date: 6/21/02

Well Diameter (inches): (2) / 3 / 4

Monitoring Well Number: MW-12

Water Column (ft): 7.59

Well Volume: 2-inch well = water column x 0.163 gal/ft
3-inch well = water column x 0.367 gal/ft
4-inch well = water column x 0.652 gal/ft

Depth to Well Bottom (ft btoc): 14.6

Depth to Water Level (ft btoc): 7.01

Screen Interval (ft btoc): _____

Well Volume Calculation: 1.2

Method of Purging: Bailer / Submersible Pump / Micro-Purge

Minimum Purge Volume (Well Volume x 3): ~~12.0~~ 12.2

Total Volume Purged (gal / liters): _____

Purged Dry? Yes / (No)

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Date: 5/ /01	6/21/02									
Time:	2035									
Vol. Purged (gal/liter):	12.25									
Water Level										
Dissolved Oxygen:	1.62									
Temperature (C):	16.97									
pH:	7.35									
Conductivity (ms/cm):	5132									
Turbidity	1117.6									
Redox	-121									

Sampling Method: (Bailer) / Micro Purge

Date/Time of Sample Collection: 6/21/02 2035

Sample ID: MW-12-2035

Sample Analytes: TPH-g, d, k, Mo / BTEX / MTBE

QA/QC Sample Collected?

MS/MSD? Yes/(No) **MS/MSD Sample Analytes:** _____

Duplicate? Yes/(No) **Sample ID of Duplicate Sample:** _____

Water Description (color, clarity, odor): DARK GREY, TURBID, no odor,

Additional Comments: REMOVED SAWDUST FROM UPPER PORTION OF WATER

Samples collected by: MG

2035

GROUNDWATER SAMPLING LOG

Project/Site: MSC

Chain of Custody No.: 1666

Date: 6/21/02

Well Diameter (inches): (2) / 3 / 4

Monitoring Well Number: MW-11

Water Column (ft): 13.33

Well Volume: (2-inch well) = water column x 0.163 gal/ft
3-inch well = water column x 0.367 gal/ft
4-inch well = water column x 0.652 gal/ft

Depth to Well Bottom (ft btoc): 19.5

Depth to Water Level (ft btoc): 6.17

Screen Interval (ft btoc): _____

Well Volume Calculation: 2.17

Method of Purging: (Bailer) / Submersible Pump / Micro-Purge

Minimum Purge Volume (Well Volume x 3): 6.51

Total Volume Purged (gal / liters): 7.0

Purged Dry? Yes (No)

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Date: 5/ /01	6/21/02									
Time:	1450	1452	1454							
Vol. Purged (gal/liter):	6.5	6.75	7.0							
Water Level										
Dissolved Oxygen:	5.52	5.51	5.53							
Temperature (C):	19.05	19.02	19.02							
pH:	6.62	6.66	6.66							
Conductivity (ms/cm):	7495	7497	7461							
Turbidity	1127.1	1125.7	1129.3							
Redox	-50.0	-57.1	-60.4							

Sampling Method: (Bailer) / Micro Purge

Date/Time of Sample Collection: 6/21/02 - 1700

Sample ID: MW11-1700

Sample Analytes: TPH-g, k, d, mo / BTEX / MTBE

QA/QC Sample Collected?

MS/MSD? Yes/(No) MS/MSD Sample Analytes: _____

Duplicate? Yes/(No) Sample ID of Duplicate Sample: _____

Water Description (color, clarity, odor): GREY, HIGH TURBIDITY, NO ODOR

Additional Comments: _____

Samples collected by: MR

GROUNDWATER SAMPLING LOG

Project/Site: MSC

Chain of Custody No.: 1666

Date: 6/21/02

Well Diameter (inches): (2) / 3 / 4

Monitoring Well Number: MW-17

Water Column (ft): 0.46

Well Volume: 2-inch well = water column x 0.163 gal/ft
3-inch well = water column x 0.367 gal/ft
4-inch well = water column x 0.652 gal/ft

Depth to Well Bottom (ft btoc): 18.25

Depth to Water Level (ft btoc): 9.79

Screen Interval (ft btoc): _____

Well Volume Calculation: 1.37

Method of Purging: (Bailer) / Submersible Pump / Micro-Purge

Minimum Purge Volume (Well Volume x 3): 13.7

Total Volume Purged (gal / liters): 14.50

Purged Dry? Yes / (No)

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Date: 5/ /01	6/21/02	6/21/02								
Time:	1550	1552	1555							
Vol. Purged (gal/liter):	14GAL	14.25	14.50							
Water Level										
Dissolved Oxygen:	5.92	5.91	5.89							
Temperature (C):	17.32	17.73	17.72							
pH:	7.73	7.58	7.51							
Conductivity (ms/cm):	23915	24031	23936							
Turbidity	1122.3	1120.6	1122.4							
Redox	-108.2	-109	-110							

Sampling Method: (Bailer) Micro Purge

Date/Time of Sample Collection: MW-17-1600 6/21/02 1600

Sample ID: MW-17-1600

Sample Analytes: TPH-d,k,g,mo | BTEX | MTBE

QA/QC Sample Collected?

MS/MSD? Yes/(No) MS/MSD Sample Analytes: _____

Duplicate? Yes/(No) Sample ID of Duplicate Sample: _____

Water Description (color, clarity, odor): STRONG SULPHUR ODOR, DARK GREY, TURBID

Additional Comments: _____

Samples collected by: MR

Appendix B

Laboratory Analytical Reports

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

ANALYTICAL REPORT

Prepared for:

Uribe & Associates
447 29th Street
Suite 200
Oakland, CA 94609

Date: 15-JUL-02
Lab Job Number: 159358
Project ID: 291-08
Location: MSC GW Sampling

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: Derek Morrison for KS
Operations Manager

U&A URIBE & ASSOCIATES
ENGINEERING AND ENVIRONMENTAL SERVICES

159358

1666

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project No.:	Project Name:
B 291-08	MSC GW SAMPLING

REPORT RESULTS TO

Name:	MARK CRUICKSHANK
Company:	URIBE & ASSOCIATES
Mailing Address:	~~2600 LAKESHORE AVENUE, SUITE 200~~ 447 29TH
City, State, Zip:	OAKLAND, ~~CA 94610-3014~~ 94609
Telephone No.:	510-832-2233 Telefax No.: 510-832-2237

SEND INVOICE TO

Purchase Order Number:	
Name:	
Company:	Dept: SAME
Mailing Address:	
City, State, Zip:	

Turn-Around Time: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☐ 5 day ☒ ~~10~~ day (Standard)

Rush Charges Authorized? ☐ Yes ☐ No

Phone Results ☐ Fax Results ☒

Special Instructions:
SILICA GEL EXTRACTION FOR TPH-d, K & MO.

No.	Date	Time	Matrix/Medium	Sample Identification Number	# OF CONTAINERS	TPH-gasoline (8015/8020)	BTEX (8015/8020)	MTBE (8015/8020)	TPH-diesel (8015)	TPH-Kerosene	TPH-Motor oil	Remarks
1	6/20/02	1000	WATER	MW-10-1000	3	X	X	X	X	X	X	
2		1120		MW-13-1120	3	X	X	X	X	X	X	
3		1215		MW-9-1215	3	X	X	X	X	X	X	
4		1450		MW-15-1450	3	X	X	X	X	X	X	
5		1500		MW-14-1500	3	X	X	X	X	X	X	
6	6/21/02	1600		MW-17-1600	3	X	X	X	X	X	X	
7		1700		MW-11-1700	3	X	X	X	X	X	X	
8		1920		MW-5-1920	3	X	X	X	X	X	X	
9		1955		MW-7-1955	3	X	X	X	X	X	X	
10		2035		MW-12-2035	3	X	X	X	X	X	X	
11				Trip Blank JAW 6-2502	3	X	X	X				

Received ☒ On Ice ☒ Cold ☐ Ambient ☒ Intact

Preservation Correct? ☒ Yes ☐ No ☐ N/A

Collected by: MAC (Print) MARK CRUICKSHANK Collector's Signature:

Relinquished by: MAC Date: 6/24/02 Time: 12:45

Relinquished by: Date: 6/24/02 Time: 11:50

Received by: Date: 6/24/02 Time: 1150

Received by: Date: 6-24-02 Time: 1150

Method of Shipment:

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

TEH samples in poly bottles. JAW 10-25-02

Original (White) Laboratory Copy (Yellow) Field Copy (Pink)

P:/88 310/COC form 12/30/98 QK DYU

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Field ID:	MW-10-1000	Batch#:	73306
Type:	SAMPLE	Sampled:	06/20/02
Lab ID:	159358-001	Analyzed:	06/27/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	120	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	34	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	90	68-145	8015B(M)
Bromofluorobenzene (FID)	80	66-143	8015B(M)
Trifluorotoluene (PID)	89	53-143	EPA 8021B
Bromofluorobenzene (PID)	76	52-142	EPA 8021B

Field ID:	MW-13-1120	Batch#:	73306
Type:	SAMPLE	Sampled:	06/20/02
Lab ID:	159358-002	Analyzed:	06/26/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	90	68-145	8015B(M)
Bromofluorobenzene (FID)	79	66-143	8015B(M)
Trifluorotoluene (PID)	87	53-143	EPA 8021B
Bromofluorobenzene (PID)	77	52-142	EPA 8021B

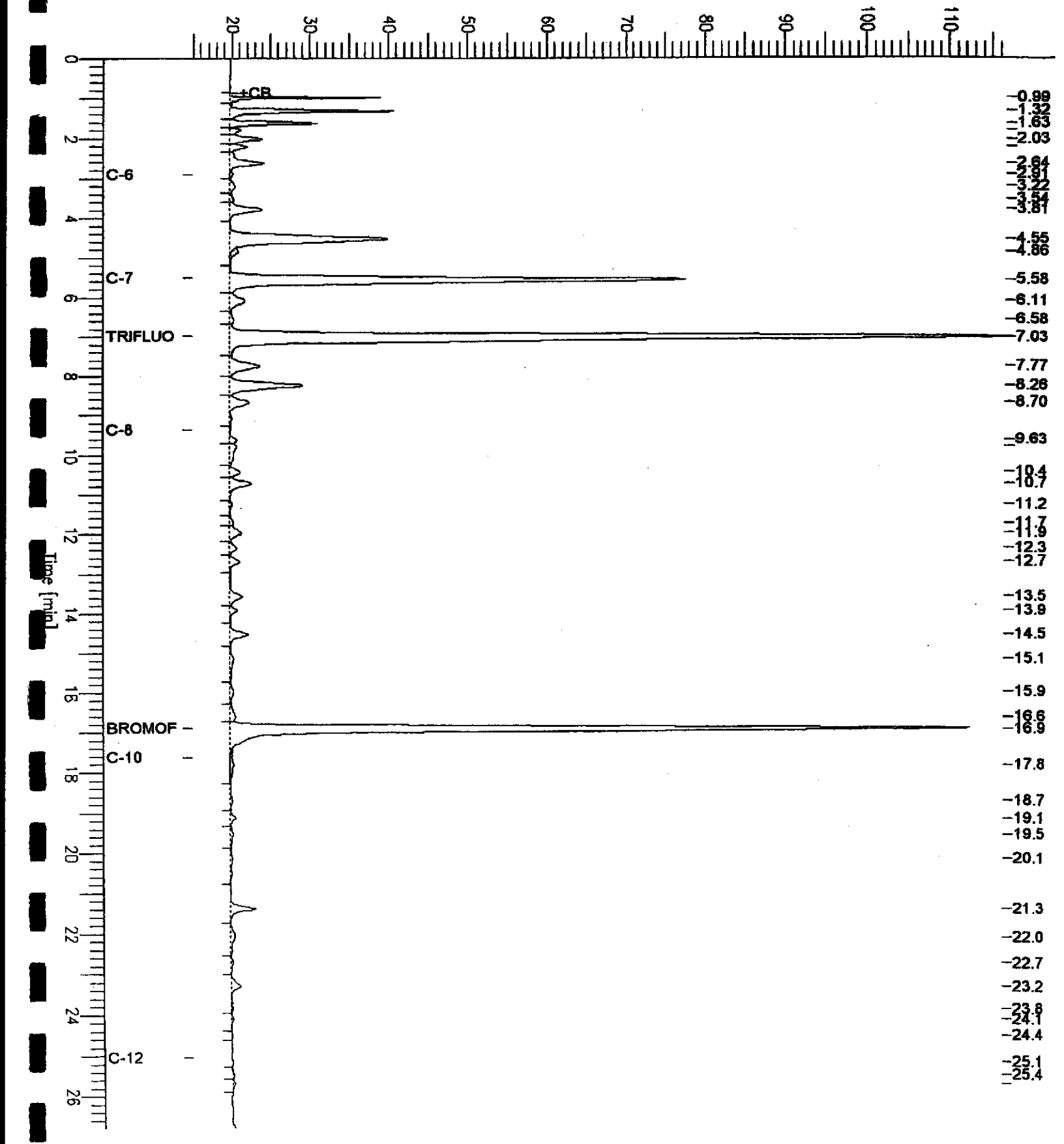
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

GC19 TVH 'A' Data File (FID)

Sample Name : 159358-001,73306,+mtbe
FileName : G:\GC19\DATA\177X032.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 15 mV

Sample #: a1 Page 1 of 1
Date : 6/27/02 11:34 AM
Time of Injection: 6/27/02 11:07 AM
Low Point : 14.83 mV High Point : 116.75 mV
Plot Scale: 101.9 mV

MW-10-1000



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Field ID:	MW-9-1215	Batch#:	73358
Type:	SAMPLE	Sampled:	06/20/02
Lab ID:	159358-003	Analyzed:	06/28/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	430	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	180	0.50	EPA 8021B
Toluene	5.7	0.50	EPA 8021B
Ethylbenzene	2.4	0.50	EPA 8021B
m,p-Xylenes	3.2	0.50	EPA 8021B
o-Xylene	0.95	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	93	68-145	8015B(M)
Bromofluorobenzene (FID)	82	66-143	8015B(M)
Trifluorotoluene (PID)	92	53-143	EPA 8021B
Bromofluorobenzene (PID)	79	52-142	EPA 8021B

Field ID:	MW-15-1450	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	06/20/02
Lab ID:	159358-004		

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	ND	50	73306	06/26/02	8015B(M)
MTBE	ND	2.0	73385	06/28/02	EPA 8021B
Benzene	0.83	0.50	73385	06/28/02	EPA 8021B
Toluene	ND	0.50	73385	06/28/02	EPA 8021B
Ethylbenzene	ND	0.50	73385	06/28/02	EPA 8021B
m,p-Xylenes	1.2	0.50	73385	06/28/02	EPA 8021B
o-Xylene	1.0	0.50	73385	06/28/02	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	89	68-145	73306	06/26/02	8015B(M)
Bromofluorobenzene (FID)	78	66-143	73306	06/26/02	8015B(M)
Trifluorotoluene (PID)	88	53-143	73385	06/28/02	EPA 8021B
Bromofluorobenzene (PID)	77	52-142	73385	06/28/02	EPA 8021B

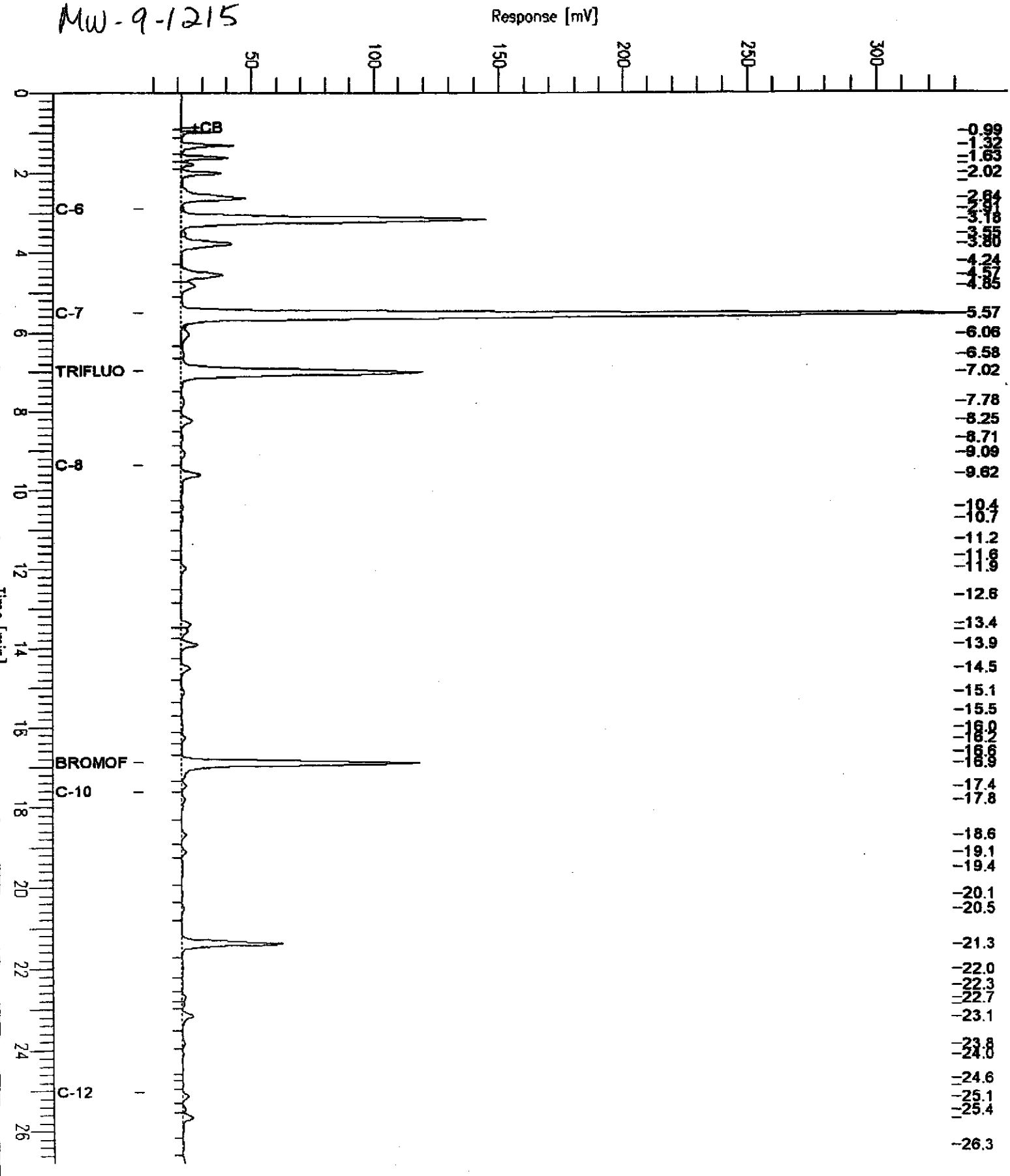
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

GC19 TVH 'A' Data File (FID)

Sample Name : 159358-003,73358
FileName : G:\GC19\DATA\178X022.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 6 mV

Sample #: b1 Page 1 of 1
Date : 6/28/02 06:10 AM
Time of Injection: 6/28/02 05:43 AM
Low Point : 5.81 mV High Point : 331.08 mV
Plot Scale: 325.3 mV

MW-9-1215



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Field ID:	MW-14-1500	Batch#:	73306
Type:	SAMPLE	Sampled:	06/20/02
Lab ID:	159358-005	Analyzed:	06/27/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	89	68-145	8015B(M)
Bromofluorobenzene (FID)	79	66-143	8015B(M)
Trifluorotoluene (PID)	88	53-143	EPA 8021B
Bromofluorobenzene (PID)	75	52-142	EPA 8021B

Field ID:	MW-17-1600	Batch#:	73306
Type:	SAMPLE	Sampled:	06/21/02
Lab ID:	159358-006	Analyzed:	06/27/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	90	68-145	8015B(M)
Bromofluorobenzene (FID)	81	66-143	8015B(M)
Trifluorotoluene (PID)	88	53-143	EPA 8021B
Bromofluorobenzene (PID)	77	52-142	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Field ID:	MW-11-1700	Batch#:	73306
Type:	SAMPLE	Sampled:	06/21/02
Lab ID:	159358-007	Analyzed:	06/26/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	280	50	8015B(M)
MTBE	3.6	2.0	EPA 8021B
Benzene	16	0.50	EPA 8021B
Toluene	1.8	0.50	EPA 8021B
Ethylbenzene	8.7	0.50	EPA 8021B
m,p-Xylenes	7.5	0.50	EPA 8021B
o-Xylene	2.1	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	100	68-145	8015B(M)
Bromofluorobenzene (FID)	81	66-143	8015B(M)
Trifluorotoluene (PID)	92	53-143	EPA 8021B
Bromofluorobenzene (PID)	84	52-142	EPA 8021B

Field ID:	MW-5-1920	Batch#:	73306
Type:	SAMPLE	Sampled:	06/21/02
Lab ID:	159358-008	Analyzed:	06/27/02
Diln Fac:	10.00		

Analyte	Result	RL	Analysis
Gasoline C7-C12	4,600	500	8015B(M)
MTBE	440	20	EPA 8021B
Benzene	130	5.0	EPA 8021B
Toluene	33 C	5.0	EPA 8021B
Ethylbenzene	380	5.0	EPA 8021B
m,p-Xylenes	40	5.0	EPA 8021B
o-Xylene	16	5.0	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	135	68-145	8015B(M)
Bromofluorobenzene (FID)	82	66-143	8015B(M)
Trifluorotoluene (PID)	108	53-143	EPA 8021B
Bromofluorobenzene (PID)	78	52-142	EPA 8021B

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

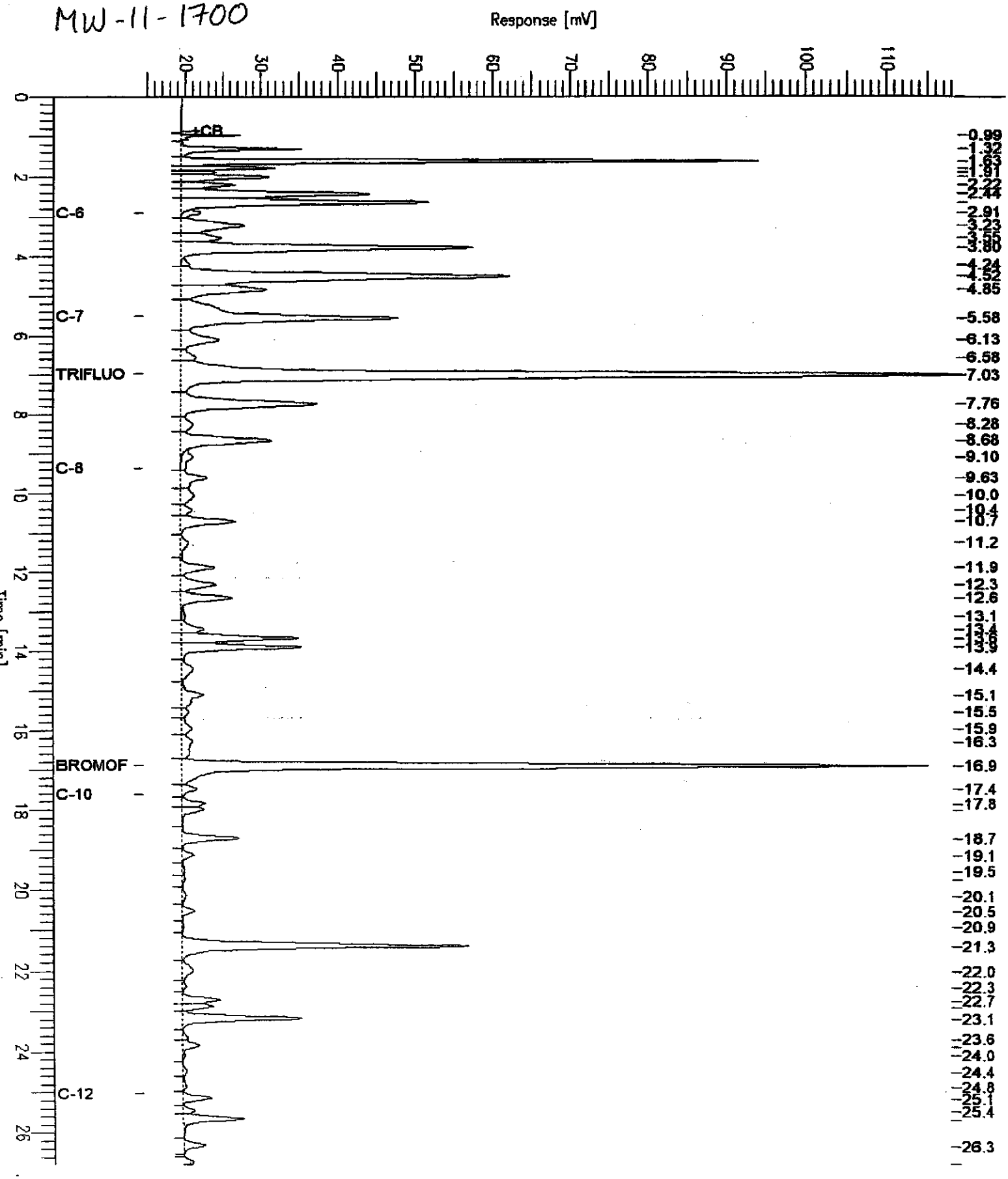
1.0

GC19 TVH 'A' Data File (FID)

Sample Name : 159358-007,73306,+mtbe
FileName : G:\GC19\DATA\177X007.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 14 mV

Sample #: a5 Page 1 of 1
Date : 6/26/02 06:29 PM
Time of Injection: 6/26/02 06:02 PM
Low Point : 14.47 mV High Point : 118.79 mV
Plot Scale: 104.3 mV

MW-11-1700

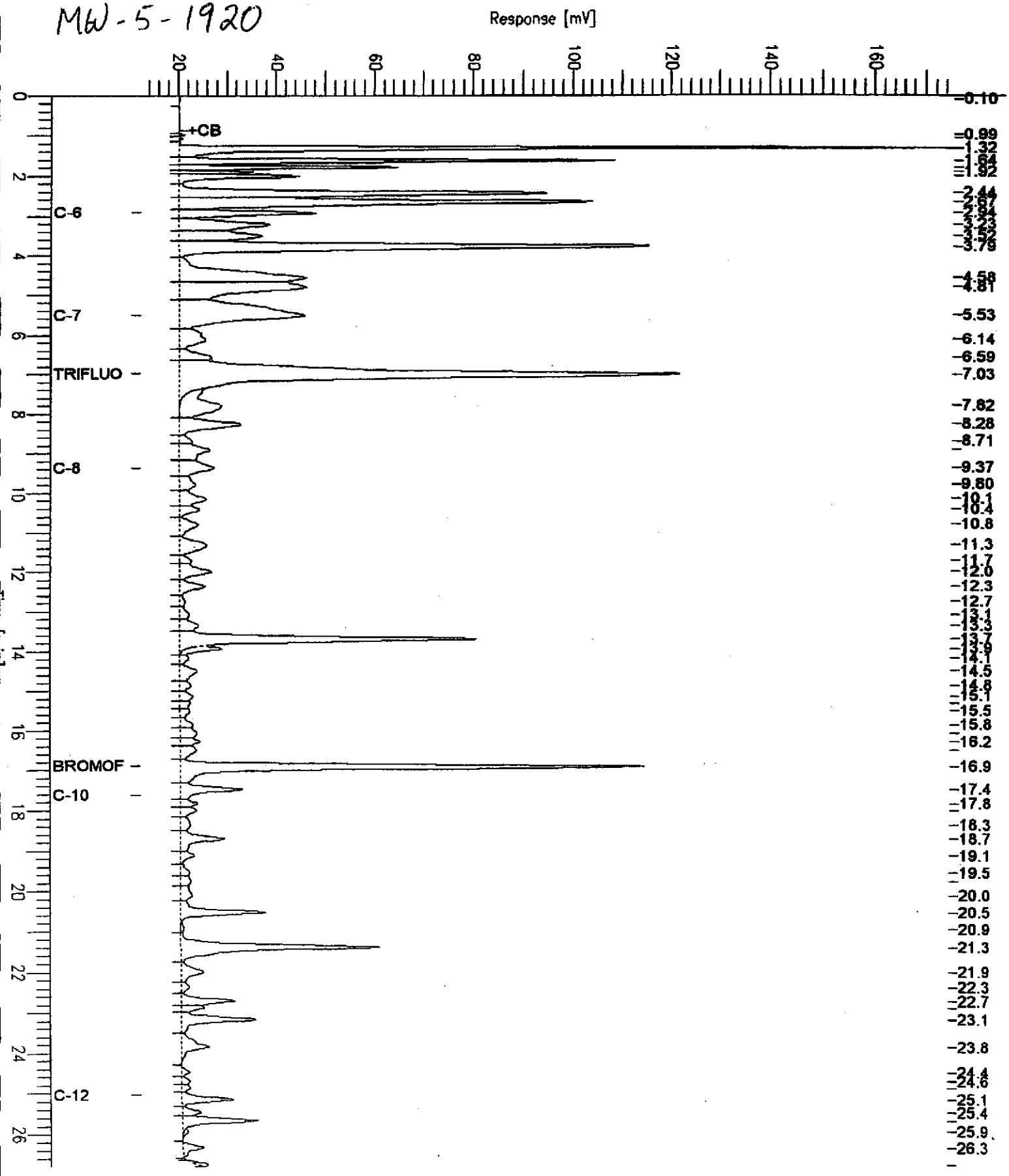


GC19 TVH 'X' Data File (FID)

Sample Name : 159358-008,73306,+mtbe
FileName : G:\GC19\DATA\177X022.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 12 mV

Sample #: a1 Page 1 of 1
Date : 6/27/02 04:44 AM
Time of Injection: 6/27/02 04:17 AM
Low Point : 12.39 mV High Point : 175.56 mV
Plot Scale: 163.2 mV

MW-5-1920



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Field ID:	MW-7-1955	Batch#:	73306
Type:	SAMPLE	Sampled:	06/21/02
Lab ID:	159358-009	Analyzed:	06/26/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	3.3	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	89	68-145	8015B(M)
Bromofluorobenzene (FID)	79	66-143	8015B(M)
Trifluorotoluene (PID)	87	53-143	EPA 8021B
Bromofluorobenzene (PID)	77	52-142	EPA 8021B

Field ID:	MW-12-2035	Batch#:	73306
Type:	SAMPLE	Sampled:	06/21/02
Lab ID:	159358-010	Analyzed:	06/27/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	180	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	0.63	0.50	EPA 8021B
m,p-Xylenes	0.88	0.50	EPA 8021B
o-Xylene	0.74	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	94	68-145	8015B(M)
Bromofluorobenzene (FID)	80	66-143	8015B(M)
Trifluorotoluene (PID)	90	53-143	EPA 8021B
Bromofluorobenzene (PID)	77	52-142	EPA 8021B

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

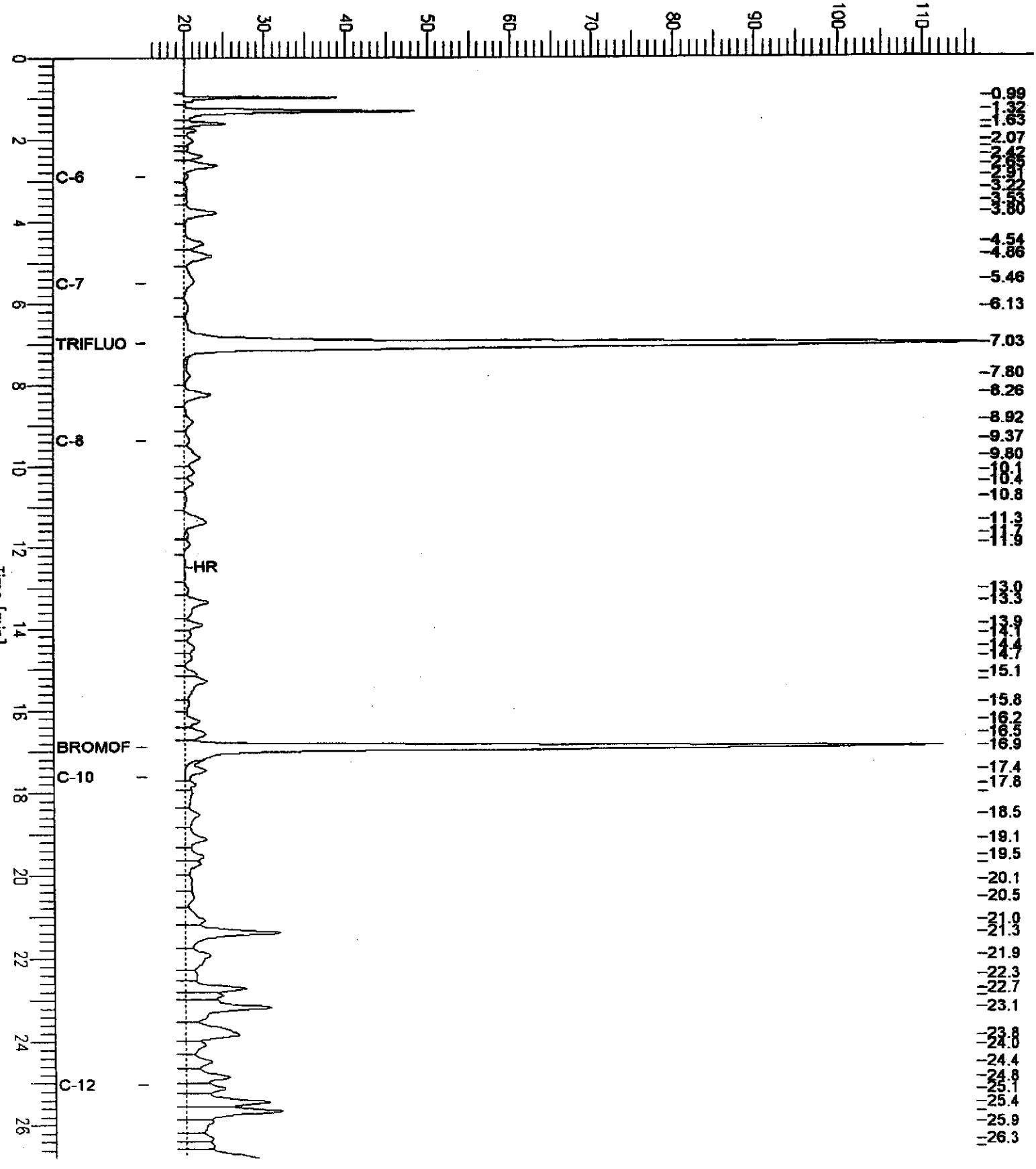
1.0

GC19 TVH 'A' Data File (FID)

Sample Name : 159358-010,73306,+mtbe
FileName : G:\GC19\DATA\177X031.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: 15 mV

Sample #: a1 Page 1 of 1
Date : 6/27/02 11:13 AM
Time of Injection: 6/27/02 10:26 AM
Low Point : 15.11 mV High Point : 116.92 mV
Plot Scale: 101.8 mV

MW-12 - 2035



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Field ID:	TRIP BLANK	Batch#:	73306
Type:	SAMPLE	Sampled:	06/21/02
Lab ID:	159358-011	Analyzed:	06/26/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	90	68-145	8015B(M)
Bromofluorobenzene (FID)	79	66-143	8015B(M)
Trifluorotoluene (PID)	87	53-143	EPA 8021B
Bromofluorobenzene (PID)	76	52-142	EPA 8021B

Type:	BLANK	Batch#:	73306
Lab ID:	QC182331	Analyzed:	06/26/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	90	68-145	8015B(M)
Bromofluorobenzene (FID)	78	66-143	8015B(M)
Trifluorotoluene (PID)	87	53-143	EPA 8021B
Bromofluorobenzene (PID)	76	52-142	EPA 8021B

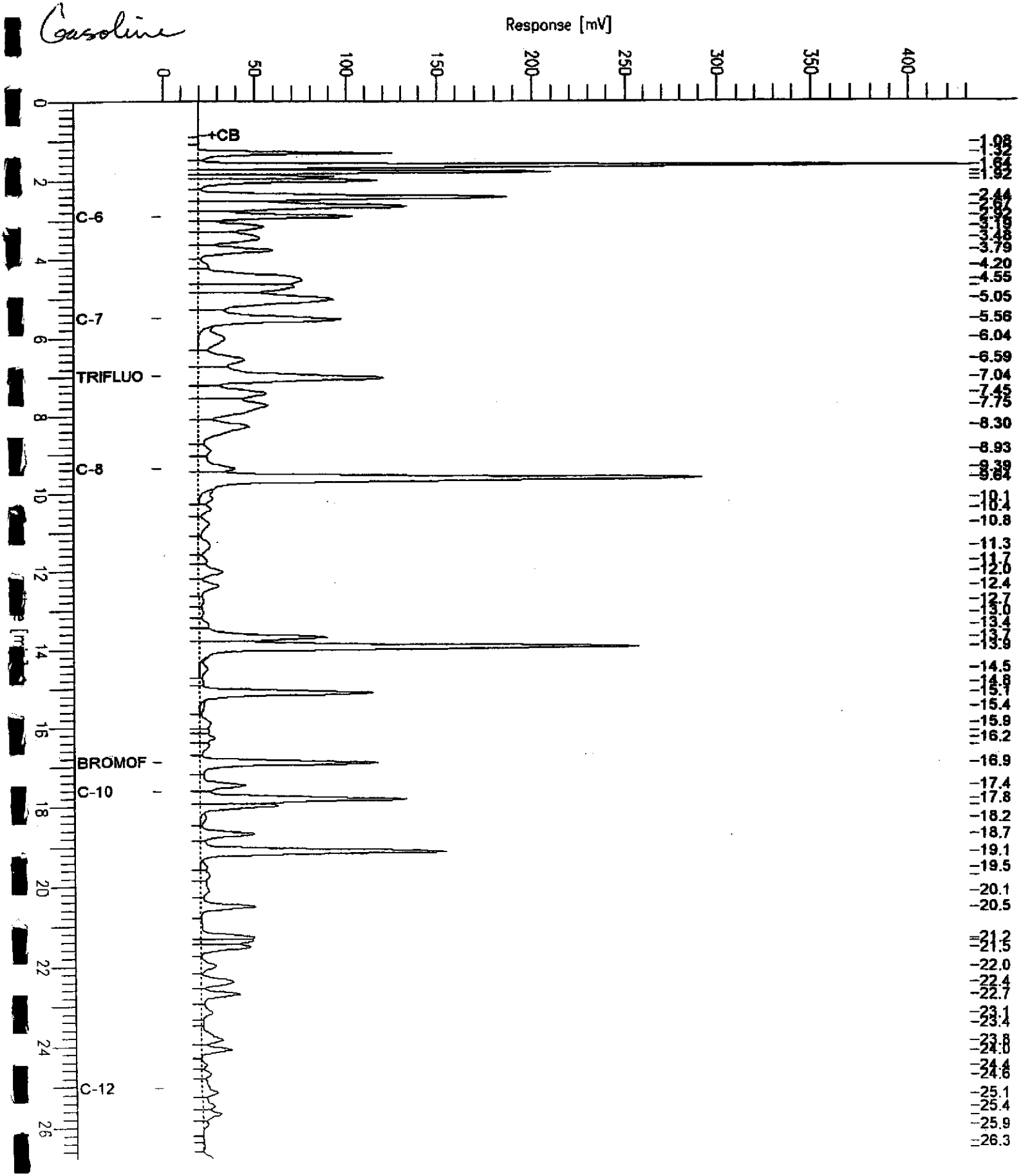
C= Presence confirmed, but confirmation concentration differed by more than a factor of two
ND= Not Detected
RL= Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : ccv/lcs,qc182332,73306,02ws0906,5/5000
FileName : G:\GC19\DATA\177X003.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: 1.0 Plot Offset: -1 mV

Sample #: Page 1 of 1
Date : 6/26/02 03:45 PM
Time of Injection: 6/26/02 03:18 PM
Low Point : -1.16 mV High Point : 431.51 mV
Plot Scale: 432.7 mV

Gasoline



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08		
Matrix:	Water	Received:	06/24/02
Units:	ug/L		

Type:	BLANK	Batch#:	73358
Lab ID:	QC182539	Analyzed:	06/27/02
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B(M)
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	92	68-145	8015B(M)
Bromofluorobenzene (FID)	83	66-143	8015B(M)
Trifluorotoluene (PID)	87	53-143	EPA 8021B
Bromofluorobenzene (PID)	79	52-142	EPA 8021B

Type:	BLANK	Batch#:	73385
Lab ID:	QC182648	Analyzed:	06/28/02
Diln Fac:	1.000	Analysis:	EPA 8021B

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)	88	53-143
Bromofluorobenzene (PID)	73	52-142

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC182332	Batch#:	73306
Matrix:	Water	Analyzed:	06/26/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,715	86	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	68-145
Bromofluorobenzene (FID)	81	66-143

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC182540	Batch#:	73358
Matrix:	Water	Analyzed:	06/27/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,999	100	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	115	68-145
Bromofluorobenzene (FID)	80	66-143

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC182335	Batch#:	73306
Matrix:	Water	Analyzed:	06/26/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.62	103	59-135
Benzene	20.00	22.52	113	65-122
Toluene	20.00	21.32	107	67-121
Ethylbenzene	20.00	22.02	110	70-121
m,p-Xylenes	40.00	39.15	98	72-125
o-Xylene	20.00	21.99	110	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	87	53-143
Bromofluorobenzene (PID)	77	52-142

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	EPA 8021B
Type:	BSD	Diln Fac:	1.000
Lab ID:	QC182548	Batch#:	73358
Matrix:	Water	Analyzed:	06/27/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	19.98	100	59-135	1	20
Benzene	20.00	22.15	111	65-122	0	20
Toluene	20.00	21.30	107	67-121	1	20
Ethylbenzene	20.00	22.21	111	70-121	0	20
m,p-Xylenes	40.00	40.49	101	72-125	0	20
o-Xylene	20.00	22.87	114	73-122	1	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	88	53-143
Bromofluorobenzene (PID)	78	52-142

RPD= Relative Percent Difference

15.0

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	73385
Units:	ug/L	Analyzed:	06/28/02
Diln Fac:	1.000		

Type: BS Lab ID: QC182649

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.12	101	59-135
Benzene	20.00	22.71	114	65-122
Toluene	20.00	21.83	109	67-121
Ethylbenzene	20.00	22.14	111	70-121
m,p-Xylenes	40.00	40.44	101	72-125
o-Xylene	20.00	22.38	112	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	89	53-143
Bromofluorobenzene (PID)	77	52-142

Type: BSD Lab ID: QC182650

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	19.73	99	59-135	2	20
Benzene	20.00	22.15	111	65-122	3	20
Toluene	20.00	21.03	105	67-121	4	20
Ethylbenzene	20.00	21.28	106	70-121	4	20
m,p-Xylenes	40.00	39.26	98	72-125	3	20
o-Xylene	20.00	21.34	107	73-122	5	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	87	53-143
Bromofluorobenzene (PID)	76	52-142

RPD= Relative Percent Difference

16.0

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	73306
MSS Lab ID:	159369-001	Sampled:	06/25/02
Matrix:	Water	Received:	06/25/02
Units:	ug/L	Analyzed:	06/27/02
Diln Fac:	1.000		

Type: MS Lab ID: QC182333

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<20.00	2,000	1,828	91	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	68-145
Bromofluorobenzene (FID)	83	66-143

Type: MSD Lab ID: QC182334

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,812	91	67-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	68-145
Bromofluorobenzene (FID)	82	66-143

RPD= Relative Percent Difference

3.0

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 5030B
Project#:	291-08	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	73358
MSS Lab ID:	159389-001	Sampled:	06/26/02
Matrix:	Water	Received:	06/26/02
Units:	ug/L	Analyzed:	06/27/02
Diln Fac:	1.000		

Type: MS Lab ID: QC182542

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<20.00	2,000	1,817	91	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	68-145
Bromofluorobenzene (FID)	85	66-143

Type: MSD Lab ID: QC182543

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,818	91	67-120	0	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	68-145
Bromofluorobenzene (FID)	85	66-143

RPD= Relative Percent Difference

7.0

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 3520C
Project#:	291-08	Analysis:	EPA 8015B(M)
Matrix:	Water	Batch#:	73322
Units:	ug/L	Received:	06/24/02
Dil'n Fac:	1.000	Prepared:	06/26/02

Field ID:	MW-10-1000	Sampled:	06/20/02
Type:	SAMPLE	Analyzed:	06/28/02
Lab ID:	159358-001	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	1,100 H Y	50
Motor Oil C24-C36	6,200	300

Surrogate	%REC	Limits
Hexacosane	87	39-137

Field ID:	MW-13-1120	Sampled:	06/20/02
Type:	SAMPLE	Analyzed:	06/28/02
Lab ID:	159358-002	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	270 H Y	50
Motor Oil C24-C36	1,500 H	300

Surrogate	%REC	Limits
Hexacosane	97	39-137

Field ID:	MW-9-1215	Sampled:	06/20/02
Type:	SAMPLE	Analyzed:	06/27/02
Lab ID:	159358-003	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	88	39-137

Field ID:	MW-15-1450	Sampled:	06/20/02
Type:	SAMPLE	Analyzed:	06/28/02
Lab ID:	159358-004	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	95 H Y	50
Diesel C10-C24	670 H Y	50
Motor Oil C24-C36	2,700 H	300

Surrogate	%REC	Limits
Hexacosane	94	39-137

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

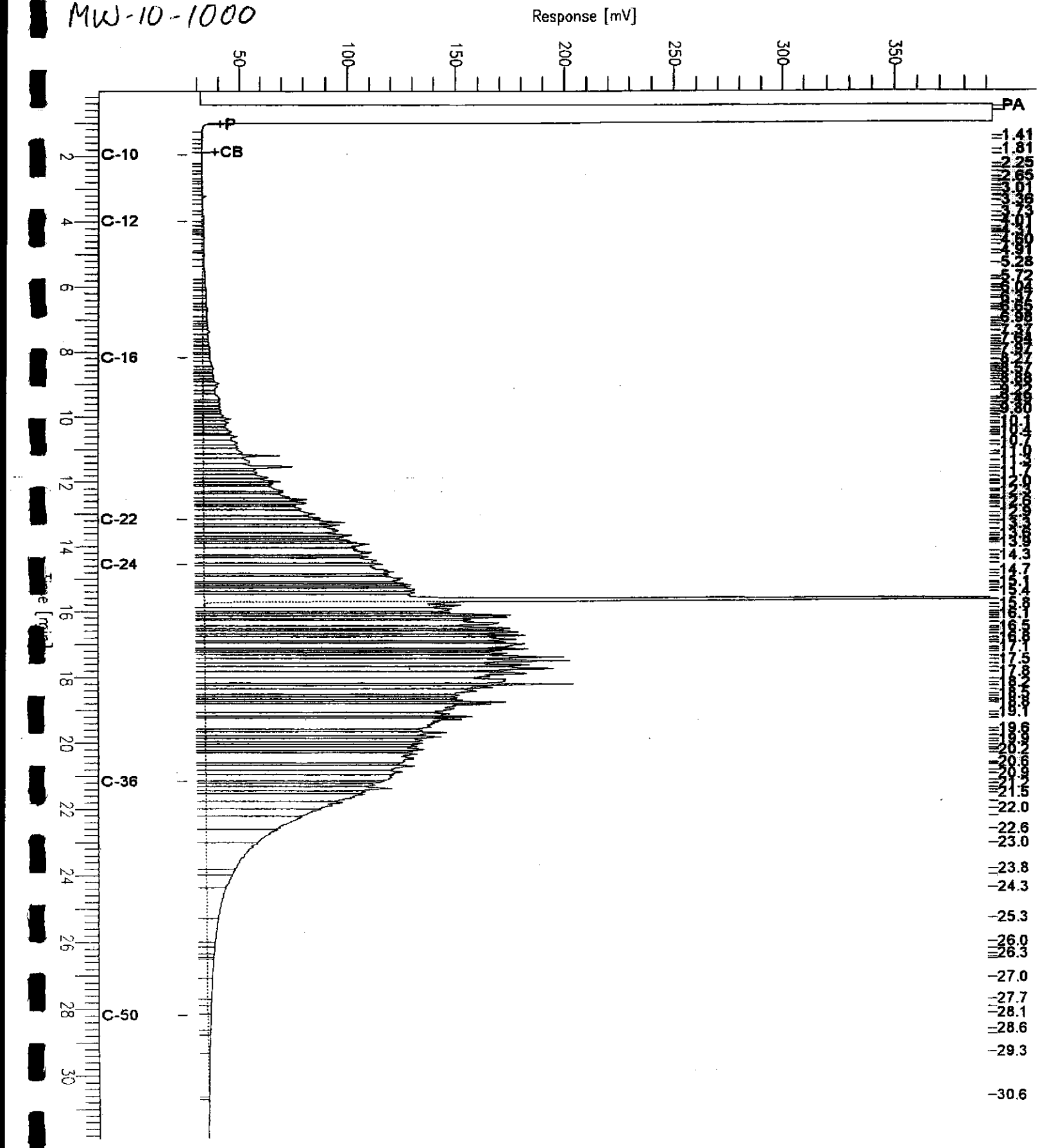
21.0

Chromatogram

Sample Name : 159358-001sg,73322
FileName : G:\GC17\CHA\178A015.RAW
ethod : ATEH165.MTH
tart Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 26 mV

Sample #: 73322
Date : 06/28/2002 08:55 AM
Time of Injection: 06/28/2002 02:19 AM
Low Point : 25.51 mV High Point : 392.84 mV
Plot Scale: 367.3 mV

MW-10-1000

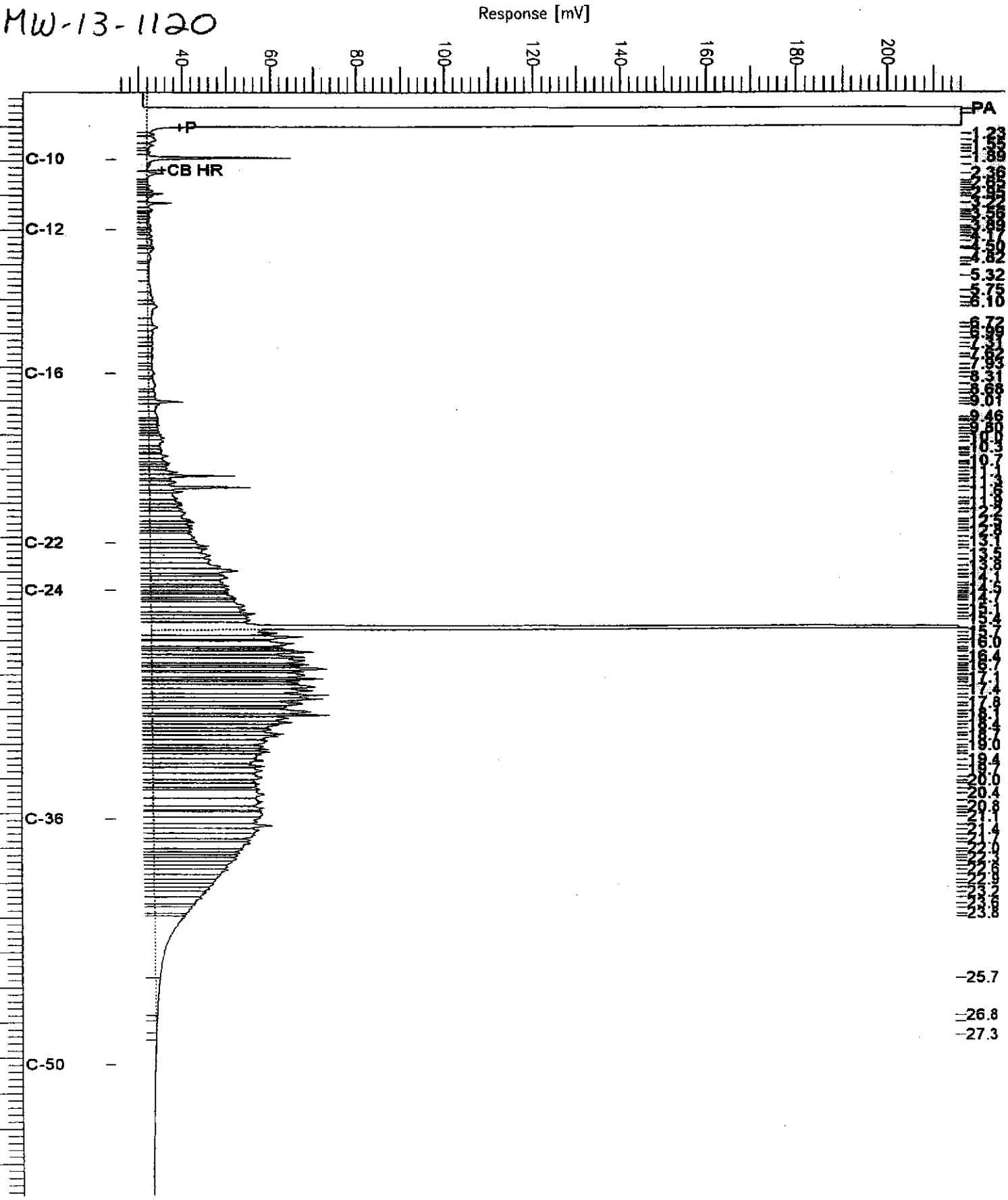


Chromatogram

Sample Name : 159358-002sg,73322
FileName : G:\GC17\CHA\178A012.RAW
Method : AT&H165.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 25 mV

Sample #: 73322 Page 1 of 1
Date : 06/28/2002 08:53 AM
Time of Injection: 06/28/2002 12:15 AM
Low Point : 24.70 mV High Point : 216.20 mV
Plot Scale: 191.5 mV

MW-13-1120

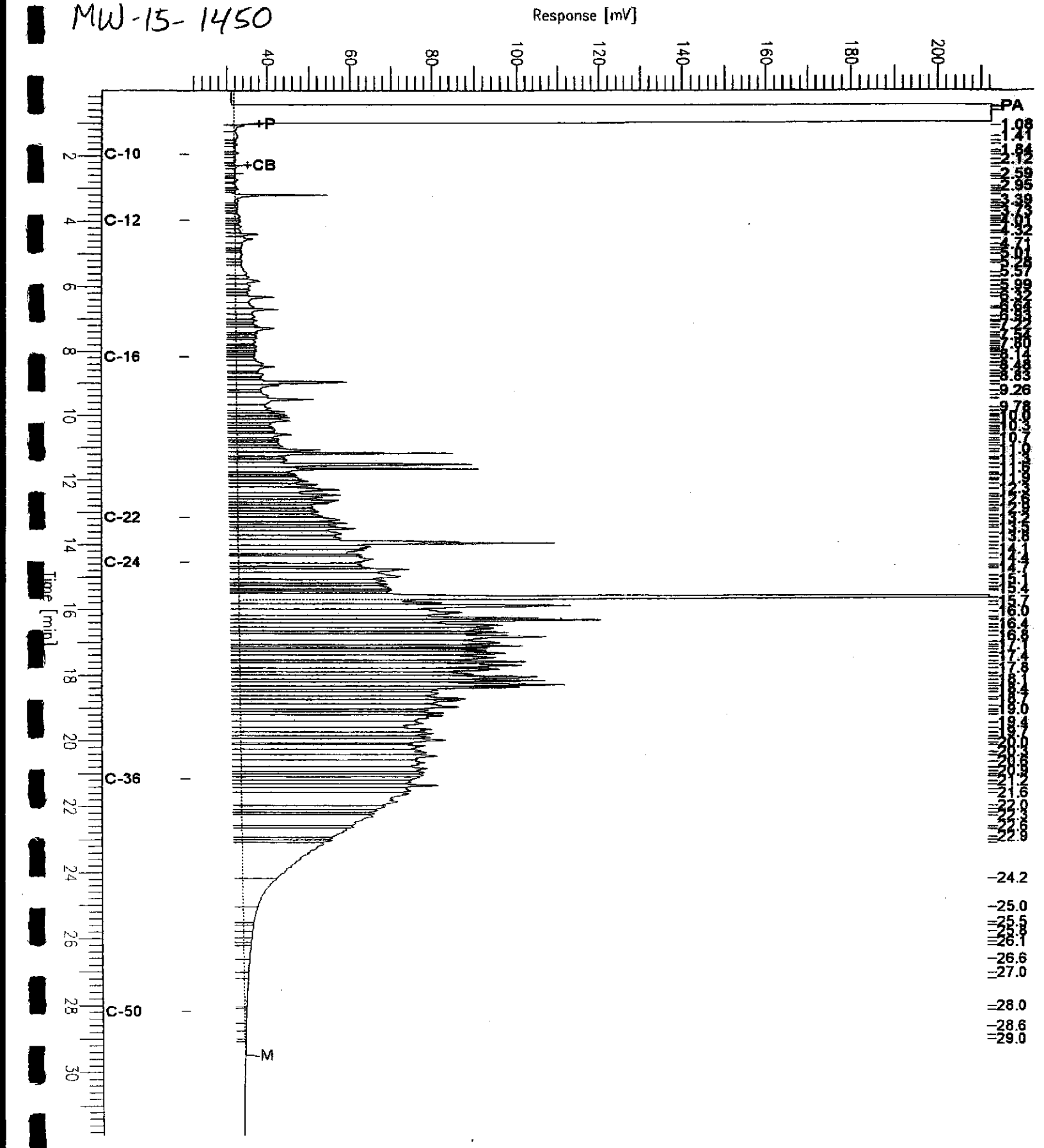


Chromatogram

Sample Name : 159358-004sg,73322
FileName : G:\GC17\CHA\178A013.RAW
Method : ATEH165.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 21 mV

Sample #: 73322 Page 1 of 1
Date : 06/28/2002 11:30 AM
Time of Injection: 06/28/2002 12:57 AM
Low Point : 20.88 mV High Point : 212.36 mV
Plot Scale: 191.5 mV

MW-15-1450



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 3520C
Project#:	291-08	Analysis:	EPA 8015B(M)
Matrix:	Water	Batch#:	73322
Units:	ug/L	Received:	06/24/02
Dil'n Fac:	1.000	Prepared:	06/26/02

Field ID:	MW-14-1500	Sampled:	06/20/02
Type:	SAMPLE	Analyzed:	06/27/02
Lab ID:	159358-005	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	310 H	300

Surrogate	%REC	Limits
Hexacosane	50	39-137

Field ID:	MW-17-1600	Sampled:	06/21/02
Type:	SAMPLE	Analyzed:	06/27/02
Lab ID:	159358-006	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	99 H Y	50
Motor Oil C24-C36	650 H	300

Surrogate	%REC	Limits
Hexacosane	78	39-137

Field ID:	MW-11-1700	Sampled:	06/21/02
Type:	SAMPLE	Analyzed:	06/27/02
Lab ID:	159358-007	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	88	39-137

Field ID:	MW-5-1920	Sampled:	06/21/02
Type:	SAMPLE	Analyzed:	06/27/02
Lab ID:	159358-008	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	190	50
Diesel C10-C24	200 H L Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	82	39-137

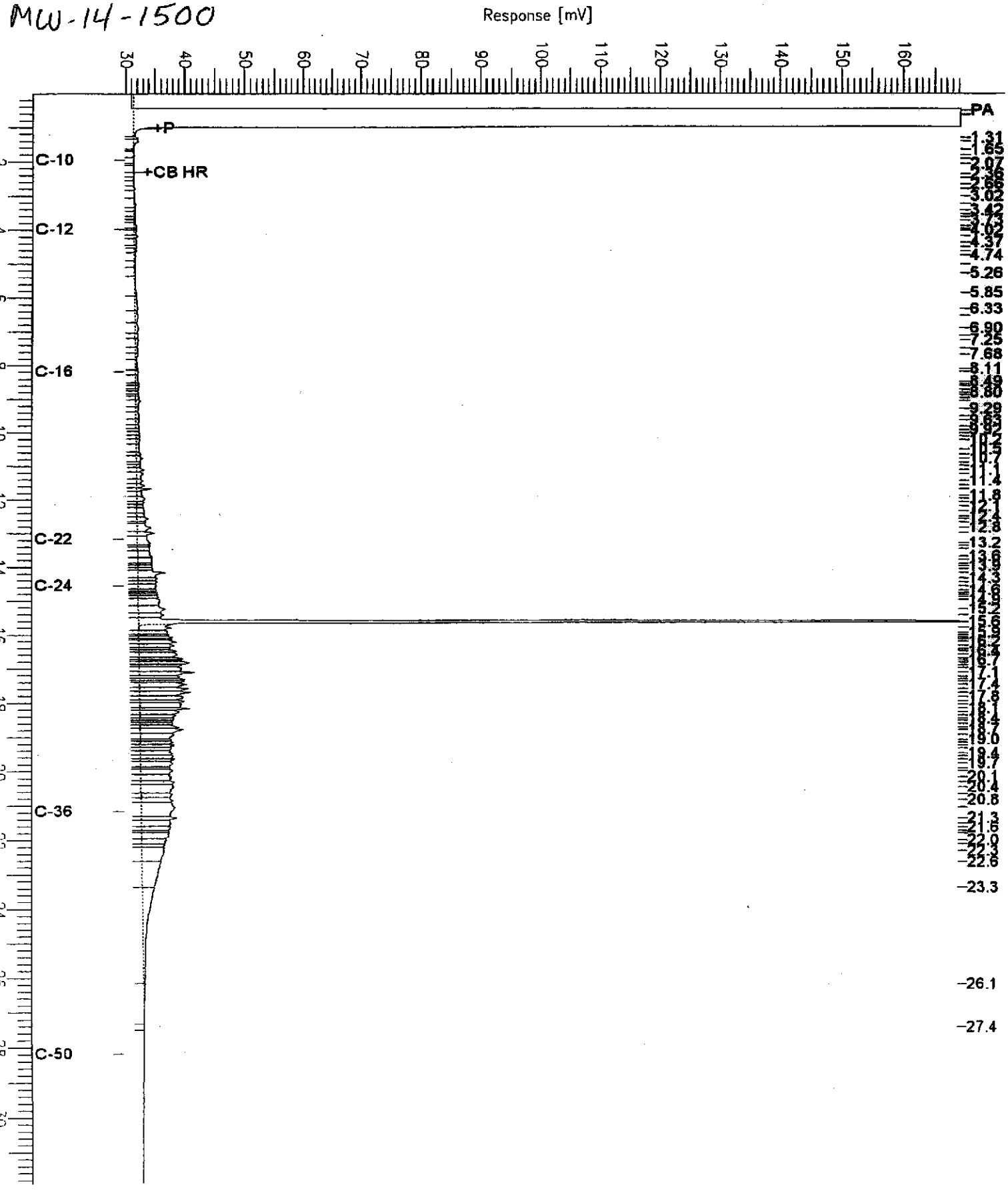
H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 159358-005sg,73322
FileName : G:\GC17\CHA\178A007.RAW
Method : ATEH165.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 30 mV

Sample #: 73322 Page 1 of 1
Date : 06/28/2002 08:39 AM
Time of Injection: 06/27/2002 08:50 PM
Low Point : 29.74 mV High Point : 169.20 mV
Plot Scale: 139.5 mV

MW-14-1500

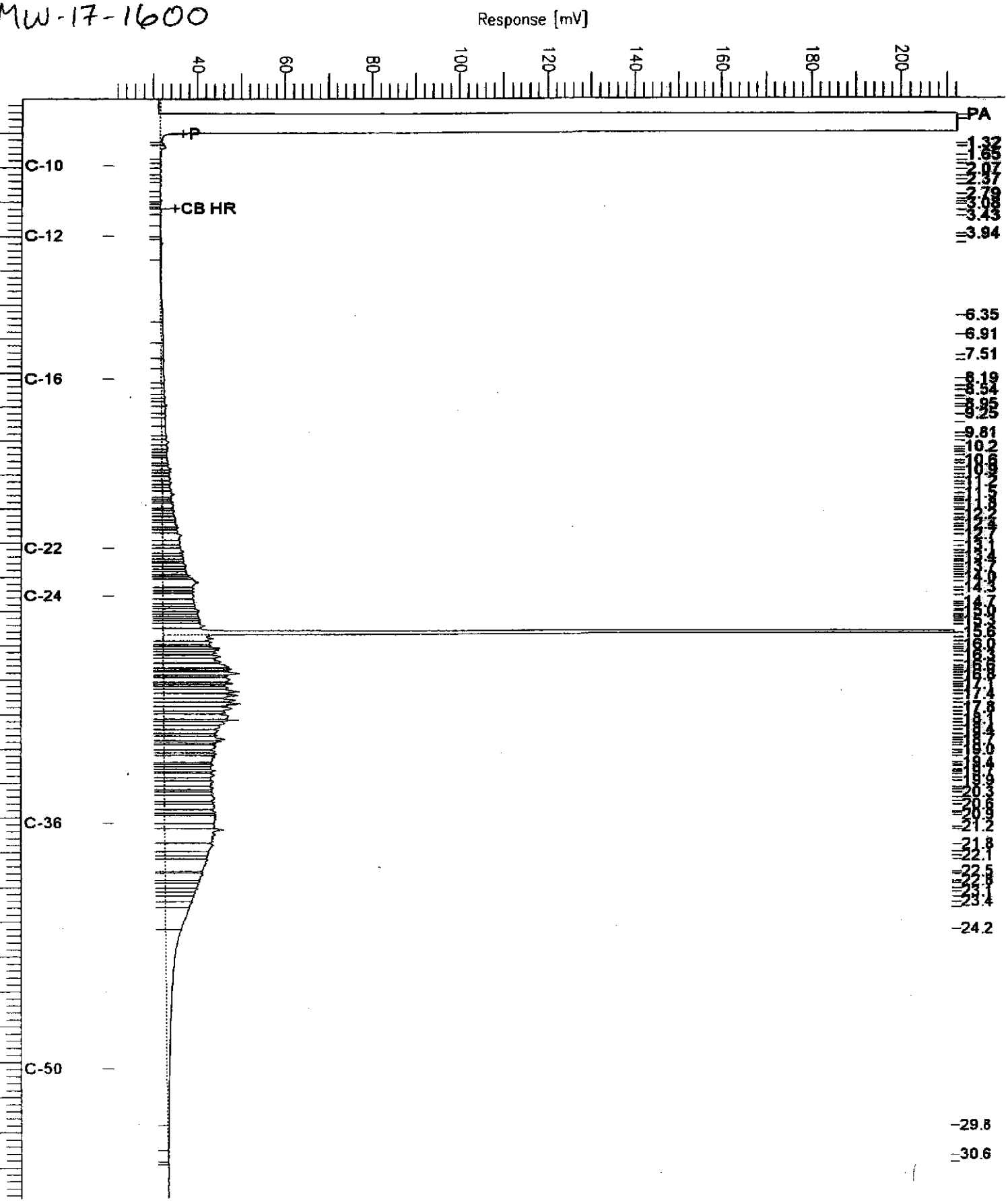


Chromatogram

Sample Name : 159358-006sg,73322
FileName : G:\GC17\CHA\178A008.RAW
Method : ATEH165.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 21 mV

Sample #: 73322 Page 1 of 1
Date : 06/28/2002 08:40 AM
Time of Injection: 06/27/2002 09:31 PM
Low Point : 20.90 mV High Point : 212.25 mV
Plot Scale: 191.3 mV

MW-17-1600

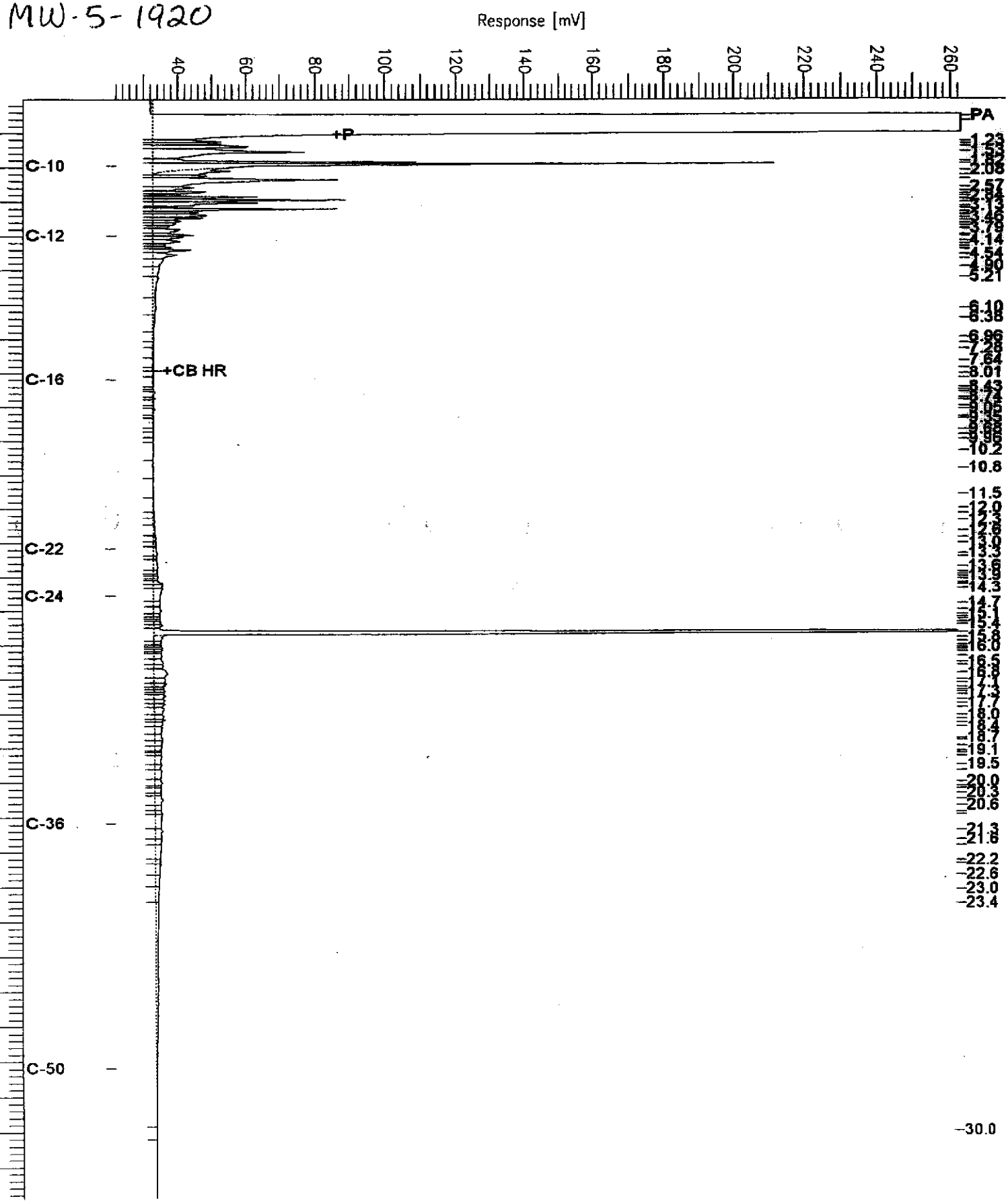


Chromatogram

Sample Name : 159358-008sg,73322
FileName : G:\GC17\CHA\178A010.RAW
Method : ATEH165.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 22 mV

Sample #: 73322 Page 1 of 1
Date : 06/28/2002 08:41 AM
Time of Injection: 06/27/2002 10:53 PM
Low Point : 21.92 mV High Point : 262.89 mV
Plot Scale: 241.0 mV

MW-5-1920



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 3520C
Project#:	291-08	Analysis:	EPA 8015B(M)
Matrix:	Water	Batch#:	73322
Units:	ug/L	Received:	06/24/02
Dil'n Fac:	1.000	Prepared:	06/26/02

Field ID:	MW-7-1955	Sampled:	06/21/02
Type:	SAMPLE	Analyzed:	06/27/02
Lab ID:	159358-009	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	95	39-137

Field ID:	MW-12-2035	Sampled:	06/21/02
Type:	SAMPLE	Analyzed:	06/28/02
Lab ID:	159358-010	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	640	50
Diesel C10-C24	1,100 H L Y	50
Motor Oil C24-C36	3,000 H	300

Surrogate	%REC	Limits
Hexacosane	80	39-137

Type:	BLANK	Analyzed:	06/28/02
Lab ID:	QC182388	Cleanup Method:	EPA 3630C

Analyte	Result	RL
Kerosene C10-C16	ND	50
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
Hexacosane	77	39-137

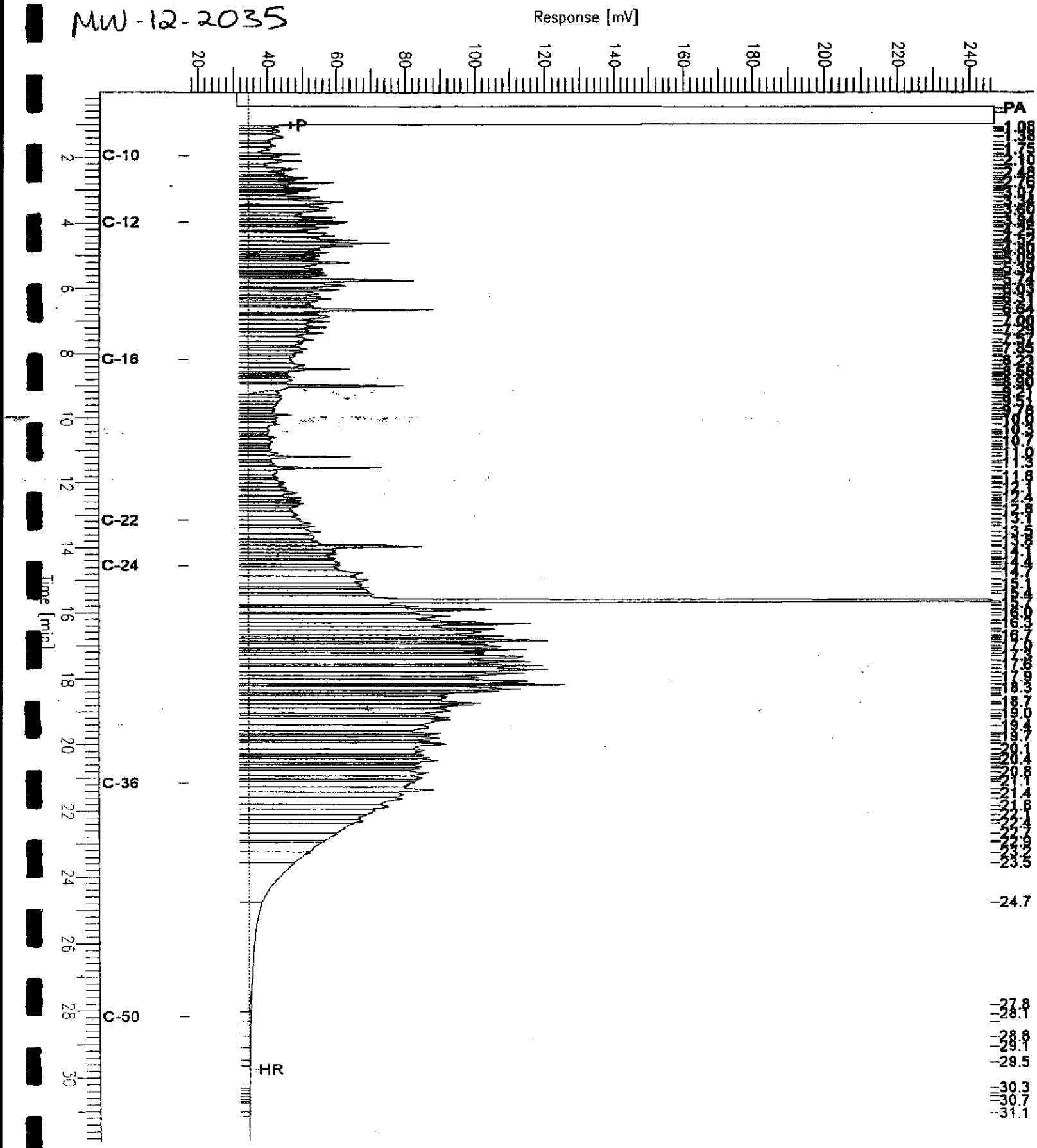
H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 159358-010sg,73322
FileName : G:\GC17\CHA\178A014.RAW
Method : ATEH165.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 17 mV

Sample #: 73322 Page 1 of 1
Date : 06/28/2002 08:55 AM
Time of Injection: 06/28/2002 01:38 AM
Low Point : 17.18 mV High Point : 246.89 mV
Plot Scale: 229.7 mV

MW-12-2035

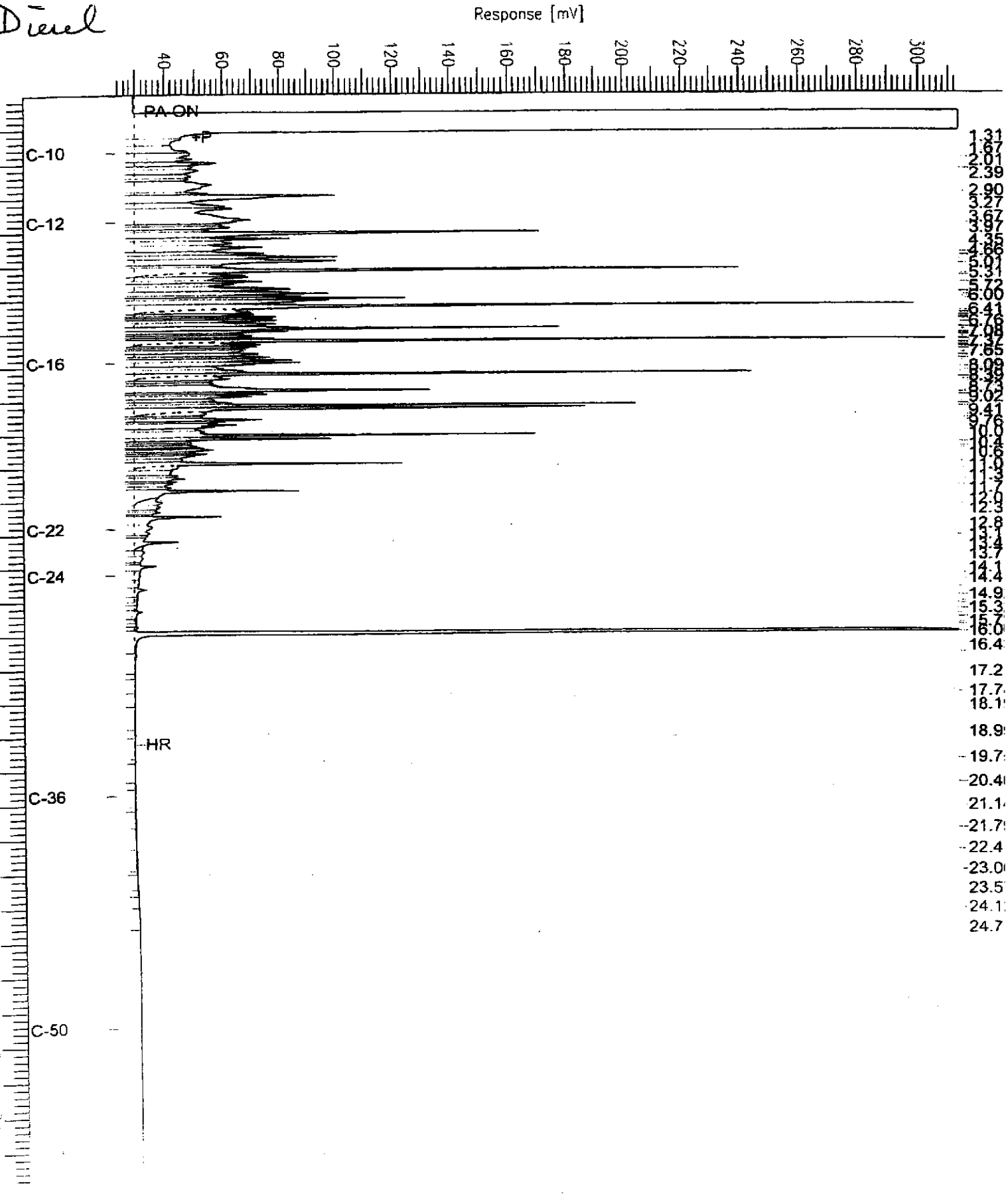


Chromatogram

Sample Name : ccv,02ws0995,dsl
FileName : G:\GC11\CHA\178A002.RAW
Method : ATEH168.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 23 mV

Sample #: 500mg/L Page 1 of 1
Date : 6/27/02 08:05 AM
Time of Injection: 6/27/02 07:30 AM
Low Point : 23.43 mV High Point : 313.27 mV
Plot Scale: 289.8 mV

Diesel

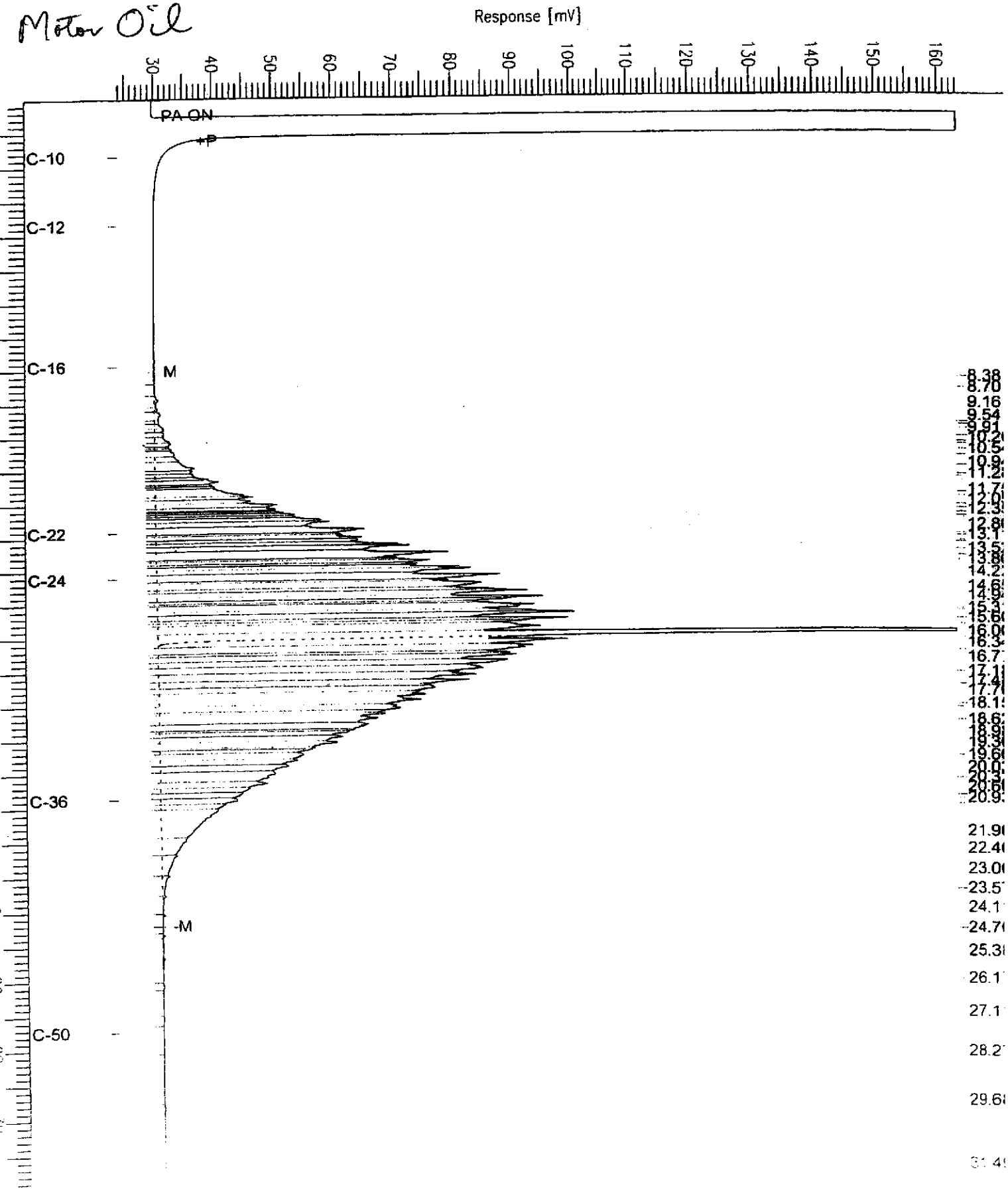


Chromatogram

Sample Name : ccv,02ws0899,mo
FileName : G:\GC11\CHA\178A003.RAW
Method : ATEH168.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 24 mV

Sample #: 500mg/L Page 1 of 1
Date : 6/27/02 08:43 AM
Time of Injection: 6/27/02 08:10 AM
Low Point : 23.88 mV High Point : 163.10 mV
Plot Scale: 139.2 mV

Motor Oil

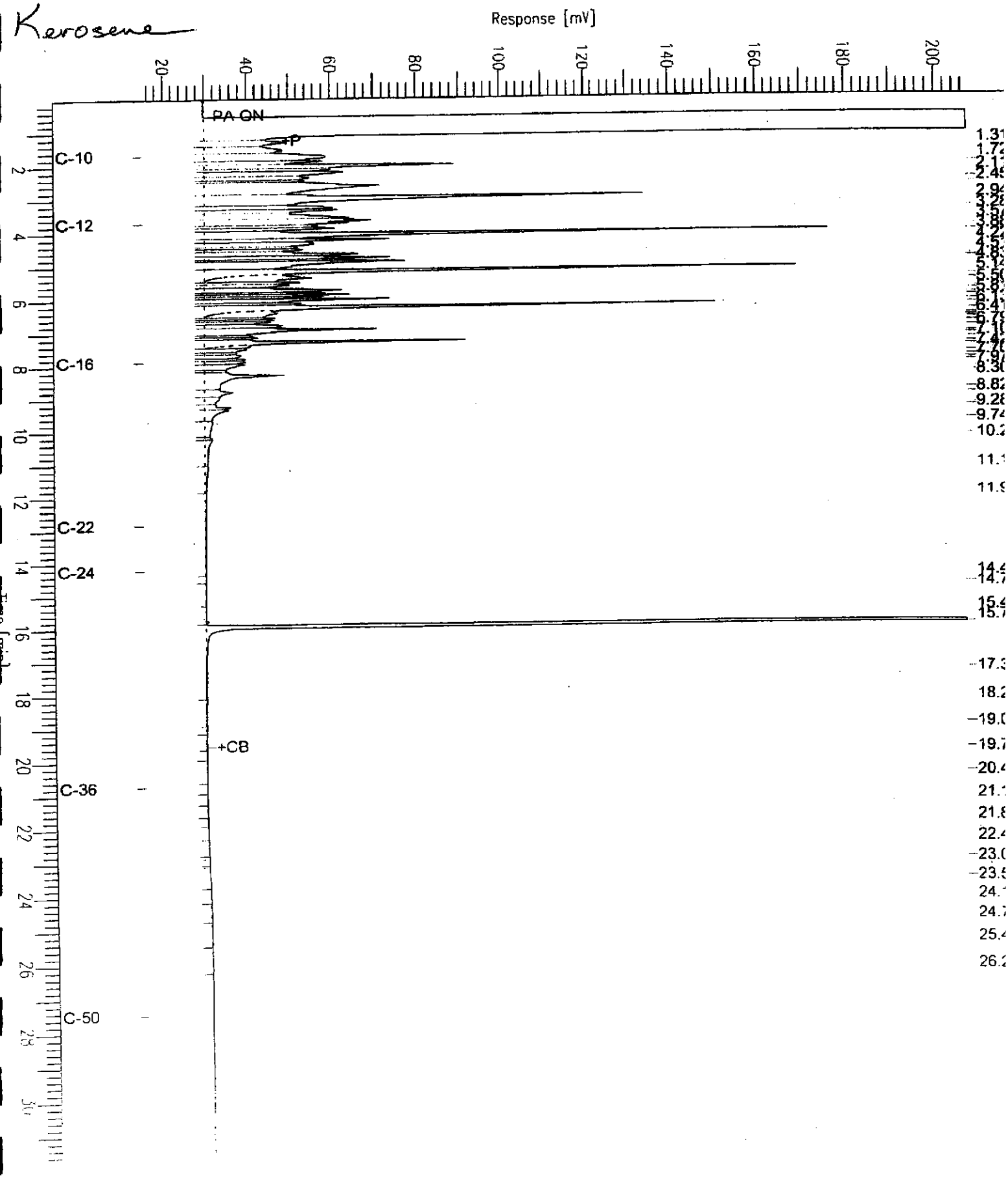


Chromatogram

Sample Name : ccv,02ws0283,ker
FileName : G:\GC11\CHA\178A026.RAW
Method : ATEH168.MTH
Start Time : 0.01 min End Time : 31.79 min
Scale Factor: 0.0 Plot Offset: 15 mV

Sample #: 250mg/L
Date : 6/28/02 10:22 AM
Time of Injection: 6/27/02 11:32 PM
Low Point : 15.15 mV High Point : 207.12 mV
Plot Scale: 192.0 mV

Kerosene



Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 3520C
Project#:	291-08	Analysis:	EPA 8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC182389	Batch#:	73322
Matrix:	Water	Prepared:	06/26/02
Units:	ug/L	Analyzed:	06/28/02

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,214	89	37-120

Surrogate	%REC	Limits
Hexacosane	86	39-137

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	159358	Location:	MSC GW Sampling
Client:	Uribe & Associates	Prep:	EPA 3520C
Project#:	291-08	Analysis:	EPA 8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	73322
MSS Lab ID:	159318-003	Sampled:	06/21/02
Matrix:	Water	Received:	06/21/02
Units:	ug/L	Prepared:	06/26/02
Diln Fac:	1.000	Analyzed:	06/28/02

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC182390

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	<21.00	2,500	2,582	103	44-131

Surrogate	%REC	Limits
Hexacosane	101	39-137

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC182391

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,335	93	44-131	10	26

Surrogate	%REC	Limits
Hexacosane	90	39-137

RPD= Relative Percent Difference

20.0

Appendix C

Well Sampling Protocol for Third Quarter 2002

Appendix C– Well Sampling Protocol
Third Quarter 2002
City of Oakland Municipal Service Center

Well	2002 Quarter				Gauge Every Quarter	DO (field meter)	TPHg/ BTEX/ MTBE* (8015B/ 8021)	TPH d/k/mo (8015B) silica gel**	VOC (8260)	SVOC (8270)	Metals	Comments
	1	2	3	4								
MW-1	X				X	X	X	X				
MW-2	X				X	X	X	X				
MW-5	X	X	X		X	X	X	X				
MW-6					X	X	X	X				SPH present
MW-7	X	X	X		X	X	X	X				
MW-8	X		X		X	X	X	X				
MW-9	X	X	X		X	X	X	X				
MW-10	X	X	X		X	X	X	X				
MW-11	X	X	X		X	X	X	X				
MW-12	X	X	X		X	X	X	X				
MW-13	X	X	X		X	X	X	X				
MW-14	X	X	X		X	X	X	X				
MW-15	X	X	X		X	X	X	X				
MW-16					X	X	X	X				SPH present
MW-17	X	X	X		X	X	X	X				
MW-18	Developed to monitor a utility trench, not sampled to date											
TBW-1	X		X		Gauge thickness of separate-phase hydrocarbons							
TBW-3	X	X	X		Gauge thickness of separate-phase hydrocarbons							
TBW-4	X	X	X		Gauge thickness of separate-phase hydrocarbons							
TBW-5	X	X	X		Gauge thickness of separate-phase hydrocarbons							
TBW-6	X	X	X		Gauge thickness of separate-phase hydrocarbons							
Trip Blank	X	X	X		NA	NA	X					

DO = Dissolved Oxygen
* Positive results for MTBE will be confirmed by re-analysis using EPA Method 8260, except for MW-5.
** Samples will be centrifuged prior to extraction to remove particulates if laboratory quality control analyses are acceptable for the three test samples. Prior to analysis, the laboratory will run the sample extracts through a silica gel column per EPA Method 3630C.
Wells MW-3 and MW-4 were destroyed during the first quarter 1999.
Metals: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc.