



PORT OF OAKLAND

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

FEB 22 2002

Subject: 801 Maritime Street UST Site
Oakland, California #
STID #3780 /RO 19

Dear Mr. Chan:

Please find enclosed a report prepared on the behalf of the Port of Oakland by Harding ESE regarding the fourth quarter 2001 groundwater monitoring event at 801 Maritime Street. Should you have any questions, regarding the report, please contact the undersigned at (510) 627-1373.

Sincerely,

John Prall, R.G.
Associate Environmental Scientist

Enclosure

Cc: Jeff Jones



Harding ESE

A MACTEC COMPANY

Harding ESE, Inc.
600 Grand Avenue
Suite 300
Oakland, CA 94610
Telephone: 510/451-1001
Fax: 510/451-3165
Home Page: www.mactec.com

EMAC FEB19 2002 2:35

February 14, 2002

54821.2

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

FEB 22 2002

Fourth Quarter 2001 Groundwater Monitoring Report
801 Maritime Street
Oakland, California

Dear Mr. Prall:

Harding ESE, Inc. (Harding), has prepared this Groundwater Monitoring and Sampling Report on behalf of the Port of Oakland for the groundwater monitoring and sampling performed on December 21, 2001 at the 801 Maritime Street site in Oakland, California. A site location map is shown on Plate 1.

The scope of work included collecting a groundwater sample from MW-1 and testing the groundwater sample for Total Petroleum Hydrocarbons as gasoline (TPH-g) and diesel (TPH-d), benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl t-butyl ether (MTBE), and total dissolved solids (TDS).

Monitoring well MW-1 is located in the vicinity of three former underground storage tanks (USTs) removed from the site in February 1989. The USTs included two 10,000-gallon tanks (CF-06 and CF-35) and one 20,000-gallon tank (CF-07).

GROUNDWATER SAMPLING

Harding performed the monitoring and sampling on December 21, 2001. Prior to purging and sampling the monitoring well, Harding measured the depth to groundwater below the top of the well casing with an electric water level indicator. After measuring the depth to water, Harding purged the well using a PVC bailer. Conductivity, pH, and temperature were monitored periodically during purging. Harding collected the groundwater samples after removing a minimum of three well-casing volumes of water and when the conductivity, pH, and temperature measurements had stabilized. The depths to groundwater and field parameter measurements were recorded on a Groundwater Sampling Form. The purge water was stored in the product recovery tank at the nearby 2277 7th Street facility.

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Mr. John Prall

Associate Environmental Scientist

Port of Oakland

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Harding collected groundwater samples from the monitoring well using a disposable bailer and then transferred the groundwater into laboratory-provided containers. Sample containers were labeled with the sample number, date and time of collection, and sampler's initials, then placed in an insulated cooler with ice. The samples were delivered under chain-of-custody protocol to Curtis and Tompkins, Ltd., a California certified analytical laboratory.

MONITORING WELL GROUNDWATER LEVEL

Depth to water data is summarized in Table 1. The top of casing elevation was re-surveyed after the retrofitting activities in April 2001. The groundwater elevation was 7.71 in July, 2001, similar to the measured groundwater elevation in July 2001.

LABORATORY ANALYSIS GROUNDWATER SAMPLES

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

- Total petroleum hydrocarbons as gasoline (TPHg) in accordance with EPA Method 8015 modified.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl t-butyl ether (MTBE) in accordance with EPA Method 8020B.
- TPH as diesel (TPHd) in accordance with EPA Method 8015 modified following a silica-gel cleanup procedure.
- Total dissolved solids (TDS) by EPA method 160.

The laboratory results for the groundwater sample are summarized in Table 2, and are shown on Plate 2. Copies of the laboratory results, chromatograms, and chain-of-custody are provided in Appendix A.

FINDINGS

The results of the December 21, 2001 groundwater monitoring and sampling of MW-1 are summarized below:

- TPHg was detected at a concentration of 160 µg/L.
- TPHd was detected at a concentration of 6,000 µg/L. The laboratory qualified this reported value as having heavier hydrocarbons contributing to the quantitation and exhibiting fuel patterns, which do not resemble the standard.

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Associate Environmental Scientist
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- Benzene, toluene, and ethylbenzene were detected at concentrations of 14 µg/L, 6.9 µg/L, and 2.6 µg/L, respectively. m,p-Xylenes were detected at a concentration of 7.3 µg/L, and o-xylenes were detected at a concentration of 4.2 µg/L.
- MTBE was not detected above the reporting limit of 2.0 µg/L.
- TDS was reported at a concentration of 1,860 mg/L.

CLOSURE

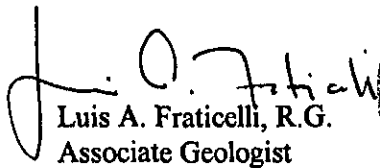
We trust that this provides the information required at this time. If you have any questions or need additional information, please contact Luis Fraticelli at (510) 451-1001.

Yours very truly,

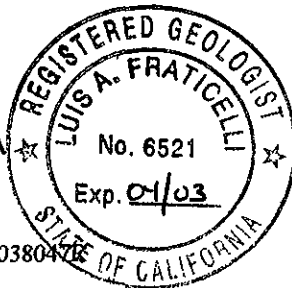
HARDING ESE, INC.



Trish A. Eliasson
Staff Engineer



Luis A. Fraticelli, R.G.
Associate Geologist



TAE/LF:dmw/P:wpdata/54821/038047E

Attachments: Table 1 – Groundwater Elevations
Table 2 – Summary of Laboratory Results
Plate 1 – Site Location Map
Plate 2 – Laboratory Results, December 21, 2001
Appendix A - Laboratory Reports

TABLES

**Table 1. Groundwater Elevations
801 Maritime Street
Oakland, California**

Monitoring Well ID	Date of Monitoring	Top of Casing Elevation (feet)	Measured Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation (feet)
MW-1	7/10/1996 ¹	13.81 ²	7.36	-	6.45 (3.25)
	12/27/1996 ⁴	(10.61) ²	7.55	-	6.26 (3.06)
	3/25/1997 ⁴	(10.61) ²	7.31	-	6.50 (3.30)
	6/23/1997 ⁴	(10.61) ²	7.55	-	6.26 (3.06)
	9/30/1997 ⁴	13.55 ³	7.46	-	6.09
	12/31/1997 ⁴	13.55	7.17	-	6.38
	4/17/01	14.18 ⁵	7.59	-	6.59
	7/26/01	14.18 ⁶	7.65	-	6.53
	10/21/01	14.18	7.71	-	6.47

Notes:

- 1 Data from Table 2, Summary of Results of Groundwater Sampling, Port of Oakland Tanks CF-06, CF-07, and CF-35, 801 Maritime Street, Oakland, California, dated August 7, 1996, by Alisto Engineering Group.
- 2 Elevation data corrected relative to Port of Oakland datum: elevation data in parentheses referenced to mean sea level.
- 3 Top of casing cut and resurveyed on September 30, 1997 relative to Port of Oakland datum.
- 4 Data from Table 2, Summary of Laboratory Results, 801 Maritime Street, Oakland, California, dated March 3, 1998 by Innovative Technical Solutions, Inc.
- 5 Top of casing elevation changed due to retrofitting activities on April 17, 2001.
- 6 Elevation remeasured in 2001 after retrofitting activities on April 17, 2001. Relative to Port of Oakland datum.

**Table 2. Summary of Laboratory Results
801 Maritime Street
Oakland, California**

Monitoring Well ID	Date of Sampling	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TPHd (µg/L)	TDS (mg/L)
MW-1	7/10/1996 ¹	180	27	14	5.4	23	-	7,100	-
	12/27/1996 ²	180	30	15	5.8	26	-	670	-
	3/25/1997 ²	180	21	11	4	17	-	19	1,840
	6/23/1997 ²	170	20	11	4.1	18	-	3,000	1,320
	9/30/1997 ^{2,3}	190	35	17	5.2	22	-	830	2,020
	12/31/1997 ^{2,3}	130	26	14	4.3	18	-	<48	1,880
	4/17/01	160	11	6.2	2.6	6.8 (m,p-) 4.4 (o-)	ND(2.0)	59 ⁴	1,860
	7/26/01	130	17	8.7	3.2	8.7 (m,p-) 5.5 (o-)	ND(2.0)	ND(50)	1,880
	12/21/01	160	14	6.9	2.6	7.3 (m,p-) 4.2 (o-)	ND(2.0)	ND(100)	1,860

Notes:

TPHg = Total petroleum hydrocarbons (TPH) as gasoline

MTBE= Methyl t-butyl ether

TPHd = TPH as diesel

TDS = Total dissolved solids

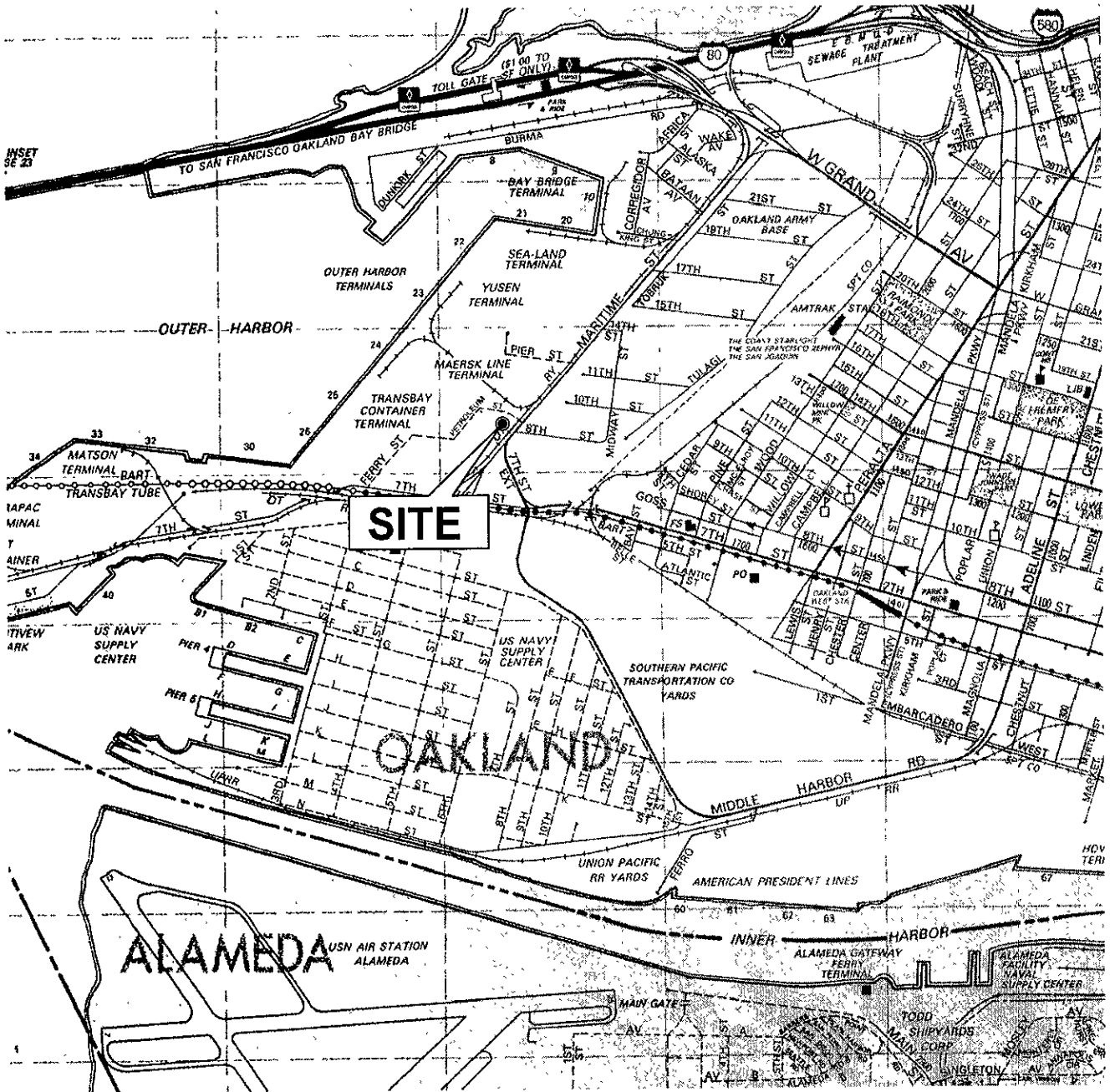
ND= Not Detected above reporting limit shown in parentheses.

(m,p-) = m,p-Xylenes

(o-) = o-Xylenes

- 1 Data from Table 2, Summary of Results of Groundwater Sampling, Port of Oakland Tanks CF-06, CF-07, and CF-35. 801 Maritime Street, Oakland, California, dated August 7, 1996, by Alisto Engineering Group.
- 2 Data from Table 2, Summary of Laboratory Results, 801 Maritime Street, Oakland, California, dated March 3, 1998 by Innovative
- 3 Laboratory results represent the highest concentrations reported for either the sample or field duplicate sample (QC-1).
- 4 Results exhibit fuel pattern not resembling standard

PLATES



SOURCE: THOMAS BROTHERS ALAMEDA/CONTRA COSTA COUNTIES STREET GUIDE; 1995



APPROXIMATE SCALE IN FEET

Vicinity Map
 801 Maritime Street
 Oakland, California
 Port of Oakland

PLATE
1



DRAWN
 SS

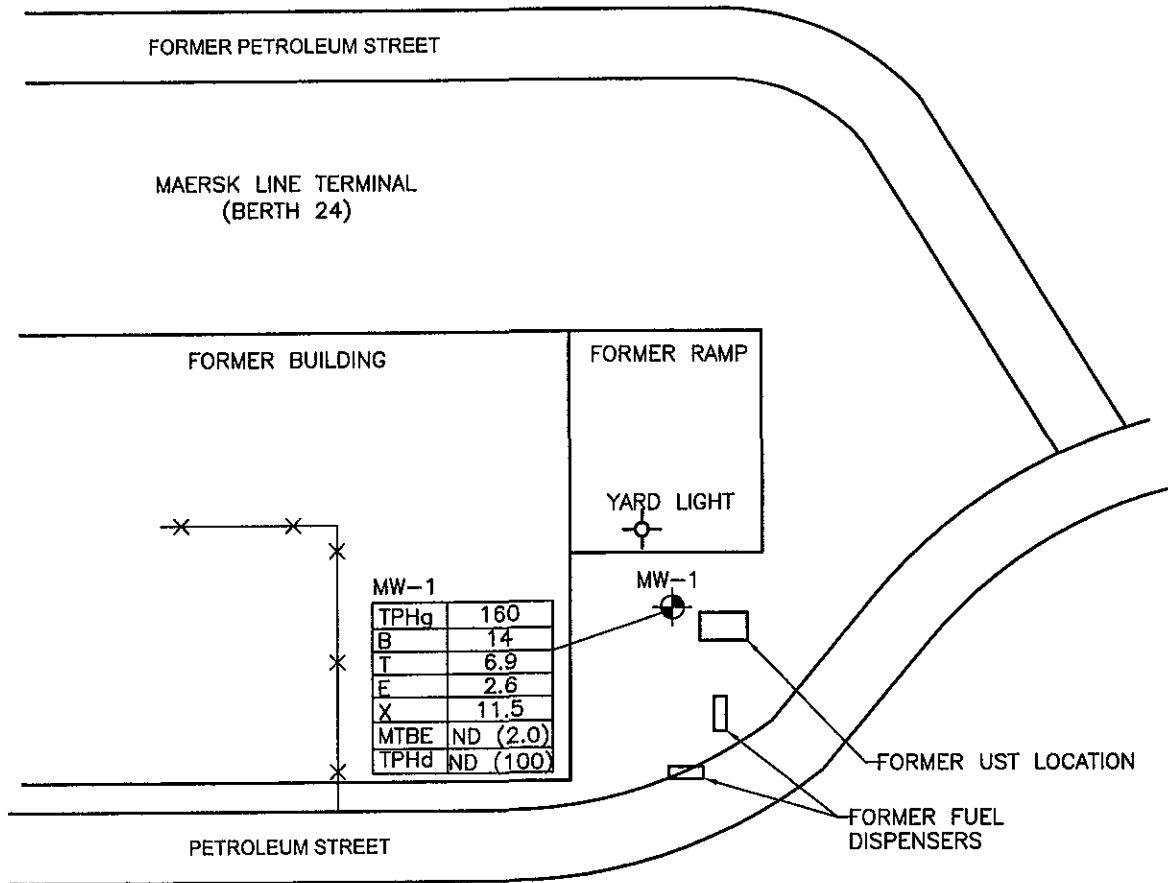
JOB NUMBER
 54821.2

APPROVED

DATE
 1/2002

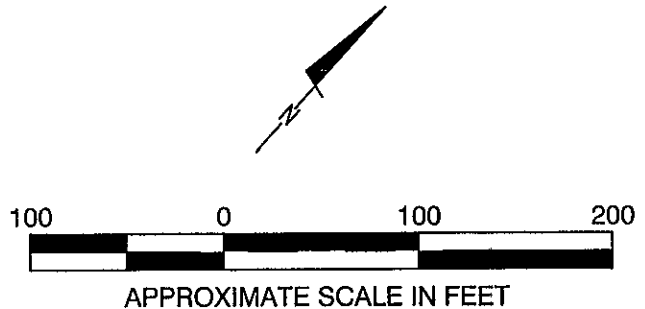
REVISED DATE

54821001.DWG 1.0
 20020122.1436



LEGEND

- MW-1 MONITORING WELL
- TPHg TPH AS GASOLINE (in µg/L)
- B BENZENE (in µg/L)
- T TOULENE (in µg/L)
- E ETHYLBENZENE (in µg/L)
- X XYLENES (in µg/L)
- MTBE METHYL T-BUYTL ETHER (in µg/L)
- TPHd TPH AS DIESEL (in µg/L)



54821002.DWG 1.0
20020216.1312



Laboratory Results for Petroleum Hydrocarbons
 December 21, 2001
 801 Maritime Street
 Oakland, California
 Port of Oakland

PLATE

2

APPENDIX A
LABORATORY REPORT



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

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

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

Prepared for:

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


Date: 17-JAN-02
Lab Job Number: 156186
Project ID: 54821.2
Location: N/A

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

Reviewed by:


Project Manager

Reviewed by:


Operations Manager

This package may be reproduced only in its entirety.

Laboratory Number: 156186
Client: Harding Lawson Associates
Project#: 54821.2

Receipt Date: 12/21/01

CASE NARRATIVE

This hardcopy data package contains sample and QC results for one water sample that was received on December 21, 2001.

TPH-Purgeable Hydrocarbons by EPA 8015B(M) and BTXE by EPA 8021B: One of the bracketing continuing calibration verifications (CCV) for the laboratory control sample had a high response for MTBE. The spike recovery for MTBE was within criteria even with the high bias and would have still been within criteria if the CCV had been within criteria. MTBE was not detected in the sample or method blank. High surrogate recoveries were observed for trifluorotoluene in the matrix spike and spike duplicate of CT#156132-001 due to co elution with hydrocarbons. No other analytical problems were encountered.

TPH-Extractable Hydrocarbons by EPA 8015B(M): No analytical problems were encountered.

Total Dissolved Solids by EPA 160.1: *No analytical problems were encountered.*



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

CHAIN OF CUSTODY FORM

Seq. No.: NO 10514
 Lab: C&T

Job Number: 54821 20
 Name/Location: ROI Maritime - Port
 Project Manager: Luis Fraticelli

Samplers: DM / CL

Recorder: Delphine Miedet
 (Signature Required)

MATRIX			#CONTAINERS & PRESERV.				SAMPLE NUMBER		DATE			
Water	Soil	Air	Unpres	H ₂ SO ₄	HNO ₃	HCL	YR	SEQ	YR	MO	DAY	TIME
X			3			3	MW	1	01	12	21	1040

STATION DESCRIPTION	
	DEPTH

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

ADDITIONAL INFORMATION		
SAMPLE NUMBER		TURNAROUND TIME/REMARKS
YR	SEQ	
		TPHd with silicagel cleaning
		Standard TAT

CHAIN OF CUSTODY RECORD			
Requested By (signature)	Delphine Miedet	Harding ESE	12/21 1200
	(Print Name)	(Company)	Date/Time
Received By (signature)	A. Allover	C&T	12/21 1205
	(Print Name)	(Company)	Date/Time
Relinquished By (signature)			
	(Print Name)	(Company)	Date/Time
Received By (signature)			
	(Print Name)	(Company)	Date/Time
Received By (signature)			
	(Print Name)	(Company)	Date/Time
Method of Shipment:			

Curtis & Tompkins Laboratories Analytical Report

Lab #:	156186	Project#:	54821.2
Client:	Harding Lawson Associates	Prep:	EPA 5030B
Field ID:	MW-1	Batch#:	68989
Matrix:	Water	Sampled:	12/21/01
Units:	ug/L	Received:	12/21/01
Diln Fac:	1.000	Analyzed:	12/22/01

Type: SAMPLE Lab ID: 156186-001

Analyte	Result	RL	Analysis
Gasoline C7-C12	160	50	8015B (M)
MTBE	ND	2.0	EPA 8021B
Benzene	14	0.50	EPA 8021B
Toluene	6.9	0.50	EPA 8021B
Ethylbenzene	2.6	0.50	EPA 8021B
m,p-Xylenes	7.3	0.50	EPA 8021B
o-Xylene	4.2	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	110	59-135	8015B (M)
Bromofluorobenzene (FID)	109	60-140	8015B (M)
Trifluorotoluene (PID)	86	56-142	EPA 8021B
Bromofluorobenzene (PID)	82	55-149	EPA 8021B

Type: BLANK Lab ID: QC166105

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)	109	59-135	8015B (M)
Bromofluorobenzene (FID)	112	60-140	8015B (M)
Trifluorotoluene (PID)	86	56-142	EPA 8021B
Bromofluorobenzene (PID)	81	55-149	EPA 8021B

GC04 TVH 'J' Data File FID

Sample Name : 156186-001,68989

Sample #: d1

Page 1 of 1

FileName : G:\GC04\DATA\356J017.raw

Date : 12/22/01 11:57 PM

Method : TVHBTXE

Time of Injection: 12/22/01 11:31 PM

Start Time : 0.00 min

End Time : 26.00 min

Low Point : 61.60 mV

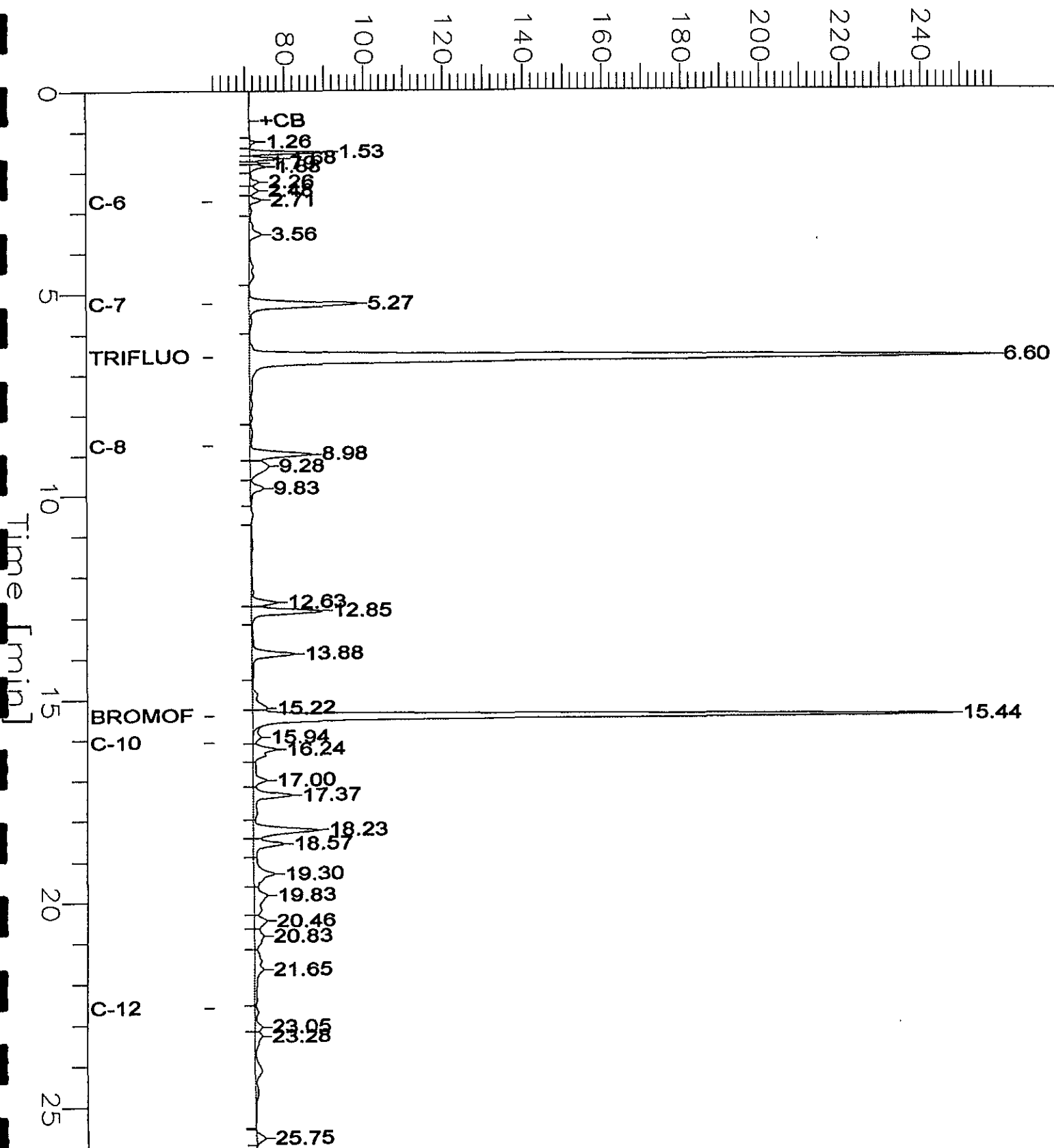
High Point : 258.32 mV

Scale Factor: 1.0

Plot Offset: 62 mV

Plot Scale: 196.7 mV

Response [mV]



GC04 TVH 'J' Data File FID

Sample Name : CCV/LCS, QC166106, 68989, 01WS2177, 5/5000

Sample #:

FileName : G:\GC04\DATA\356J002.raw

Date : 12/22/01 01:43 PM

Method : TVHBTXE

Time of Injection: 12/22/01 01:17 PM

Start Time : 0.00 min

End Time : 26.00 min

Low Point : 53.41 mV

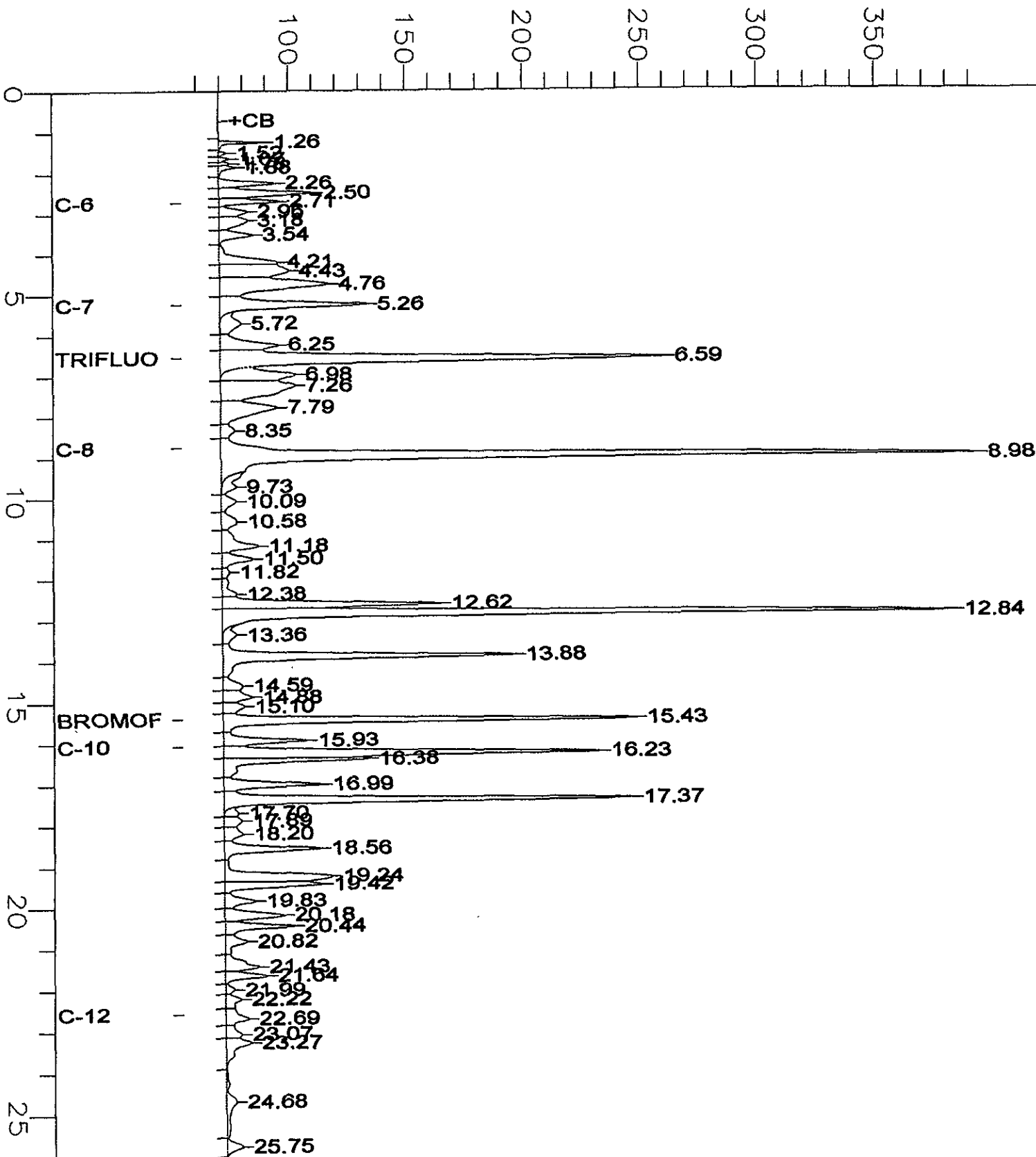
High Point : 393.43 mV

Scale Factor: 1.0

Plot Offset: 53 mV

Plot Scale: 340.0 mV

Response [mV]



Gasoline by GC/FID CA LUFT

Lab #:	156186	Prep:	EPA 5030B
Client:	Harding Lawson Associates	Analysis:	8015B (M)
Project#:	54821.2		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC166106	Batch#:	68989
Matrix:	Water	Analyzed:	12/22/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,957	98	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	121	59-135
Bromofluorobenzene (FID)	111	60-140



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	156186	Prep:	EPA 5030B
Client:	Harding Lawson Associates	Analysis:	EPA 8021B
Project#:	54821.2		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC166109	Batch#:	68989
Matrix:	Water	Analyzed:	12/22/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	24.39 b	122	51-125
Benzene	20.00	19.13	96	67-117
Toluene	20.00	19.76	99	69-117
Ethylbenzene	20.00	20.17	101	68-124
m,p-Xylenes	40.00	40.42	101	70-125
o-Xylene	20.00	21.85	109	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	89	56-142
Bromofluorobenzene (PID)	84	55-149

Gasoline by GC/FID CA LUFT

Lab #:	156186	Prep:	EPA 5030B
Client:	Harding Lawson Associates	Analysis:	8015B (M)
Project#:	54821.2		
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	156132-001	Batch#:	68989
Matrix:	Water	Sampled:	12/17/01
Units:	ug/L	Received:	12/20/01

Type: MS Analyzed: 12/27/01
 Lab ID: QC166107

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	49.44	2,000	1,918	93	65-131
Surrogate	%REC		Limits		
Trifluorotoluene (FID)	152 *	59-135			
Bromofluorobenzene (FID)	114	60-140			

Type: MSD Analyzed: 12/28/01
 Lab ID: QC166108

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,953	95	65-131	2	20
Surrogate	%REC		Limits			
Trifluorotoluene (FID)	153 *	59-135				
Bromofluorobenzene (FID)	112	60-140				

*= Value outside of QC limits; see narrative
 RPD= Relative Percent Difference
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Total Extractable Hydrocarbons

Lab #:	156186	Prep:	EPA 3520C
Client:	Harding Lawson Associates	Analysis:	8015B (M)
Project#:	54821.2		
Field ID:	MW-1	Sampled:	12/21/01
Matrix:	Water	Received:	12/21/01
Units:	ug/L	Prepared:	12/26/01
Batch#:	69036		

Type: SAMPLE Cleanup Method: EPA 3630C
 Lab ID: 156186-001

Analyte	Result	RL	Diln Fac	Analyzed
Diesel C10-C24	6,000 H Y	50	1.000	12/28/01
Diesel C10-C24 (SGCU)	ND	100	2.000	01/23/02

Surrogate	%REC	Limits	Diln Fac	Analyzed
Hexacosane	91	44-121	2.000	01/23/02

Type: BLANK Diln Fac: 1.000
 Lab ID: QC166275 Cleanup Method: EPA 3630C

Analyte	Result	RL	Analyzed
Diesel C10-C24	ND	50	12/28/01
Diesel C10-C24 (SGCU)	ND	50	01/23/02

Surrogate	%REC	Limits	Analyzed
Hexacosane	70	44-121	01/23/02

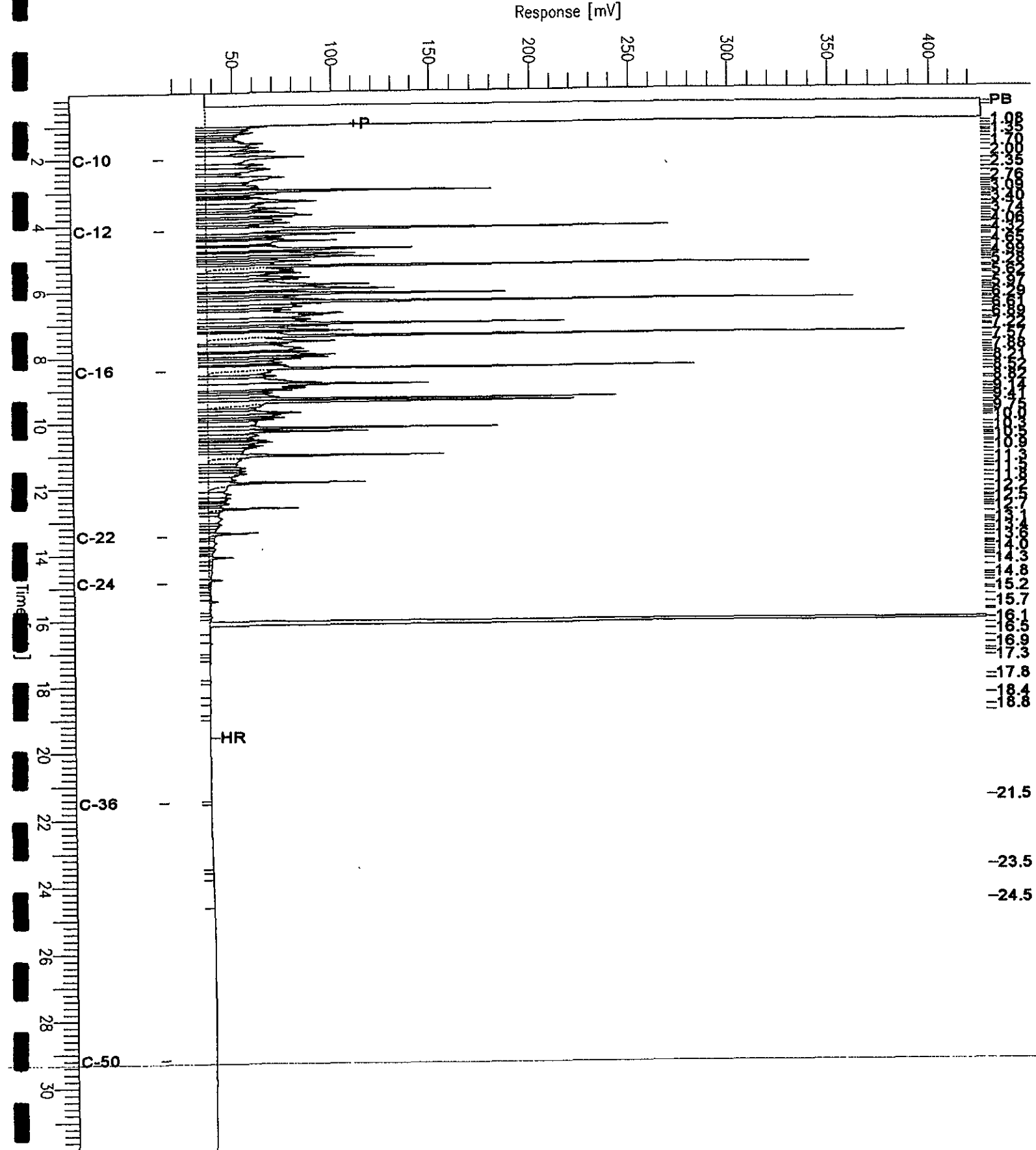
H= Heavier hydrocarbons contributed to the quantitation
 Y= Sample exhibits fuel pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit
 GCU= Silica gel cleanup
 Page 1 of 1

Chromatogram

Sample Name : ccv,01ws2297,ds1
FileName : G:\GC15\CHB\361B002.RAW
Method : BTEH361.MTH
Start Time : 0.01 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: 15 mV

Sample #: 500mg/L
Date : 12/27/2001 02:51 PM
Time of Injection: 12/27/2001 01:28 PM
Low Point : 15.12 mV
Plot Scale: 411.1 mV
High Point : 426.18 mV



Total Extractable Hydrocarbons

Lab #:	156186	Prep:	EPA 3520C
Client:	Harding Lawson Associates	Analysis:	8015B(M)
Project#:	54821.2		
Matrix:	Water	Batch#:	69036
Units:	ug/L	Prepared:	12/26/01
Diln Fac:	1.000		

Type:	BS	Cleanup Method:	EPA 3630C
Lab ID:	QC166276		

Analyte	Spiked	Result	%REC	Limits	Analyzed
Diesel C10-C24	2,500	2,109	84	45-110	12/28/01
Diesel C10-C24 (SGCU)	2,500	1,865	75	45-110	01/23/02

Surrogate	%REC	Limits	Analyzed
Hexacosane	76	44-121	01/23/02

Type:	BSD	Cleanup Method:	EPA 3630C
Lab ID:	QC166277		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
Diesel C10-C24	2,500	2,071	83	45-110	2	22	12/28/01
Diesel C10-C24 (SGCU)	2,500	1,754	70	45-110	6	22	01/23/02

Surrogate	%REC	Limits	Analyzed
Hexacosane	73	44-121	01/23/02

Total Dissolved Solids (TDS)

Lab #:	156186	Prep:	METHOD
Client:	Harding Lawson Associates	Analysis:	EPA 160.1
Project#:	54821.2		
Analyte:	Total Dissolved Solids	Batch#:	69094
Field ID:	MW-1	Sampled:	12/21/01
Matrix:	Water	Received:	12/21/01
Units:	mg/L	Analyzed:	12/21/01

Type	Lab ID	Result	RL	Diln Fac
SAMPLE	156186-001	1,860	13	1.300
BLANK	QC166486	ND	10	1.000

Total Dissolved Solids (TDS)

Lab #:	156186	Prep:	METHOD
Client:	Harding Lawson Associates	Analysis:	EPA 160.1
Project#:	54821.2		
Analyte:	Total Dissolved Solids	Batch#:	69094
Field ID:	ZZZZZZZZZZ	Sampled:	12/19/01
MSS Lab ID:	156109-001	Received:	12/19/01
Matrix:	Water	Analyzed:	12/21/01
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	RL	TRC	Units	RPD	Lim	Dir	Fac
BS	QC166487		10,000	9,640		96	80-120			1.000	
BSD	QC166488		10,000	9,460		95	80-120	2	20	1.000	
SDUP	QC166489	12,780		14,700	100			14	20	10.00	
SSPIKE	QC166490	12,780	10,000	21,940		92	70-130			10.00	

RL= Reporting Limit
 RPD= Relative Percent Difference
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