Appendix E: Site #43 – 1619 Keosauqua Way

Christy Hunter

Fields of Opportunities

STATE OF IOWA

THOMAS J VILSACK, GOVERNOR
SALLY J PEDERSON, LT GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
JEFFREY R VONK, DIRECTOR

November 18, 2004

Mr Jim Elza, Director
Polk County Planning & Development
5885 NE 14th Street
Des Moines, IA 50313

SUBJECT: Des Moines USTFields Site Check Report --
Former Gas Station property at 1619 Keo Way in Des Moines, Iowa

Dear Mr Elza:

The department received a Site Check Report (environmental investigation) for the above-referenced site The site check was funded through an EPA grant and completed by Barker Lemar Engineering as part of the Des Moines USTFields project (a description of the project was provided to you in our January 20, 2004 letter). Records show the site was operated as a gas station from 1930 – 1935. The purpose of the investigation was to determine if petroleum contamination is present in soil or groundwater due to the historical operation of a service station on the property.

Soil contaminant concentrations were below the action limits established by this department (see 567—135 14(455B) Iowa Administrative Code). Minimal levels of Total Extractable Hydrocarbons as waste oil (TEH-wo) were detected in soil; however, there is no action level established for TEH-wo in soil. Contaminants above action levels were not detected in groundwater samples. Therefore, no further action will be required at this time. We will update our records to indicate a petroleum release was not verified.

For your convenience, we are providing you a copy of the site check report. Additional information concerning the Des Moines UST Fields project is available for public viewing at the DNR Records Center, Wallace State Office Building, 502 East Ninth Street, Des Moines, Iowa. You are welcome to review these files during regular business hours (8 a.m. - 4:30 p.m. Monday through Friday), or to request copies of the material at a fee of $0.40 per page.

Please contact me at 515/281-8011, if you have additional questions or we may be of further assistance.

Sincerely,

Elaine R. Douskey

ELAINE R DOUSKEY
ENVIRONMENTAL SPECIALIST
UNDERGROUND STORAGE TANK SECTION

c: Field Office 5
Christy Jaworski, 1801 Industrial Circle West Des Moines, IA 50265
Ellen Walkowiak, Economic Development, City of Des Moines, 400 E. 1st Street, Des Moines, IA 50309

USTFsitechk_1619Keo doc

Summary of Activities

Iowa USTfields Project
City of Des Moines
Property Owner – Polk County
1619 Keo Way
Des Moines, IA
Project No. IADNR 001
April 2004

1801 Industrial Circle, West Des Moines, Iowa 50265
(515) 256-8814 Fax (515) 256-0152

Summary of Activities
Iowa USTfields Project – City of Des Moines
Property Owner - Polk County
1619 Keo Way
Des Moines, IA

1.0 INTRODUCTION

BARKER LEMAR ENGINEERING CONSULTANTS was contracted by the Iowa Department of Natural Resources in partnership with the City of Des Moines, the EPA, and the Iowa Underground Storage Tank Financial Responsibility Program to assess and clean up contaminated sites within the pilot project area with the ultimate goal of redevelopment. The sites are located in the Drake Neighborhood area within the City of Des Moines.

Initial activities included identifying sites where potential petroleum contamination may be located which could hinder future development activities. The potential petroleum contaminated sites were identified by a search of Polk City Directories, Sanborn Maps, review of IDNR underground storage tank and leaking underground storage tank records, and review of the Fire Marshall's records.

The site at 1619 Keo Way is currently owned by Polk County. It is currently vacant. A filling station operated on site from 1930-1935.

2.0 RECORD REVIEW

Polk City Directories were reviewed at the Des Moines Library. The Directory was reviewed in approximately 5 year intervals. Information in the Directory indicated the site was a Phillips Station from 1930 through 1935. The site is currently vacant.

According to Matt Porter with the Fire Department there is no information on tanks at this site in their records.

Site visual observations did not indicate any evidence of underground storage tanks.

3.0 SOIL AND GROUNDWATER RESULTS

BARKER LEMAR personnel were on site February 22, 2004. Two soil borings were installed with a Geoprobe and converted to temporary monitoring wells. Logs are included in Appendix A. Only two borings were installed on the site due to the steep grade on the east portion of the site. If an additional boring is required on the east side of the site, it will likely need to be installed with a hand auger. Figure 1 is a site map showing the location of the borings/temporary monitoring wells.

Soil samples were screened approximately every two feet with a photoionization detector (PID). A soil sample was collected from each soil boring at the location of the highest PID, or if the PID did not detect any contaminant, at the assumed groundwater/soil interface. Samples were submitted to Keystone Laboratories in Newton, Iowa for BTEX/MTBE analysis by Iowa Method OA-1 by GC/MS and for total extractable hydrocarbon analysis by Iowa Method OA-2. Copies of the analytical results and chain of custody forms are located in Appendix B.

Temporary wells were installed at the boring locations. Wells were purged of three volumes or bailed dry and groundwater samples were collected for analysis. Samples were submitted to Keystone Laboratories in Newton, Iowa for BTEX/MTBE analysis by Iowa Method OA-1 by GC/MS and for total extractable hydrocarbon analysis by Iowa Method OA-2. Sample results are included in the following table. Soil results indicate detectable concentrations of total extractable hydrocarbons as waste oil in both soil borings. There is no established action level for waste oil in soil. All analyzed compounds are below detection limits in the groundwater samples.

Table 1

Analytical Results

Soil Sampling

Analyte	Units	Action Level	B-1 11-13'	B-2 11-13'
Methyl-tert-Butyl Ether (MTBE)	mg/kg	NE	<0.010	<0.010
Benzene	mg/kg	0.54	<.005	<.005
Toluene	mg/kg	42	<.005	<.005
Ethylbenzene	mg/kg	15	<.005	<.005
Xylenes, Total	mg/kg	NE	<.005	<.005
TEH, as #2 diesel fuel	mg/kg	3800	<5	<5
TEH, as gasoline	mg/kg	NE	<5	<5
TEH, as waste oil	mg/kg	NE	23	10

Table 2

Analytical Results

Groundwater Sampling

Analyte	Units	Action Level	B-1	B-2
Methyl-tert-Butyl Ether (MTBE)	ug/L	NA	<2	<2
Benzene	ug/L	250	<2	<2
Toluene	ug/L	1000	<2	<2
Ethylbenzene	ug/L	700	<2	<2
Xylenes, Total	ug/L	1000	<4	<4
TEH, as #2 diesel fuel	ug/L	1200	<100	<200
TEH, as waste oil	ug/L	400	<100	<200

4.0 CONCLUSION

Barker Lemar conducted assessment activities to determine potential petroleum contamination for property owned by Polk County at 1619 Keo Way in Des Moines, Iowa. Results of the activities did not locate any underground storage tanks. Total extractable hydrocarbons as waste oil is present in both soil borings. There is no established action level for waste oil in soil. All analyzed compounds are below detection limits in the water groundsamples. Due to the slope of the site, only two soil borings/temporary wells were installed and these were installed by hand auger. The

shape of the property parcel likely limits future development potential. Based on this limited potential and the results of the two samples collected, Barker Lemar does not recommend the third boring be installed at this time. This boring installation would require hand augering to a likely depth of 25 to 30 feet below ground surface.

We have appreciated being of service to you on this project. If you have any questions concerning this submittal, please do not hesitate to contact our office at 515-256-8814.

Sincerely,

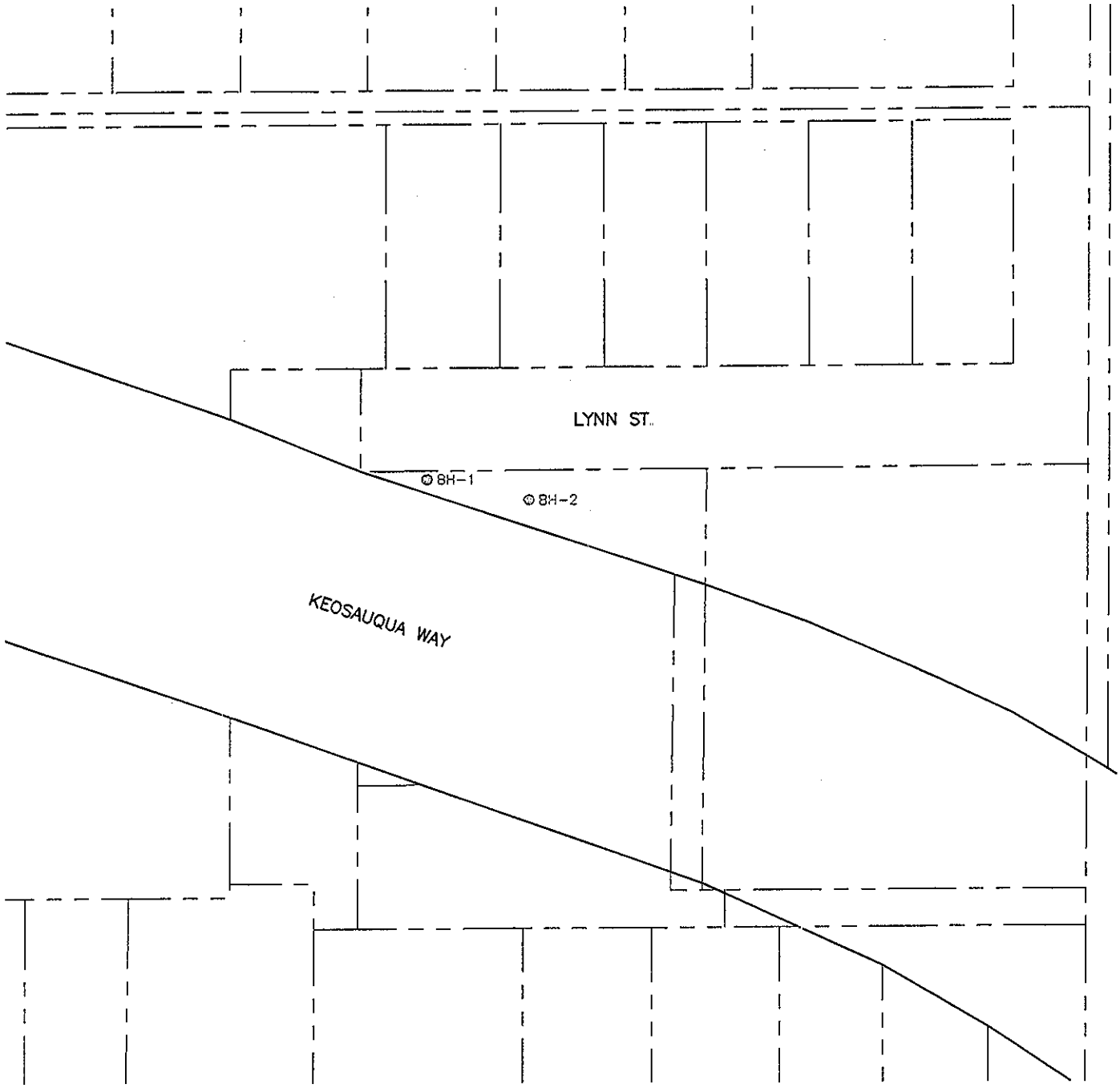
BARKER LEMAR ENGINEERING CONSULTANTS

Christy L. Jaworski
Senior Project Manager

Anita Maher-Lewis
Regional Manager

FIGURE 1

SITE PLAN MAP



LEGEND

BH-1 — APPROXIMATE LOCATION OF BOREHOLE

PROPERTY BOUNDARY

SCALE

0 60 FT.

SITE MAP
BOREHOLE LOCATIONS
1619 KEOSAUQUA WAY
PROJECT NO. IADNR 001
DRAWING DATE: MARCH, 2004

BARKER LEMAR
ENGINEERING CONSULTANTS
1300 Cummins Road, Suite 201 - Des Moines, Iowa - 50315
Phone: 515 256 8814 - Fax: 515 256 0152 - www.barkerlemar.com

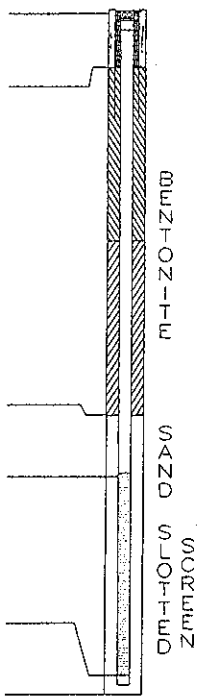
FIGURE
1

APPENDIX A

Boring/Monitoring Well Logs

MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: B-1	Facility Name: Polk County Property	Facility Street Address: 1619 Keo, Des Moines, IA
Boring Depth (ft) X Diameter (in): 14.0' X 2"		Drilling Method: Hand Auger
Certified Well Contractor Name: Kevin Sperfslage Certification Number: 40530		Logged by: John Wyciskalla
Ground Surface Elevation (ASL):	Top of Casing Elevation (ASL): NA	
Date: 2/22/2004 Start Time:	Date: 2/22/2004 End Time:	UST Number: NA / LUST Number: NA

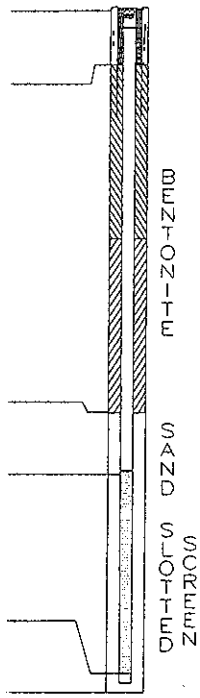
Depth (feet)	Well Construction Details (Temporary Monitoring Well)	Sample Depth (feet)	Sample No	Sample Type*	Field Screening Results (PID / FID)	Rock Formations, Soil, Color and Classifications Observations (moisture, odor, etc.) First column for USCS	
0.0		0-2'	1	SS	0	CL	0.0–2.0 – Dark Brown Sandy Clay with Gravel
1.0		2-4'	2	SS	2		
		4-6'	3	SS	0	CL	2.0-7.0 – Brown Sandy Clay with Gravel
		6-8'	4	SS	3		
		8-10'	5	SS	0		7.0-14.0 – Brown-Gray Clay with Gravel and Sand
		*10-12'	6	SS	0		
7.0		12-14'	7	SS	0		
9.0							
14.0							
14.0							14.0 End of Boring

* Sample collected for laboratory analysis SS – Spilt Spoon NR – No Recovery

Observations	Date:	2/22/04				
Water Levels (ASL)	Level:	10 51'				
Static Water Level Symbol (v)	Time:					

MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: B-2	Facility Name: Polk County Property	Facility Street Address: 1619 Keo, Des Moines, IA
Boring Depth (ft) X Diameter (in): 14.0' X 2"		Drilling Method: Hand Auger
Certified Well Contractor Name: Kevin Sperfslage Certification Number: 40530		Logged by: John Wyciskalla
Ground Surface Elevation (ASL):		Top of Casing Elevation (ASL): NA
Date: 2/22/2004 Start Time:	Date: 2/22/2004 End Time:	UST Number: NA / LUST Number: NA

Depth (feet)	Well Construction Details (Temporary Monitoring Well)	Sample Depth (feet)	Sample No.	Type*	Field Screening Results (PID / FID)	Rock Formations, Soil Color and Classifications, Observations (moisture, odor, etc.) First column for USCS	
0.0		0-2'	1	SS	0	CL	0.0–2.0 – Dark Brown Sandy Clay with Gravel
1.0		2-4'	2	SS	2		
		4-6'	3	SS	0	CL	2.0-5.0 – Brown Clay Gravel with Brick
		6-8'	4	SS	0		
		8-10'	5	SS	0	CL	5.0-8.0 – Brown Sandy Clay with Gravel
		10-12'	6	SS	0		
		*12-14'	7	SS	0	CL	8.0 -14.0 – Brown Gray Clay Gravel
6.0							
9.0							
14.0							
14.0							14.0 End of Boring

* Sample collected for laboratory analysis SS – Spilt Spoon NR – No Recovery

Observations	Date:	2/22/04				
Water Levels (ASL)	Level:	13.20'				
Static Water Level Symbol (v)	Time:					

APPENDIX B

Laboratory Analytical Results

Keystone
LABORATORIES, INC.

ACCREDITED IN ACCORDANCE WITH nelac

MEMBER ACIL

Accreditations:
Iowa DNR: 095
New Jersey DEP: IA001
Kansas DHE: E-10287

ANALYTICAL REPORT

March 09, 2004

Work Order: 14B0897

Report To

Christy Jaworski
Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

Work Order Information

Date Received: 02/24/2004 11:10AM
Collector: Wyciskalla, J.
Phone: 515-256-8814
PO Number:

Project : UST-Iowa
Project Number: IADNR-KEO

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
14B0897-01 B-1				Matrix:Water		Collected: 02/22/04 00:00	
Determination of Volatile Petroleum Hydrocarbons							
Benzene	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Toluene	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Ethylbenzene	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Xylenes, total	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Methyl-t-butyl Ether (MTBE)	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Ethyl-tert-Butyl Ether (ETBE)	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Di-iso-Propyl Ether (DIPE)	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
tert-Amyl Methyl Ether (TAME)	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
tert-Butyl Alcohol (TBA)	<100 ug/l	100	1C40310	OA-1 (GC/MS)	JRF	03/02/04 14:53	R-02
Surrogate: 4-Bromofluorobenzene	*100 %*			*81-124*	JRF	03/02/04 14:53	R-02
Determination of Extractable Petroleum Hydrocarbons							
TEH, as gasoline	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 4:53	
TEH, as #2 diesel fuel	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 4:53	
TEH, as waste oil	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 4:53	
Total Extractable Hydrocarbons	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 4:53	
Surrogate Pentacosane	*91 4 %*			*70-130*	SMG	03/06/04 4:53	
14B0897-02 B-1 11-13'				Matrix:Soil		Collected: 02/22/04 00:00	
Determination of Volatile Petroleum Hydrocarbons							
Benzene	<0 005 mg/kg	0 005	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Toluene	<0 005 mg/kg	0 005	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Ethylbenzene	<0 005 mg/kg	0 005	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Xylenes, total	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Methyl-t-butyl Ether (MTBE)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Di-iso-Propyl Ether (DIPE)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Ethyl-tert-Butyl Ether (ETBE)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
tert-Amyl Methyl Ether (TAME)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
tert-Butyl Alcohol (TBA)	<0 250 mg/kg	0 250	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:01	
Surrogate 4-Bromofluorobenzene	*93 6 %*			*81-127*	JRF	03/02/04 18:01	
Determination of Extractable Petroleum Hydrocarbons							
TEH, as gasoline	<5 mg/kg	5	1C40440	Iowa OA-2	SMG	03/09/04 4:16	

The results in this report apply to the samples analyzed in accordance with the chain of custody document This analytical report must be reproduced in its entirety Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted MRL= Method Reporting Limit

Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

March 09, 2004

Work Order: 14B0897

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
14B0897-02 B-1 11-13'				Matrix:Soil	Collected: 02/22/04 00:00		
Determination of Extractable Petroleum Hydrocarbons							
TEH, as #2 diesel fuel	<5 mg/kg	5	1C40440	Iowa OA-2	SMG	03/09/04 4:16	
TEH, as waste oil	**23 mg/kg**	**5**	1C40440	Iowa OA-2	SMG	03/09/04 4:16	
Total Extractable Hydrocarbons	**23 mg/kg**	**5**	1C40440	Iowa OA-2	SMG	03/09/04 4:16	
Surrogate Pentacosane	*56 9 %*			*60-140*	SMG	03/09/04 4:16	S-07
14B0897-03 B-2				Matrix:Water	Collected: 02/22/04 00:00		
Determination of Volatile Petroleum Hydrocarbons							
Benzene	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Toluene	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Ethylbenzene	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Xylenes, total	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Methyl-t-butyl Ether (MTBE)	<2 ug/l	2	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Ethyl-tert-Butyl Ether (ETBE)	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Di-iso-Propyl Ether (DIPE)	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
tert-Amyl Methyl Ether (TAME)	<4 ug/l	4	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
tert-Butyl Alcohol (TBA)	<100 ug/l	100	1C40310	OA-1 (GC/MS)	JRF	03/02/04 15:33	R-02
Surrogate 4-Bromofluorobenzene	*105 %*			*81-124*	JRF	03/02/04 15:33	R-02
Determination of Extractable Petroleum Hydrocarbons							
TEH, as gasoline	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 5:42	
TEH, as #2 diesel fuel	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 5:42	
TEH, as waste oil	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 5:42	
Total Extractable Hydrocarbons	<0 1 mg/l	0 1	1B42710	Iowa OA-2	SMG	03/06/04 5:42	
Surrogate Pentacosane	*91 4 %*			*70-130*	SMG	03/06/04 5:42	
14B0897-04 B-2 11-13'				Matrix:Soil	Collected: 02/22/04 00:00		
Determination of Volatile Petroleum Hydrocarbons							
Benzene	<0 005 mg/kg	0 005	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Toluene	<0 005 mg/kg	0 005	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Ethylbenzene	<0 005 mg/kg	0 005	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Xylenes, total	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Methyl-t-butyl Ether (MTBE)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Di-iso-Propyl Ether (DIPE)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Ethyl-tert-Butyl Ether (ETBE)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
tert-Amyl Methyl Ether (TAME)	<0 010 mg/kg	0 010	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
tert-Butyl Alcohol (TBA)	<0 250 mg/kg	0 250	1C40230	OA-1 (GC/MS)	JRF	03/02/04 18:42	
Surrogate 4-Bromofluorobenzene	*97 3 %*			*81-127*	JRF	03/02/04 18:42	
Determination of Extractable Petroleum Hydrocarbons							
TEH, as gasoline	<5 mg/kg	5	1C40440	Iowa OA-2	SMG	03/09/04 5:05	
TEH, as #2 diesel fuel	<5 mg/kg	5	1C40440	Iowa OA-2	SMG	03/09/04 5:05	
TEH, as waste oil	**10 mg/kg**	**5**	1C40440	Iowa OA-2	SMG	03/09/04 5:05	D-06
Total Extractable Hydrocarbons	**10 mg/kg**	**5**	1C40440	Iowa OA-2	SMG	03/09/04 5:05	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted
MRL= Method Reporting Limit

Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

March 09, 2004

Work Order: 14B0897

14B0897-04	B-2 11-13'		Matrix:Soil	Collected: 02/22/04 00:00	
Determination of Extractable Petroleum Hydrocarbons					
Surrogate Pentacosane		*66 0 %*	*60-140*	SMG	03/09/04 5:05

The results in this report apply to the samples analyzed in accordance with the chain of custody document This analytical report must be reproduced in its entirety Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted MRL= Method Reporting Limit

Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

March 09, 2004

Work Order: 14B0897

Determination of Volatile Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40230 - EPA 5030B										
Blank (1C40230-BLK1)				Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	*0 2164*		*mg/kg*	*0 2500*		*86 6*	*81-127*			
Benzene	ND	0 005	"							
Toluene	ND	0 005	"							
Ethylbenzene	ND	0 005	"							
Xylenes, total	ND	0 010	"							
Methyl-t-butyl Ether (MTBE)	ND	0 010	"							
Di-iso-Propyl Ether (DIPE)	ND	0 010	"							
Ethyl-tert-Butyl Ether (ETBE)	ND	0 010	"							
tert-Amyl Methyl Ether (TAME)	ND	0 010	"							
tert-Butyl Alcohol (TBA)	ND	0 250	"							
Calibration Check (1C40230-CCV1)				Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	*0 2192*		*mg/kg*	*0 2500*		*87 7*	*81-127*			
Benzene	0 4134	0 005	"	0 4050		102	70-130			
Toluene	0 3572	0 005	"	0 3325		107	70-130			
Ethylbenzene	0 3852	0 005	"	0 3475		111	70-130			
Xylenes, total	0 7862	0 010	"	0 7725		102	70-130			
Methyl-t-butyl Ether (MTBE)	0 2934	0 010	"	0 3425		85 7	70-130			
Di-iso-Propyl Ether (DIPE)	0 2580	0 010	"	0 3150		81 9	70-130			
Ethyl-tert-Butyl Ether (ETBE)	0 2771	0 010	"	0 3350		82 7	70-130			
tert-Amyl Methyl Ether (TAME)	0 2900	0 010	"	0 2925		99 1	70-130			
tert-Butyl Alcohol (TBA)	4 148	0 250	"	4 975		83 4	70-130			
Matrix Spike (1C40230-MS1)		**Source: 14B0881-04**		Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	*0 2016*		*mg/kg*	*0 2336*		*86 3*	*81-127*			
Benzene	0 3530	0 005	"	0 3785	ND	93 3	66-140			
Toluene	0 3112	0 005	"	0 3107	ND	100	66-132			
Ethylbenzene	0 3607	0 005	"	0 3248	ND	111	60-140			
Xylenes, total	0 7036	0 010	"	0 7220	ND	97 5	71-128			
Methyl-t-butyl Ether (MTBE)	0 2592	0 010	"	0 3201	ND	81 0	64-120			

The results in this report apply to the samples analyzed in accordance with the chain of custody document This analytical report must be reproduced in its entirety Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted MRL = Method Reporting Limit

Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

March 09, 2004

Work Order: 14B0897

Determination of Volatile Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40230 - EPA 5030B										
Matrix Spike Dup (1C40230-MSD1)		**Source: 14B0881-04**		Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	*0 2174*		*mg/kg*	*0 2404*		*90 4*	*81-127*			
Benzene	0 3815	0 005	"	0 3894	ND	98 0	66-140	7 76	27	
Toluene	0 3256	0 005	"	0 3197	ND	102	66-132	4 52	25	
Ethylbenzene	0 3637	0 005	"	0 3341	ND	109	60-140	0 828	27	
Xylenes, total	0 7342	0 010	"	0 7428	ND	98 8	71-128	4 26	25	
Methyl-t-butyl Ether (MIBE)	0 2923	0 010	"	0 3293	ND	88 8	64-120	12 0	26	
Batch 1C40310 - EPA 5030B										
Blank (1C40310-BLK1)				Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	*51 5*		*ug/l*	*50 0*		*103*	*81-124*			
Benzene	ND	1	"							
Toluene	ND	1	"							
Ethylbenzene	ND	1	"							
Xylenes, total	ND	2	"							
Methyl-t-butyl Ether (MIBE)	ND	1	"							
Ethyl-tert-Butyl Ether (EIBE)	ND	2	"							
Di-iso-Propyl Ether (DIPE)	ND	2	"							
tert-Amyl Methyl Ether (TAME)	ND	2	"							
tert-Butyl Alcohol (TBA)	ND	50	"							
Calibration Check (1C40310-CCV1)				Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	*50 8*		*ug/l*	*50 0*		*102*	*81-124*			
Benzene	76 2	1	"	81 0		94 1	70-130			
Toluene	81 2	1	"	66 5		122	70-130			
Ethylbenzene	79 7	1	"	69 5		115	70-130			
Xylenes, total	173 4	2	"	154 5		112	70-130			
Methyl-t-butyl Ether (MIBE)	71 4	1	"	68 5		104	70-130			
Ethyl-tert-Butyl Ether (EIBE)	71 4	2	"	67 0		107	70-130			
Di-iso-Propyl Ether (DIPE)	65 0	2	"	63 0		103	70-130			
tert-Amyl Methyl Ether (TAME)	52 9	2	"	58 5		90 4	70-130			
tert-Butyl Alcohol (TBA)	1062	50	"	995 0		107	70-130			

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Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

Work Order: 14B0897

Determination of Volatile Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40310 - EPA 5030B										
Matrix Spike (1C40310-MS1)		**Source: 14B0817-10**		Prepared: 03/02/04 Analyzed: 03/03/04						
Surrogate: 4-Bromofluorobenzene	*50 0*		*ug/l*	*50 0*		*100*	*81-124*			
Benzene	36940	500	"	29250	16500	69 9	63-138			
Toluene	132300	500	"	31250	102000	97 0	72-128			
Ethylbenzene	39170	500	"	29500	12500	90 4	69-139			
Xylenes, total	105800	1000	"	58750	57400	82 4	71-136			
Methyl-t-butyl Ether (MIBE)	62000	500	"	79500	ND	78 0	65-127			
Matrix Spike Dup (1C40310-MSD1)		**Source: 14B0817-10**		Prepared: 03/02/04 Analyzed: 03/03/04						
Surrogate: 4-Bromofluorobenzene	*50 2*		*ug/l*	*50 0*		*100*	*81-124*			
Benzene	38220	500	"	29250	16500	74 3	63-138	3 41	12	
Toluene	125300	500	"	31250	102000	74 6	72-128	5 43	21	
Ethylbenzene	38620	500	"	29500	12500	88 5	69-139	1 41	12	
Xylenes, total	102200	1000	"	58750	57400	76 3	71-136	3 46	10	
Methyl-t-butyl Ether (MIBE)	60420	500	"	79500	ND	76 0	65-127	2 58	18	

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Des Moines, IA 50315

Work Order: 14B0897

Determination of Extractable Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1B42710 - 3510C OA-2 Sep Fnl										
Blank (1B42710-BLK1)				Prepared: 02/26/04 Analyzed: 03/05/04						
Surrogate Pentacosane	*0 0447*		*mg/l*	*0 0498*		*89 8*	*70-130*			
TEH, as gasoline	ND	0 1	"							
TEH, as #2 diesel fuel	ND	0 1	"							
TEH, as waste oil	ND	0 1	"							
Total Extractable Hydrocarbons	ND	0 1	"							
LCS (1B42710-BS1)				Prepared: 02/26/04 Analyzed: 03/06/04						
Surrogate Pentacosane	*0 0497*		*mg/l*	*0 0498*		*99 8*	*70-130*			
TEH, as #2 diesel fuel	9 27	0 1	"	10 00		92 7	65-110			
LCS Dup (1B42710-BSD1)				Prepared: 02/26/04 Analyzed: 03/06/04						
Surrogate Pentacosane	*0 0501*		*mg/l*	*0 0498*		*101*	*70-130*			
TEH, as #2 diesel fuel	9 18	0 1	"	10 00		91 8	65-110	0 976	20	
Calibration Check (1B42710-CCV1)				Prepared: 02/26/04 Analyzed: 03/05/04						
Surrogate Pentacosane	*45 22*		*mg/l*	*49 80*		*90 8*	*70-130*			
TEH, as gasoline	2246		"	2050		110	85-115			
TEH, as #2 diesel fuel	2218		"	2100		106	85-115			
TEH, as waste oil	2054		"	2030		101	85-115			
Calibration Check (1B42710-CCV2)				Prepared: 02/26/04 Analyzed: 03/06/04						
Surrogate Pentacosane	*45 64*		*mg/l*	*49 80*		*91 6*	*70-130*			
TEH, as gasoline	2176		"	2050		106	85-115			
TEH, as #2 diesel fuel	2199		"	2100		105	85-115			
TEH, as waste oil	1832		"	2030		90 2	85-115			
Reference (1B42710-SRM1)				Prepared: 02/26/04 Analyzed: 03/06/04						
Surrogate Pentacosane	*50 12*		*mg/l*	*49 80*		*101*	*70-130*			
TEH, as #2 diesel fuel	5176	100	"	4752		109	61-110			

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Des Moines, IA 50315

Work Order: 14B0897

Determination of Extractable Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40440 - 3545 OA-2 PFE										
Blank (1C40440-BLK1)				Prepared: 03/04/04 Analyzed: 03/06/04						
Surrogate: Pentacosane	*1 93*		*mg/kg*	*2 49*		*77 5*	*60-140*			
TEH, as gasoline	ND	5	"							
TEH, as #2 diesel fuel	ND	5	"							
TEH, as waste oil	ND	5	"							
Total Extractable Hydrocarbons	ND	5	"							
LCS (1C40440-BS1)				Prepared: 03/04/04 Analyzed: 03/07/04						
Surrogate Pentacosane	*2 31*		*mg/kg*	*2 49*		*92 8*	*60-140*			
TEH, as #2 diesel fuel	398 9	5	"	500 4		79 7	61-110			
Calibration Check (1C40440-CCV1)				Prepared: 03/04/04 Analyzed: 03/06/04						
Surrogate: Pentacosane	*45 6*		*mg/kg*	*49 8*		*91 6*	*60-140*			
TEH, as gasoline	2176		"	2050		106	85-115			
TEH, as #2 diesel fuel	2199		"	2100		105	85-115			
TEH, as waste oil	1832		"	2030		90 2	85-115			
Calibration Check (1C40440-CCV2)				Prepared: 03/04/04 Analyzed: 03/07/04						
Surrogate: Pentacosane	*47 7*		*mg/kg*	*49 8*		*95 8*	*60-140*			
TEH, as gasoline	2102		"	2050		103	85-115			
TEH, as #2 diesel fuel	2270		"	2100		108	85-115			
TEH, as waste oil	2066		"	2030		102	85-115			
Calibration Check (1C40440-CCV3)				Prepared: 03/04/04 Analyzed: 03/08/04						
Surrogate Pentacosane	*47 8*		*mg/kg*	*49 8*		*96 0*	*60-140*			
TEH, as gasoline	2046		"	2050		99 8	85-115			
TEH, as #2 diesel fuel	2139		"	2100		102	85-115			
TEH, as waste oil	1785		"	2030		87 9	85-115			

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Des Moines, IA 50315

Work Order: 14B0897

Determination of Extractable Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40440 - 3545 OA-2 PFE										
Calibration Check (1C40440-CCV4)				Prepared: 03/04/04 Analyzed: 03/09/04						
Surrogate: Pentacosane	*47 6*		*mg/kg*	*49 8*		*95 6*	*60-140*			
IEH, as gasoline	2110		"	2050		103	85-115			
IEH, as #2 diesel fuel	2214		"	2100		105	85-115			
IEH, as waste oil	1829		"	2030		90 1	85-115			
Matrix Spike (1C40440-MS1)		**Source: 14B0956-04**		Prepared: 03/04/04 Analyzed: 03/07/04						
Surrogate: Pentacosane	*2 35*		*mg/kg*	*2 49*		*94 4*	*60-140*			
IEH, as #2 diesel fuel	428 7	5	"	500 4	ND	85 7	51-110			
Matrix Spike Dup (1C40440-MSD1)		**Source: 14B0956-04**		Prepared: 03/04/04 Analyzed: 03/07/04						
Surrogate: Pentacosane	*2 03*		*mg/kg*	*2 49*		*81 5*	*60-140*			
IEH, as #2 diesel fuel	384 5	5	"	500 2	ND	76 9	51-110	10 9	18	
Reference (1C40440-SRM1)				Prepared: 03/04/04 Analyzed: 03/07/04						
Surrogate: Pentacosane	*52 1*		*mg/kg*	*49 8*		*105*	*60-140*			
IEH, as #2 diesel fuel	4869	100	"	4754		102	70-130			

ND = Non Detect; REC= Recovery; RPD= Relative Percent Difference

Notes and Definitions

D-06 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

R-02 The Reporting Limit for this analysis are elevated due to limited sample volume.

S-07 The surrogate recovery for this sample is outside of established control limits.

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1801 Industrial Circle
Des Moines, IA 50315

March 09, 2004

Work Order: 14B0897

End of Report

Jeffrey King

Keystone Laboratories, Inc.
Jeffrey King, Ph D
Laboratory Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document This analytical report must be reproduced in its entirety Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted MRL= Method Reporting Limit

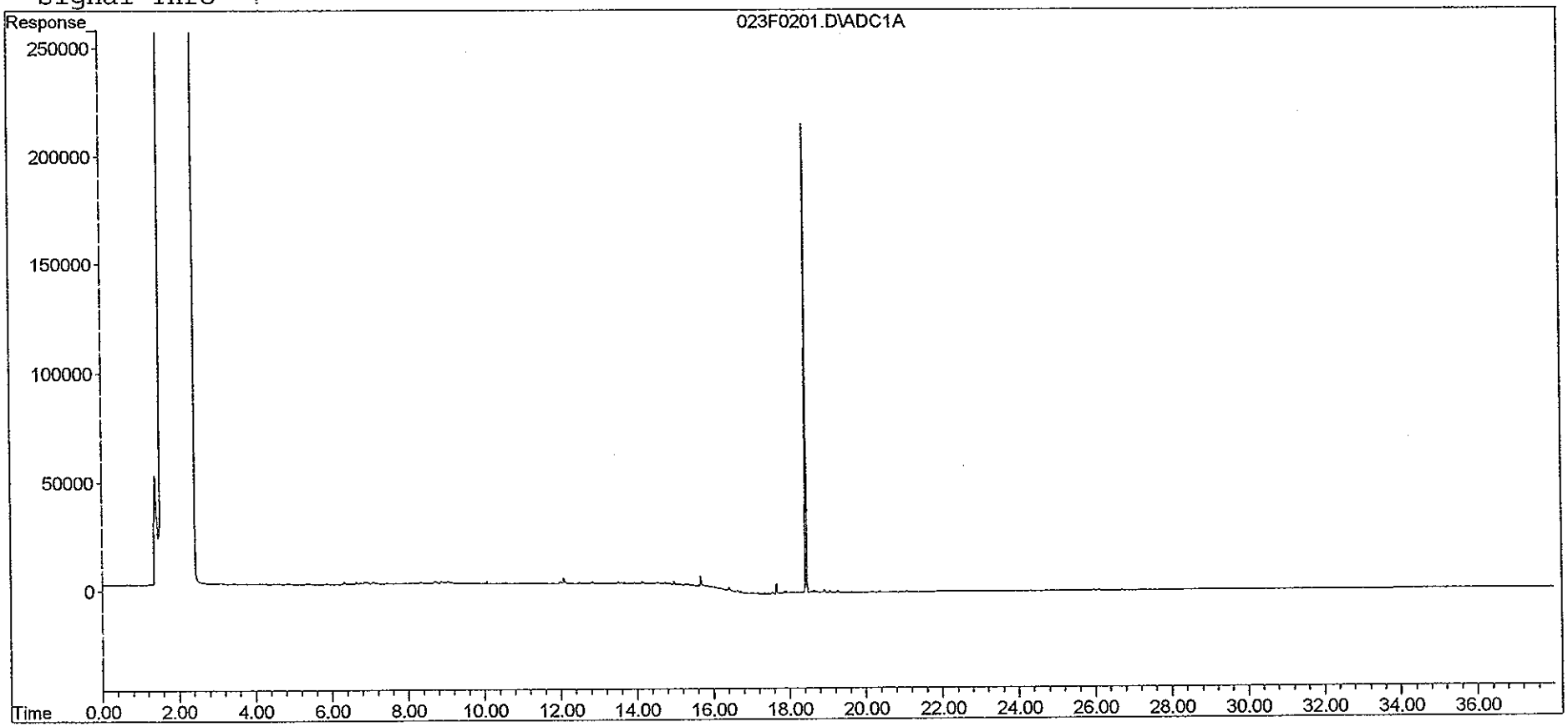
Data File : G:\HPCHEM\2\DATA\030504A2\023F0201.D
Acq On : 06 Mar 2004 04:53 AM
Sample : 14B0897-01
Misc :
IntFile : HYDRO.E
Quant Time: Mar 6 11:38 19104 Quant Results File: F022304.RES

Vial: 23
Operator: SMG
Inst : GC #2
Multiplr: 1.00

Keystone Laboratories
600 East 17th St
Newton, IA 50208

Quant Method : G:\HPCHEM\2\METHODS\F022304.M (Chemstation Integrator)
Title : 8015-500/OA-2 Method
Last Update : Tue Feb 24 08:57:51 2004
Response via : Multiple Level Calibration
DataAcq Meth : DIESEL.MTH

Volume Inj. :
Signal Phase :
Signal Info :

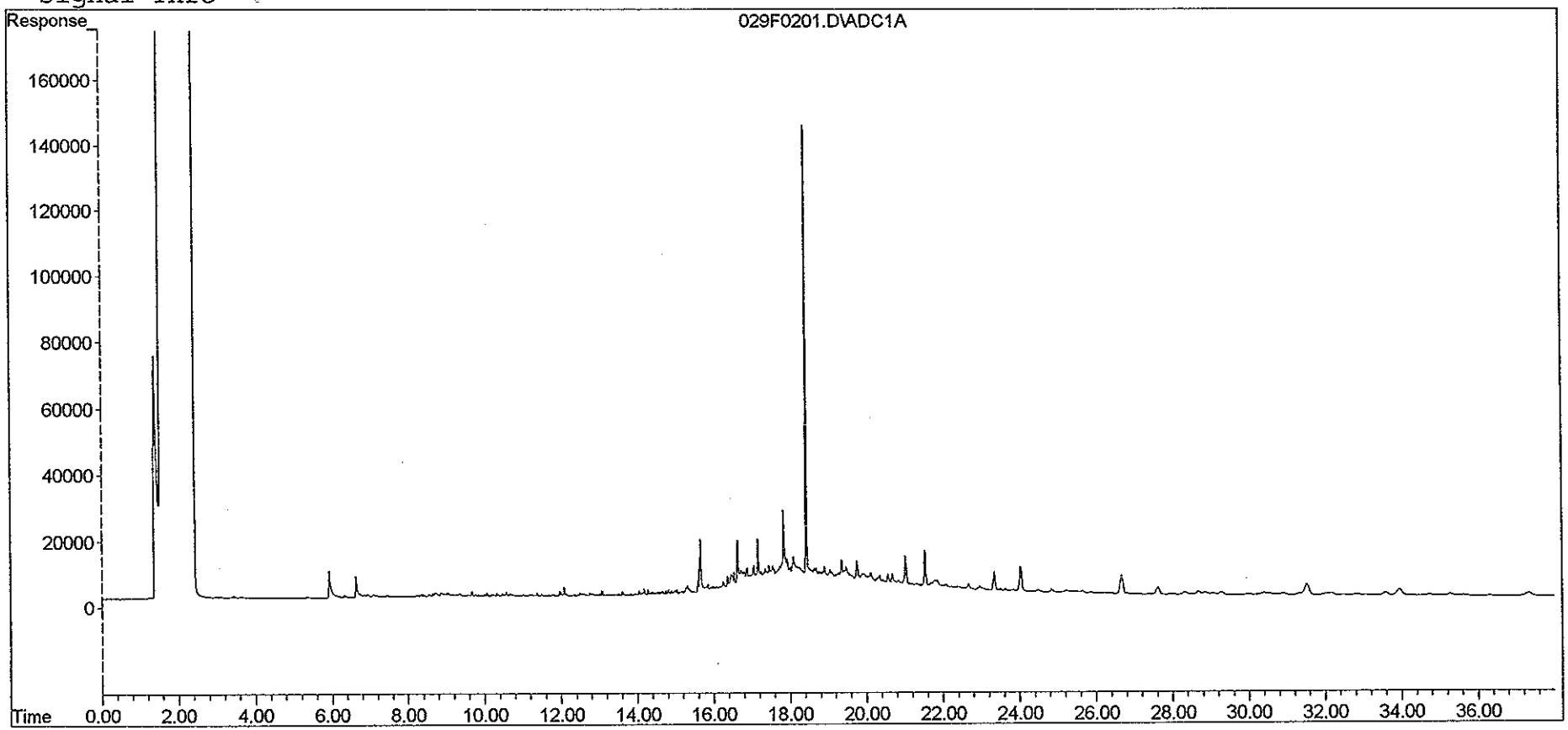


Data File : G:\HPCHEM\2\DATA\030804A2\029F0201.D Vial: 29
Acq On : 09 Mar 2004 04:16 AM Operator: SMG
Sample : 14B0897-02 Inst : GC #2
Misc : Multiplr: 1.00
IntFile : HYDRO.E
Quant Time: Mar 9 9:31 19104 Quant Results File: F022304.RES

Keystone Laboratories, Inc.

Quant Method : G:\HPCHEM\2\METHODS\F022304.M (Chemstation Integrator)
Title : 8015-500/OA-2 Method
Last Update : Tue Feb 24 08:57:51 2004
Response via : Multiple Level Calibration
DataAcq Meth : DIESEL.MTH

Volume Inj. :
Signal Phase :
Signal Info :

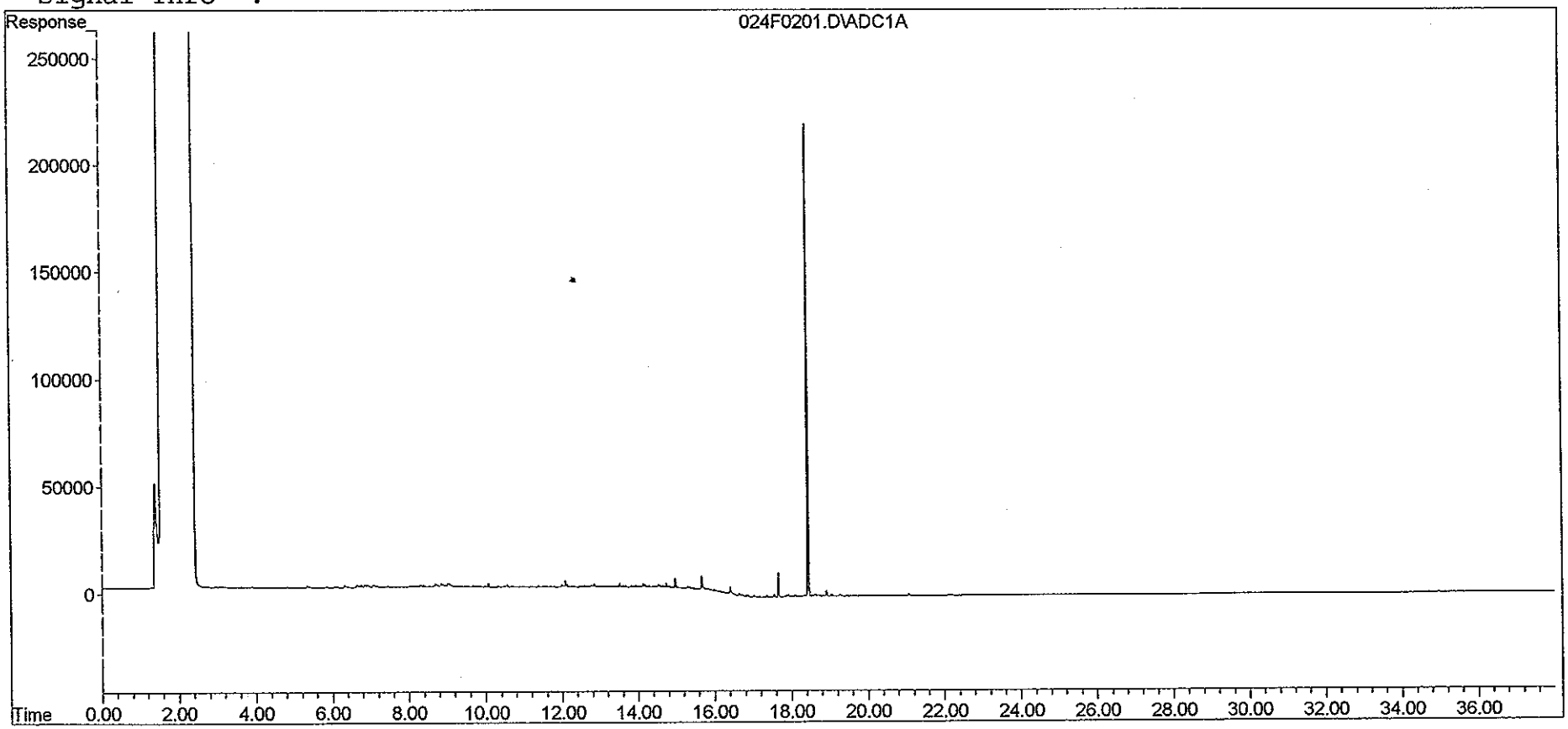


Data File : G:\HPCHEM\2\DATA\030504A2\024F0201.D Vial: 24
Acq On : 06 Mar 2004 05:42 AM Operator: SMG
Sample : 14B0897-03 Inst : GC #2
Misc : Multiplr: 1.00
IntFile : HYDRO.E
Quant Time: Mar 6 11:39 19104 Quant Results File: F022304.RES

Quant Method : G:\HPCHEM\2\METHODS\F022304.M (Chemstation Integrator)
Title : 8015-500/OA-2 Method
Last Update : Tue Feb 24 08:57:51 2004
Response via : Multiple Level Calibration
DataAcq Meth : DIESEL.MTH

Keystone Laboratories, Inc.
600 East 17th St.
Newton, Kansas

Volume Inj. :
Signal Phase :
Signal Info :

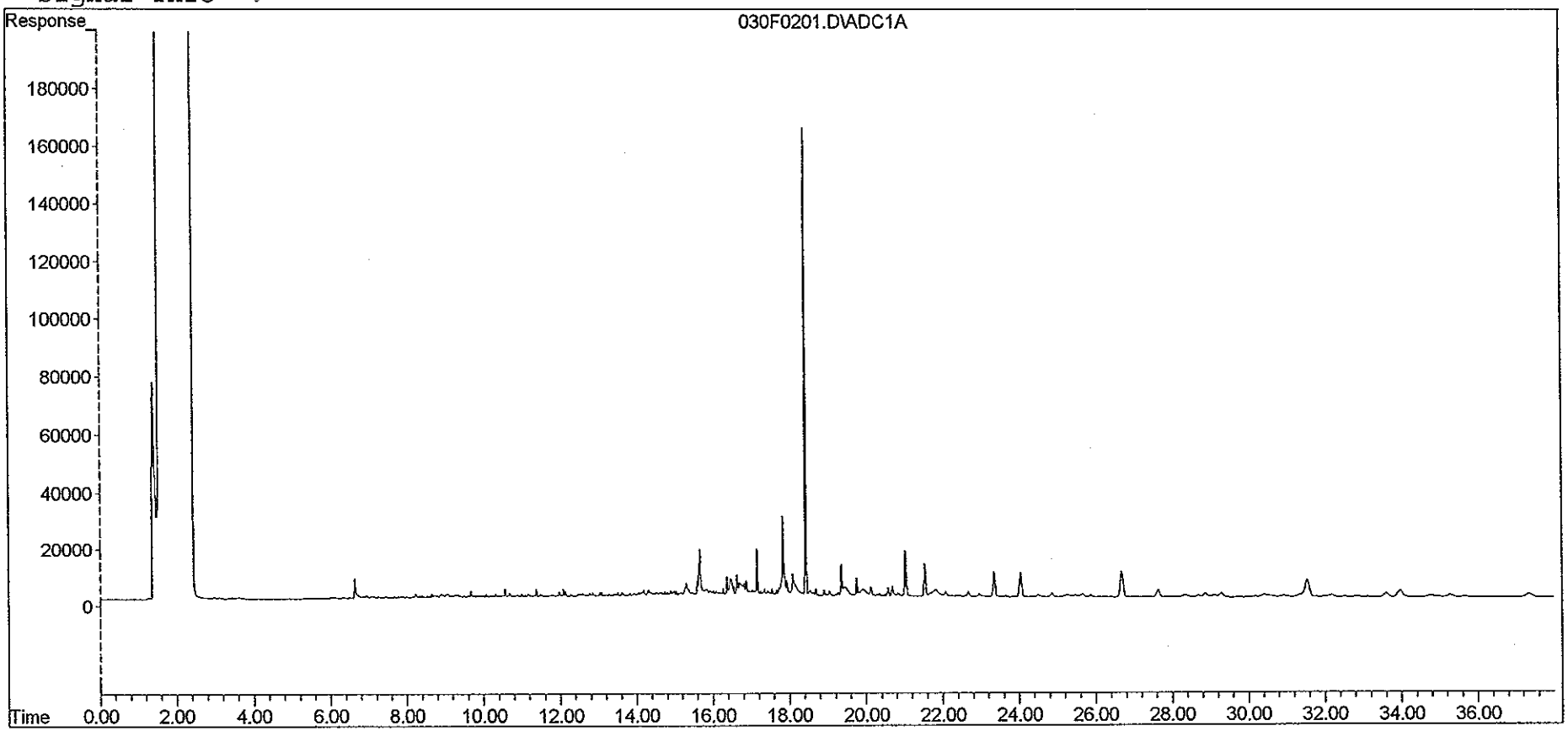


Data File : G:\HPCHEM\2\DATA\030804A2\030F0201.D Vial: 30
Acq On : 09 Mar 2004 05:05 AM Operator: SMG
Sample : 14B0897-04 Inst : GC #2
Misc : Multiplr: 1.00
IntFile : HYDRO.E
Quant Time: Mar 9 9:31 19104 Quant Results File: F022304.RES

Keystone Laboratories, Inc.
600 East 17th Street
Newton, IA 50208

Quant Method : G:\HPCHEM\2\METHODS\F022304.M (Chemstation Integrator)
Title : 8015-500/OA-2 Method
Last Update : Tue Feb 24 08:57:51 2004
Response via : Multiple Level Calibration
DataAcq Meth : DIESEL.MTH

Volume Inj. :
Signal Phase :
Signal Info :



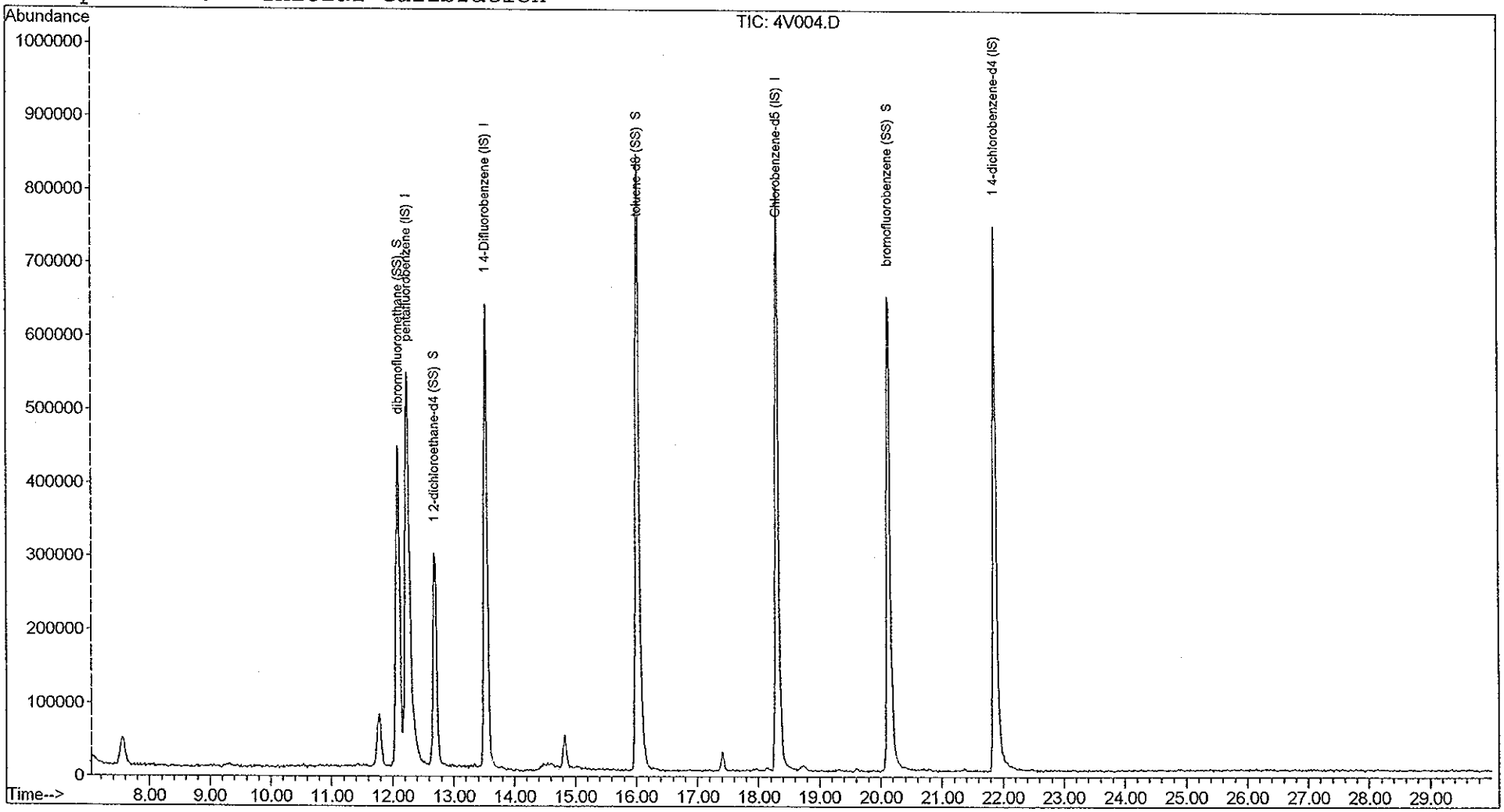
Data File : G:\MSCHEM\4\DATA\030204A4\4V004.D
Acq On : 2 Mar 2004 2:53 pm
Sample : 14B0897-01
Misc : 2X
MS Integration Params: rteint.p
Quant Time: Mar 3 7:44 2004

Vial: 4
Operator: JRF
Inst : MS #4
Multiplr: 1.00

Quant Results File: BW020504.RES

Keystone Laboratories, Inc.
Newton, IA

Method : G:\MSCHEM\4\METHODS\BW020504.M (RTE Integrator)
Title : BTEX Water
Last Update : Thu Feb 05 14:27:51 2004
Response via : Initial Calibration



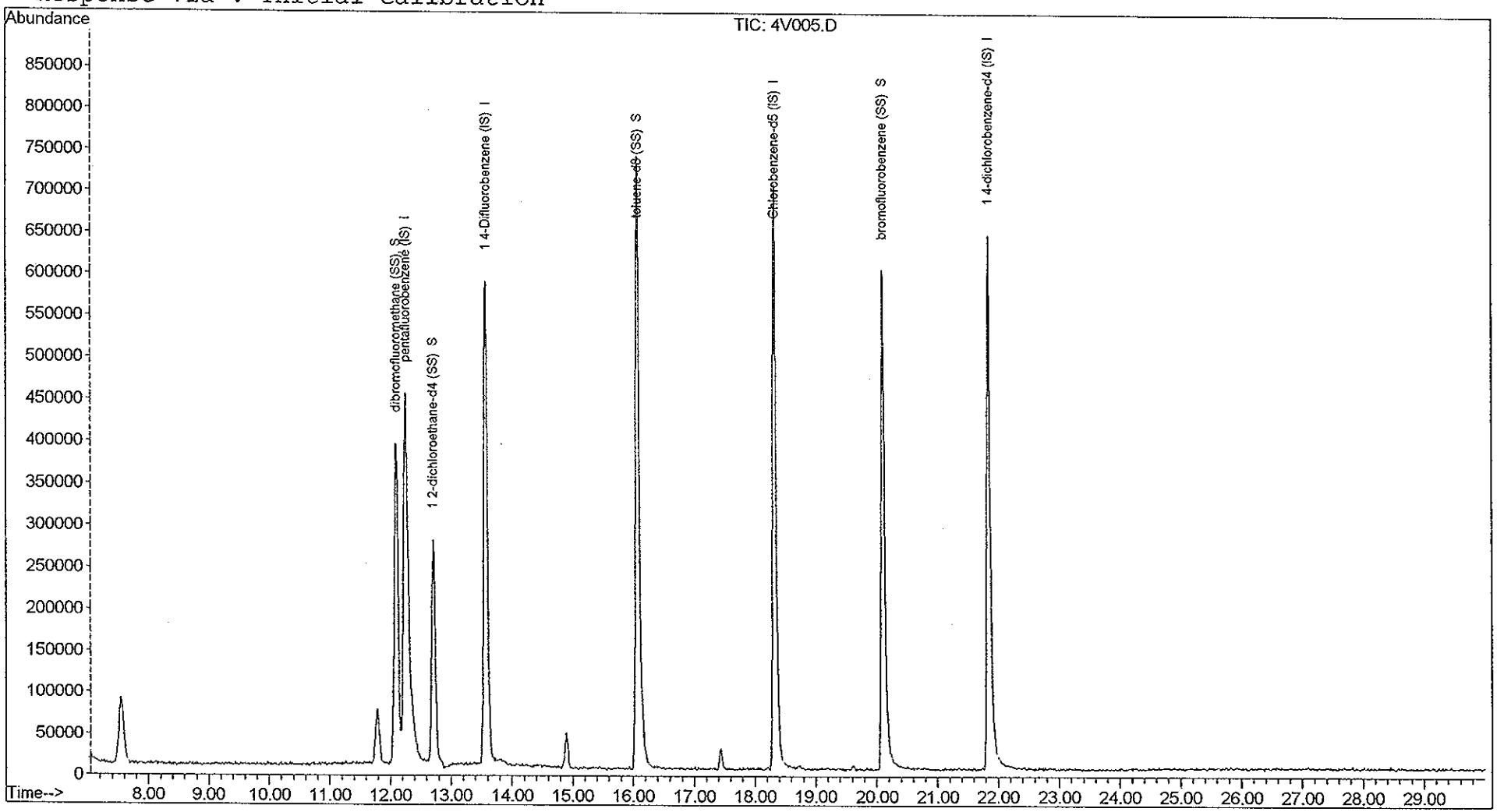
Data File : G:\MSCHEM\4\DATA\030204A4\4V005.D
Acq On : 2 Mar 2004 3:33 pm
Sample : 14B0897-03
Misc : 2X
MS Integration Params: rteint.p
Quant Time: Mar 3 7:44 2004

Vial: 5
Operator: JRF
Inst : MS #4
Multiplr: 1.00

Keystone Laboratories
600 East 7th
Newton, IA 50208

Quant Results File: BW020504.RES

Method : G:\MSCHEM\4\METHODS\BW020504.M (RTE Integrator)
Title : BTEX Water
Last Update : Thu Feb 05 14:27:51 2004
Response via : Initial Calibration



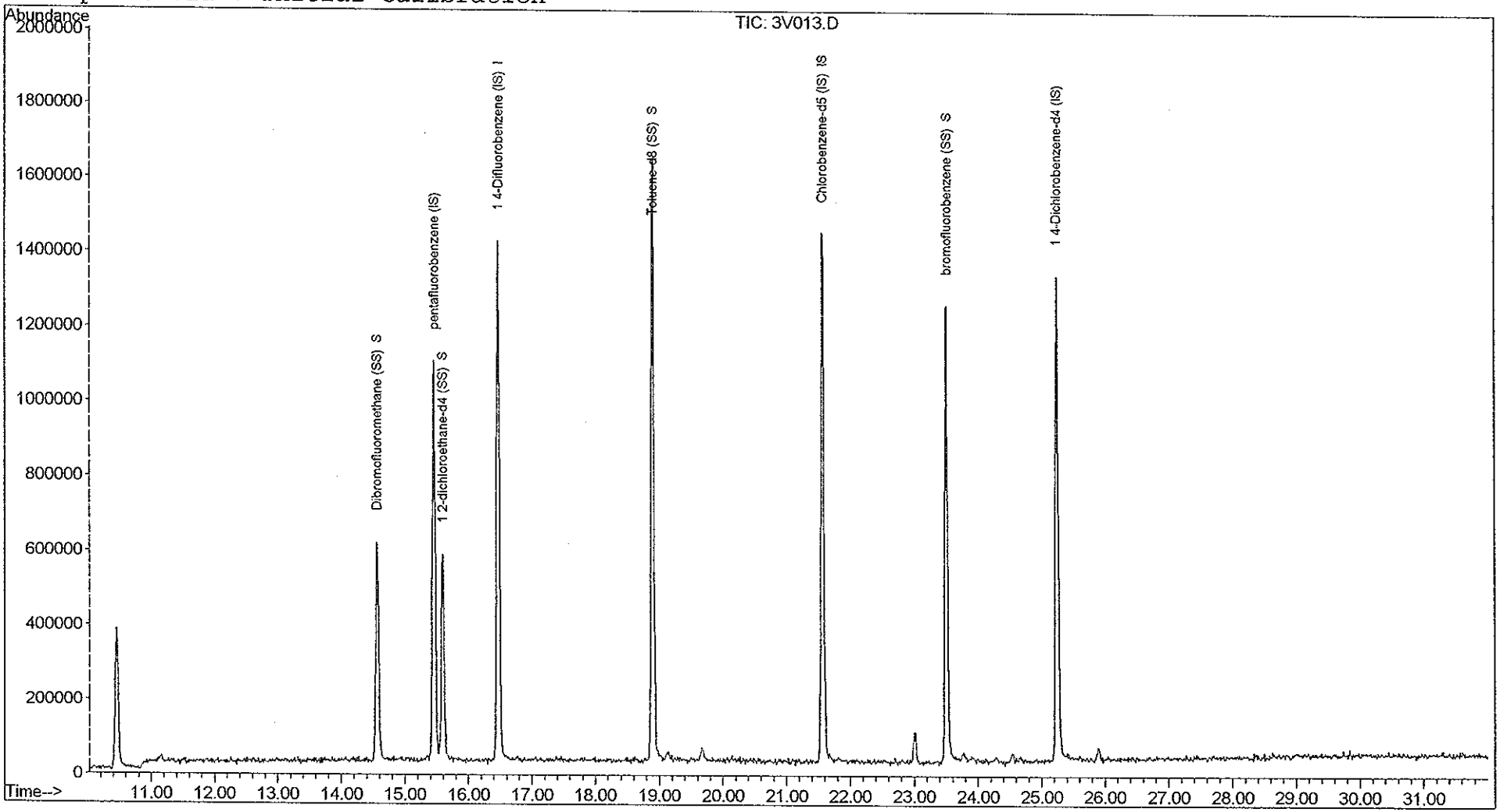
Data File : G:\MSCHEM\3\DATA\030204A3\3V013.D
Acq On : 2 Mar 2004 6:01 pm
Sample : 14B0897-02
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 3 7:29 2004

Vial: 5
Operator: JRF
Inst : MS #3
Multiplr: 1.00

Newton, IA

Quant Results File: BS022504.RES

Method : G:\MSCHEM\3\METHODS\BS022504.M (RTE Integrator)
Title : BTEX Soil
Last Update : Thu Feb 26 10:08:34 2004
Response via : Initial Calibration



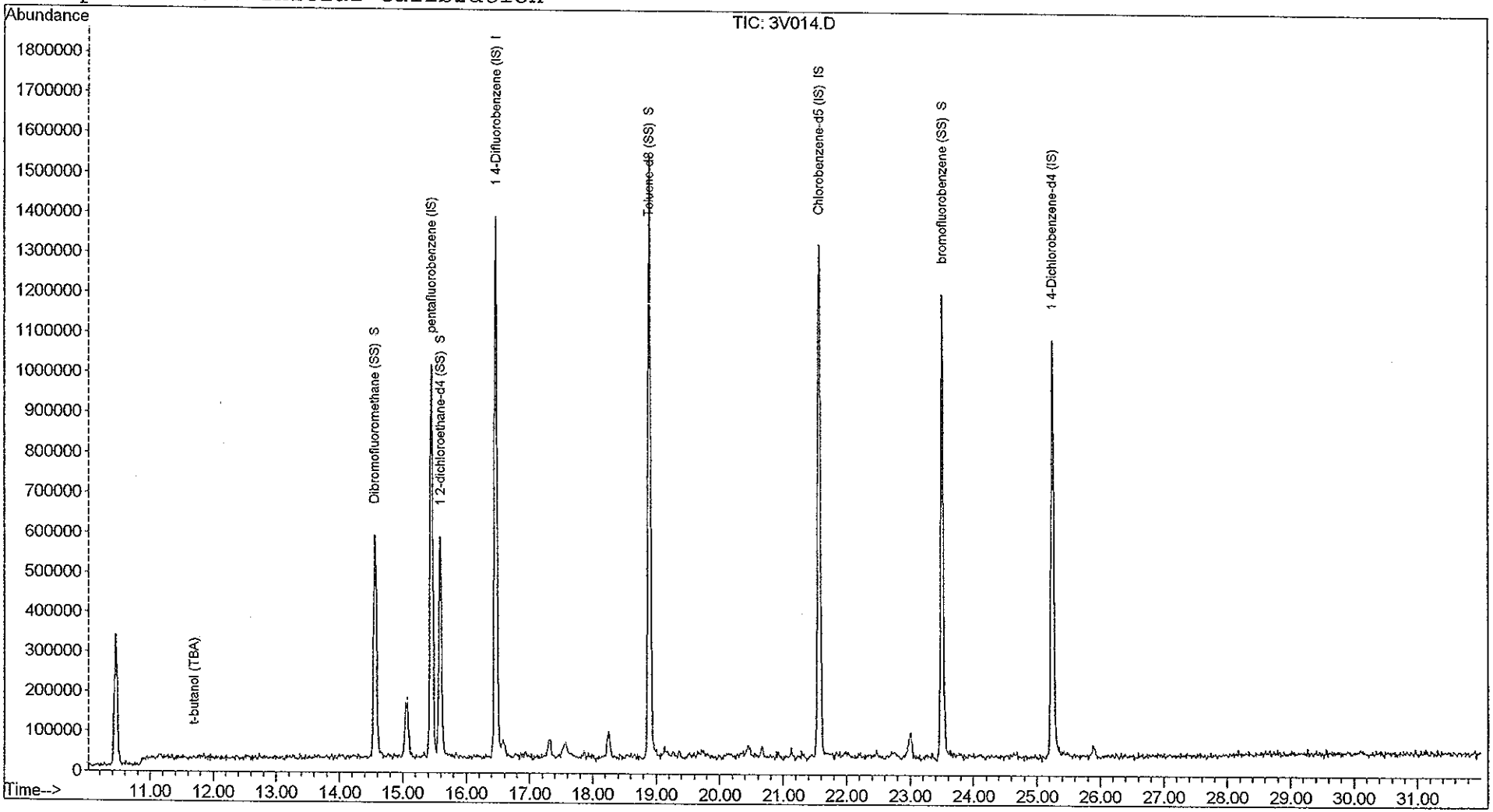
Data File : G:\MSCHEM\3\DATA\030204A3\3V014.D
Acq On : 2 Mar 2004 6:42 pm
Sample : 14B0897-04
Misc :
MS Integration Params: rteint.p
Quant Time: Mar 3 7:29 2004

Vial: 6
Operator: JRF
Inst : MS #3
Multiplr: 1.00

Quant Results File: BS022504.RES

Keystone Laboratories, Inc.
Newton, IA

Method : G:\MSCHEM\3\METHODS\BS022504.M (RTE Integrator)
Title : BTEX Soil
Last Update : Thu Feb 26 10:08:34 2004
Response via : Initial Calibration



CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

☒ 600 E. 17th St. S.
Newton, IA 50208
Phone: 641-792-8451
Fax: 641-792-7989

☐ 3012 Ansborough Ave.
Waterloo, IA 50701
Phone: 319-235-4440
Fax: 319-235-2480

☐ 1304 Adams
Kansas City, KS 66103
Phone: 913-321-7856
Fax: 913-321-7937

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW
SAMPLER: J. WISKOSKILL
SITE NAME: IADNR - KEO
ADDRESS: KEO
CITY/ST/ZIP: PELLA IOWA
PHONE:

REPORT TO:
NAME: CHRIS JANOSKY
COMPANY NAME: BARKER LEMAR
ADDRESS:
CITY/ST/ZIP:
PHONE:
FAX:

BILL TO:
NAME:
COMPANY NAME:
ADDRESS:
CITY/ST/ZIP:
PHONE:
Keystone Quote No.: (If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED: BTEX/MTBE (8260)	ANALYSES REQUIRED: TEN LOG-2	LAB USE ONLY: LABORATORY SAMPLE NUMBER
B-1	2/22/04				GW	G	X	X	01
B-1			11-13		SOIL	G	X	X	02
B-2					GW	G	X	X	03
B-2	V		11-13		SOIL	G	X	X	04

LABORATORY WORK ORDER NO.: 14B0897
SAMPLE TEMPERATURE UPON RECEIPT: °C
SAMPLE CONDITION/COMMENTS:

Relinquished by: (Signature)	Date 2/24/04 Time 0800	Received by: (Signature)	Date Time	Turn-Around: ☒ Standard ☐ Rush ____ Contact Lab Prior to Submission	
Relinquished by: (Signature)	Date Time	Received for Lab by: (Signature)	Date 2/24/04 Time 1110 A.M.	Remarks:	

Original - Return with Report • Yellow - Lab Copy • Pink - Sampler Copy

FORM: CCR 7-97