



PORT OF OAKLAND

July 25, 2000

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

**SUBJECT: 2225 and 2277 Seventh Street UST Sites,
Oakland, California**

Dear Mr. Seto:

I am responding to your April 19th correspondence regarding the status of groundwater monitoring and sampling at 2225 Seventh Street and a request to explain the hydrologic relationship between the 2225 and 2277 Seventh Street sites. At 2225 Seventh Street, the Port of Oakland (Port) tasked Harding Lawson Associates (HLA) to concurrently perform groundwater monitoring and sampling at both sites. The results will be reported to the County in the 2nd Quarter 2000 Monitoring Report.

The Port has looked into the hydrologic relationship and evidence for subsurface contamination migration between the two sites. Two consultants have worked on this project: Innovative Technical Solutions, Inc. (ITSI) and HLA. Their findings are presented in the enclosed figures that are based on past site investigation activities conducted by the Port and the former tenant at 2225 Seventh Street. The investigations established that the shallow fill soils have been impacted by petroleum hydrocarbon releases. The releases identified are primarily diesel fuel discovered during the removal of the various underground storage tanks. The shape of the free-phase and dissolved phase diesel fuel plumes (see figure, *Distribution of TPH as Diesel in Groundwater*) indicates a northerly flow direction that is approximately coincident with the northern groundwater flow direction. Based on data from up gradient wells, the plume source appears to lie within the 2225 Seventh Street site. The *Groundwater Elevation for March-April 1999* figure depicts the groundwater flow directions. At present, we have only the one groundwater elevation map that includes both sites at the same time period because the Port and the tenant had different field monitoring and sampling schedules.

Also enclosed is a *Legend and References* figure that lists the references that were utilized in the preparation for the first two figures. If you have any questions, please contact me at 627-1373.

Sincerely,

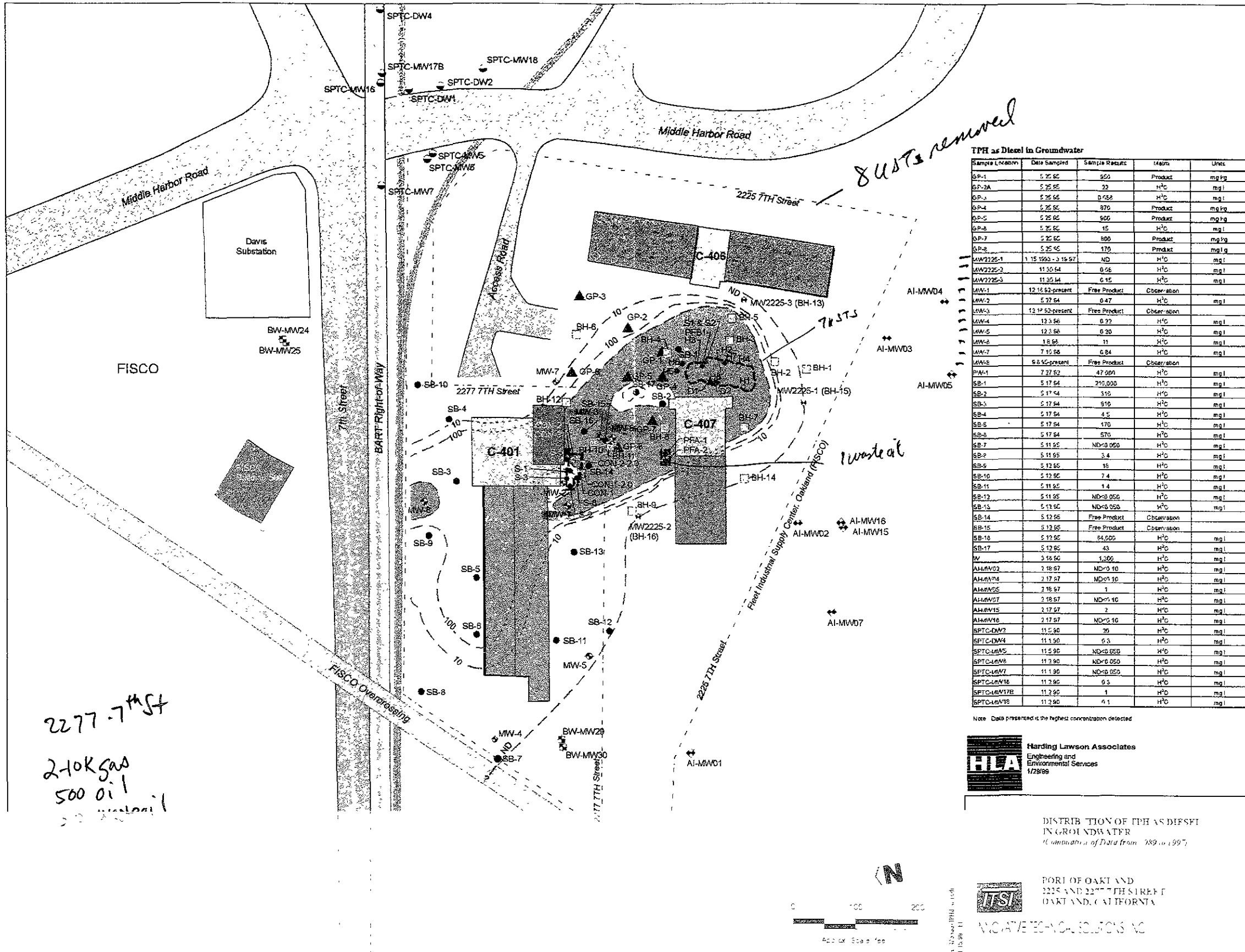
John Prall, R.G.

Associate Environmental Scientist

Enclosure

Cc: Jeff Jones

00 JUL 26 PM 3:55
ENVIRONMENTAL
PROTECTION



RR track planned in area.
 Why was MW-8 abandoned, will it be replaced?
 If fpc is as large as shown what addnl remediation/removal will be done?

2277-7th St
 240K gas
 500 oil
 200 waste oil

8 USTs removed

waste oil

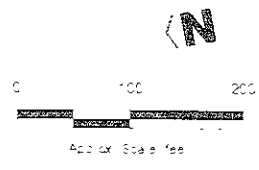
TPH as Diesel in Groundwater

Sample Location	Date Sampled	Sample Result	Units	Units
GP-1	5.25.85	503	Product	mg/kg
GP-2A	5.25.85	32	H ₂ O	mg/l
GP-3	5.25.85	0.58	H ₂ O	mg/l
GP-4	5.25.85	876	Product	mg/kg
GP-5	5.25.85	800	Product	mg/kg
GP-6	5.25.85	15	H ₂ O	mg/l
GP-7	5.25.85	800	Product	mg/kg
GP-8	5.25.85	170	Product	mg/kg
MW2225-1	11.15.85 - 3.15.87	ND	H ₂ O	mg/l
MW2225-2	11.30.84	0.58	H ₂ O	mg/l
MW2225-3	11.30.84	0.15	H ₂ O	mg/l
MW-1	12.16.82-present	Free Product	Observation	
MW-2	5.27.84	0.47	H ₂ O	mg/l
MW-3	12.14.82-present	Free Product	Observation	
MW-4	12.3.86	0.22	H ₂ O	mg/l
MW-5	12.3.86	0.20	H ₂ O	mg/l
MW-6	1.8.88	11	H ₂ O	mg/l
MW-7	7.10.88	0.84	H ₂ O	mg/l
MW-8	8.6.82-present	Free Product	Observation	
MW-9	7.27.82	47.000	H ₂ O	mg/l
SB-1	5.17.84	710,000	H ₂ O	mg/l
SB-2	5.17.84	316	H ₂ O	mg/l
SB-3	5.17.84	816	H ₂ O	mg/l
SB-4	5.17.84	4.5	H ₂ O	mg/l
SB-5	5.17.84	170	H ₂ O	mg/l
SB-6	5.17.84	570	H ₂ O	mg/l
SB-7	5.11.85	ND<0.050	H ₂ O	mg/l
SB-8	5.11.85	3.4	H ₂ O	mg/l
SB-9	5.12.85	15	H ₂ O	mg/l
SB-10	5.12.85	7.4	H ₂ O	mg/l
SB-11	5.11.85	1.4	H ₂ O	mg/l
SB-12	5.11.85	ND<0.050	H ₂ O	mg/l
SB-13	5.12.85	ND<0.050	H ₂ O	mg/l
SB-14	5.12.85	Free Product	Observation	
SB-15	5.12.85	Free Product	Observation	
SB-16	5.12.85	84,000	H ₂ O	mg/l
SB-17	5.12.85	43	H ₂ O	mg/l
AI-MW01	3.18.86	1,200	H ₂ O	mg/l
AI-MW02	2.18.87	ND<0.10	H ₂ O	mg/l
AI-MW03	2.17.87	ND<0.10	H ₂ O	mg/l
AI-MW04	2.18.87	1	H ₂ O	mg/l
AI-MW05	2.18.87	ND<0.10	H ₂ O	mg/l
AI-MW06	2.17.87	2	H ₂ O	mg/l
AI-MW07	2.17.87	ND<0.10	H ₂ O	mg/l
AI-MW08	2.17.87	ND<0.10	H ₂ O	mg/l
SPTC-DW2	11.5.80	30	H ₂ O	mg/l
SPTC-DW4	11.1.80	0.3	H ₂ O	mg/l
SPTC-MW5	11.5.80	ND<0.050	H ₂ O	mg/l
SPTC-MW6	11.3.80	ND<0.050	H ₂ O	mg/l
SPTC-MW7	11.1.80	ND<0.050	H ₂ O	mg/l
SPTC-MW16	11.2.80	0.3	H ₂ O	mg/l
SPTC-MW17B	11.2.80	1	H ₂ O	mg/l
SPTC-MW18	11.2.80	4.1	H ₂ O	mg/l

Note: Data presented is the highest concentration detected.

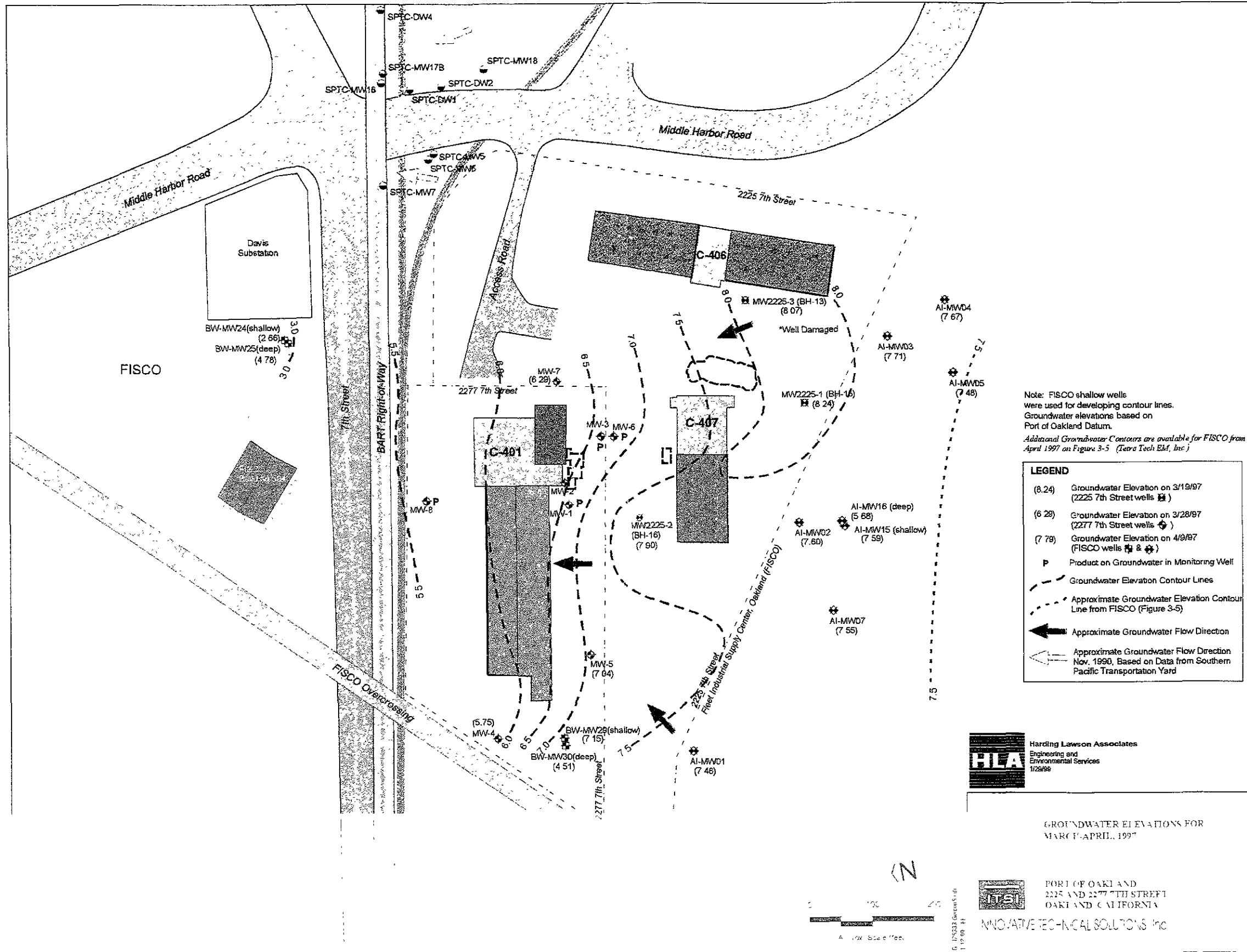


DISTRIBUTION OF TPH AS DIFSPH IN GROUNDWATER
 Distribution of Data from 1989 to 1997



PORI OF OAK AND
 2225 AND 2277 7TH STREET
 OAKLAND, CALIFORNIA

W. G. ATY & ASSOCIATES, INC.

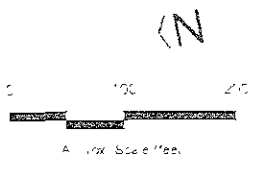


Note: FISCO shallow wells were used for developing contour lines. Groundwater elevations based on Port of Oakland Datum.
 Additional Groundwater Contours are available for FISCO from April 1997 on Figure 3-5 (Tetra Tech E&E, Inc.)

LEGEND	
(8.24)	Groundwater Elevation on 3/19/97 (2225 7th Street wells)
(6.28)	Groundwater Elevation on 3/28/97 (2277 7th Street wells)
(7.78)	Groundwater Elevation on 4/9/97 (FISCO wells)
P	Product on Groundwater in Monitoring Well
- - -	Groundwater Elevation Contour Lines
- - -	Approximate Groundwater Elevation Contour Line from FISCO (Figure 3-5)
→	Approximate Groundwater Flow Direction
↔	Approximate Groundwater Flow Direction Nov. 1990, Based on Data from Southern Pacific Transportation Yard






HILA
 Harding Lawson Associates
 Engineering and Environmental Services
 1/29/98

GROUNDWATER ELEVATIONS FOR MARCH/APRIL 1997










ITSI
 PORT OF OAKLAND
 2225 AND 2277 7TH STREET
 OAKLAND, CALIFORNIA
 INNOVATIVE TECHNICAL SOLUTIONS, INC.
















GROUNDWATER MONITORING WELLS

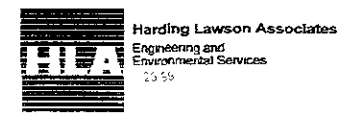
-  MW-1 - MW-8
2277 7th Street
 Alisto Engineering Group (January 30, 1996), *Site Investigation Report*, Port of Oakland Building C-401, 2277 7th Street, Oakland, CA, Project #10-270-01-006, Walnut Creek, CA
 [Locations referenced from PLS survey data, Map: *Partial Topographical Survey*, Sealand Corporation, Port of Oakland, April 1, 1998]
-  BW-MW24, 25
 29 and 30
FISCO - Surveyed well location.
 Tetra Tech EM, Inc. Information (1997).
 [Locations referenced from PLS survey data, Map: *Partial Topographical Survey*, Sealand Corporation, Port of Oakland, April 1, 1998]
-  AI-MW01 - AI-MW16
FISCO - Estimated well location.
 Locations referenced from Tetra Tech EM, Inc. Information (1997)
-  MW2225-1 (BH-15)
 MW2225-2 (BH-12)
 MW2225-3 (BH-13)
2225 7th Street
 RAMCON Engineering and Environmental Contracting (March 18, 1993);
Soil and Groundwater Site Assessment: Dongary Investments-Oakland,
 2225 7th Street, Oakland, CA 94607
 RAMCON Job #476004, West Sacramento, CA
 [Locations referenced from PLS survey data, Map: *Partial Topographical Survey*, Sealand Corporation, Port of Oakland, April 1, 1998]
-  SPTC-DW1 -
 SPTC-DW4
 SPTC-MW5 -
 SPTC-MW18
Southern Pacific Transportation Corporation Yard
 Locations estimated from Figure 7, *Data Report: Impoundment Area*, December 1990
 Geomatrix Consultants

SOIL BORINGS

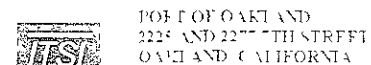
-  SB-1 - SB-17
 Alisto Engineering Group (January 30, 1996); *Site Investigation Report*, Port of Oakland Building C-401, 2277 7th Street, Oakland, CA, Project #10-270-01-006, Walnut Creek, CA
 [Locations referenced from edges of buildings and monitoring wells]
-  CON-1 - CON-3
 S-2 - S-8
 Uribe and Associates (February 23, 1994); *Port of Oakland Building C-401, 2277 7th Street, Oakland*, Report of Underground Storage Tank Removals, Oakland, CA
 [Locations referenced from the former UST excavation for 2225 7th Street]
-  GP1 - GP8
 Groundwater Technology, Inc. (July 26, 1995); *Soil and Groundwater Assessment Report, Ringsby Terminals, Port of Oakland Lease, 2225 7th Street, Oakland, CA 94607*
 GTI Project #02 070 0061, Sacramento, CA
 [Locations referenced from Building C-407, and Monitoring Wells at 2225 7th Street]
-  BH1 - BH6
 RAMCON Engineering and Environmental Contracting (March 18, 1993);
Soil and Groundwater Site Assessment: Dongary Investments-Oakland, 2225 7th Street, Oakland, CA 94607
 RAMCON Job #476004, West Sacramento, CA
 [Locations referenced from Building C-406 and the former UST excavation for 2225 7th Street]
-  H1 - H8
 National Environmental Service Company (May 31, 1991); *Tank Removal Closure Report ANR Freight System*, 2225 7th Street, Oakland, CA 94607
 [Locations referenced from the former UST excavation for 2225 7th Street]
-  S1 and S2
 SCS Engineers (April 6, 1990); *File No. 0389079 00 Soil and Water Sample Analysis: Underground Storage Tank Removal ANR Trucking 2225 7th Street Oakland CA*
 [Locations referenced from the former UST excavation for 2225 7th Street]
-  D1 and D2
 PFB1
 PF 1A and PF 1B
 RAMCON Engineering and Environmental Contracting (September 12, 1992);
Tank Removal Work Summary, Dongary Investment-Truck Maintenance Facility
 2225 7th Street Oakland CA 94607
 RAMCON Job #476004, West Sacramento, CA
 [Locations referenced from the former UST excavation for 2225 7th Street]

OTHER

-  Storm Drain/Catch Basin
-  Inferred Storm Drain/Catch Basin - Simpson, Strata & Associates (June 5, 1961), Plot Plan M-1, Office and Warehouse for R.E.A. Express, Oakland, CA; Drawing 42-11, Ringsby Freight Terminal Server Layout Behind Railway Express Agency (August 1968); and Port of Oakland (Personal communications)
-  Storm Drain Flow Direction
-  100 Concentration contour of Diesel in Soil (mg/kg)
-  Soil TPH-d >10,000 mg/kg
-  100 Concentration Contour of TPH as Diesel in Groundwater (in mg/L)
-  Free Product in Groundwater (assumed to be diesel)
-  100 Concentration contour of Gasoline in Soil (mg/kg)
-  Soil TPH-g >1,000 mg/kg
-  10 Concentration Contour of TPH as Gasoline in Groundwater (in mg/L)
-  Concentration of TPH as Gasoline in Groundwater >100 mg/L
-  10 Concentration contour of Benzene in soil (mg/kg)
-  Soil Benzene >10 mg/kg
-  10 Concentration Contour of Benzene in Groundwater (in mg/L)
-  Indicates areas excavated during UST removals
- ND Not Detected



LEGEND AND REFERENCES



W. CLARETECH, CA SOLUTIONS, INC.



PORT OF OAKLAND

July 25, 2000

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

**SUBJECT: 2277 Seventh Street UST Site,
Oakland, California**

Dear Mr. Seto:

I am responding to your June 26th correspondence regarding the schedule for constructing replacement well MW-8. The original well MW-8 was destroyed because it was located within the footprint of the impending Joint Intermodal Terminal (JIT) construction project. Upon completion of the JIT in August of next year, the Port will construct the replacement well.

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

Sincerely,

John Prall, R.G.
Associate Environmental Scientist

Cc: Jeff Jones

ENVIRONMENTAL
PROTECTION
00 JUL 26 PM 3:53

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

June 26, 2000

Mr. John Prall
Port of Oakland
530 Water Street
PO Box 2064
Oakland, CA 94604-2064
STID 3899

RE: 2277 Seventh Street, Oakland, CA

Dear Mr. Prall:

I have received a letter dated June 13, 2000 written by Harding Lawson Associates documenting the abandonment of MW-8 at the above address. In the letter it stated the Port of Oakland has committed to the construction of a new (replacement) well after the railroad track is in place. Please inform this office within 10 days of the receipt of this letter the Port's timeframe for the installation of this replacement well for MW-8.

If you have any questions, please contact me at (510) 567-6774.

Sincerely,



Larry Seto

Sr. Hazardous Materials Specialist

Cc: James McCarty, Harding Lawson Associates, 383 Fourth Street, 3rd Floor,
Oakland, CA 94607

Files



ENVIRONMENTAL
PROTECTION

PORT OF OAKLAND

JUN 23 AM 10:43

June 21, 2000

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

**SUBJECT: WELL ABANDONMENT
2277 SEVENTH STREET SITE,
OAKLAND, CALIFORNIA
(STID #3899)**

Dear Mr. Seto:

Following your concurrence, the Port of Oakland through Harding Lawson Associates (HLA) abandoned monitoring well MW-8. The well was abandoned due to the immediate start of construction work. After that work has been completed, the Port intends to reinstall the well. HLA documented the well destruction through a brief report enclosed herein. If you have any questions, please contact me at 627-1373.

Sincerely,

John Prall, R.G.

Associate Environmental Scientist

Enclosure

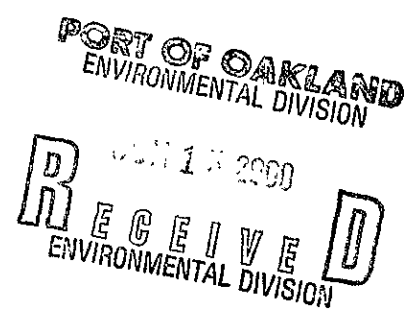
Cc: Jeff Jones



June 13, 2000

50229 1

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



**Abandonment of Monitoring Well 8
2277 Seventh Street
Oakland, California**

Dear Mr. Prall:

This letter documents the abandonment of groundwater monitoring well 8 (MW-8) at 2277 Seventh Street in Oakland California. Harding Lawson Associates (HLA) abandoned the well on behalf of Port of Oakland (Port) because of impending construction. The Port of Oakland plans to construct a railroad track associated with the Port of Oakland Vision 2000 improvements in the immediate vicinity of the well. In order for construction of the railroad track to proceed, all surface structures, including the well, needed to be removed. HLA requested approval to abandon MW-8 in a letter to Mr. Lawrence Seto of the Alameda County Department of Environmental Health dated April 19, 2000. The Port received approval in a letter from Mr. Seto dated April 20, 2000. The Port of Oakland has committed to the construction of a new well, after the railroad track is in place, in the location shown on Plate 1.

HLA obtained a permit (#W00-1690) from the Alameda County Public Works Agency (ACPW) for the abandonment of the well and, on April 20, 2000, HLA contracted with Gregg Drilling and Testing, Inc. (Gregg) to remove the well construction materials and backfill the boring with neat cement. Gregg removed the well box and then, using 8-inch hollow stem augurs, overdrilled the 2-inch monitoring well to a final depth of 20 feet below ground surface to remove all the sandpack, bentonite, and grout materials. The well casing was removed intact and consisted of 10 feet of slotted casing and 7.75 feet of blank casing.

June 13, 2000
50229 1
Mr. John Prall
Port of Oakland
Page 2


Harding Lawson Associates


Gregg contained the cuttings (soil, sand, and grout material) in a 55-gallon drum and the used personal protective equipment (tyveks, gloves, etc.) and the well casing were placed in a separate drum. We noted the presence of thick viscous oil along the casing of the monitoring well and in the soil cuttings. HLA collected a four-point composite sample of cuttings, which was submitted to Curtis and Tompkins, LTD. (C&T), a California state-certified analytical laboratory, for analysis. C&T analyzed the sample for total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, TPH as motor oil, TPH as hydraulic fluid, TPH and bunker fuel, and the five LUFT Metals (cadmium, chromium, lead, nickel, and zinc). HLA submitted the results of the analyses to the Port to facilitate the disposal of the material by the Port's waste disposal contractor. A copy of the laboratory report is attached to this letter. Gregg backfilled the boring by tremie grouting with a cement grout and bentonite mix to near surface and then completed the hole with quick-set concrete.

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

Yours very truly,

HARDING LAWSON ASSOCIATES


James McCarty
Project Engineer


Stephen J. Osborne
Geotechnical Engineer

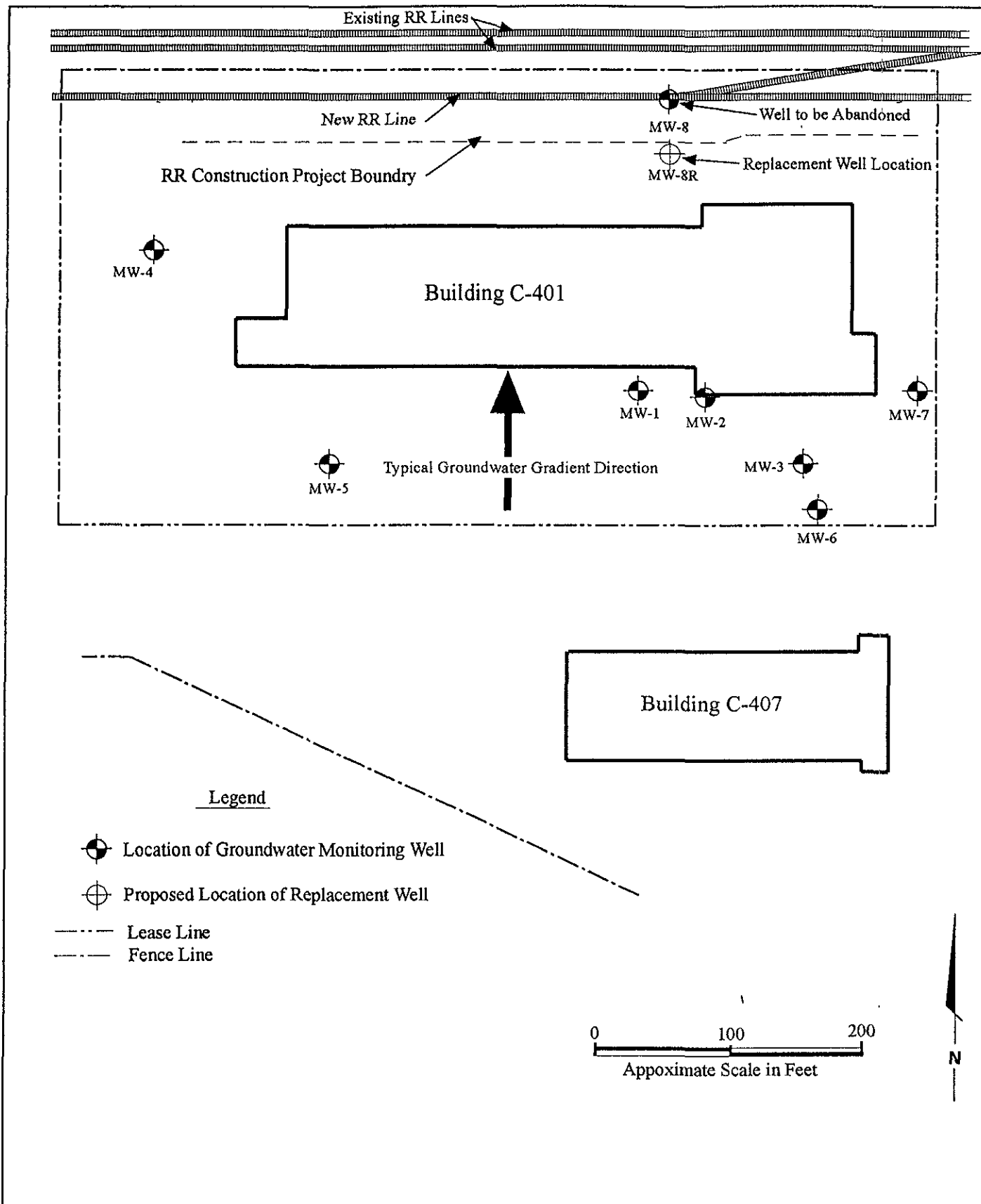


JGM/tcp/037733P

1 copies submitted

Attachments

- Plate 1 – Site Map
- Request for Approval to Abandon MW-8
- Approval Letter from County
- Field Notes
- Laboratory Report



Harding Lawson Associates
 Engineering and
 Environmental Services

Site Plan
Monitoring Well MW-8 Removal and Replacement
 2277 Seventh Street
 Oakland, California 94607

PLATE

1

DRAWN
 jgm

PROJECT NUMBER
 50229 2

APPROVED

DATE
 04/18/00

REVISED DATE



April 19, 2000

02884 101BAYA

Mr. Lawrence Seto
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

**Request for Approval to
Abandon Monitoring Well MW-8
Port of Oakland
2277 Seventh Street
Oakland, California**

Dear Mr. Seto:

On behalf of the Port of Oakland (Port), Harding Lawson Associates (HLA) requests approval to abandon groundwater monitoring well MW-8, located at 2277 Seventh Street in Oakland, California (Site), see Plate 1. Construction of a railroad track associated with the Port of Oakland Vision 2000 improvements requires the removal of MW-8. The well is located in the alignment of the new track, and in order for construction to proceed, all surface structures need to be removed. After the well has been properly abandoned and the construction activities are complete, HLA will construct a replacement well in the location shown on Plate 1.

HLA has received a permit (#W00-1690) from the Alameda County Public Works Agency (ACPW) for the abandonment of the well. The well will be destroyed in accordance with ACPW well permit policy by overdrilling to remove the sand pack and well casing and then backfilling with a cement grout and bentonite mix.


HLA will construct the replacement well approximately 30 days after the abandonment of MW-8 using standard construction procedures for groundwater monitoring wells. Within three weeks of the construction of the replacement well, HLA will issue a brief letter report will be issued to the Alameda County Department of Environmental Health documenting the replacement well's location and construction details.


April 19, 2000
02884 101BAYA
Mr. Lawrence Seto
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health
Page 2

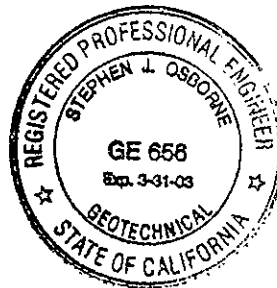
The Port has scheduled surface preparation for the construction for the new railroad spur to begin on Friday, April 21, 2000. Therefore HLA requests your authorization on Wednesday, April 19, 2000, to the proceed with well abandonment so that the well can be remove on Thursday, April 20, 2000 before construction begins. HLA appreciates your attention to this matter on such short notice and if you have any questions please contact James McCarty at (510) 628-3220.

Yours very truly,

HARDING LAWSON ASSOCIATES


James McCarty
Project Engineer


Stephen Osborne.
Geotechnical Engineer



JGM/SJO/mlw/P/037665P

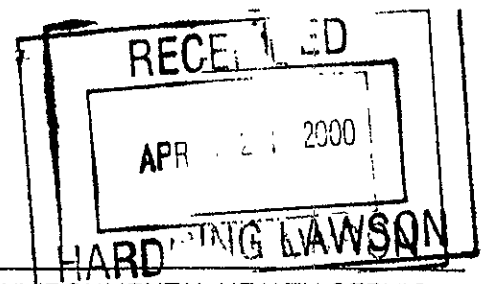
1 copies submitted

Attachments Plate 1 – Site Map

cc: John Prall
Port of Oakland

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

April 20, 2000

Mr. John Prall
Port of Oakland
530 Water Street
Oakland, CA 94607
STID 3899

RE: Port of Oakland, 2277 Seventh Street, Oakland, CA 94607

Dear Mr. Prall:

I have reviewed the Request for Approval to Abandon Monitoring Well MW-8 dated April 19, 2000 that was prepared by Harding Lawson Associates. It is acceptable.

Please forward to this office the replacement well installation report as soon as it becomes available.

If you have any questions, please contact me at (510) 567-6774.

Sincerely,



Larry Seto
Sr. Hazardous Materials Specialist

Cc: James McCarty, Harding Lawson Associates, 383 Fourth Street, 3rd Floor,
Oakland, CA 94607

Files

Project: Port 2277 WA Job No.: 50229-2
 Subject: FIELD INVESTIGATION DAILY REPORT Date: 4/20/00
 Equipment Rental: _____ Company: _____ To: File
 Equipment Hours: _____ F.E. Time from: _____ to: _____ By: JGM

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

0800 onsite
 0805 Gregg crew arrives w/ drill rig & support truck
 (Chris & Jose)
 08:10 H&S meeting, discuss potential contamination,
 PPE & hospital route - preferred course of
 action for emergency is to call 911
 Require that they wear Tyveks & gloves at all
 times due to the presence of heavy oil
 0820 Calibrate OUM w/ 100 ppm isobutylene std
 0830 Break out well box
 Drill to 20' bgs
 oil noted in cutting from about 8'-12'
 monitoring breathing space w/ OUM
 ND so far
 Pull casing 17.75' total, 10' of screened casing
 (slotted) | oil on casing
 0900 Backfill boring with neat cement & bentonite
 mix - tremie grout to ~5' bgs then pour from
 surface, top w/ quikrete
 Drum up cuttings & label drum # 4220
 collected 4 soil sample at intervals during drilling
 to characterize soil
 Simple ID → Drum 4220-A @ 8:35
 { -B @ 8:40
 -C @ 8:45
 -D @ 8:50
 Drum casing & PPE in Drum → label # 4219
 10:30 Leave site

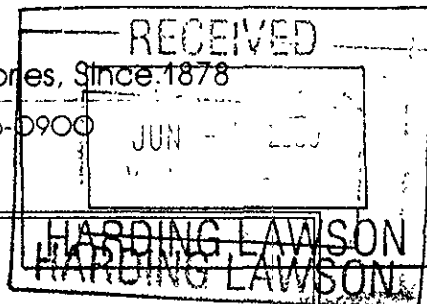
Attachments:

Initial



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
383 Fourth Street
Third Floor
Oakland, CA 94607

Date: 16-MAY-00
Lab Job Number: 145166
Project ID: 50229-2
Location: Port 2277 WA

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: Anna Jagt
Project Manager

Reviewed by: [Signature]
Operations Manager

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

CHAIN OF CUSTODY FORM

No. **2320**

Lab: **C&L**

145166

Samplers: **JGM**

Job Number: **50229-2**

Name/Location: **Port 2277 WA**

Project Manager: **Jim McCarty**

Recorder: **James M. McCarty**
 (Signature Required)

SOURCE CODE	MATRIX					# CONTAINERS & PRESERV.				SAMPLE NUMBER OR LAB NUMBER			DATE				STATION DESCRIPTION/ NOTES
	Water	Sediment	Soil	Oil	Unpres	H ₂ SO ₄	HNO ₃	HCL	Ice	Yr	Wk	Seq	Yr	Mo	Day	Time	
			X						1			Drum 4220-A	00	04	20	08:35	Composite 5
			X						1			Drum 4220-B				08:40	
			X						1			Drum 4220-C				08:45	
			X						1			Drum 4220-D				08:55	

ANALYSIS REQUESTED											
EPA 8010	EPA 8020	EPA 8260	EPA 8270	METALS	EPA 8015M/TPHG	EPA 8020/BTEX	EPA 8015M/TPHD.o	TPH A	TPH B	TPH C	TPH Hydrocarbon Dioxin
								X	X	X	X
								X	X	X	X
								X	X	X	X
								X	X	X	X
								X	X	X	X
											5 Luch Metals

LAB NUMBER			DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
Yr	Wk	Seq				
						Std TAT

TEMP. RECEIVED BY: **[Signature]** **60**

CHAIN OF CUSTODY RECORD		
RELINQUISHED BY: (Signature) James M. McCarty	RECEIVED BY: (Signature) [Signature]	DATE/TIME 4/21/00 18:55
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature)	DATE/TIME	RECEIVED FOR LAB BY (Signature) [Signature]
METHOD OF SHIPMENT		
SAMPLE CONDITION WHEN RECEIVED BY THE LABORATORY		

Gasoline by GC/FID CA LUFT

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	50229-2	Analysis:	EPA 8015M
Field ID:	COMP DRUM 4220-(A-D)	Diln Fac:	1.000
Matrix:	Soil	Batch#:	55398
Units:	mg/Kg	Sampled:	04/20/00
Basis:	wet	Received:	04/21/00

Type: SAMPLE Analyzed: 04/27/00
 Lab ID: 145166-005

Analyte	Result	RL
Gasoline C7-C12	2.1 H Y	0.95

Surrogate	%REC	Limits
Trifluorotoluene (FID)	80	62-138
Bromofluorobenzene (FID)	92	46-150

Type: BLANK Analyzed: 04/26/00
 Lab ID: QC113940

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

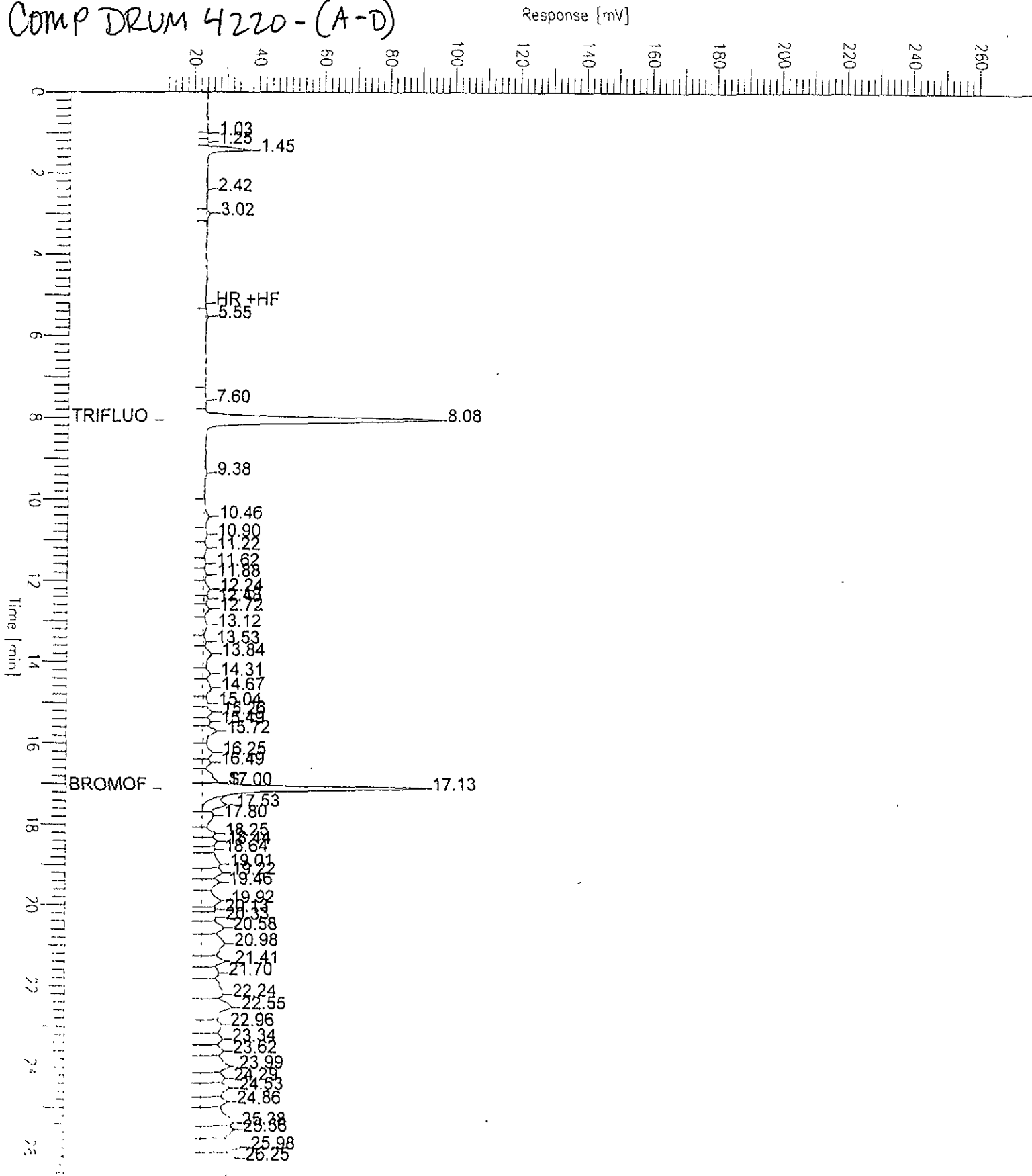
Surrogate	%REC	Limits
Trifluorotoluene (FID)	80	62-138
Bromofluorobenzene (FID)	79	46-150

Chromatogram

Sample Name : 145166-005,55398,TVH ONLY
FileName : G:\GC05\DATA\117G026.raw
Method : TVHBTXE
Start Time : 0.00 min - End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 11 mV

Sample #: COMP(1-4)A Page 1 of 1
Date : 5/1/00 01:31 PM
Time of Injection: 4/27/00 10:45 AM
Low Point : 11.21 mV High Point : 261.21 mV
Plot Scale: 250.0 mV

COMP DRUM 4220-(A-D)

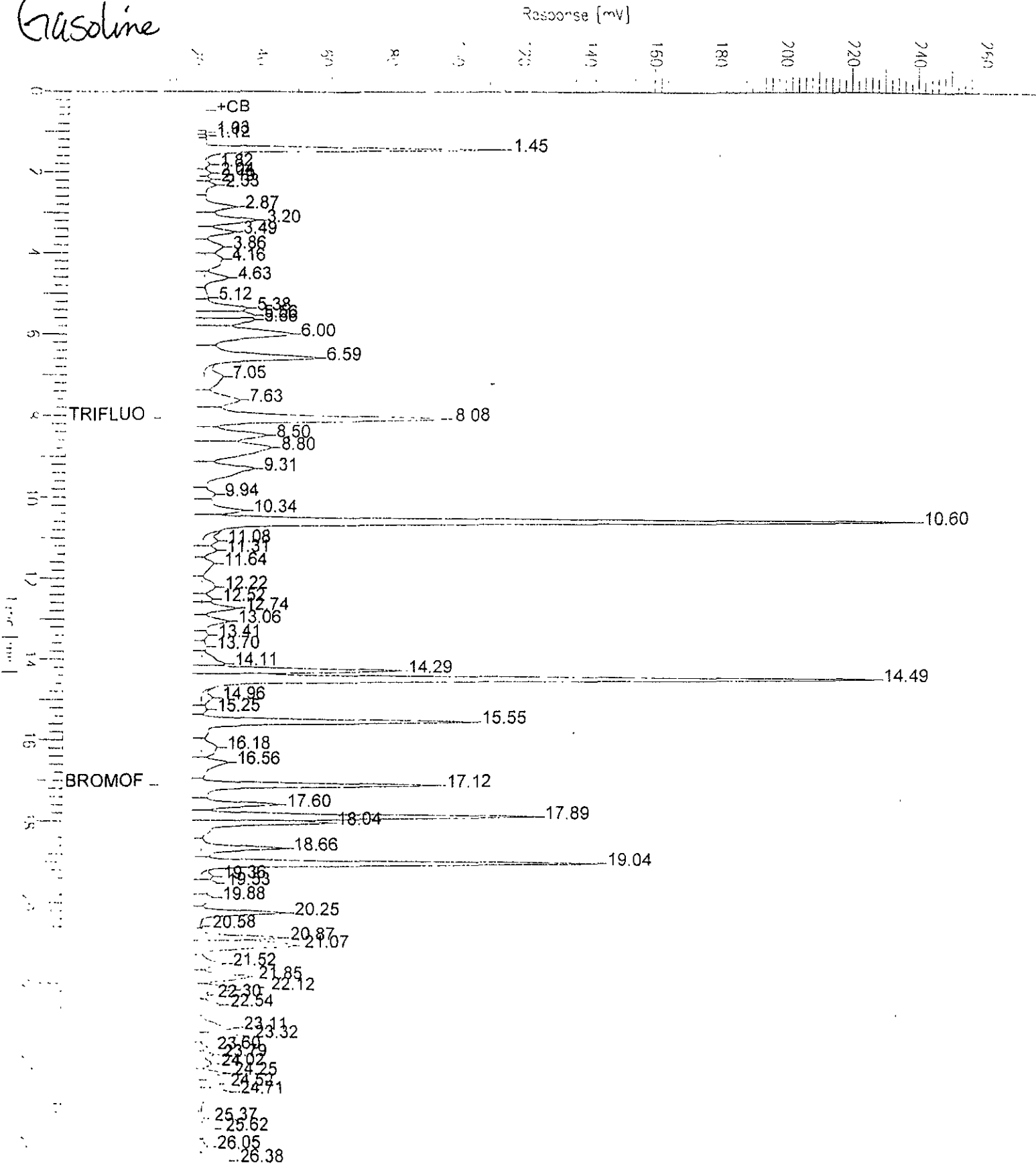


Chromatogram

Sample Name : CCV/LCS, QC113941, 55398, 00WS8880, 5/5000
FileName : G:\GC05\DATA\117G002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor : -1.0 Plot Offset: 11 mV

Sample #: GAS
Date : 4/26/00 07:52 PM
Time of Injection: 4/26/00 07:25 PM
Low Point : 10.69 mV High Point : 260.69 mV
Plot Scale: 250.0 mV

Gasoline



Gasoline by GC/FID CA LUFT

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	50229-2	Analysis:	EPA 8015M
Type:	LCS	Basis:	wet
Lab ID:	QC113941	Diln Fac:	1.000
Matrix:	Soil	Batch#:	55398
Units:	mg/Kg	Analyzed:	04/26/00

Analyte	Spiked	Result	%RBC	Limits
Gasoline C7-C12	10.00	9.034	90	75-123

Surrogate	%RBC	Limits
Trifluorotoluene (FID)	92	62-138
Bromofluorobenzene (FID)	84	46-150



Gasoline by GC/FID CA LUFT			
Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	50229-2	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	145227-005	Batch#:	55398
Matrix:	Soil	Sampled:	04/13/00
Units:	mg/Kg	Received:	04/21/00
Basis:	wet	Analyzed:	04/26/00

Type: MS Lab ID: QC113942

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.07208	10.00	7.853	78	41-132

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	62-138
Bromofluorobenzene (FID)	83	46-150

Type: MSD Lab ID: QC113943

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.00	7.687	76	41-132	2	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	62-138
Bromofluorobenzene (FID)	82	46-150

Total Extractable Hydrocarbons

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	SHAKER TABLE
Project#:	50229-2	Analysis:	EPA 8015M
Field ID:	COMP DRUM 4220-(A-D)	Batch#:	55292
Matrix:	Soil	Sampled:	04/20/00
Units:	mg/Kg	Received:	04/21/00
Basis:	wet	Prepared:	04/21/00

Type: SAMPLE Diln Fac: 5.000
 Lab ID: 145166-005 Analyzed: 04/27/00

Analyte	Result	RL
Diesel C10-C24	810 H	5.0
Motor Oil C24-C36	830 Y	25
Bunker C C12-50	3,500 Y	25
Hydraulic Fluid, C12-50	1,200 L	25

Surrogate	%REC	Limits
Hexacosane	103	60-136

Type: BLANK Diln Fac: 1.000
 Lab ID: QC113567 Analyzed: 04/29/00

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0
Bunker C C12-50	ND	5.0
Hydraulic Fluid, C12-50	ND	5.0

Surrogate	%REC	Limits
Hexacosane	92	60-136

Chromatogram

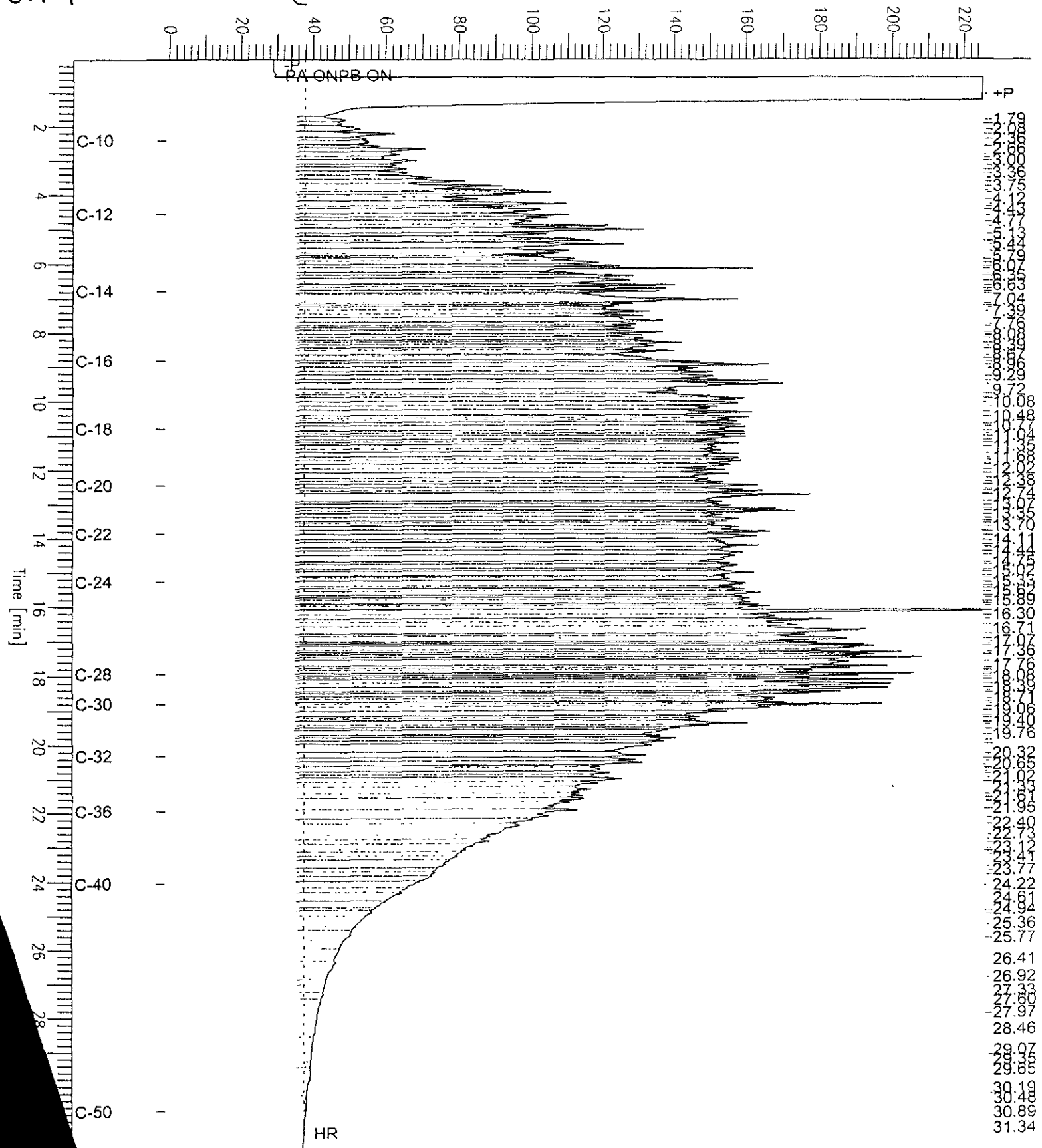
Sample Name : 145166-005,55292
FileName : G:\GC13\CHB\116B056.RAW
Method : BTEH118.MTH
Start Time : 0.01 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: -1 mV

Sample #: 55292
Date : 04/27/2000 12:12 PM
Time of Injection: 04/27/2000 11:56 AM
Low Point : -0.91 mV
Plot Scale: 226.1 mV

COMP DRUM 4220 (A-D)

Response [mV]



Chromatogram

Sample Name : ccv,00ws8987,ds1
FileName : G:\GC13\CHB\119B002.RAW
Method : BTEH118.MTH
Start Time : 0.01 min
Scale Factor: 0.0

End Time : 31.91 min
Plot Offset: -1 mV

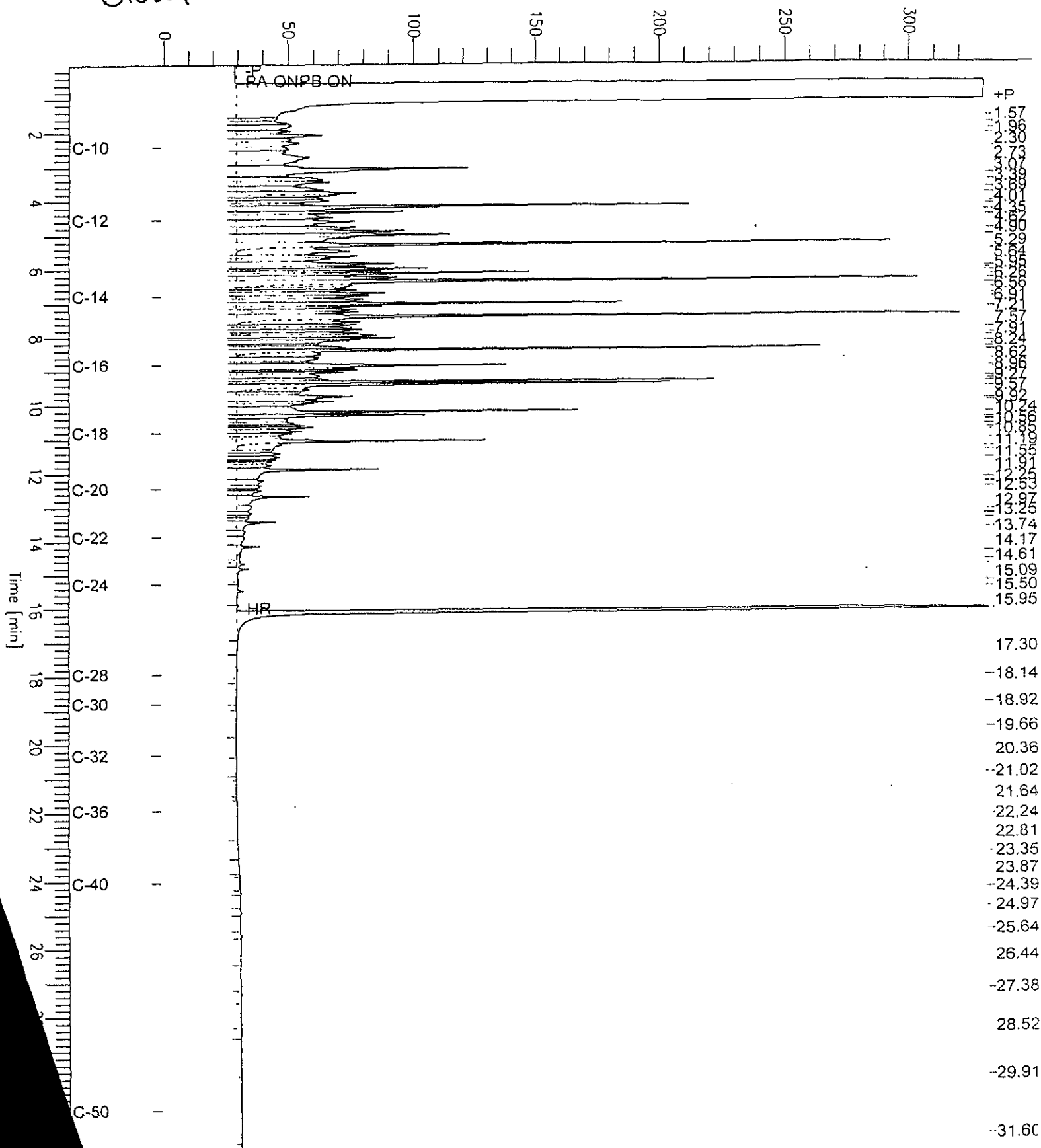
Sample #: 500mg/l
Date : 04/30/2000 10:21 AM
Time of Injection: 04/28/2000 06:53 PM
Low Point : -1.23 mV
Plot Scale: 331.1 mV

Page 1 of 1

High Point : 329.85 mV

Diesel

Response [mV]



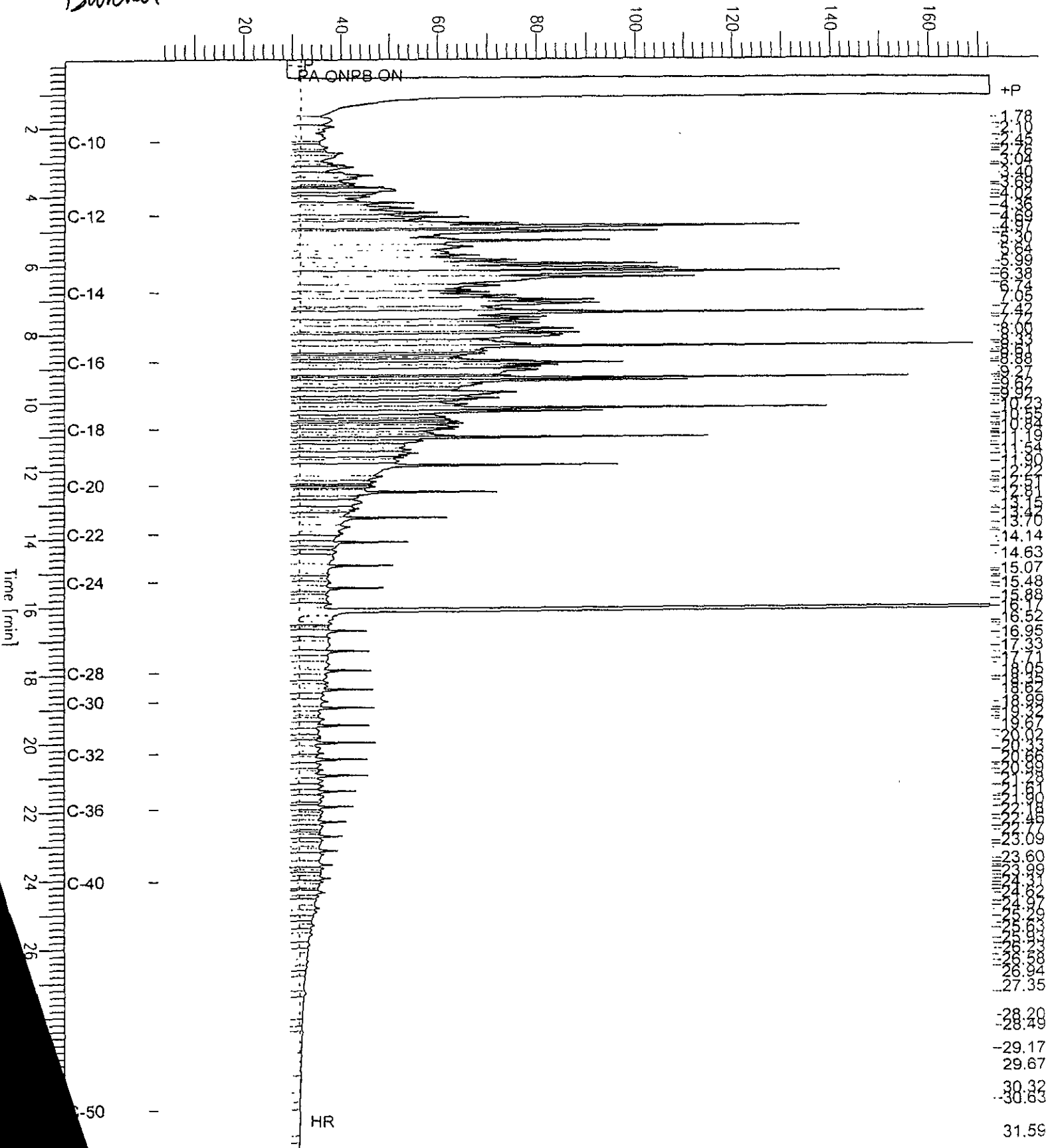
Chromatogram

Sample Name : ccv,00ws8815,bu
FileName : G:\GC13\CHB\119B005.RAW
Method : BTEH118.MTH
Start Time : 0.01 min , End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 3 mV

Sample # :
Date : 04/30/2000 10:23 AM
Time of Injection: 04/28/2000 08:59 PM
Low Point : 2.90 mV High Point : 172.35 mV
Plot Scale: 169.4 mV

Bunker C

Response [mV]



Chromatogram

Sample Name : ccv,00ws8989.mo
FileName : G:\GC15\CHB\1148037.RAW
Method : BTEH15B.MTH
Start Time : 0.01 min
Scale Factor: 0.0

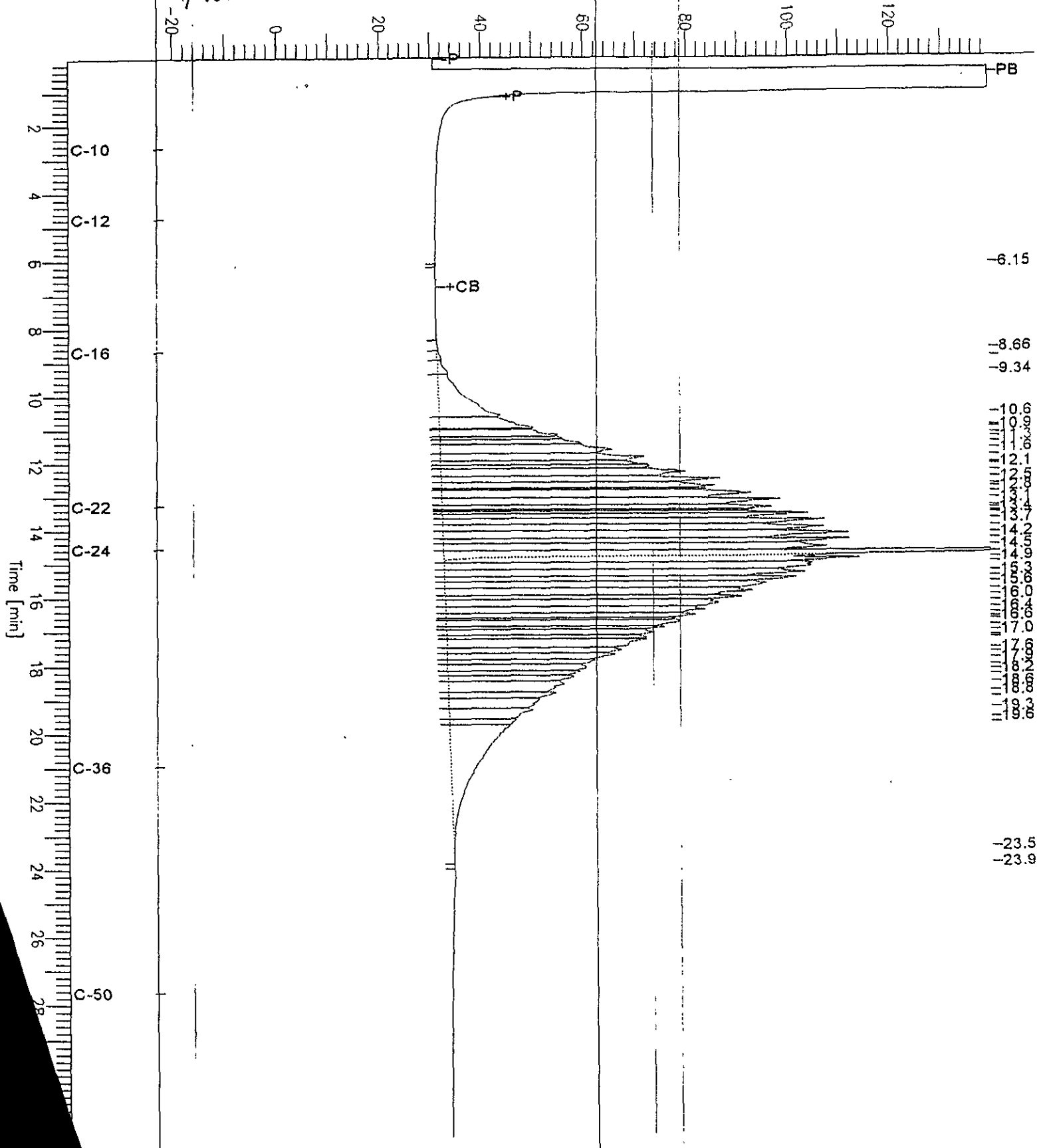
End Time : 31.91 min
Plot Offset: -22 mV

Sample #: 500mg/l
Date : 04/24/2000 01:36 PM
Time of Injection: 04/24/2000 12:16 PM
Low Point : -21.67 mV
Plot Scale: 160.8 mV
High Point : 139.14 mV

Page 1 of 1

MOTOR OIL

Response [mV]



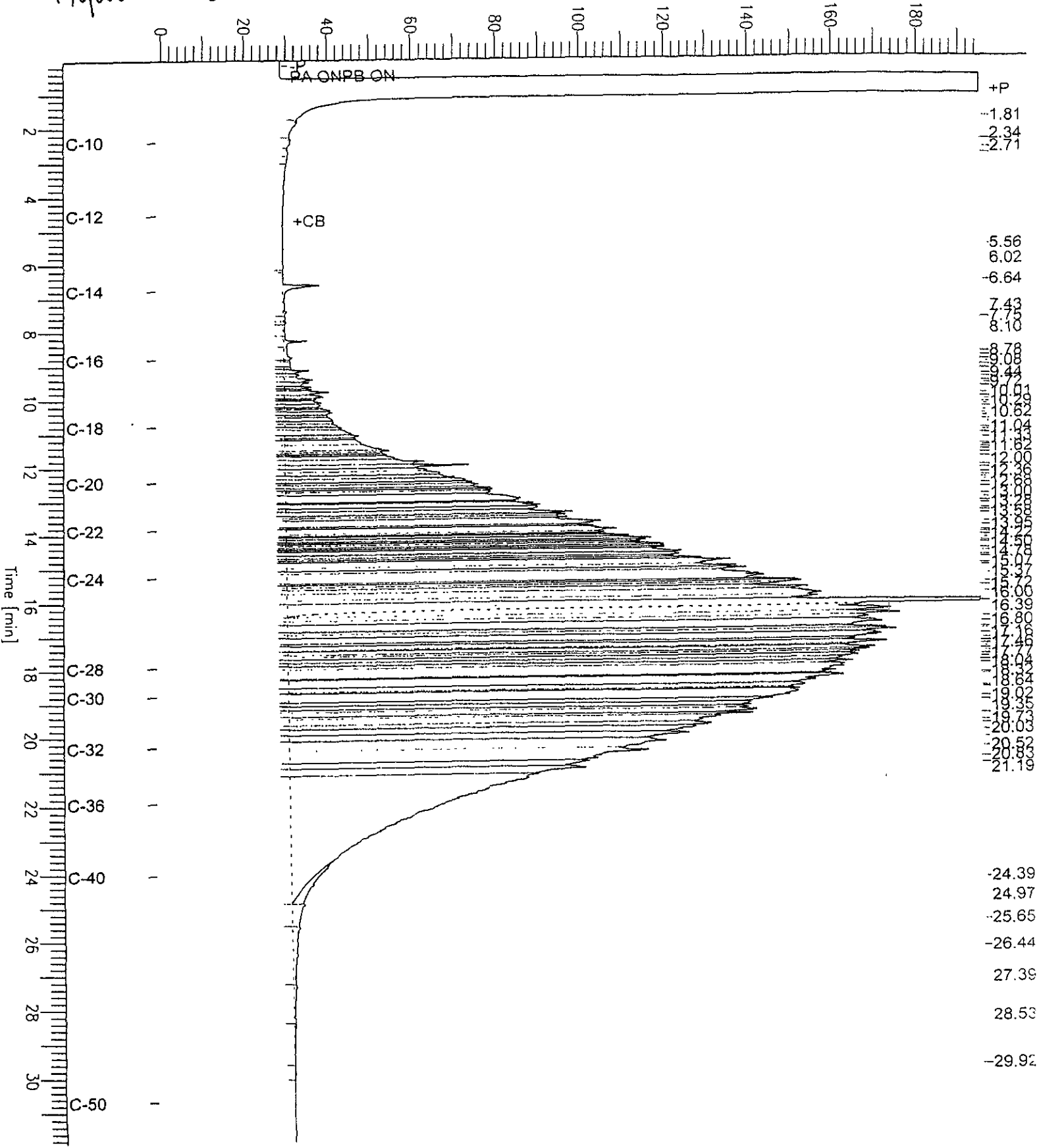
Chromatogram

Sample Name : ccv,00ws8825,ho
FileName : G:\GC13\CHB\119B006.RAW
Method : BTEH118.MTH
Start Time : 0.01 min
Scale Factor : 0.0
End Time : 31.91 min
Plot Offset : -1 mV

Sample # :
Date : 04/30/2000 10:23 AM
Time of Injection : 04/28/2000 09:40 PM
Low Point : -1.10 mV
Plot Scale : 196.1 mV
High Point : 194.97 mV

Hydraulic Oil

Response [mV]



Total Extractable Hydrocarbons

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	SHAKER TABLE
Project#:	50229-2	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC113568	Batch#:	55292
Matrix:	Soil	Prepared:	04/21/00
Units:	mg/Kg	Analyzed:	04/23/00
Basis:	wet		

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.50	40.80	82	67-121

Surrogate	%REC	Limits
Hexacosane	97	60-136

California LUFT Metals

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 3050
Project#:	50229-2	Analysis:	EPA 6010B
Field ID:	COMP DRUM 4220-(A-D)	Batch#:	55341
Matrix:	Soil	Sampled:	04/20/00
Units:	mg/Kg	Received:	04/21/00
Basis:	wet	Prepared:	04/24/00
Diln Fac:	1.000	Analyzed:	04/26/00

Type: SAMPLE Lab ID: 145166-005

Analyte	Result	RL
Cadmium	1.1	0.25
Chromium	20	0.50
Lead	3.5	0.15
Nickel	19	1.0
Zinc	41	1.0

Type: BLANK Lab ID: QC113734

Analyte	Result	RL
Cadmium	ND	0.25
Chromium	ND	0.50
Lead	ND	0.15
Nickel	ND	1.0
Zinc	ND	1.0

California LUFT Metals

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 3050
Project#:	50229-2	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	55341
Units:	mg/Kg	Prepared:	04/24/00
Basis:	wet	Analyzed:	04/26/00
Diln Fac:	1.000		

Type: BS Lab ID: QC113735

Analyte	Spiked	Result	%REC	Limits
Cadmium	10.00	8.250	83	75-112
Chromium	100.0	85.50	86	73-111
Lead	100.0	83.00	83	70-110
Nickel	25.00	20.80	83	74-111
Zinc	25.00	20.60	82	68-110

Type: BSD Lab ID: QC113736

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Cadmium	10.00	8.550	86	75-112	4	20
Chromium	100.0	89.00	89	73-111	4	23
Lead	100.0	87.00	87	70-110	5	20
Nickel	25.00	21.60	86	74-111	4	21
Zinc	25.00	21.40	86	68-110	4	22

California LUFT Metals

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 3050
Project#:	50229-2	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
Type:	SSPIKE	Batch#:	55341
MSS Lab ID:	145124-008	Sampled:	04/17/00
Lab ID:	QC113738	Received:	04/18/00
Matrix:	Soil	Prepared:	04/24/00
Units:	mg/Kg	Analyzed:	04/26/00
Basis:	wet		

Analyte	MSS Result	Spiked	Result	%REC	Limits
Cadmium	1.145	9.615	8.510	77	35-128
Chromium	16.09	96.15	92.31	79	23-141
Lead	108.7	96.15	142.3	35	31-133
Nickel	15.80	24.04	33.70	74	32-132
Zinc	45.80	24.04	58.65	53	30-132

California LUFT Metals

Lab #:	145166	Location:	Port 2277 WA
Client:	Harding Lawson Associates	Prep:	EPA 3050
Project#:	50229-2	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
Type:	SDUP	Batch#:	55341
MSS Lab ID:	145124-008	Sampled:	04/17/00
Lab ID:	QC113737	Received:	04/18/00
Matrix:	Soil	Prepared:	04/24/00
Units:	mg/Kg	Analyzed:	04/26/00
Basis:	wet		

Analyte	MSS Result	Result	RL	RPD	Lim
Cadmium	1.145	0.8599	0.24	28 *	27
Chromium	16.09	13.24	0.48	19	34
Lead	108.7	48.79	0.14	76 *	40
Nickel	15.80	13.62	0.97	15	31
Zinc	45.80	37.78	0.97	19	34

* = Value outside of QC limits; see narrative

RL = Reporting Limit

RPD= Relative Percent Difference