APPENDIX E

HYDROCARBON FINGERPRINT RESULTS

Environmental Forensic Report

Con Edison – W. 45th Street

SDG: PA060216

Report To:

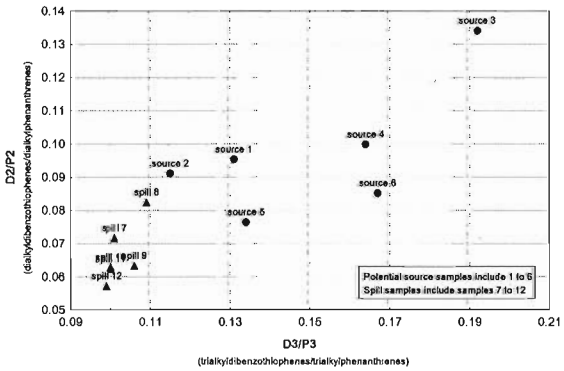
Parsons
290 Elwood Davis Rd.
Suite 312
Liverpool, NY 13088

Report By:

META Environmental, Inc.
49 Clarendon Street
Watertown, MA 02472

March 6, 2006

Figure 1. Double Ratio Plot



Identifying and allocating sources of pollutants in complex environments.

META Environmental, Inc.
ENGINEERING & CHEMISTRY

Final Laboratory Report

META Environmental, Inc.
49 Clarendon Street
Watertown, MA 02472

Phone: 617-923-4662
Fax: 617-923-4610
e-Mail meta@metaenv.com

Certification

This certifies that this package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed herein. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager and Quality Assurance Officer, as verified by the following signatures.

Raymond Siegener, Ph. D.
Senior Chemist

March 7, 2006
Date

David M. Mauro
Senior Scientist, Quality Assurance Officer

3/7/06
Date

Sample Delivery Group Narrative

Project: Con Edison, W. 45st Street

Client: Parsons
290 Elwood Davis Rd.
Suite 312
Liverpool, NY 13088

Report Contact: Mr. Shane Blauvelt

Dates of Receipt: 03/06/2006

Sample Summary:

The sample received for this project is summarized in the attached sample login forms.

META Project Number: P06004

Chain of Custody

The samples were received in good condition. The internal temperature of the shipment containers were as follows:

Samples received 03/16/2006 5.8°C

Internal chain of custody procedures were followed after sample receipt. Samples were stored in a locked refrigerator. A sample custody logbook contains the record of sample removal from the secure sample storage area to the sample preparation laboratory. The custody record for the sample extracts is present on the sample extraction logbook page.

The disposal of samples and extracts will be authorized one month after the release of this data report. Sample disposal will be documented.

Methods

The soil samples were prepared by solvent extraction (EPA 3570) using dichloromethane (DCM). The extracts were spiked with internal standard and analyzed by GC/FID (EPA 8100 mod.) and GC/MS/SIM (EPA 8270 mod.).

Results

Sample results are presented in summary forms (CLP Form 1 equivalent), which follow this narrative.

Quality Control

Analyte Flags

The detection limits were determined as the sample equivalent of the lowest linear initial calibration standard. Analytes measured between 50% and 100% of the lowest standard were reported as "estimated" and flagged with the letter "J." Undetected analytes were reported as null and flagged with the letter, "U." Analytes marked with a "B" were detected in the associated blank and should be reviewed for a possible positive bias. No deviations were thought significant enough to compromise the integrity of the reported values.

Holding Times

The sediment samples were extracted within holding times. The samples and extracts were stored at 4°C ± 2°C prior to extraction and analysis. The extracts were analyzed within 40 days of sample preparation.

Surrogate Spikes

Extraction surrogates were added to all samples prior to extraction. All surrogates were recovered with in the acceptability criteria of 50% - 120%.

Blanks

Styrene, phenanthrene and fluorene were detected in the Blank at levels at or below the Reporting Limit (RL). These compounds were present in the samples at greater than 10 times the blank concentration, therefore the data is considered acceptable. Toluene was detected in the Blank at a level above the RL. Sample *SB-39 (29-31')* had toluene present at groundwater than 10 times the blank concentration; the data is considered acceptable. Sample *MW-9 (21-23')*, had low levels of toluene present, this sample should be evaluated for possible bias.

Blank Spike

A Blank Spike sample was extracted with the soil batch. All Compounds were recovered within the acceptability criteria of 50 – 120%.

Matrix Spike
A Matrix Spike sample was extracted with the soil batch. The following compounds were out of criteria in the Matrix Spike: t-butylbenzene, naphthalene, 2-methylnaphthalene, 1-methylnaphthalene, acenaphthylene, acenaphthene, and fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz[a]anthracene, chrysene, benzo[j/k]fluoranthene, and benzo[a]pyrene.

Internal Standards
Internal standards were recovered within acceptable QC limits (50%-200%) relative to the continuing calibration standards.

Duplicate
A sample duplicate was extracted with this batch. All analytes had relative percent differences (RPD) within criteria (50% RPD).

Interpretation

SB-39 (29-31')

This sample contains a mixture of material from both petrogenic and pyrogenic sources. There appears to be at least two different petrogenic materials present in this sample. The first material is characterized by the high relative abundance of monoaromatic hydrocarbons (MAHs), particularly xylenes, toluene, and 1,2,4-trimethylbenzene, and the pronounced, low molecular weight alkane pattern present in the 85 m/z Extracted Ion Current Profile (EICP, Appendix E). This pattern of MAH and alkane distributions is similar to gasolines in our in-house library of source materials.

The second petrogenic material present is indicated by the presence of the sterane and terpane biomarkers (Appendix E), and the low, unresolved complex mixture (UCM) eluting between 26 minutes (C16 - hexadecane) to past 50 minutes (C40 – tetracontane), with a maximum at 38 minutes (C25 – pentacosane). This pattern is present in both the GCFID fingerprint (Appendix B) and the 85 m/z EICP (Appendix e). From the 85 m/z EICP, a range of n-alkanes is present that becomes odd-carbon heavy, indicating the presence of some biogenic material as well. The UCM is in the range of a heavy fuel oil, but a more detailed identification can not be made due to a lack of information.

The pyrogenic material is indicated by the full range of unsubstituted polycyclic aromatic hydrocarbons (PAHs) present. The high relative naphthalene and methylnaphthalenes present indicate that the material present is relatively unweathered. Several diagnostic source and weathering ratios, in particular the fluoranthene/pyrene (Fl/Py), benzofluorene/methylpyrenes (BF/MP), and dibenzofuran/fluorene (D/F), are presented in Table 1 and Figures 1-3. These data indicate that the pyrogenic material in *SB-39 (29-31')* was formed under low relative temperatures, and is similar to carbureted water gas (CWG) tar from our in-house library.

MW-9(21-23')

This sample contained pyrogenic material. This material is characterized by the presence of the full range of unsubstituted PAH dominated, by the 2- and 3-ring PAH.The PAH distribution and diagnostic ratios (Table 1) indicate that this material is similar to the material in *SB-39 (29-31')*

and appears to be CWG tar. The high relative naphthalene and methylnaphthalenes indicate that this material is unweathered.

The were no petrogenic materials present in this sample.

Discussion

Both samples contained pyrogenic material that was of a similar nature, and which is consistent with CWG tars from our library of in-house source materials. Sample *SB-39 (29-31')* did, however, contain at least two other petrogenic materials; one of which was similar to a gasoline, and another heavier product. Neither material was detected in sample *MW-9 (21-23')*.

Definitions

Pyrogenic substances are complex mixtures of primarily hydrocarbons produced from organic matter subjected to high temperatures but with insufficient oxygen for complete combustion. Pyrogenic materials are produced by fires, internal combustion engines, and furnaces. They also are formed when coke or gas are produced from coal or oil. Coal-tar based products, such as roofing, pavement sealers, waterproofing, pesticides, and some shampoos contain pyrogenic materials.

Petrogenic substances include crude oil and crude oil derivatives such as gasoline, heating oil, and asphalt.

Pitch is the semi-solid or solid material consisting of high molecular weight hydrocarbons that remain following coal tar distillation.

References

1 "Chemical Source Attribution at Former MGP Sites," EPRI Report 1000728, December 2000.

2 "Chemical Fingerprinting of Hydrocarbons," in: Introduction to Environmental Forensics. B.L. Murphy and R.D. Morrison editors, Academic Press, San Diego, CA 2002.

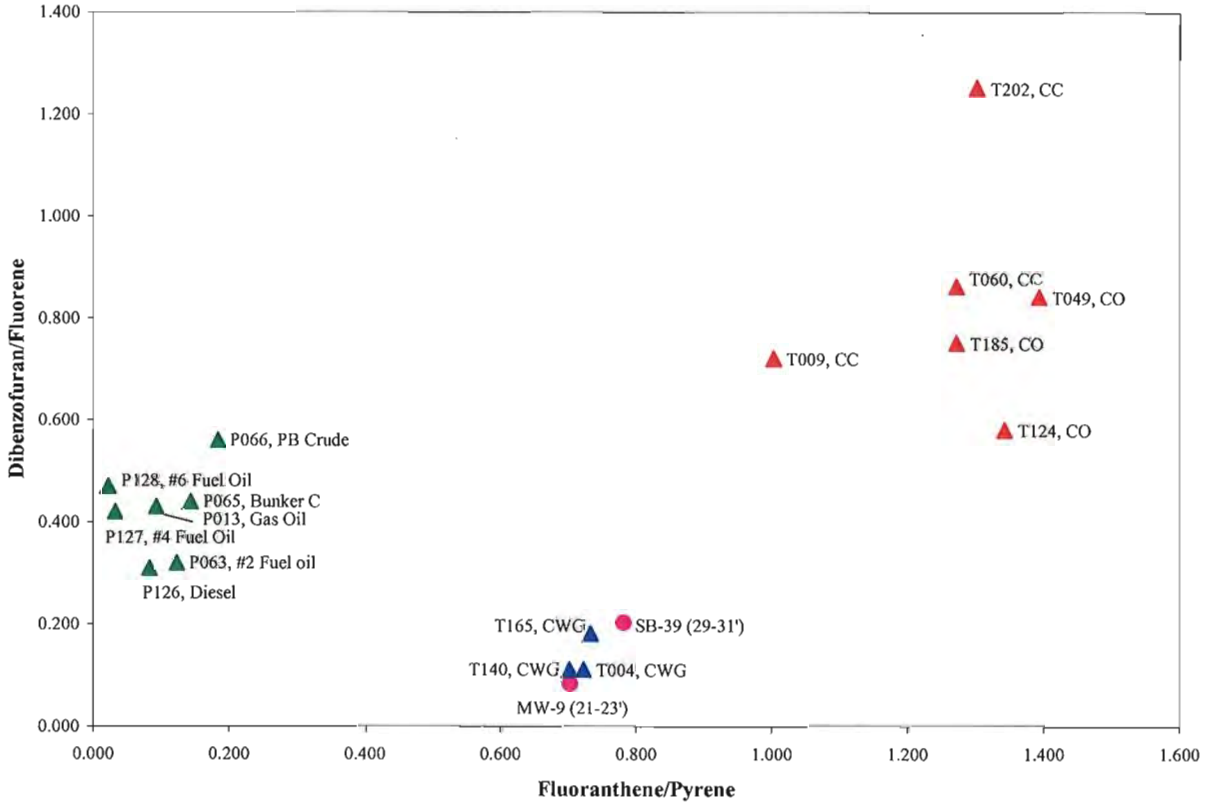
Table 1. Selected Source and Weathering Ratios

	Fl/Py	D/F	BF/MP	C17/Pris	C18/Phy	Pris/ Phy	C3D/ C3PA	C2D/ C2PA
SB-39 (29-31')	0.778	0.200	0.355	1.845	1.827	1.053	0.381	0.241
MW-9 (21-23')	0.701	0.083	0.373	4.128	5.179	1.441	0.290	0.171

Ratios:

Fl/Py	fluoranthene/pyrene
D/F	dibenzofuran/fluorene
C17/Pris	heptadecane/pristane
C18/Phy	octadecane/phytane
Pris/Phy	pristane/phytane
C3D/C3PA	trialkyldibenzothiophenes/trialkylphenanthrenes/anthracenes
C2D/C2PA	dialkyldibenzothiophenes/dialkylphenanthrenes/anthracenes

Figure 1. Selected Diagnostic Ratios – Fl/Py v. D/F



TXXX	Tar Sample from META's in house source library
CC	Coal Carbonization Tar
CO	Coke Oven Tar
CWG	Carburetted Water Gas Tar
●	Field Samples

Appendix A

Chains of Custody

META ENVIRONMENTAL SAMPLE RECEIPT

Lab ID	Field ID	Matrix	Prep Method	Cleanup Method	Analysis Method	Date Sampled	Date Received	Client/ Project	Container/ Storage	Comments/Logger	Client Name	Project Name
PA060216-01	SB-39 (29-31')	Soil	2508		4007/4008	2/15/2006	2/16/2006	P06009-60	4 oz. jar		Parsons	Con Ed - W. 45th street
PA060216-02	MW-9 (21-23')	Soil	2508		4007/4008	2/15/2006	2/16/2006	P06009-60	4 oz. jar		Parsons	Con Ed - W. 45th street

Logged By: DB

Date: 02/17/06

Reviewed By: NS

Date: 2/22/06

MEPA ENVIRONMENTAL, INC. 49 Clarendon Street, Watertown, MA

CHEMTECH

CHAIN OF CUSTODY RECORD

~~284 Sheffield Street, Mountainside, NJ 07092~~ 02472
(PAY) ~~(908) 789-8900~~ ~~Fax (908) 789-8922~~ (617) 923-4662
www.chemtech.net

CHEMTECH PROJECT NO.

COC Number 057579

CLIENT INFORMATION

REPORT TO BE SENT TO:

COMPANY: Parsons

ADDRESS: 290 Elwood Davis Rd. Suite 312

CITY: Liverpool STATE: NY ZIP: 13088

ATTENTION: Shane Blanchard

PHONE: (315) 451-9560 FAX: (315) 451-9570

CLIENT PROJECT INFORMATION

PROJECT NAME: Con Edison

PROJECT NO.: 442145-01000 LOCATION: W. 45th Street

PROJECT MANAGER: Rich Rizzo

e-mail:

PHONE: (718) 204-4288 FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:

ADDRESS:

CITY: STATE: ZIP:

ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: Standard DAYS *

HARD COPY: DAYS *

EDD: DAYS *

* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ☐ RESULTS ONLY
- ☐ RESULTS + QC
- ☐ New Jersey REDUCED
- ☐ New Jersey CLP
- ☐ EDD FORMAT
- ☐ USEPA CLP
- ☐ New York State ASP "B"
- ☐ New York State ASP "A"
- ☐ Other

ANALYSIS

1 GC/FID (EPA 8100 mod.) 2 GC/MS/SIM (EPA 8260/8270 mod.) 3 4 5 6 7 8 9

PRESERVATIVES

COMMENTS

← Specify Preservatives
A–HCl B–HNO_3
C–H_2SO_4 D–NaOH
E–ICE F–Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	1	2	3	4	5	6	7	8	9	COMMENTS
1.	SB-39 (29-31')	So.2		X	2/15/06	1300	1	X	X								PA060216-01
2.	MW-9 (21-23')	So.2		X	2/15/06	1315	1	X	X								↓ -02
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:
1. [signature]	2/15/06 1530	1.
RELINQUISHED BY: 2.	DATE/TIME:	RECEIVED BY: 2.
RELINQUISHED BY: 3.	DATE/TIME:	RECEIVED FOR LAB BY: 3. Dina Berhanu 02/16/05

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments: FEDEX #8532 4668 9390

Cooler Temp. 5.8°C
Ice in Cooler?: Yes

Page 1 of 1

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☐ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☐ YES ☐ NO

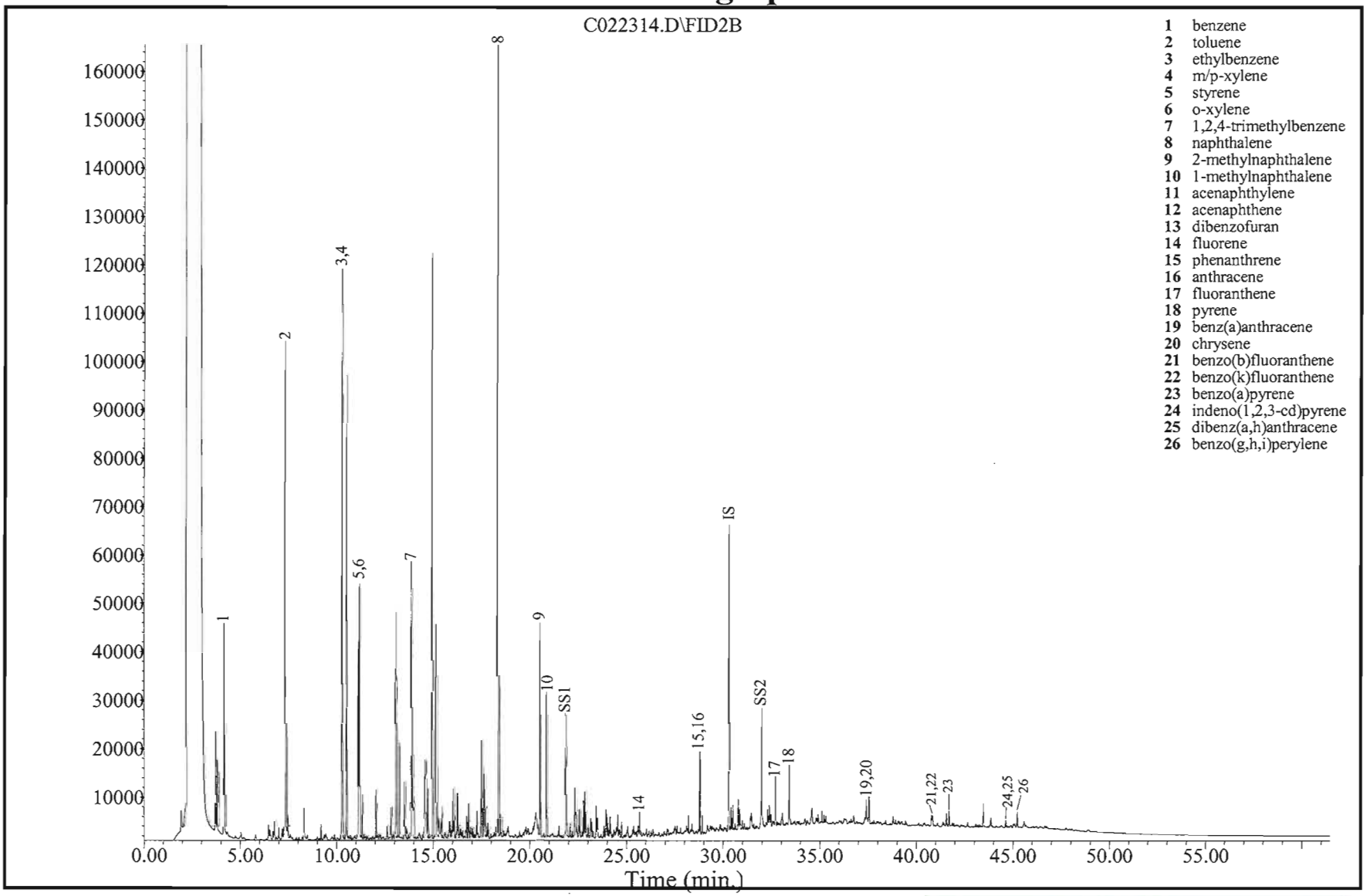
Revision 4/2005

WHITE - CHEMTECH COPY FOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

Appendix B

GC/FID Fingerprints

GC/FID Fingerprint

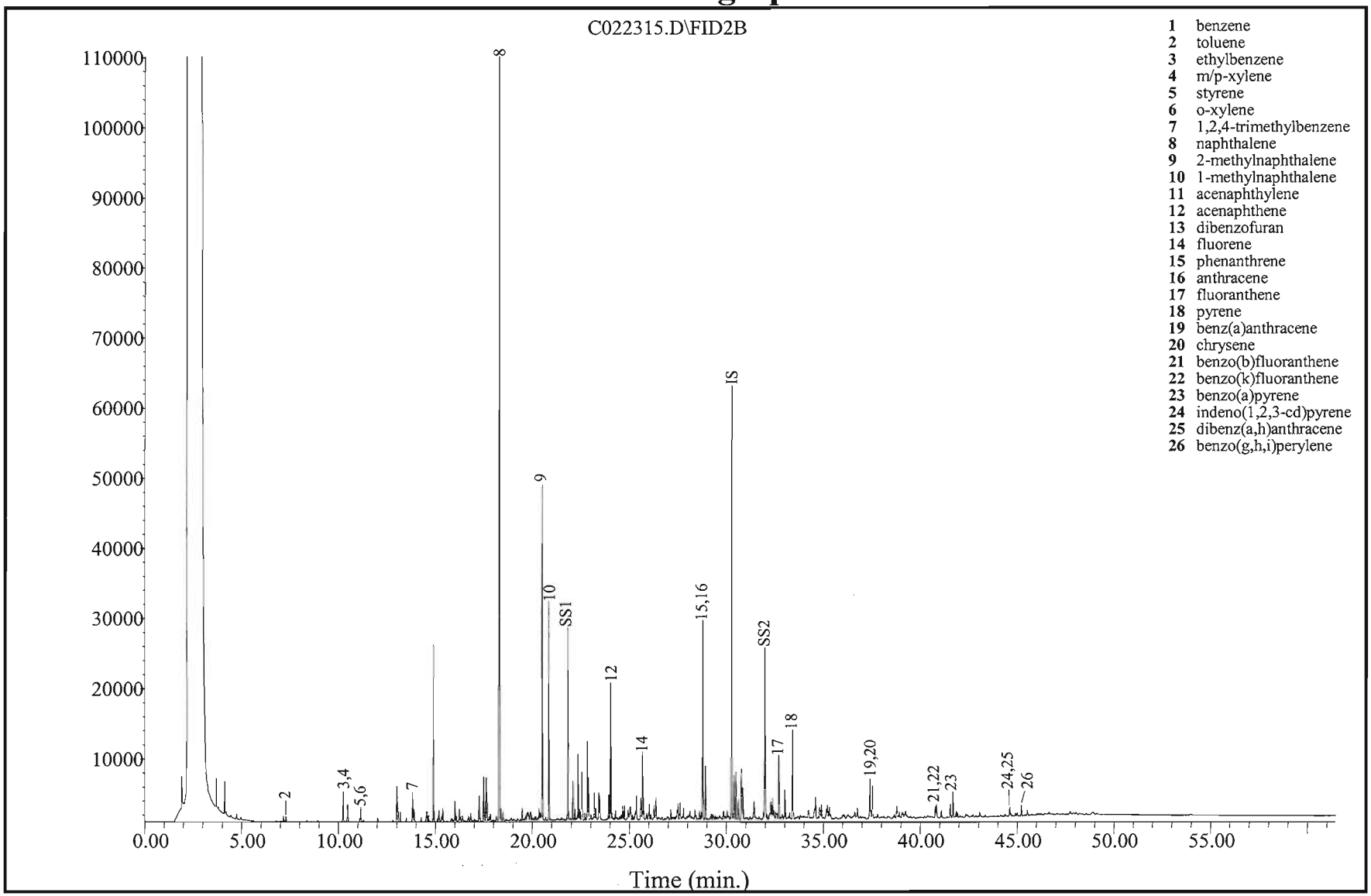


IS – o-terphenyl
SS1 – 2-fluorobiphenyl
SS2 – 5a-androstane

Field ID:	SB-39 (29-31')
Laboratory ID:	PA060216-01
Method:	EPA 8100 mod.

META

GC/FID Fingerprint

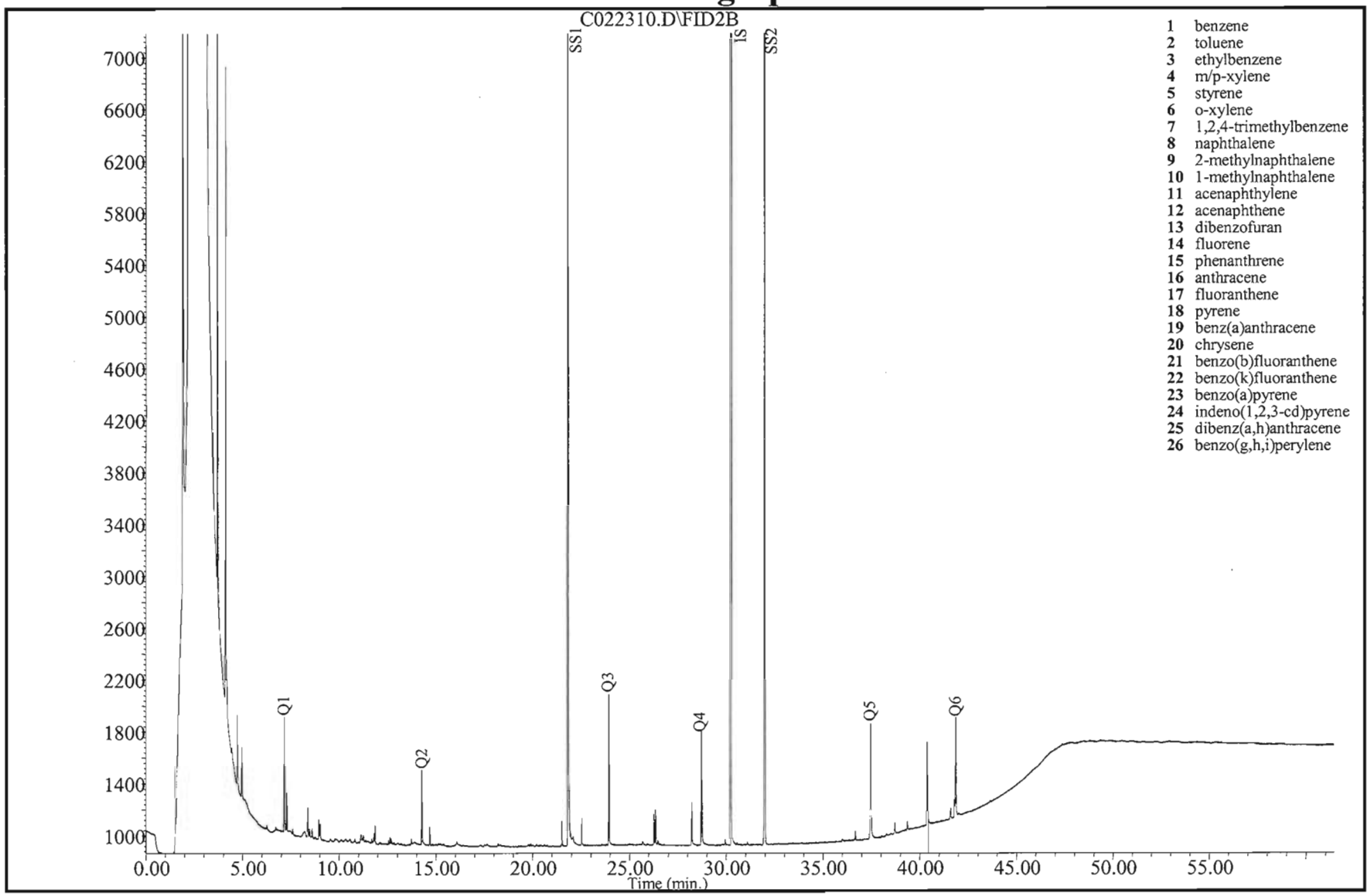


IS – o-terphenyl
SS1 – 2-fluorobiphenyl
SS2 – 5a-androstane

Field ID:	MW-9 (21-23')
Laboratory ID:	PA060216-02
Method:	EPA 8100 mod.

META

GC/FID Fingerprint



IS – o-terphenyl
SS1 – 2-fluorobiphenyl
SS2 – 5a-androstane

Field ID:	Soil Blank
Laboratory ID:	PA060221-SB
Method:	EPA 8100 mod.

META

Appendix C

MAH/PAH Concentrations

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: SB-39 (29-31')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-01		
File ID:	E022418.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.15
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)		RL	EDL	Comments
PAH COMPOUNDS:					
Benzene	60.0	D	0.063	0.032	
Toluene	142	DB	0.063	0.032	
Ethylbenzene	134	D	0.013	0.006	
m/p-Xylenes	124	D	0.013	0.006	
Styrene	100	DB	0.013	0.006	
o-Xylene	55.3	D	0.013	0.006	
Isopropylbenzene	10.3		0.013	0.006	
n-Propylbenzene	6.14		0.013	0.006	
1,3,5-Trimethylbenzene	17.8		0.013	0.006	
1,2,4-Trimethylbenzene	61.1	D	0.013	0.006	
t-Butylbenzene	7.66		0.013	0.006	
sec-Butylbenzene	0.408		0.013	0.006	
p-Isopropyltoluene	4.02		0.013	0.006	
n-Butylbenzene	2.82		0.013	0.006	
C1 - Benzene	105	DB	0.063	0.032	
C2 - Benzene	171	D	0.013	0.006	
C3 - Benzene	92.9	D	0.013	0.006	
C4 - Benzene	22.5		0.013	0.006	
C5 - Benzene	3.93		0.013	0.006	
trans-Decalin	0.424		0.013	0.006	
cis-Decalin	0.043		0.013	0.006	
Naphthalene	166	D	0.013	0.006	
2-Methylnaphthalene	44.0	D	0.013	0.006	
1-Methylnaphthalene	29.3	D	0.013	0.006	
C1 - Naphthalene	45.9	D	0.013	0.006	
C2 - Naphthalene	15.1		0.013	0.006	
C3- Naphthalene	4.55		0.013	0.006	
C4- Naphthalene	1.47		0.013	0.006	
Acenaphthylene	12.5		0.013	0.006	
Acenaphthene	2.48		0.013	0.006	
Dibenzofuran	0.902		0.013	0.006	
Fluorene	4.5		0.013	0.006	
C1 - Fluorene	3.92		0.013	0.006	
C2 - Fluorene	3.11		0.013	0.006	
C3 - Fluorene	1.68		0.013	0.006	
Phenanthrene	14.6	B	0.013	0.006	
Anthracene	4.36		0.013	0.006	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: SB-39 (29-31')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-01		
File ID:	E022418.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.15
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene	13.6	0.013	0.006	
C2 - Phenanthrene/Anthracene	7.91	0.013	0.006	
C3 - Phenanthrene/Anthracene	3.1	0.013	0.006	
C4 - Phenanthrene/Anthracene	0.975	0.013	0.006	
Dibenzothiophene	1.41	0.013	0.006	
C1 - Dibenzothiophene	2.07	0.013	0.006	
C2 - Dibenzothiophene	1.91	0.013	0.006	
C3 - Dibenzothiophene	1.18	0.013	0.006	
C4 - Dibenzothiophene	0.597	0.013	0.006	
Benzo(b)naphtho(2,1-d)thiophene	0.712	0.013	0.006	
Fluoranthene	8.32 B	0.013	0.006	
Pyrene	10.7	0.013	0.006	
C1 - Fluoranthene/Pyrene	10.4	0.013	0.006	
C2 - Fluoranthene/Pyrene	4.82	0.013	0.006	
C3 - Fluoranthene/Pyrene	2.06	0.013	0.006	
Benz[a]anthracene	4.44	0.013	0.006	
Chrysene*	5.69	0.013	0.006	
C1 - Benz(a)anthracene/Chrysene	4.4	0.013	0.006	
C2 - Benz(a)anthracene/Chrysene	1.78	0.013	0.006	
C3 - Benz(a)anthracene/Chrysene	0.604	0.013	0.006	
C4 - Benz(a)anthracene/Chrysene	0.278	0.013	0.006	
Benzo[b]fluoranthene	2.14	0.013	0.006	
Benzo[j/k]fluoranthene	2.45	0.013	0.006	
Benzo(e)pyrene	2.59	0.013	0.006	
Benzo[a]pyrene	3.39	0.013	0.006	
Perylene	0.601	0.013	0.006	
Indeno[1,2,3-cd]pyrene	1.88	0.013	0.006	
Dibenz[a,h]anthracene	0.484	0.013	0.006	
Benzo[g,h,i]perylene	2.31	0.013	0.006	
Coronene	0.573	0.013	0.006	
Retene	0.953	0.013	0.006	
Benzo(b/c)fluorenes	1.49	0.013	0.006	
2-Methylpyrene	1.38	0.013	0.006	
4-Methylpyrene	1.43	0.013	0.006	
1-Methylpyrene	1.39	0.013	0.006	
Heptadecane	0.919	0.013	0.006	
Pristane	0.498	0.013	0.006	
Octadecane	0.864	0.013	0.006	
Phytane	0.473	0.013	0.006	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: SB-39 (29-31')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-01		
File ID:	E022418.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.15
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	0.393	0.013	0.006	
2,6,10-trimethyltridecane	0.289	0.013	0.006	
Norpristane	0.229	0.013	0.006	
Total PAH (16)	246	0.013	0.006	
Total PAH (43)	383	0.013	0.006	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	85	50 - 120
Phenanthrene-d10	80	50 - 120
Perylene-d12	71	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: MW-9 (21-23')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-02		
File ID:	E022422.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.39
Date Cleanup:	NA	Percent Solid:	85%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)		RL	EDL	Comments
PAH COMPOUNDS:					
Benzene	0.221		0.049	0.025	
Toluene	0.724	B	0.049	0.025	
Ethylbenzene	3.69		0.010	0.005	
m/p-Xylenes	2.48		0.010	0.005	
Styrene	0.809	B	0.010	0.005	
o-Xylene	1.68		0.010	0.005	
Isopropylbenzene	0.544		0.010	0.005	
n-Propylbenzene	0.267		0.010	0.005	
1,3,5-Trimethylbenzene	1.15		0.010	0.005	
1,2,4-Trimethylbenzene	3.36		0.010	0.005	
t-Butylbenzene		U	0.010	0.005	
sec-Butylbenzene	0.022		0.010	0.005	
p-Isopropyltoluene	0.462		0.010	0.005	
n-Butylbenzene	0.486		0.010	0.005	
C1 - Benzene	0.525	B	0.049	0.025	
C2 - Benzene	4.15		0.010	0.005	
C3 - Benzene	5.92		0.010	0.005	
C4 - Benzene	4.01		0.010	0.005	
C5 - Benzene	1.05		0.010	0.005	
trans-Decalin	0.029		0.010	0.005	
cis-Decalin	0.010		0.010	0.005	
Naphthalene	85.7	D	0.010	0.005	
2-Methylnaphthalene	37.9	D	0.010	0.005	
1-Methylnaphthalene	24.6	D	0.010	0.005	
C1 - Naphthalene	39.0	D	0.010	0.005	
C2 - Naphthalene	16.0		0.010	0.005	
C3- Naphthalene	4.64		0.010	0.005	
C4- Naphthalene	1.38		0.010	0.005	
Acenaphthylene	4.69		0.010	0.005	
Acenaphthene	13.7		0.010	0.005	
Dibenzofuran	0.592		0.010	0.005	
Fluorene	7.16		0.010	0.005	
C1 - Fluorene	4.35		0.010	0.005	
C2 - Fluorene	2.74		0.010	0.005	
C3 - Fluorene	1.01		0.010	0.005	
Phenanthrene	18.6	B	0.010	0.005	
Anthracene	7.31		0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: MW-9 (21-23')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-02		
File ID:	E022422.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.39
Date Cleanup:	NA	Percent Solid:	85%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene	14.0	0.010	0.005	
C2 - Phenanthrene/Anthracene	6.02	0.010	0.005	
C3 - Phenanthrene/Anthracene	1.87	0.010	0.005	
C4 - Phenanthrene/Anthracene	0.418	0.010	0.005	
Dibenzothiophene	1.21	0.010	0.005	
C1 - Dibenzothiophene	1.42	0.010	0.005	
C2 - Dibenzothiophene	1.03	0.010	0.005	
C3 - Dibenzothiophene	0.543	0.010	0.005	
C4 - Dibenzothiophene	0.172	0.010	0.005	
Benzo(b)naphtho(2,1-d)thiophene	0.459	0.010	0.005	
Fluoranthene	6.81 B	0.010	0.005	
Pyrene	9.72	0.010	0.005	
C1 - Fluoranthene/Pyrene	10.5	0.010	0.005	
C2 - Fluoranthene/Pyrene	3.66	0.010	0.005	
C3 - Fluoranthene/Pyrene	1.18	0.010	0.005	
Benz[a]anthracene	4.5	0.010	0.005	
Chrysene*	4.3	0.010	0.005	
C1 - Benz(a)anthracene/Chrysene	3.49	0.010	0.005	
C2 - Benz(a)anthracene/Chrysene	1.27	0.010	0.005	
C3 - Benz(a)anthracene/Chrysene	0.361	0.010	0.005	
C4 - Benz(a)anthracene/Chrysene	0.120	0.010	0.005	
Benzo[b]fluoranthene	1.37	0.010	0.005	
Benzo[j/k]fluoranthene	1.98	0.010	0.005	
Benzo(e)pyrene	1.7	0.010	0.005	
Benzo[a]pyrene	3.65	0.010	0.005	
Perylene	0.536	0.010	0.005	
Indeno[1,2,3-cd]pyrene	1.32	0.010	0.005	
Dibenz[a,h]anthracene	0.399	0.010	0.005	
Benzo[g,h,i]perylene	1.39	0.010	0.005	
Coronene	0.318	0.010	0.005	
Retene	U	0.010	0.005	
Benzo(b/c)fluorenes	1.55	0.010	0.005	
2-Methylpyrene	1.29	0.010	0.005	
4-Methylpyrene	1.26	0.010	0.005	
1-Methylpyrene	1.6	0.010	0.005	
Heptadecane	1.16	0.010	0.005	
Pristane	0.281	0.010	0.005	
Octadecane	1.01	0.010	0.005	
Phytane	0.195	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: MW-9 (21-23')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-02		
File ID:	E022422.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.39
Date Cleanup:	NA	Percent Solid:	85%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	0.105	0.010	0.005	
2,6,10-trimethyltridecane	0.200	0.010	0.005	
Norpristane	0.150	0.010	0.005	
Total PAH (16)	172	0.010	0.005	
Total PAH (43)	292	0.010	0.005	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	83	50 - 120
Phenanthrene-d10	88	50 - 120
Perylene-d12	88	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060221-SB		
File ID:	E022416.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	2/21/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
PAH COMPOUNDS:				
Benzene	U	0.050	0.025	
Toluene	0.270	0.050	0.025	
Ethylbenzene	U	0.010	0.005	
m/p-Xylenes	U	0.010	0.005	
Styrene	0.006 J	0.010	0.005	
o-Xylene	U	0.010	0.005	
Isopropylbenzene	U	0.010	0.005	
n-Propylbenzene	U	0.010	0.005	
1,3,5-Trimethylbenzene	U	0.010	0.005	
1,2,4-Trimethylbenzene	U	0.010	0.005	
t-Butylbenzene	U	0.010	0.005	
sec-Butylbenzene	U	0.010	0.005	
p-Isopropyltoluene	U	0.010	0.005	
n-Butylbenzene	U	0.010	0.005	
C1 - Benzene	0.196	0.050	0.025	
C2 - Benzene	U	0.010	0.005	
C3 - Benzene	U	0.010	0.005	
C4 - Benzene	U	0.010	0.005	
C5 - Benzene	U	0.010	0.005	
trans-Decalin	U	0.010	0.005	
cis-Decalin	U	0.010	0.005	
Naphthalene	U	0.010	0.005	
2-Methylnaphthalene	U	0.010	0.005	
1-Methylnaphthalene	U	0.010	0.005	
C1 - Naphthalene	U	0.010	0.005	
C2 - Naphthalene	U	0.010	0.005	
C3- Naphthalene	U	0.010	0.005	
C4- Naphthalene	U	0.010	0.005	
Acenaphthylene	U	0.010	0.005	
Acenaphthene	U	0.010	0.005	
Dibenzofuran	U	0.010	0.005	
Fluorene	U	0.010	0.005	
C1 - Fluorene	U	0.010	0.005	
C2 - Fluorene	U	0.010	0.005	
C3 - Fluorene	U	0.010	0.005	
Phenanthrene	0.010 J	0.010	0.005	
Anthracene	U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060221-SB		
File ID:	E022416.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	2/21/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene	U	0.010	0.005	
C2 - Phenanthrene/Anthracene	U	0.010	0.005	
C3 - Phenanthrene/Anthracene	U	0.010	0.005	
C4 - Phenanthrene/Anthracene	U	0.010	0.005	
Dibenzothiophene	U	0.010	0.005	
C1 - Dibenzothiophene	U	0.010	0.005	
C2 - Dibenzothiophene	U	0.010	0.005	
C3 - Dibenzothiophene	U	0.010	0.005	
C4 - Dibenzothiophene	U	0.010	0.005	
Benzo(b)naphtho(2,1-d)thiophene	U	0.010	0.005	
Fluoranthene	0.005 J	0.010	0.005	
Pyrene	U	0.010	0.005	
C1 - Fluoranthene/Pyrene	U	0.010	0.005	
C2 - Fluoranthene/Pyrene	U	0.010	0.005	
C3 - Fluoranthene/Pyrene	U	0.010	0.005	
Benz[a]anthracene	U	0.010	0.005	
Chrysene*	U	0.010	0.005	
C1 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
C2 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
C3 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
C4 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
Benzo[b]fluoranthene	U	0.010	0.005	
Benzo[j/k]fluoranthene	U	0.010	0.005	
Benzo(e)pyrene	U	0.010	0.005	
Benzo[a]pyrene	U	0.010	0.005	
Perylene	U	0.010	0.005	
Indeno[1,2,3-cd]pyrene	U	0.010	0.005	
Dibenz[a,h]anthracene	U	0.010	0.005	
Benzo[g,h,i]perylene	U	0.010	0.005	
Coronene	U	0.010	0.005	
Retene	U	0.010	0.005	
Benzo(b/c)fluorenes	U	0.010	0.005	
2-Methylpyrene	U	0.010	0.005	
4-Methylpyrene	U	0.010	0.005	
1-Methylpyrene	U	0.010	0.005	
Heptadecane	U	0.010	0.005	
Pristane	U	0.010	0.005	
Octadecane	U	0.010	0.005	
Phytane	U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060221-SB		
File ID:	E022416.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	2/21/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	U	0.010	0.005	
2,6,10-trimethyltridecane	U	0.010	0.005	
Norpristane	U	0.010	0.005	
Total PAH (16)	0.015	0.010	0.005	
Total PAH (43)	0.015	0.010	0.005	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	88	50 - 120
Phenanthrene-d10	87	50 - 120
Perylene-d12	81	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank Spike**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060221-SBS		
File ID:	E022417.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	2/21/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)			RL	EDL	Comments
PAH COMPOUNDS:	Spike Amount					% Recovery
Benzene	1.00	0.762		0.050	0.025	76 %
Toluene	1.00	0.996	B	0.050	0.025	100 %
Ethylbenzene	1.00	0.829		0.010	0.005	83 %
m/p-Xylenes	1.00	0.803		0.010	0.005	80 %
Styrene	1.00	0.835	B	0.010	0.005	84 %
o-Xylene	1.00	0.819		0.010	0.005	82 %
Isopropylbenzene	1.00	0.845		0.010	0.005	85 %
n-Propylbenzene	1.00	0.839		0.010	0.005	84 %
1,3,5-Trimethylbenzene	1.00	0.852		0.010	0.005	85 %
1,2,4-Trimethylbenzene	1.00	0.851		0.010	0.005	85 %
t-Butylbenzene	1.00	0.803		0.010	0.005	80 %
sec-Butylbenzene	1.00	0.853		0.010	0.005	85 %
p-Isopropyltoluene	1.00	0.808		0.010	0.005	81 %
n-Butylbenzene	1.00	0.826		0.010	0.005	83 %
C1 - Benzene			BU	0.050	0.025	
C2 - Benzene			U	0.010	0.005	
C3 - Benzene			U	0.010	0.005	
C4 - Benzene			U	0.010	0.005	
C5 - Benzene			U	0.010	0.005	
trans-Decalin			U	0.010	0.005	
cis-Decalin			U	0.010	0.005	
Naphthalene	1.00	0.828		0.010	0.005	83 %
2-Methylnaphthalene	1.00	0.840		0.010	0.005	84 %
1-Methylnaphthalene	1.00	0.850		0.010	0.005	85 %
C1 - Naphthalene			U	0.010	0.005	
C2 - Naphthalene			U	0.010	0.005	
C3- Naphthalene			U	0.010	0.005	
C4- Naphthalene			U	0.010	0.005	
Acenaphthylene	1.00	0.924		0.010	0.005	92 %
Acenaphthene	1.00	0.884		0.010	0.005	88 %
Dibenzofuran	1.00	0.884		0.010	0.005	88 %
Fluorene	1.00	0.872		0.010	0.005	87 %
C1 - Fluorene			U	0.010	0.005	
C2 - Fluorene			U	0.010	0.005	
C3 - Fluorene			U	0.010	0.005	
Phenanthrene	1.00	0.879	B	0.010	0.005	88 %
Anthracene	1.00	0.914		0.010	0.005	91 %

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank Spike**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060221-SBS		
File ID:	E022417.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	2/21/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte		Concentration (mg/kg dry wt.)		RL	EDL	Comments
C1 - Phenanthrene/Anthracene			U	0.010	0.005	
C2 - Phenanthrene/Anthracene			U	0.010	0.005	
C3 - Phenanthrene/Anthracene			U	0.010	0.005	
C4 - Phenanthrene/Anthracene			U	0.010	0.005	
Dibenzothiophene			U	0.010	0.005	
C1 - Dibenzothiophene			U	0.010	0.005	
C2 - Dibenzothiophene			U	0.010	0.005	
C3 - Dibenzothiophene			U	0.010	0.005	
C4 - Dibenzothiophene			U	0.010	0.005	
Benzo(b)naphtho(2,1-d)thiophene			U	0.010	0.005	
Fluoranthene	1.00	0.907	B	0.010	0.005	91 %
Pyrene	1.00	0.903		0.010	0.005	90 %
C1 - Fluoranthene/Pyrene			U	0.010	0.005	
C2 - Fluoranthene/Pyrene			U	0.010	0.005	
C3 - Fluoranthene/Pyrene			U	0.010	0.005	
Benz[a]anthracene	1.00	0.873		0.010	0.005	87 %
Chrysene*	1.00	0.912		0.010	0.005	91 %
C1 - Benz(a)anthracene/Chrysene			U	0.010	0.005	
C2 - Benz(a)anthracene/Chrysene			U	0.010	0.005	
C3 - Benz(a)anthracene/Chrysene			U	0.010	0.005	
C4 - Benz(a)anthracene/Chrysene			U	0.010	0.005	
Benzo[b]fluoranthene	1.00	0.801		0.010	0.005	80 %
Benzo[j/k]fluoranthene	1.00	0.862		0.010	0.005	86 %
Benzo(e)pyrene			U	0.010	0.005	
Benzo[a]pyrene	1.00	0.859		0.010	0.005	86 %
Perylene			U	0.010	0.005	
Indeno[1,2,3-cd]pyrene	1.00	0.884		0.010	0.005	88 %
Dibenz[a,h]anthracene	1.00	0.909		0.010	0.005	91 %
Benzo[g,h,i]perylene	1.00	0.888		0.010	0.005	89 %
Coronene			U	0.010	0.005	
Retene			U	0.010	0.005	
Benzo(b/c)fluorenes			U	0.010	0.005	
2-Methylpyrene			U	0.010	0.005	
4-Methylpyrene			U	0.010	0.005	
1-Methylpyrene			U	0.010	0.005	
Heptadecane			U	0.010	0.005	
Pristane			U	0.010	0.005	
Octadecane			U	0.010	0.005	
Phytane			U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank Spike**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060221-SBS		
File ID:	E022417.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	2/21/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	U	0.010	0.005	
2,6,10-trimethyltridecane	U	0.010	0.005	
Norpristane	U	0.010	0.005	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	85	50 - 120
Phenanthrene-d10	86	50 - 120
Perylene-d12	82	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Matrix Spike of MW-9 (21-23')**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-02MS		
File ID:	E022424.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.33
Date Cleanup:	NA	Percent Solid:	85%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)			RL	EDL	Comments
PAH COMPOUNDS:	Spike Amount					% Recovery
Benzene	1.01	0.918		0.051	0.025	69
Toluene	1.01	1.49	B	0.051	0.025	76
Ethylbenzene	1.01	3.88		0.010	0.005	19
m/p-Xylenes	1.01	2.88		0.010	0.005	40
Styrene	1.01	1.56	B	0.010	0.005	74
o-Xylene	1.01	2.24		0.010	0.005	55
Isopropylbenzene	1.01	1.37		0.010	0.005	82
n-Propylbenzene	1.01	1.15		0.010	0.005	87
1,3,5-Trimethylbenzene	1.01	1.84		0.010	0.005	68
1,2,4-Trimethylbenzene	1.01	3.53		0.010	0.005	17
t-Butylbenzene	1.01	1.23		0.010	0.005	122
sec-Butylbenzene	1.01	0.974		0.010	0.005	94
p-Isopropyltoluene	1.01	1.27		0.010	0.005	80
n-Butylbenzene	1.01	1.32		0.010	0.005	82
C1 - Benzene			BU	0.051	0.025	
C2 - Benzene			U	0.010	0.005	
C3 - Benzene			U	0.010	0.005	
C4 - Benzene			U	0.010	0.005	
C5 - Benzene			U	0.010	0.005	
trans-Decalin			U	0.010	0.005	
cis-Decalin			U	0.010	0.005	
Naphthalene	1.01	68.7	D	0.010	0.005	-1681
2-Methylnaphthalene	1.01	30.3	D	0.010	0.005	-752
1-Methylnaphthalene	1.01	20.0	D	0.010	0.005	-455
C1 - Naphthalene			U	0.010	0.005	
C2 - Naphthalene			U	0.010	0.005	
C3- Naphthalene			U	0.010	0.005	
C4- Naphthalene			U	0.010	0.005	
Acenaphthylene	1.01	4.66		0.010	0.005	-3
Acenaphthene	1.01	11.6		0.010	0.005	-208
Dibenzofuran	1.01	1.4		0.010	0.005	80
Fluorene	1.01	6.55		0.010	0.005	-60
C1 - Fluorene			U	0.010	0.005	
C2 - Fluorene			U	0.010	0.005	
C3 - Fluorene			U	0.010	0.005	
Phenanthrene	1.01	15.8	B	0.010	0.005	-277
Anthracene	1.01	6.7		0.010	0.005	-60

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Matrix Spike of MW-9 (21-23')**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-02MS		
File ID:	E022424.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.33
Date Cleanup:	NA	Percent Solid:	85%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte		Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene		U	0.010	0.005	
C2 - Phenanthrene/Anthracene		U	0.010	0.005	
C3 - Phenanthrene/Anthracene		U	0.010	0.005	
C4 - Phenanthrene/Anthracene		U	0.010	0.005	
Dibenzothiophene		U	0.010	0.005	
C1 - Dibenzothiophene		U	0.010	0.005	
C2 - Dibenzothiophene		U	0.010	0.005	
C3 - Dibenzothiophene		U	0.010	0.005	
C4 - Dibenzothiophene		U	0.010	0.005	
Benzo(b)naphtho(2,1-d)thiophene		U	0.010	0.005	
Fluoranthene	1.01	6.32 B	0.010	0.005	-48
Pyrene	1.01	8.69	0.010	0.005	-102
C1 - Fluoranthene/Pyrene		U	0.010	0.005	
C2 - Fluoranthene/Pyrene		U	0.010	0.005	
C3 - Fluoranthene/Pyrene		U	0.010	0.005	
Benz[a]anthracene	1.01	4.49	0.010	0.005	-1
Chrysene*	1.01	4.28	0.010	0.005	-2
C1 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
C2 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
C3 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
C4 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
Benzo[b]fluoranthene	1.01	1.95	0.010	0.005	57
Benzo[j/k]fluoranthene	1.01	2.41	0.010	0.005	43
Benzo(e)pyrene		U	0.010	0.005	
Benzo[a]pyrene	1.01	3.79	0.010	0.005	14
Perylene		U	0.010	0.005	
Indeno[1,2,3-cd]pyrene	1.01	2.03	0.010	0.005	70
Dibenz[a,h]anthracene	1.01	1.3	0.010	0.005	89
Benzo[g,h,i]perylene	1.01	2.07	0.010	0.005	67
Coronene		U	0.010	0.005	
Retene		U	0.010	0.005	
Benzo(b/c)fluorenes		U	0.010	0.005	
2-Methylpyrene		U	0.010	0.005	
4-Methylpyrene		U	0.010	0.005	
1-Methylpyrene		U	0.010	0.005	
Heptadecane		U	0.010	0.005	
Pristane		U	0.010	0.005	
Octadecane		U	0.010	0.005	
Phytane		U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Matrix Spike of MW-9 (21-23')**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-02MS		
File ID:	E022424.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.33
Date Cleanup:	NA	Percent Solid:	85%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	U	0.010	0.005	
2,6,10-trimethyltridecane	U	0.010	0.005	
Norpristane	U	0.010	0.005	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	89	50 - 120
Phenanthrene-d10	93	50 - 120
Perylene-d12	92	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Duplicate of SB-39 (29-31')**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-01DUP		
File ID:	E022420.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.19
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)		RL	EDL	Comments
PAH COMPOUNDS:					RPD
Benzene	70.0	D	0.062	0.031	15.4
Toluene	171	DB	0.062	0.031	18.5
Ethylbenzene	165	D	0.012	0.006	20.7
m/p-Xylenes	156	D	0.012	0.006	22.9
Styrene	130	DB	0.012	0.006	26.1
o-Xylene	69.8	D	0.012	0.006	23.2
Isopropylbenzene	12.6		0.012	0.006	20.1
n-Propylbenzene	7.2		0.012	0.006	15.9
1,3,5-Trimethylbenzene	22.0		0.012	0.006	21.1
1,2,4-Trimethylbenzene	76.4	D	0.012	0.006	22.3
t-Butylbenzene		U	0.012	0.006	NA
sec-Butylbenzene	0.453		0.012	0.006	10.5
p-Isopropyltoluene	4.81		0.012	0.006	17.9
n-Butylbenzene	3.18		0.012	0.006	12
C1 - Benzene	126	DB	0.062	0.031	18.2
C2 - Benzene	214	D	0.012	0.006	22.3
C3 - Benzene	117	D	0.012	0.006	23
C4 - Benzene	25.6		0.012	0.006	12.9
C5 - Benzene	4.45		0.012	0.006	12.4
trans-Decalin	0.485		0.012	0.006	13.4
cis-Decalin	0.048		0.012	0.006	11
Naphthalene	206	D	0.012	0.006	21.5
2-Methylnaphthalene	53.1	D	0.012	0.006	18.7
1-Methylnaphthalene	34.5	D	0.012	0.006	16.3
C1 - Naphthalene	54.7	D	0.012	0.006	17.5
C2 - Naphthalene	16.6		0.012	0.006	9.5
C3- Naphthalene	5.1		0.012	0.006	11.4
C4- Naphthalene	1.72		0.012	0.006	15.7
Acenaphthylene	14.9		0.012	0.006	17.5
Acenaphthene	2.41		0.012	0.006	2.9
Dibenzofuran	0.915		0.012	0.006	1.4
Fluorene	4.81		0.012	0.006	6.7
C1 - Fluorene	4.35		0.012	0.006	10.4
C2 - Fluorene	3.57		0.012	0.006	13.8
C3 - Fluorene	1.95		0.012	0.006	14.9
Phenanthrene	16.4	B	0.012	0.006	11.6
Anthracene	4.9		0.012	0.006	11.7

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Duplicate of SB-39 (29-31')**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-01DUP		
File ID:	E022420.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.19
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene	15.9	0.012	0.006	15.6
C2 - Phenanthrene/Anthracene	9.35	0.012	0.006	16.7
C3 - Phenanthrene/Anthracene	3.67	0.012	0.006	16.8
C4 - Phenanthrene/Anthracene	1.13	0.012	0.006	14.7
Dibenzothiophene	1.54	0.012	0.006	8.8
C1 - Dibenzothiophene	2.39	0.012	0.006	14.3
C2 - Dibenzothiophene	2.17	0.012	0.006	12.7
C3 - Dibenzothiophene	1.37	0.012	0.006	14.9
C4 - Dibenzothiophene	0.723	0.012	0.006	19.1
Benzo(b)naphtho(2,1-d)thiophene	0.861	0.012	0.006	18.9
Fluoranthene	9.1 B	0.012	0.006	9
Pyrene	12.0	0.012	0.006	11.5
C1 - Fluoranthene/Pyrene	12.2	0.012	0.006	15.9
C2 - Fluoranthene/Pyrene	5.99	0.012	0.006	21.6
C3 - Fluoranthene/Pyrene	2.55	0.012	0.006	21.3
Benz[a]anthracene	5.5	0.012	0.006	21.3
Chrysene*	6.77	0.012	0.006	17.3
C1 - Benz(a)anthracene/Chrysene	5.54	0.012	0.006	22.9
C2 - Benz(a)anthracene/Chrysene	2.45	0.012	0.006	31.7
C3 - Benz(a)anthracene/Chrysene	0.780	0.012	0.006	25.4
C4 - Benz(a)anthracene/Chrysene	0.350	0.012	0.006	22.9
Benzo[b]fluoranthene	2.57	0.012	0.006	18.3
Benzo[j/k]fluoranthene	3.02	0.012	0.006	20.8
Benzo(e)pyrene	3.1	0.012	0.006	17.9
Benzo[a]pyrene	4.29	0.012	0.006	23.4
Perylene	0.775	0.012	0.006	25.3
Indeno[1,2,3-cd]pyrene	2.38	0.012	0.006	23.5
Dibenz[a,h]anthracene	0.621	0.012	0.006	24.8
Benzo[g,h,i]perylene	2.79	0.012	0.006	18.8
Coronene	0.692	0.012	0.006	18.8
Retene	0.999	0.012	0.006	4.7
Benzo(b/c)fluorenes	1.74	0.012	0.006	15.5
2-Methylpyrene	1.64	0.012	0.006	17.2
4-Methylpyrene	1.68	0.012	0.006	16.1
1-Methylpyrene	1.67	0.012	0.006	18.3
Heptadecane	1.16	0.012	0.006	23.2
Pristane	0.616	0.012	0.006	21.2
Octadecane	1.12	0.012	0.006	25.8
Phytane	0.611	0.012	0.006	25.5

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Duplicate of SB-39 (29-31')**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	Con Ed - W. 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060216-01DUP		
File ID:	E022420.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	2/15/2006	Decanted:	None
Date Received:	2/16/2006		
Date Prepared:	2/21/2006	Sample Size (g):	2.19
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	2/25/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	JAR	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060221-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	0.469	0.012	0.006	17.6
2,6,10-trimethyltridecane	0.354	0.012	0.006	20.2
Norpristane	0.269	0.012	0.006	16.1
Total PAH (16)	298	0.012	0.006	19.1
Total PAH (43)	459	0.012	0.006	18.1

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	84	50 - 120
Phenanthrene-d10	75	50 - 120
Perylene-d12	71	50 - 120

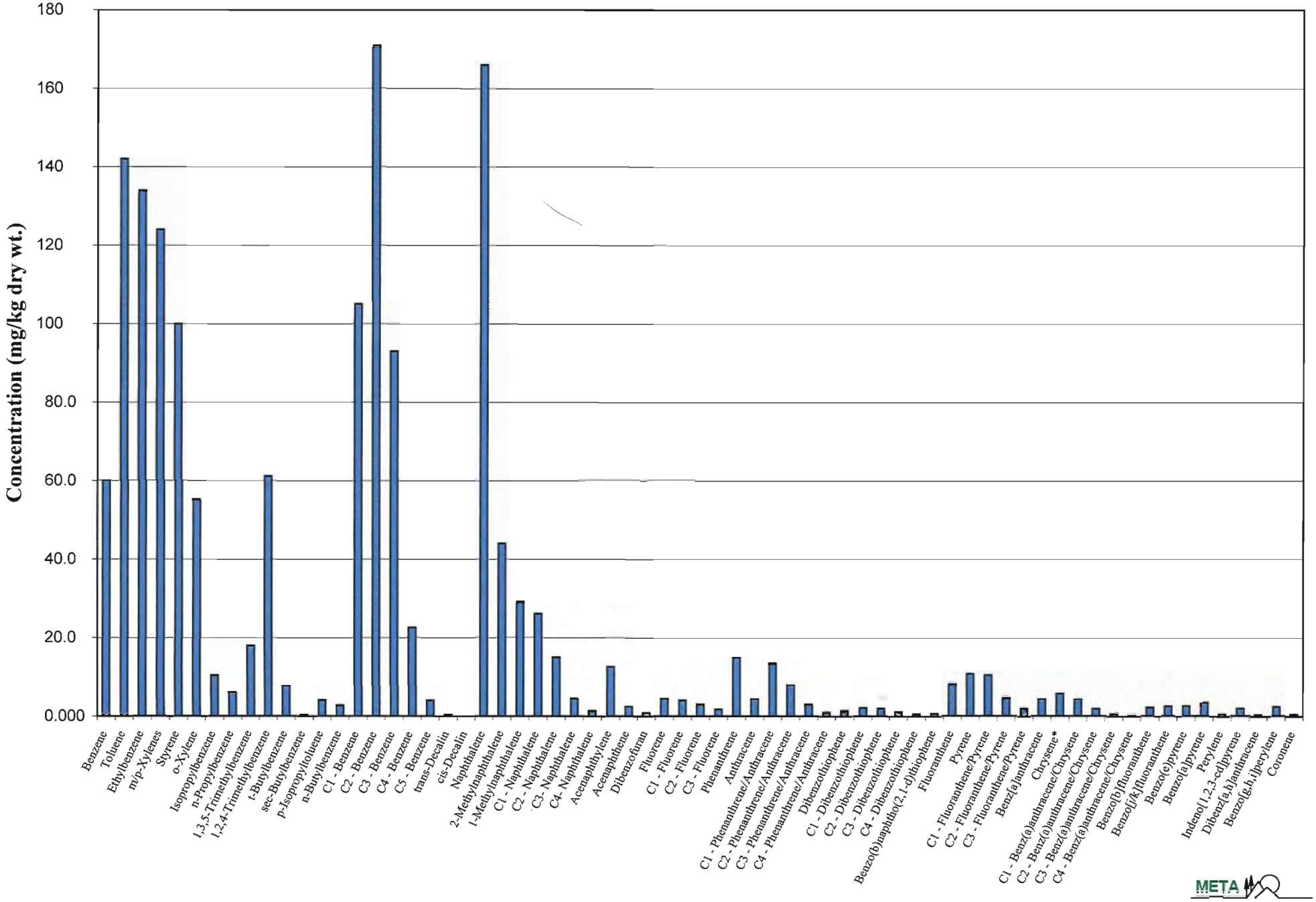
NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Appendix D

Extended MAH/PAH Profiles – Histograms

SB-39 (29-31')

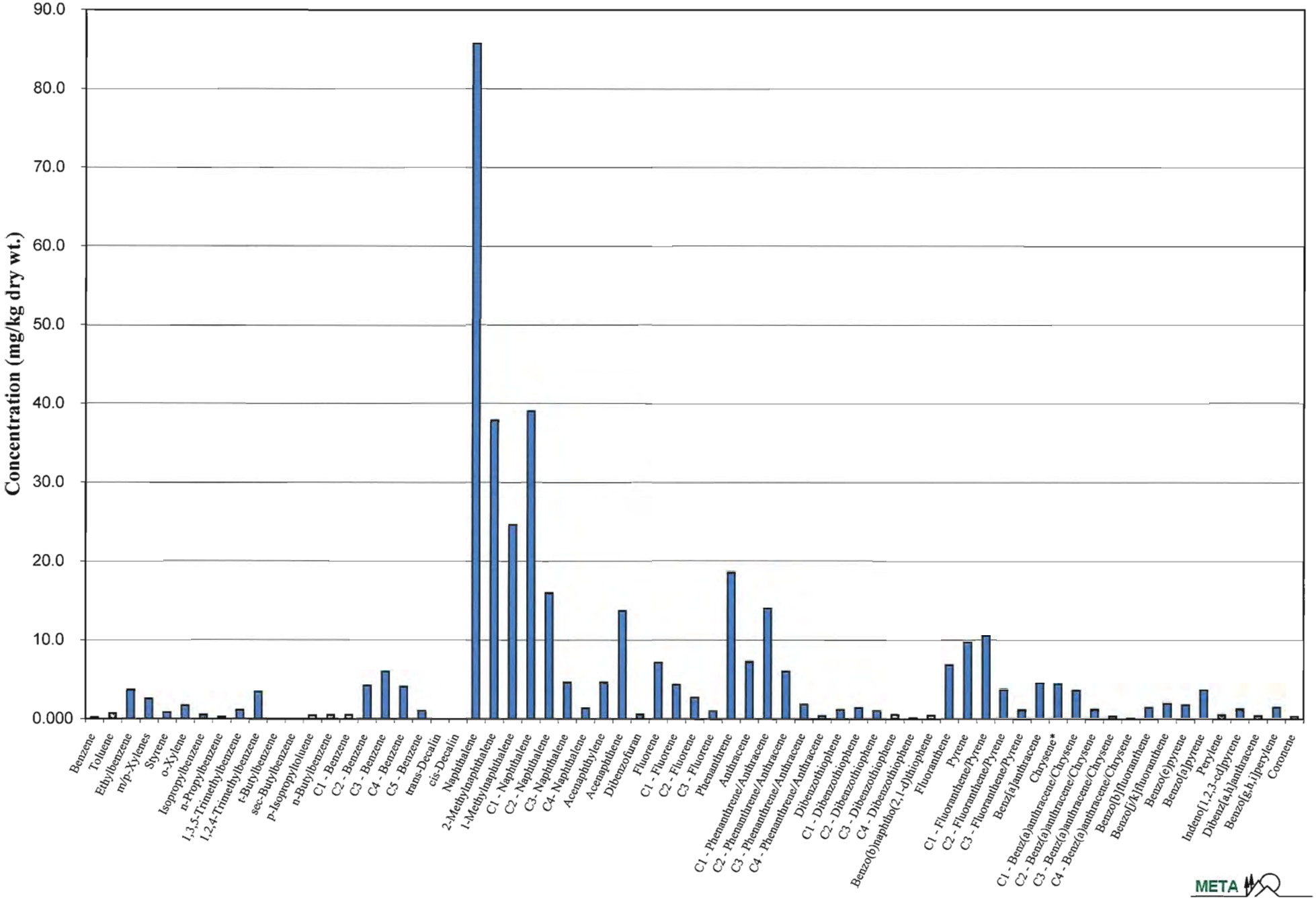
PA060216-01



META

MW-9 (21-23')

PA060216-02



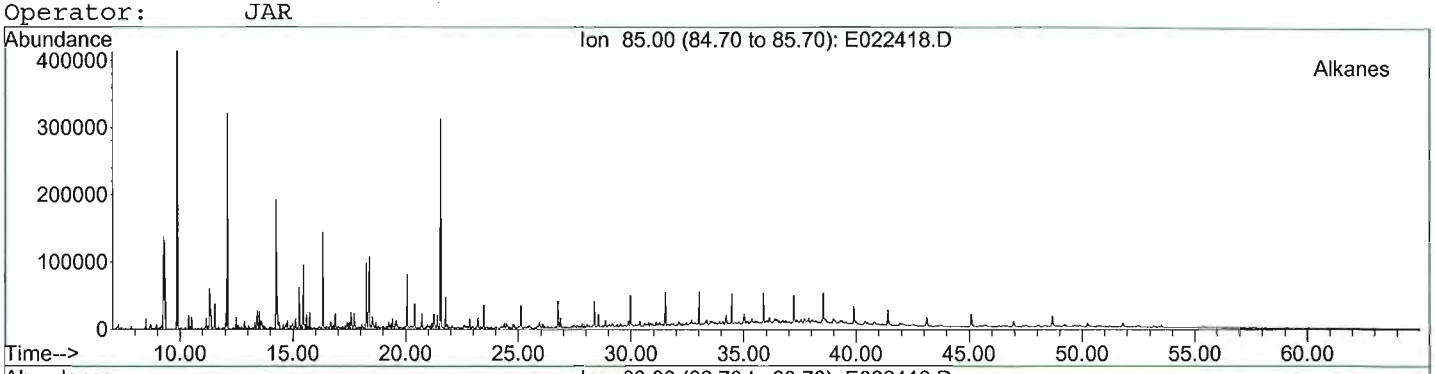
Appendix E

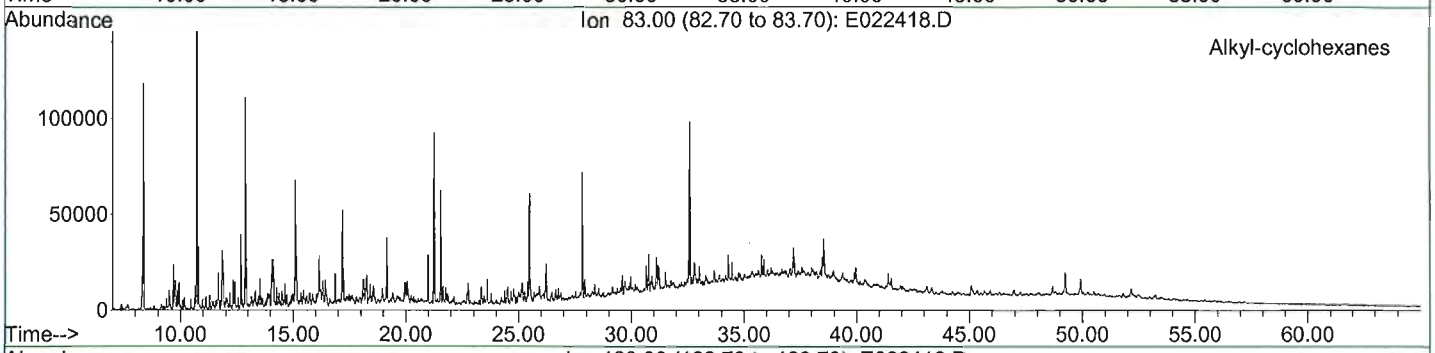
Extracted Ion Current Profiles (EICPs)

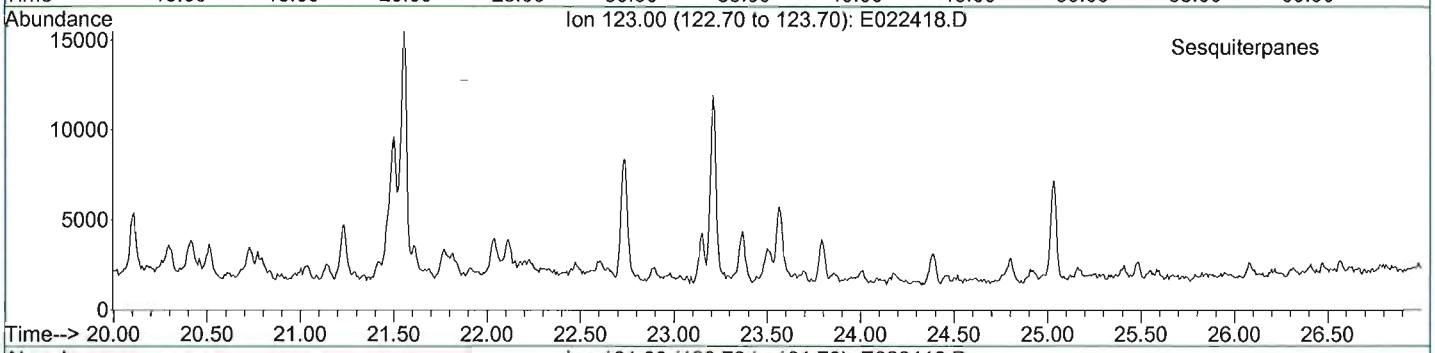
META Environmental, Inc.

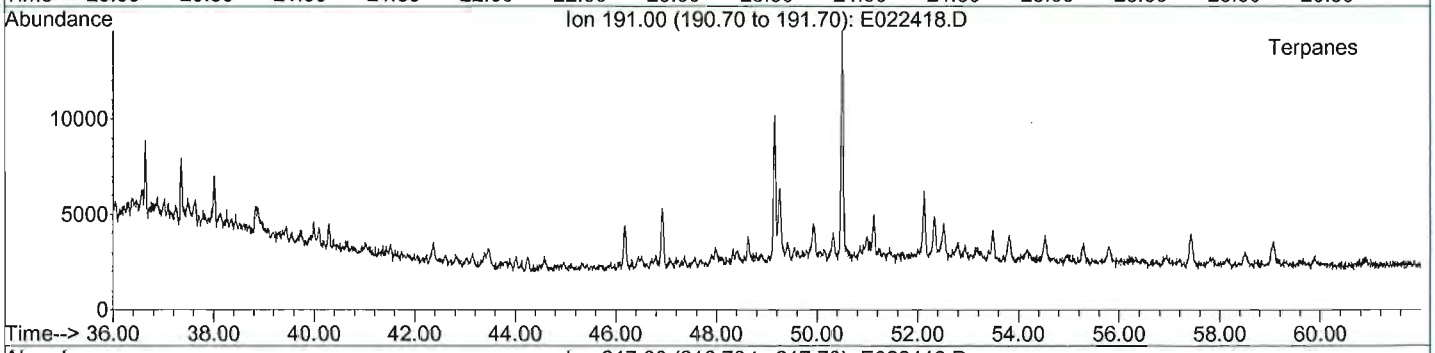
GC/MS EXTRACTED ION CHROMATOGRAM

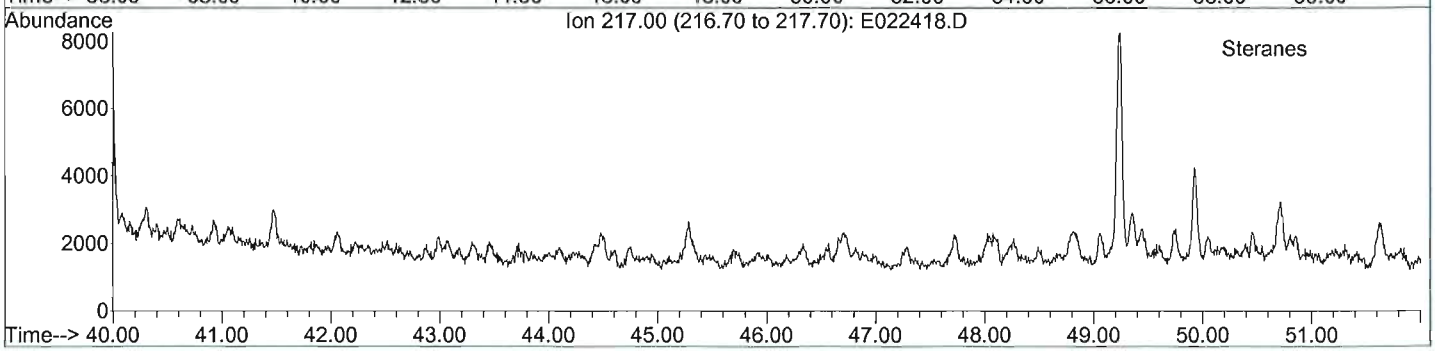
File: J:\1\DATA\E060224\E022418.D
Date Acquired: 25 Feb 2006 12:13 pm
Method File: 4008SIM2.M
Sample Name: PA060216-01
Misc Info:
Operator: JAR











META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

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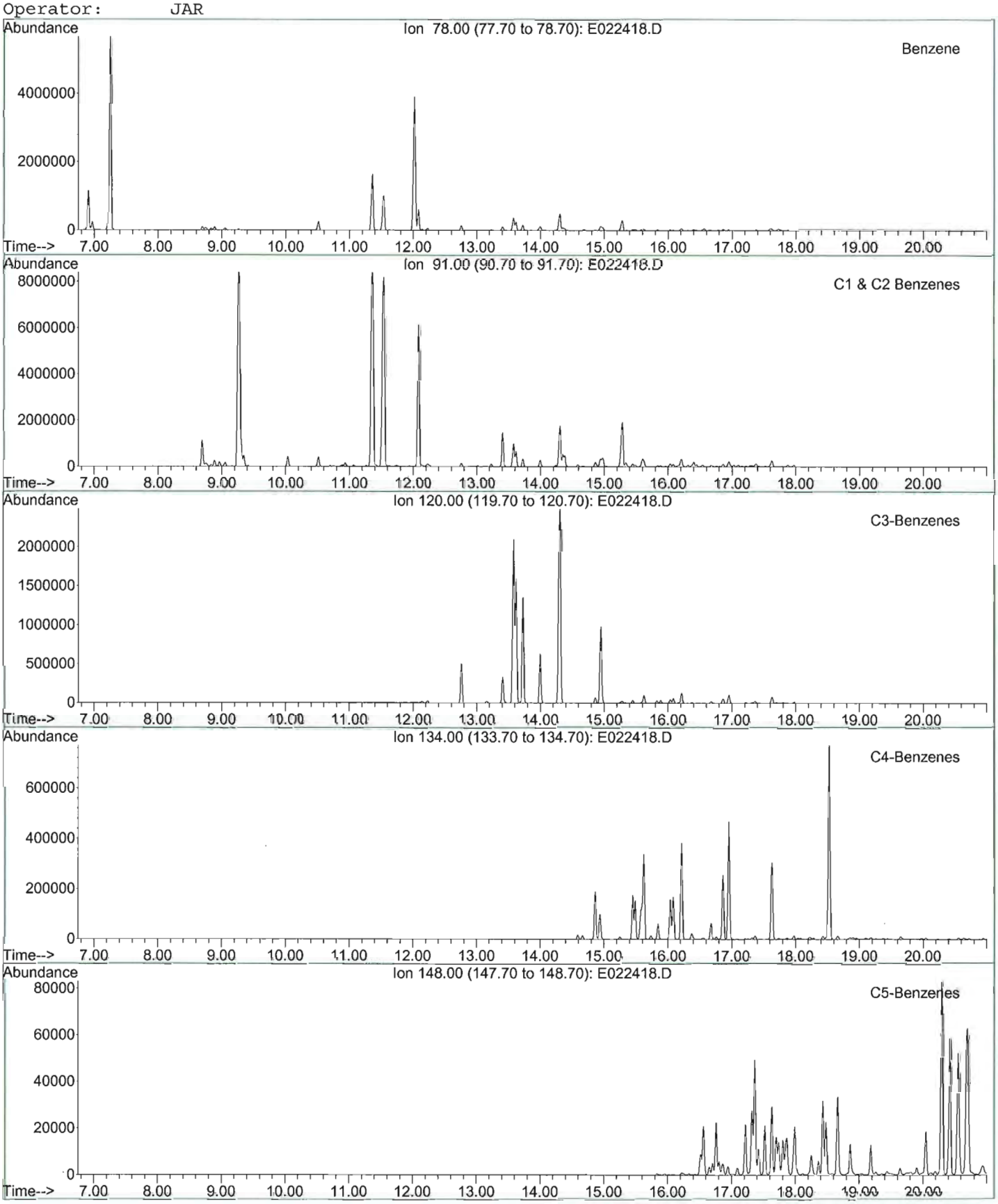
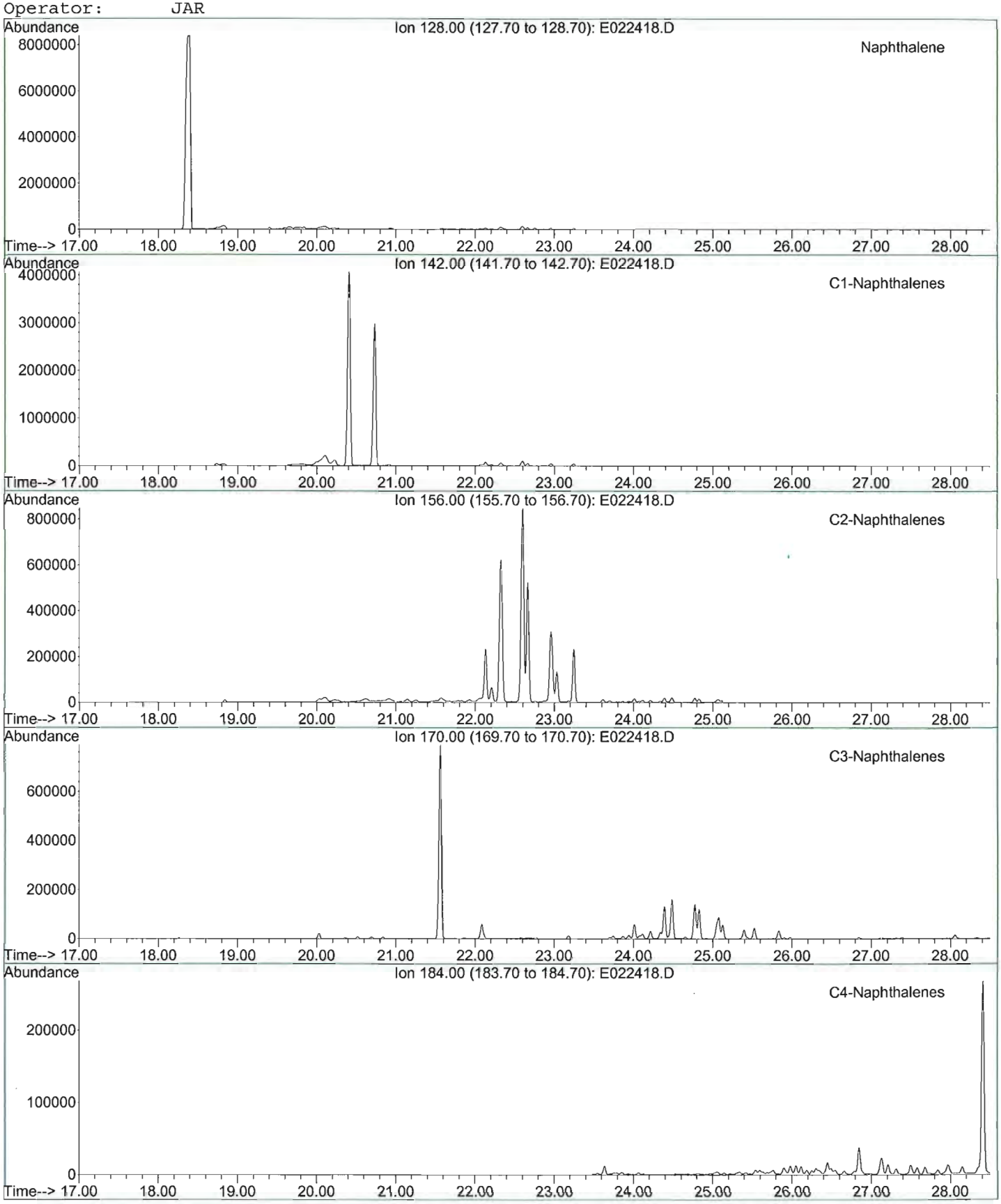
Date Acquired: 25 Feb 2006 12:13 pm
Method File: 4008SIM2.M
Sample Name: PA060216-01
Misc Info:
Operator: JAR



META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

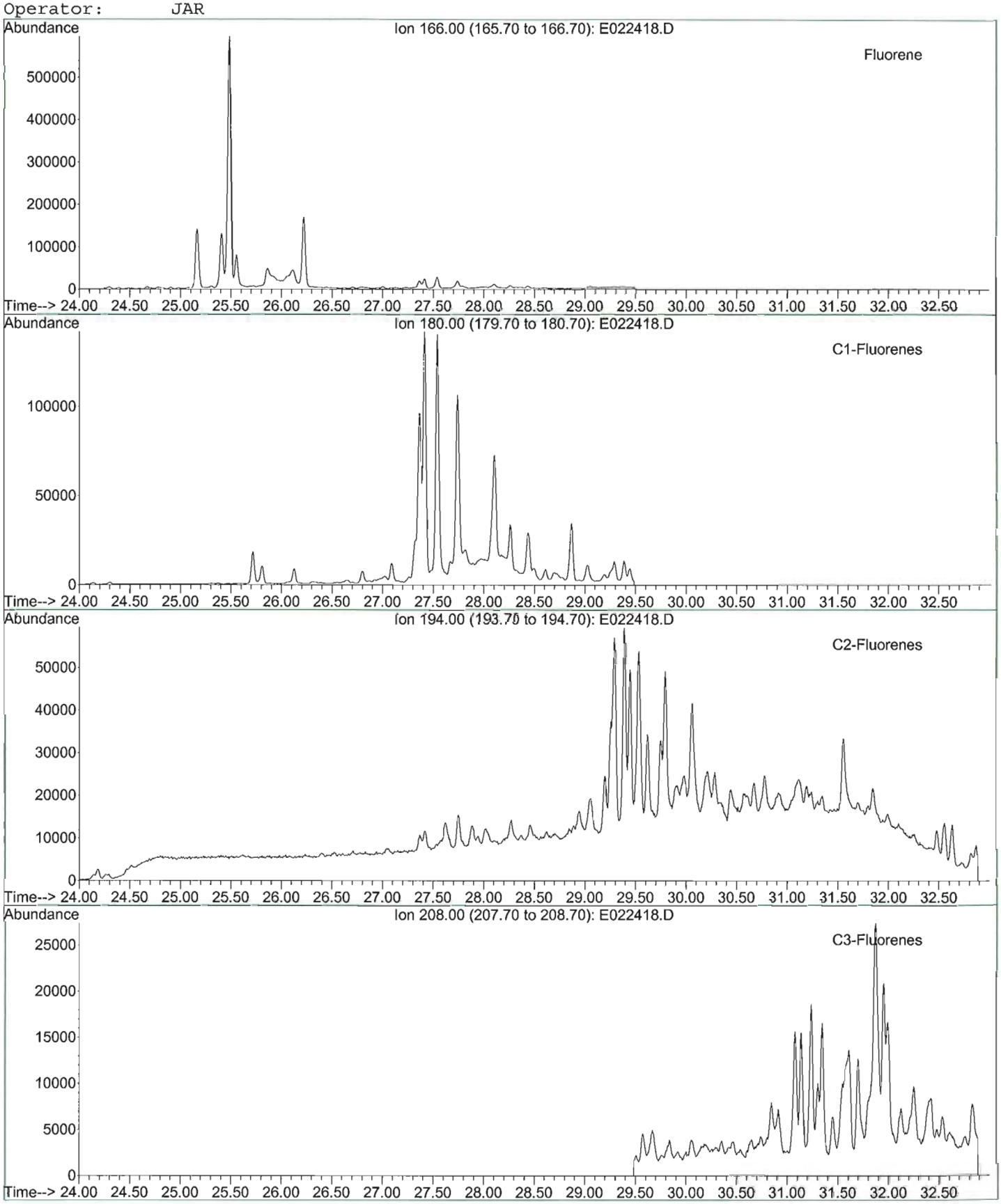
File: J:\1\DATA\E060224\E022418.D
Date Acquired: 25 Feb 2006 12:13 pm
Method File: 4008SIM2.M
Sample Name: PA060216-01
Misc Info:
Operator: JAR



META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

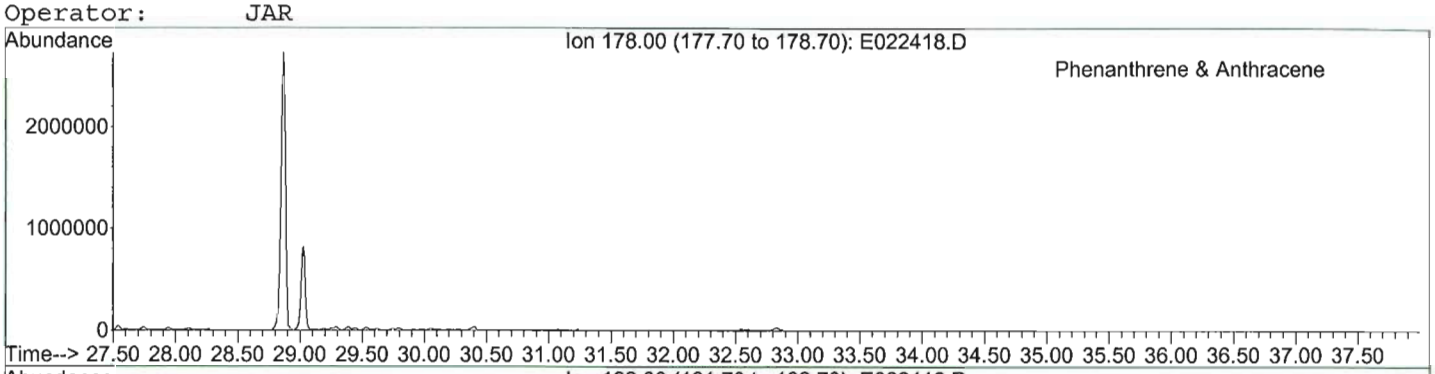
File: J:\1\DATA\E060224\E022418.D
Date Acquired: 25 Feb 2006 12:13 pm
Method File: 4008SIM2.M
Sample Name: PA060216-01
Misc Info:
Operator: JAR

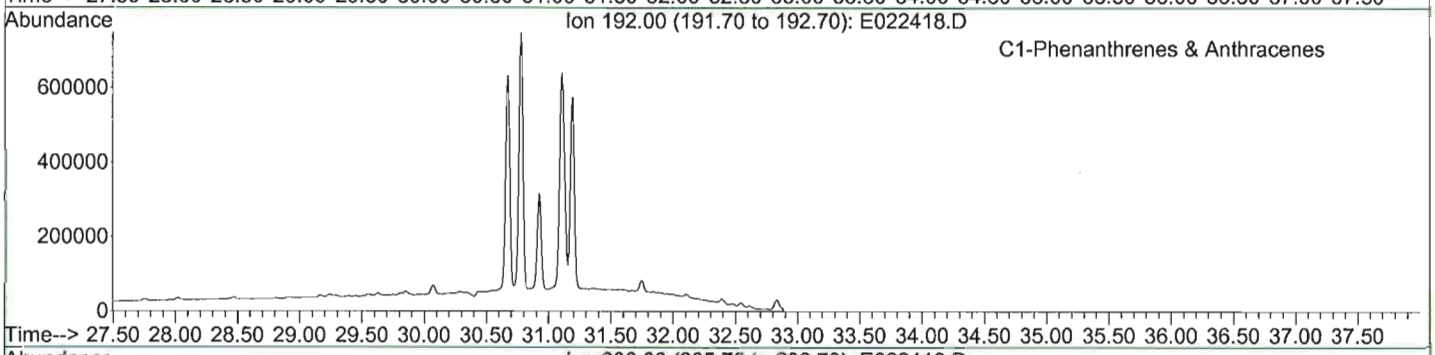


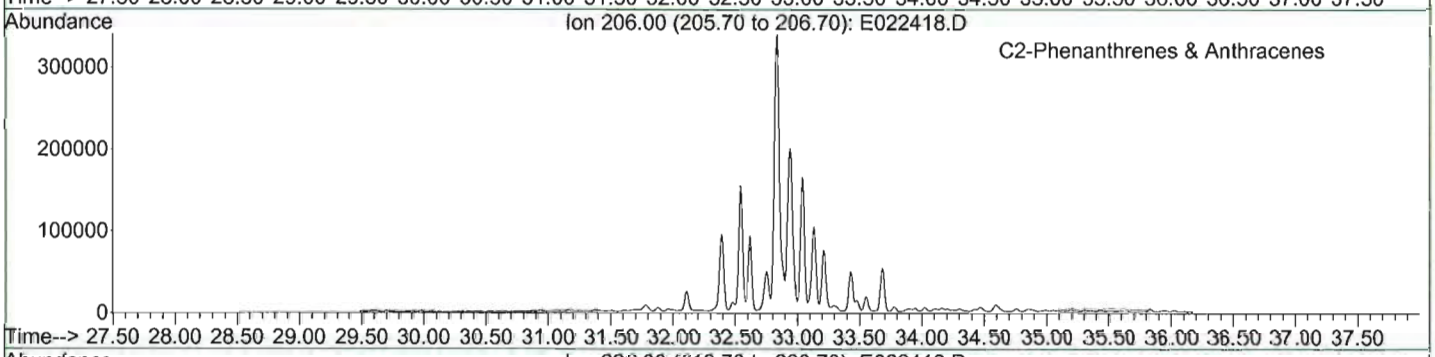
META Environmental, Inc.

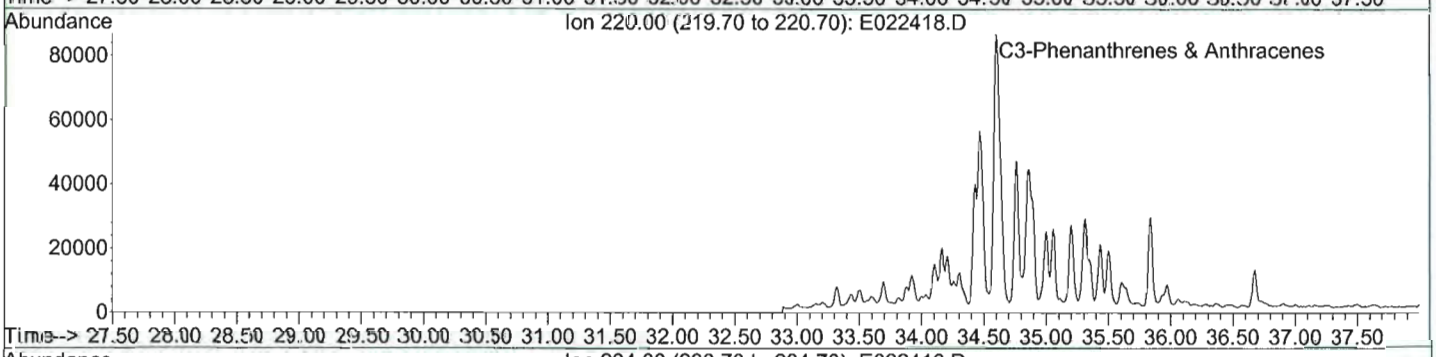
GC/MS EXTRACTED ION CHROMATOGRAM

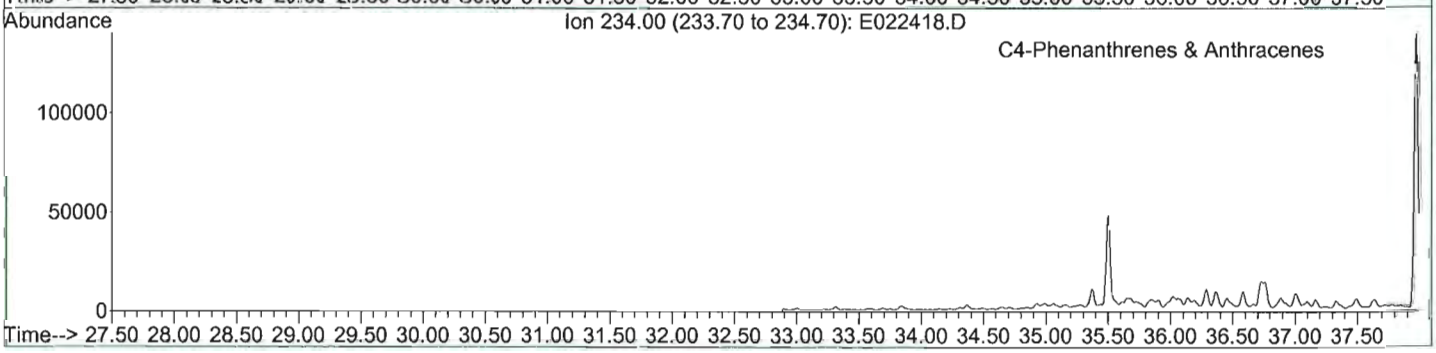
File: J:\1\DATA\E060224\E022418.D
Date Acquired: 25 Feb 2006 12:13 pm
Method File: 4008SIM2.M
Sample Name: PA060216-01
Misc Info:
Operator: JAR











META Environmental, Inc.

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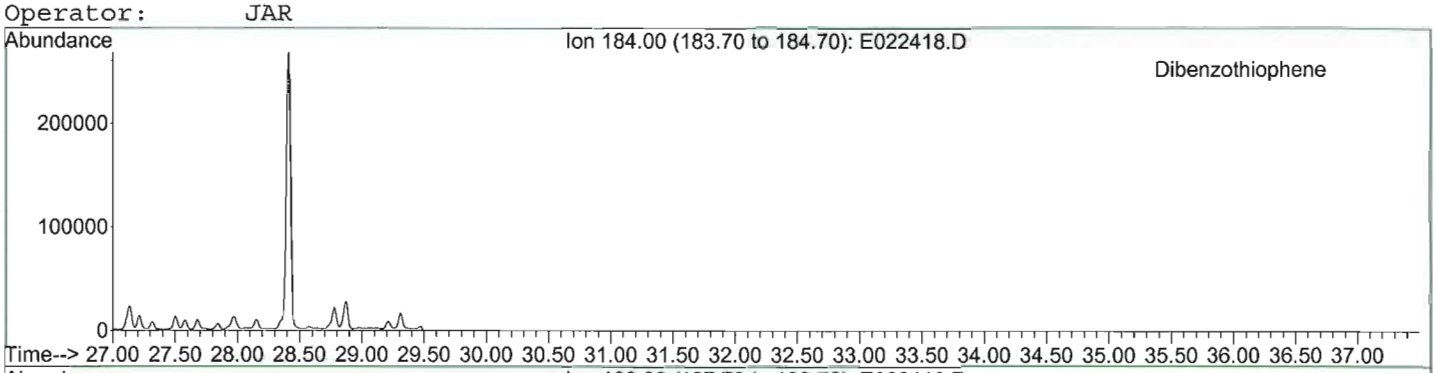
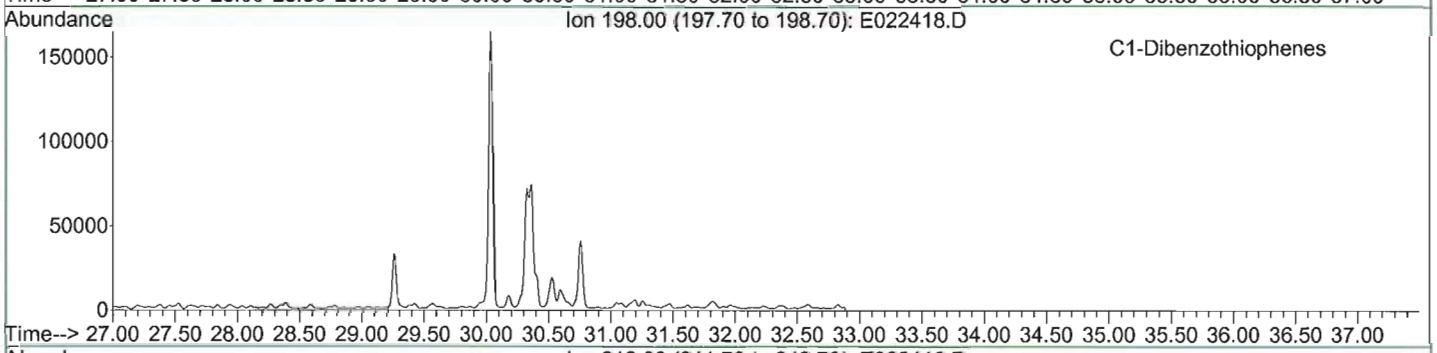
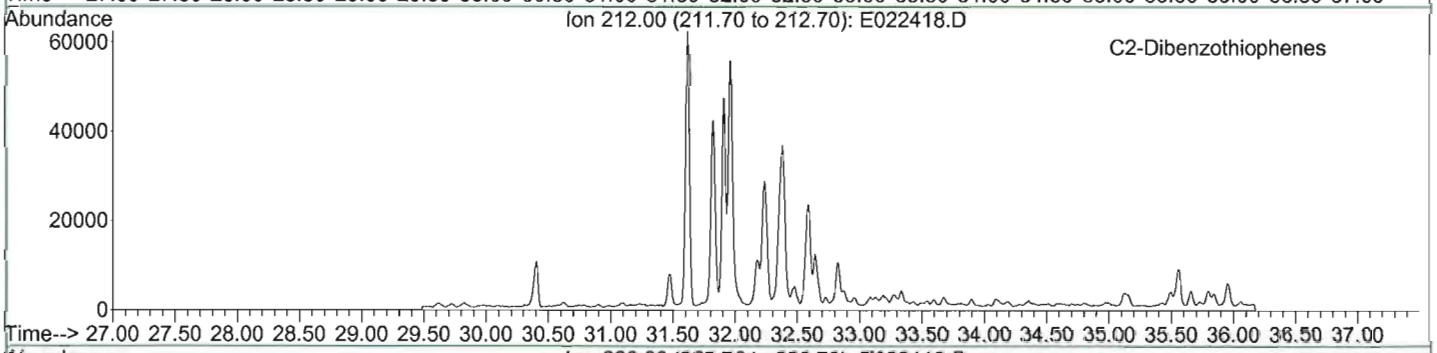
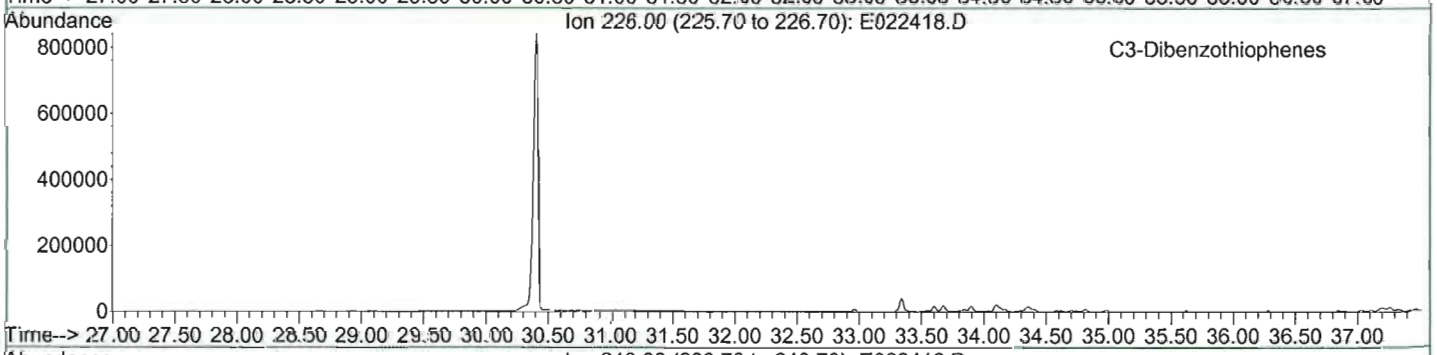
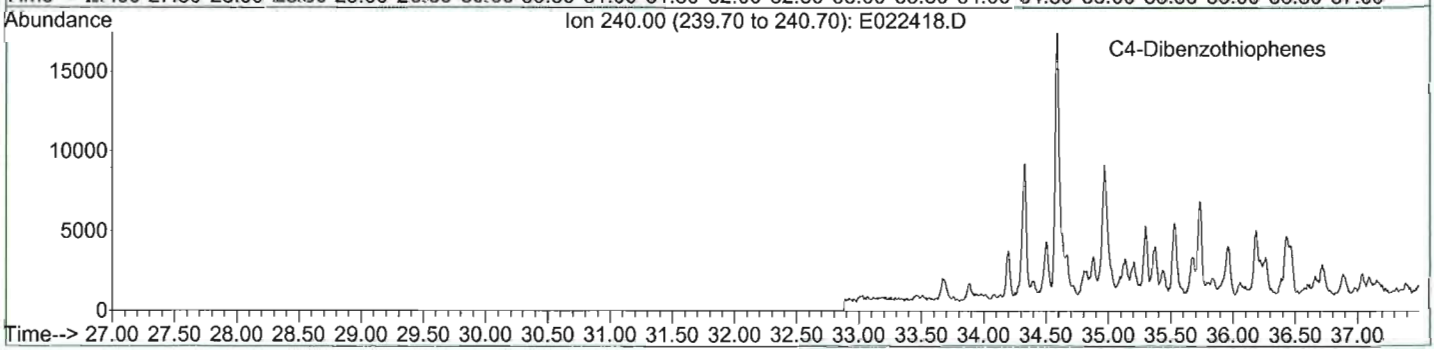
File: J:\1\DATA\E060224\E022418.D
Date Acquired: 25 Feb 2006 12:13 pm
Method File: 4008SIM2.M
Sample Name: PA060216-01
Misc Info:
Operator: JAR











META Environmental, Inc.

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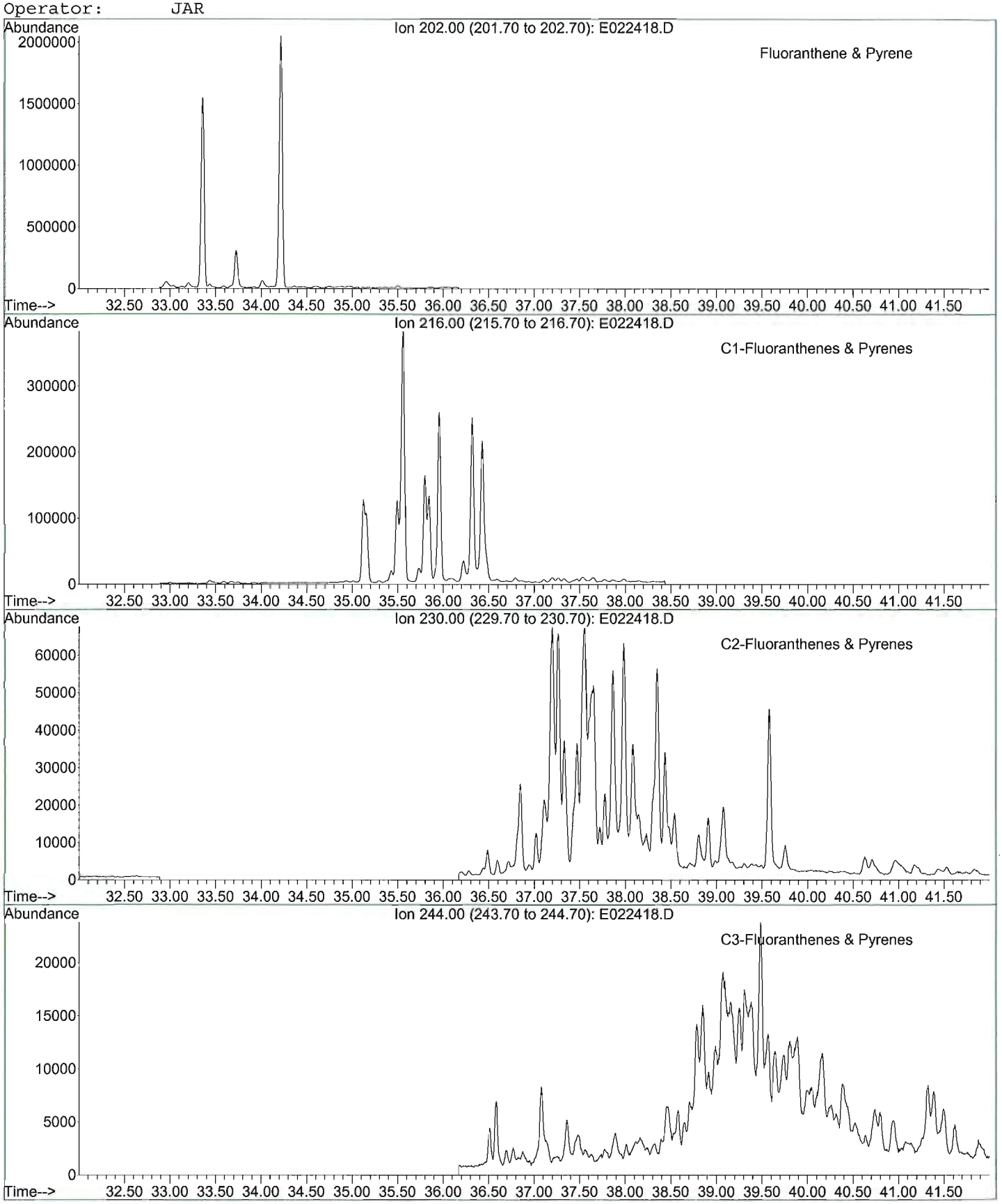

META Environmental, Inc.

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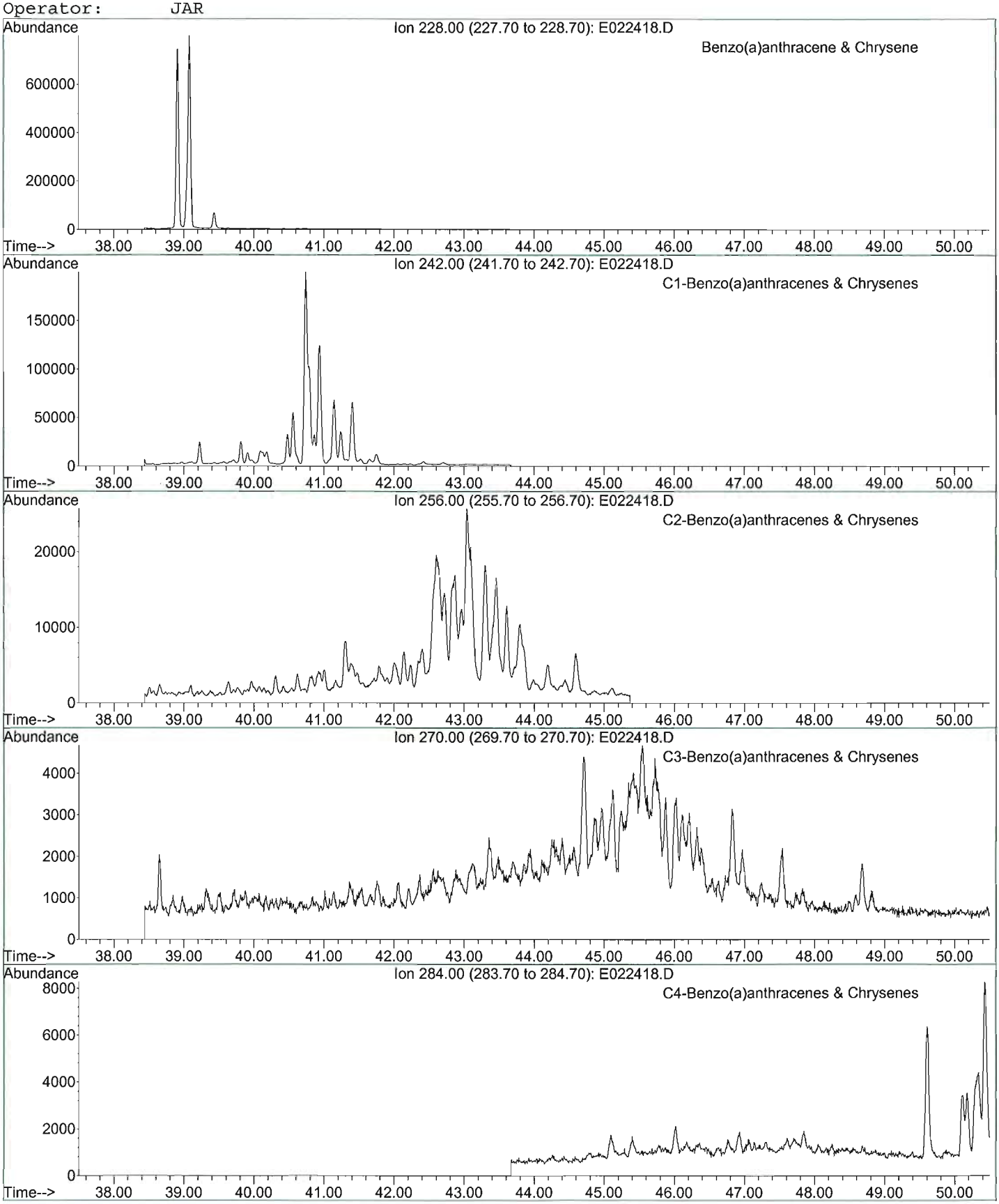

META Environmental, Inc.

GC/MS TOTAL ION CHROMATOGRAM

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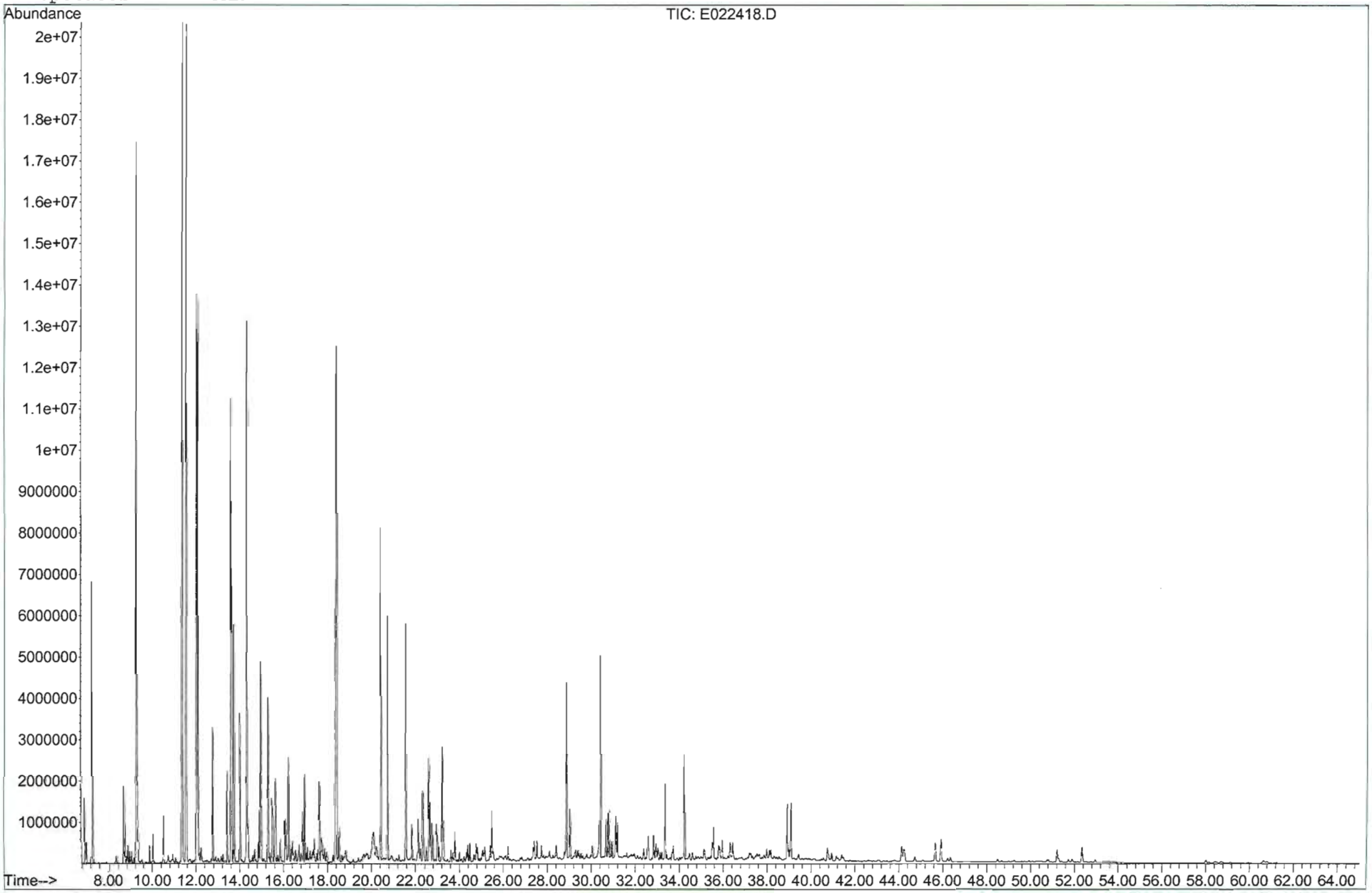

META Environmental, Inc.

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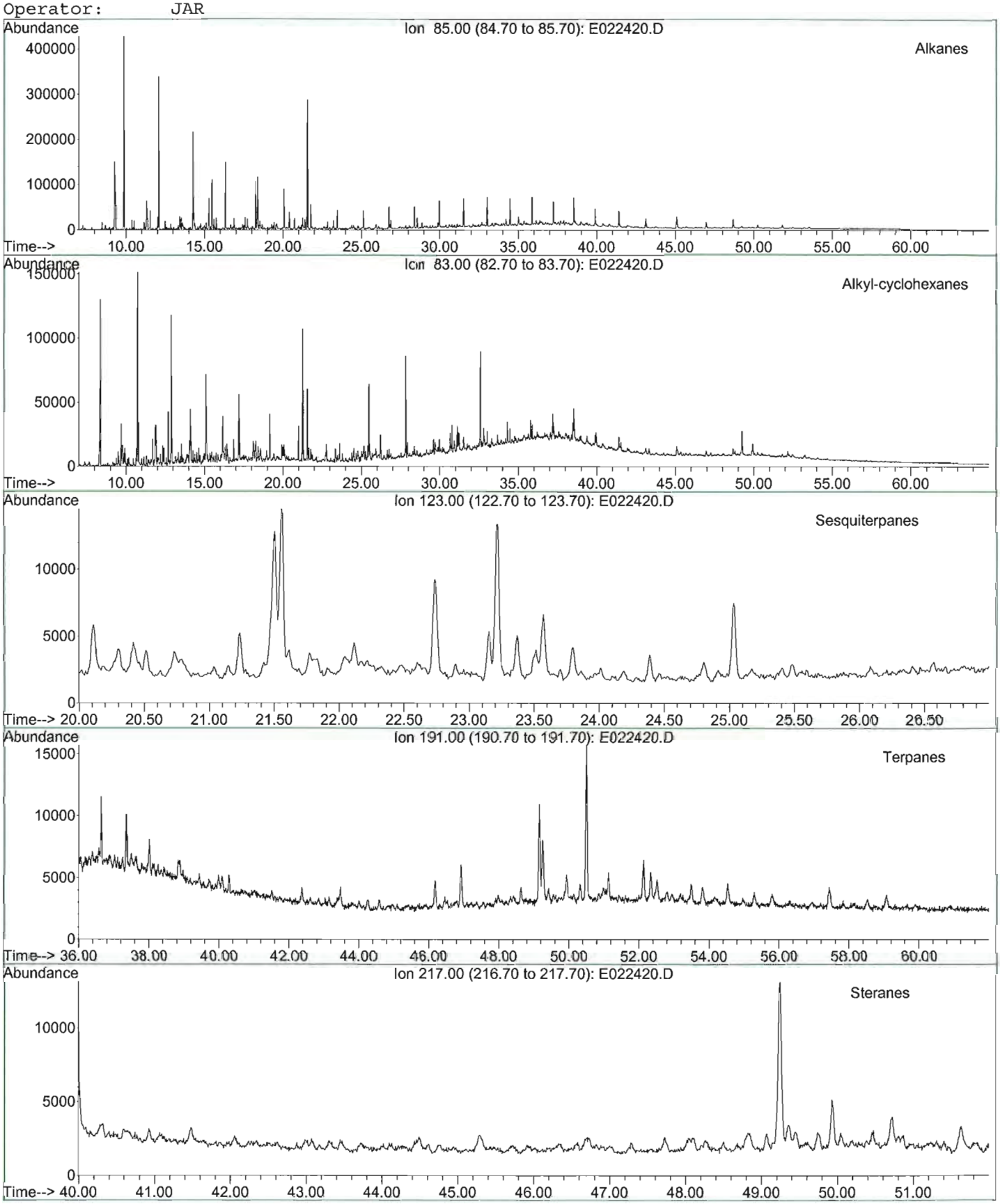

META Environmental, Inc.

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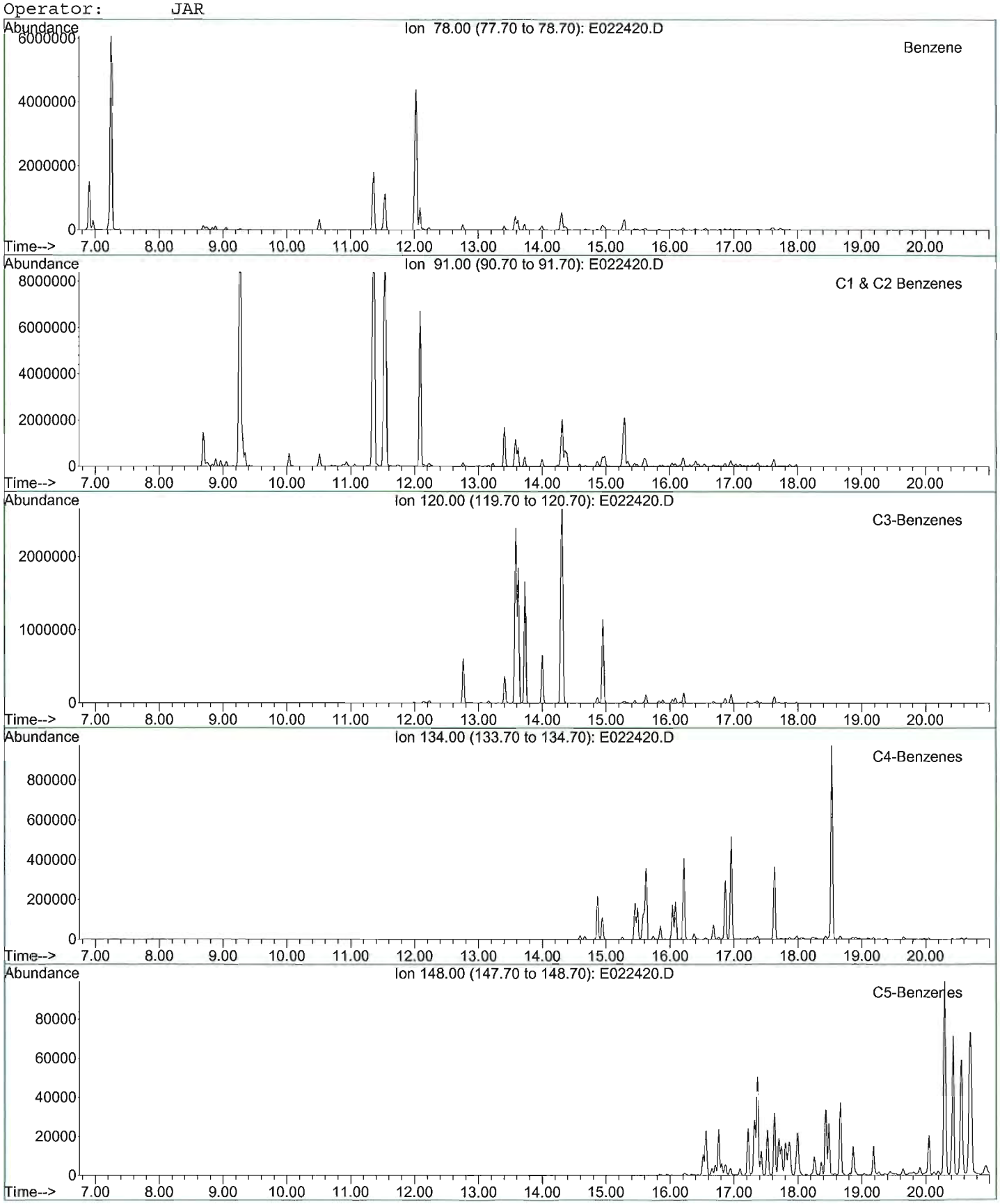

META Environmental, Inc.

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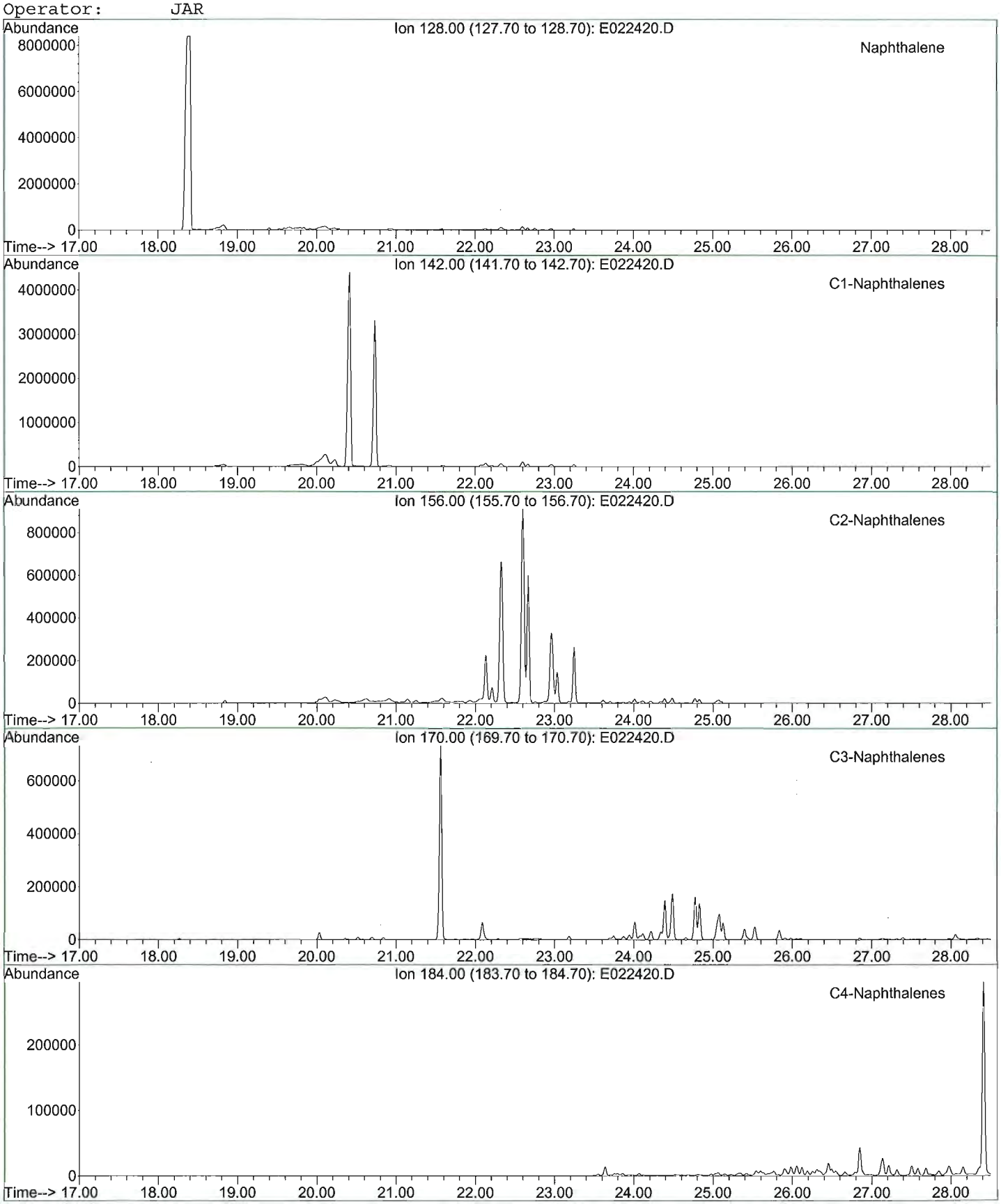

META Environmental, Inc.

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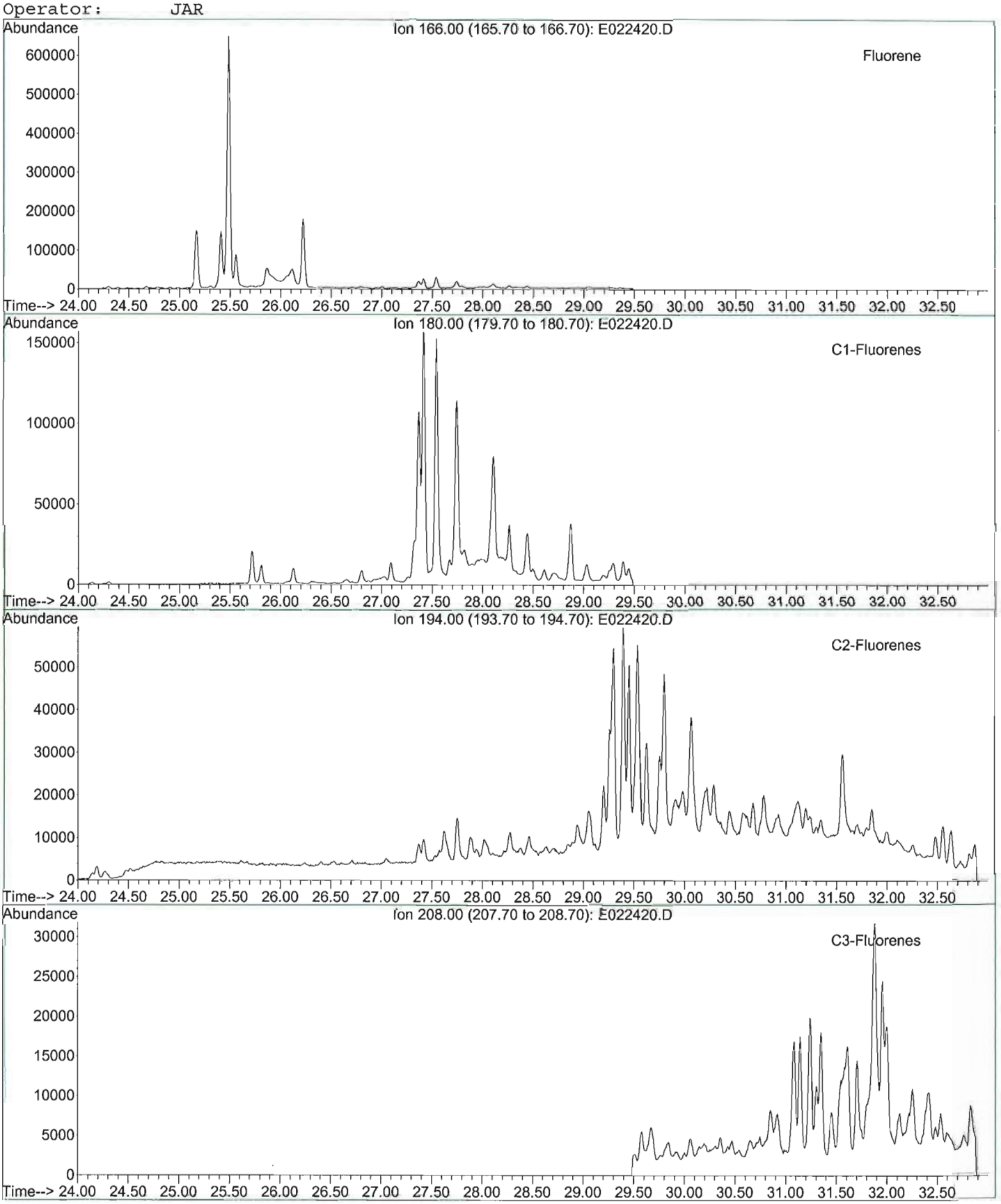

META Environmental, Inc.

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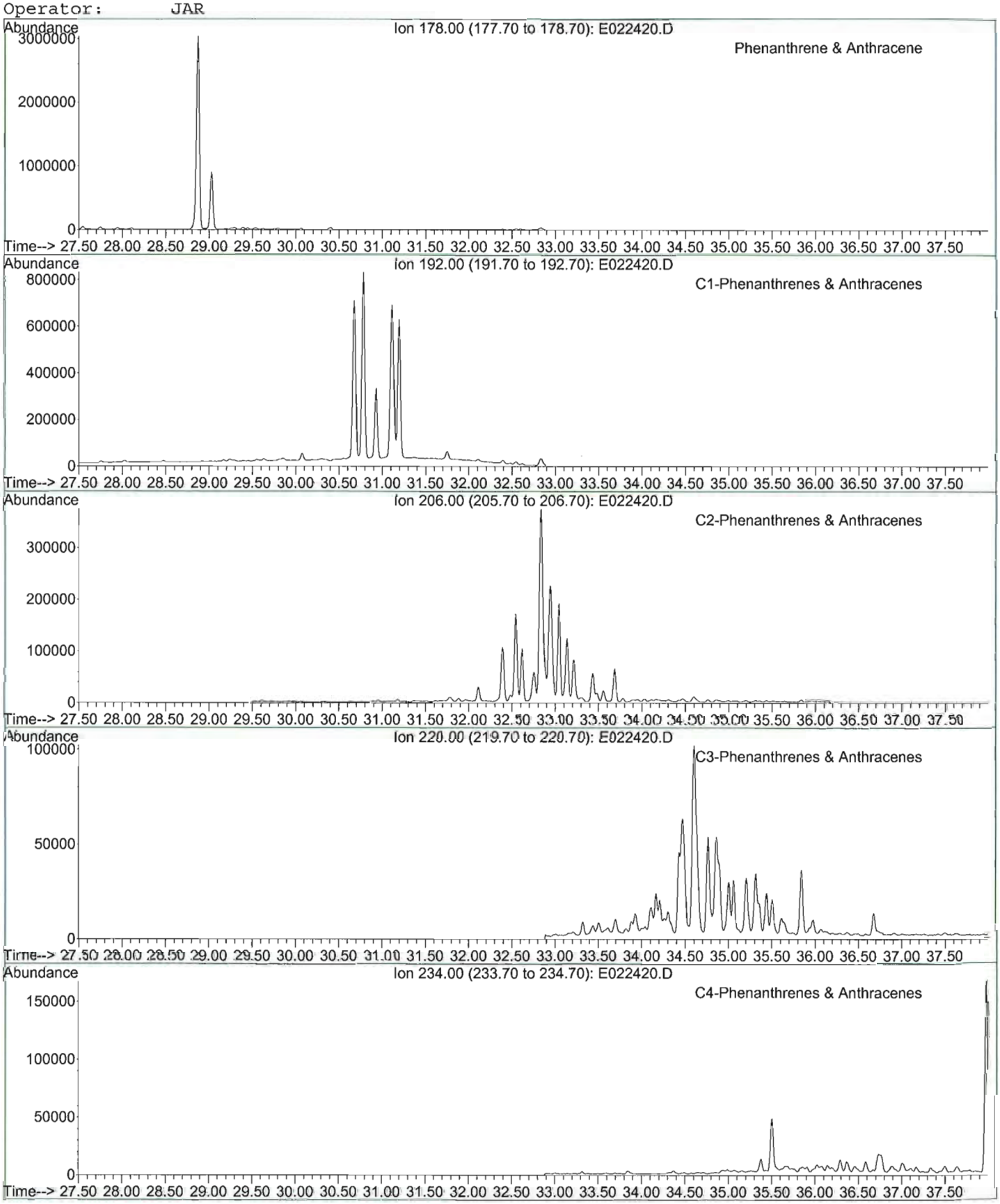

META Environmental, Inc.

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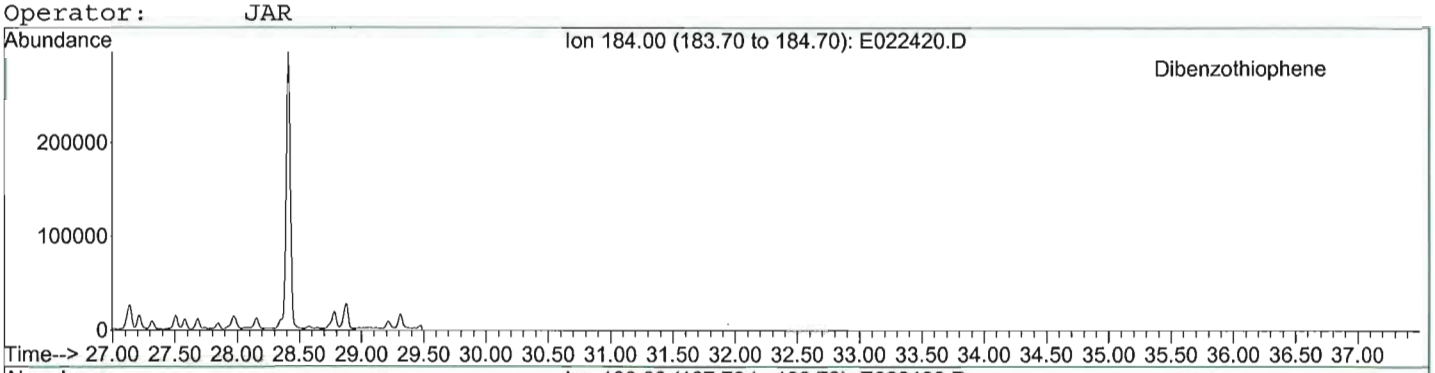

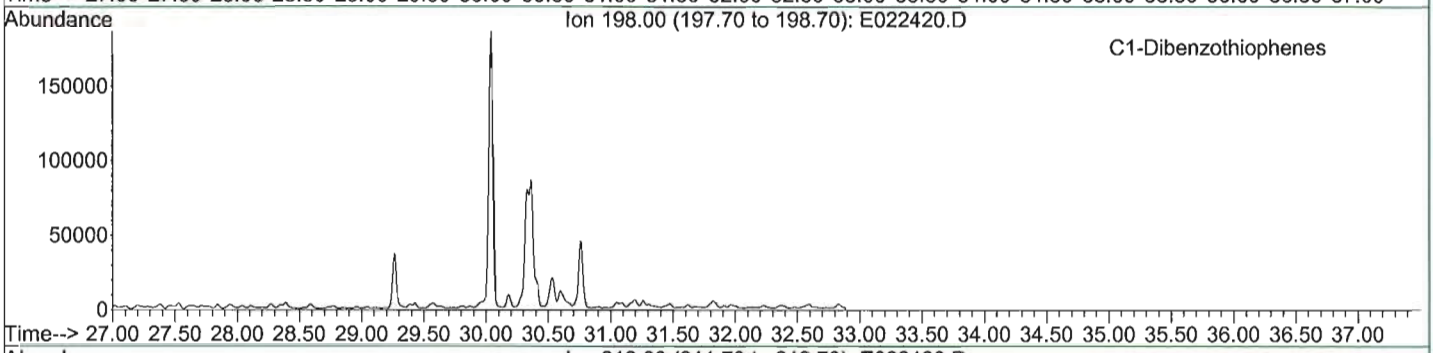

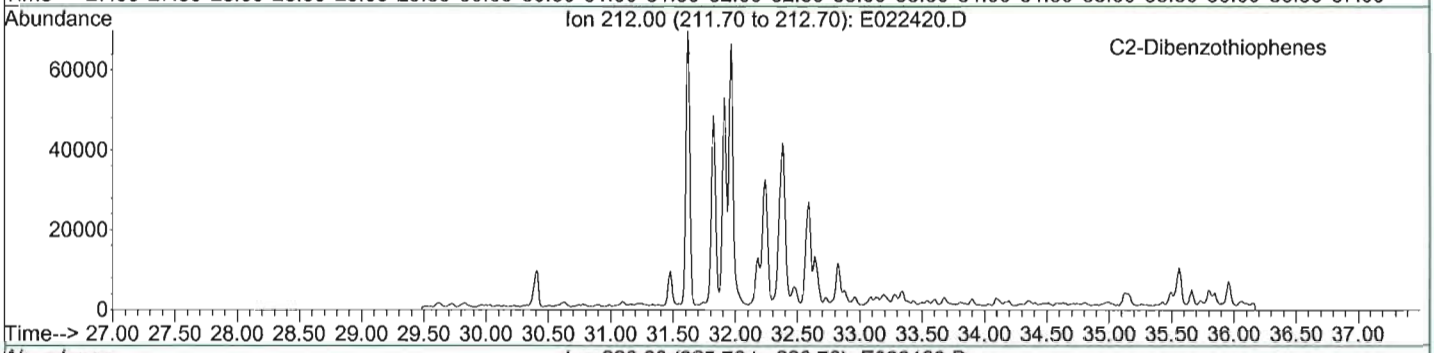

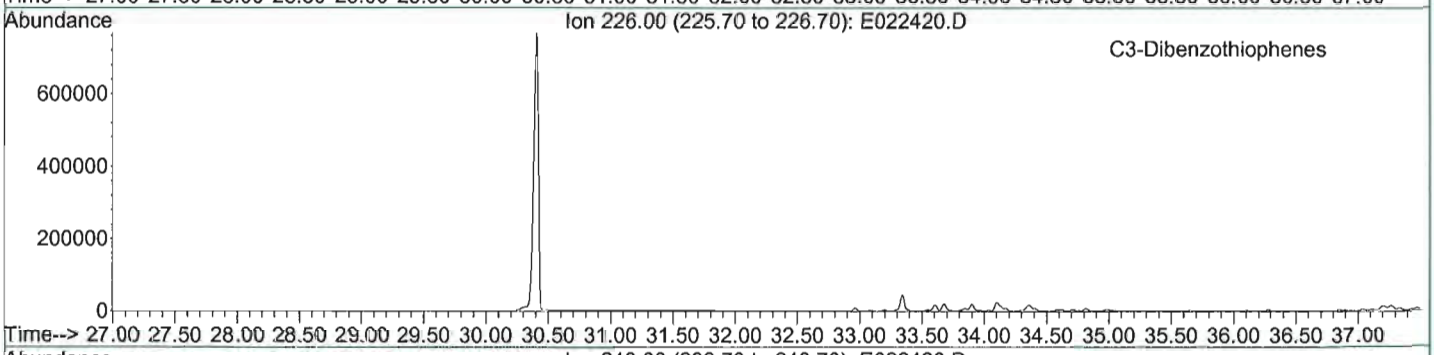

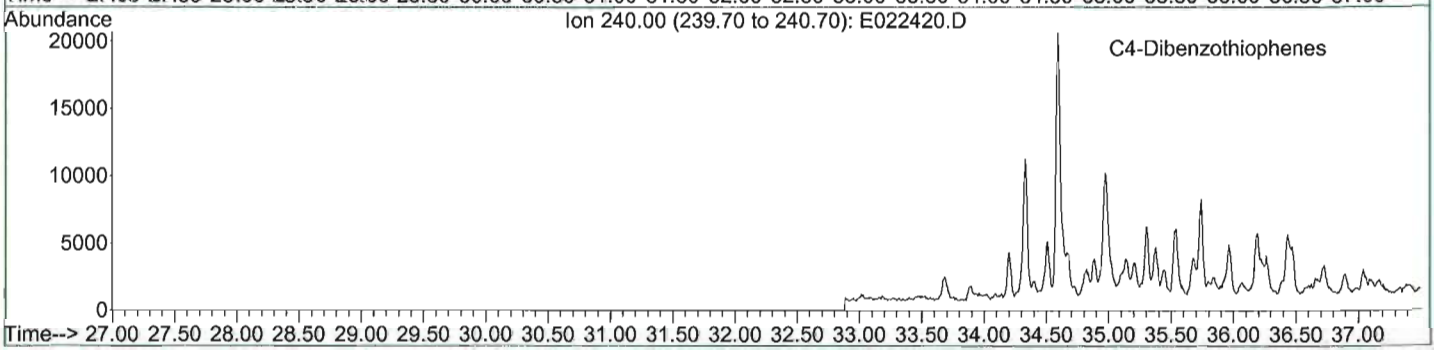

META Environmental, Inc.

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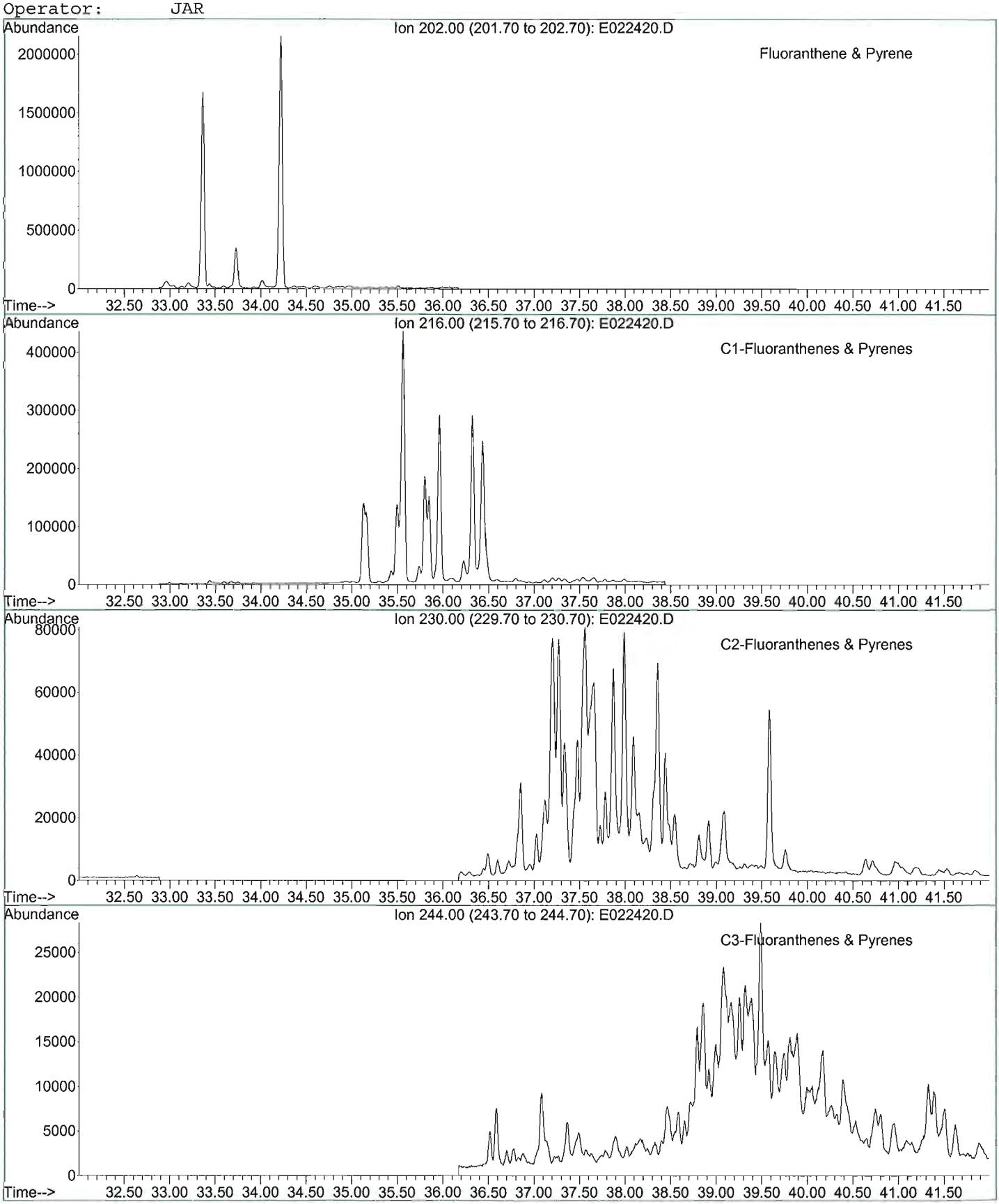

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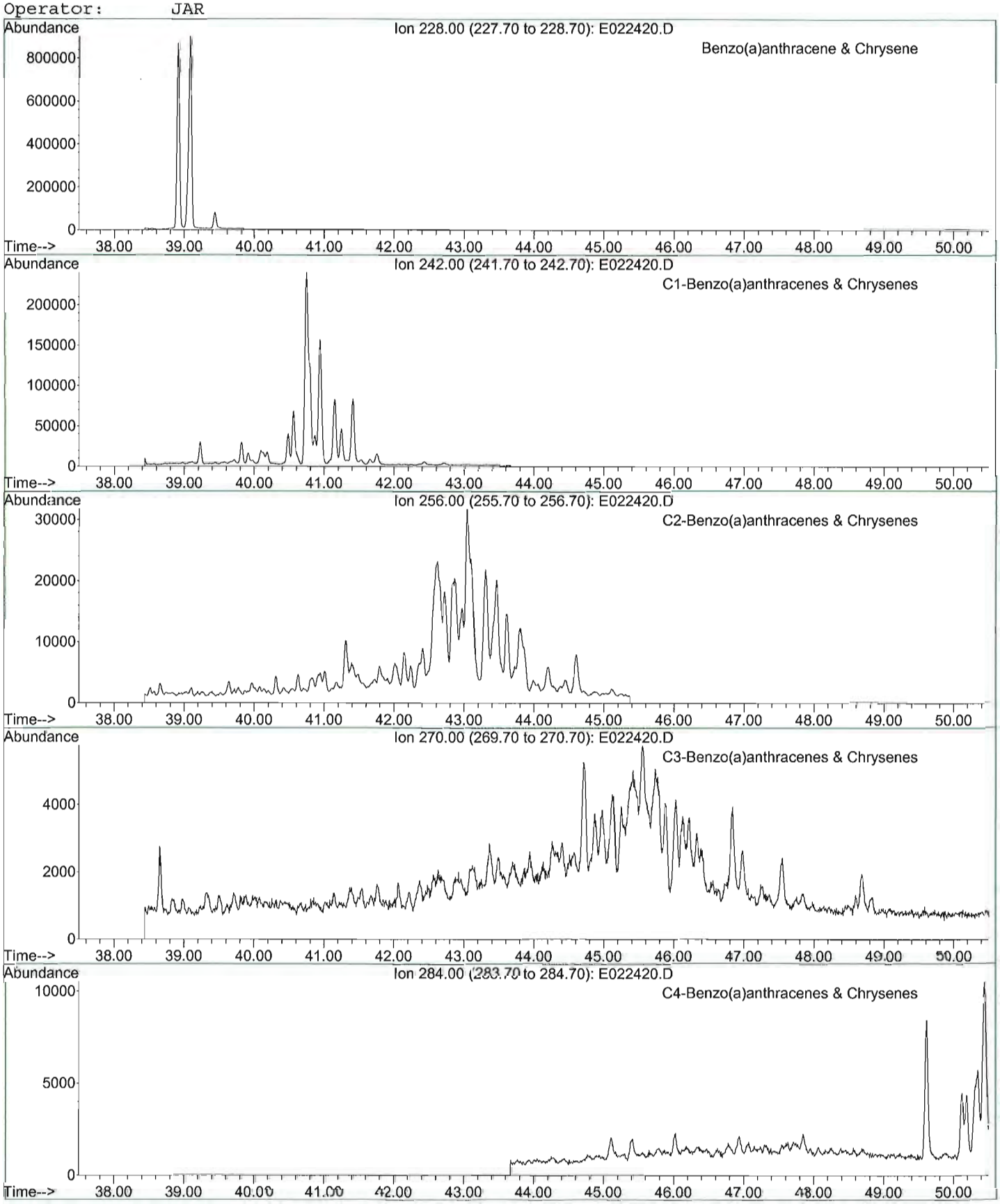

META Environmental, Inc.

GC/MS TOTAL ION CHROMATOGRAM

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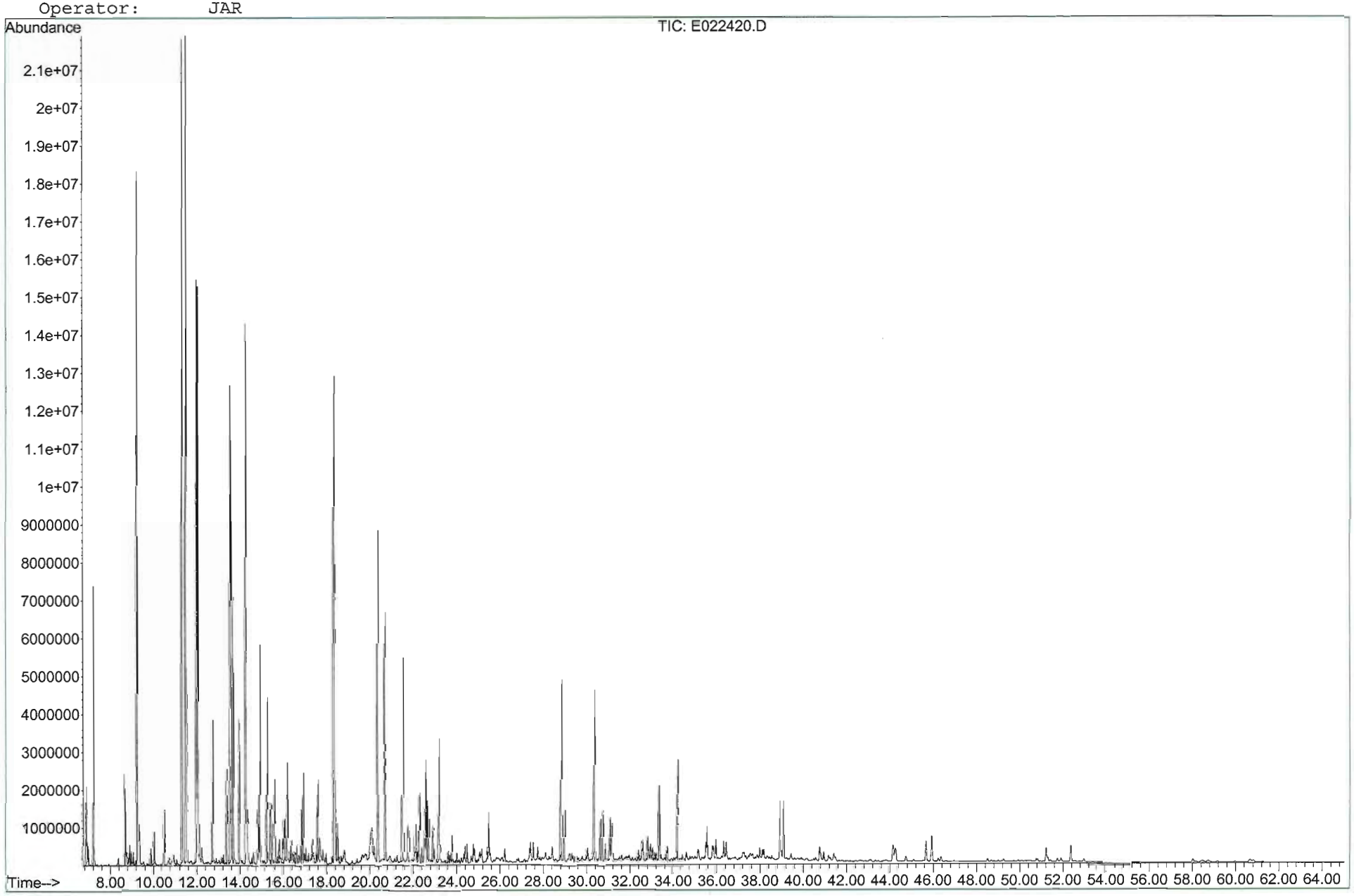

META Environmental, Inc.

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Sample Name: PA060216-02
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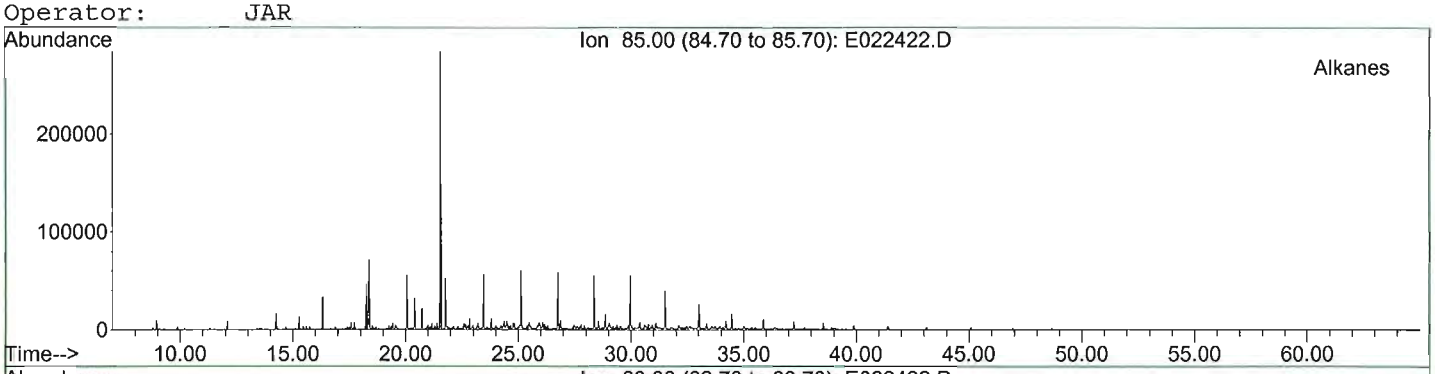

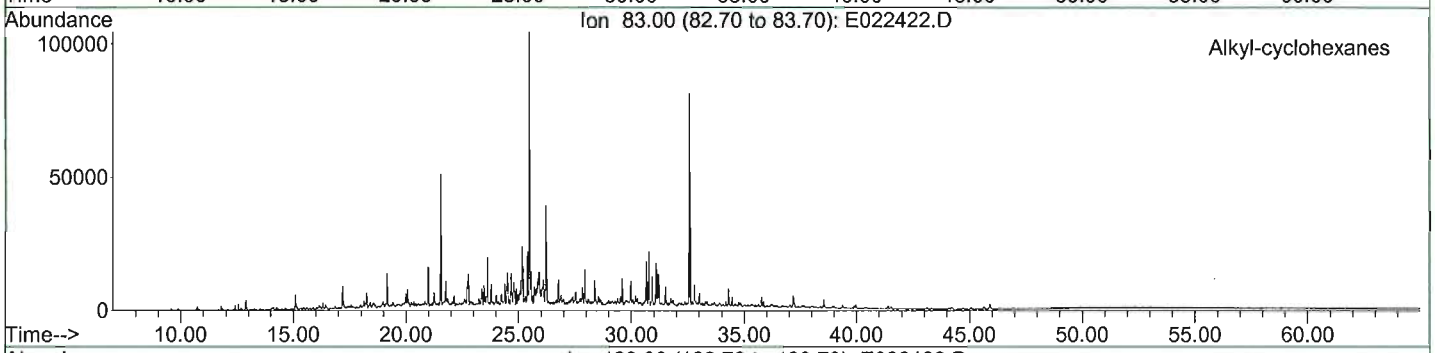

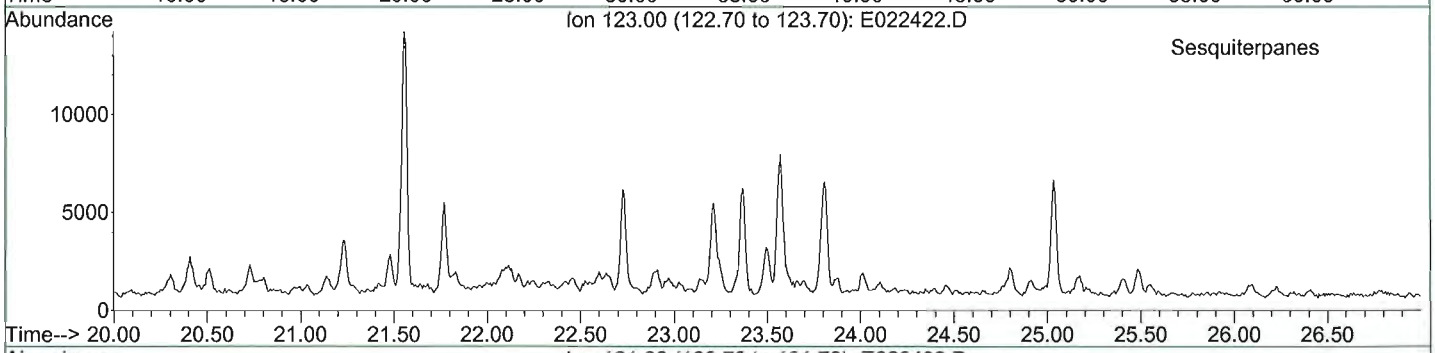

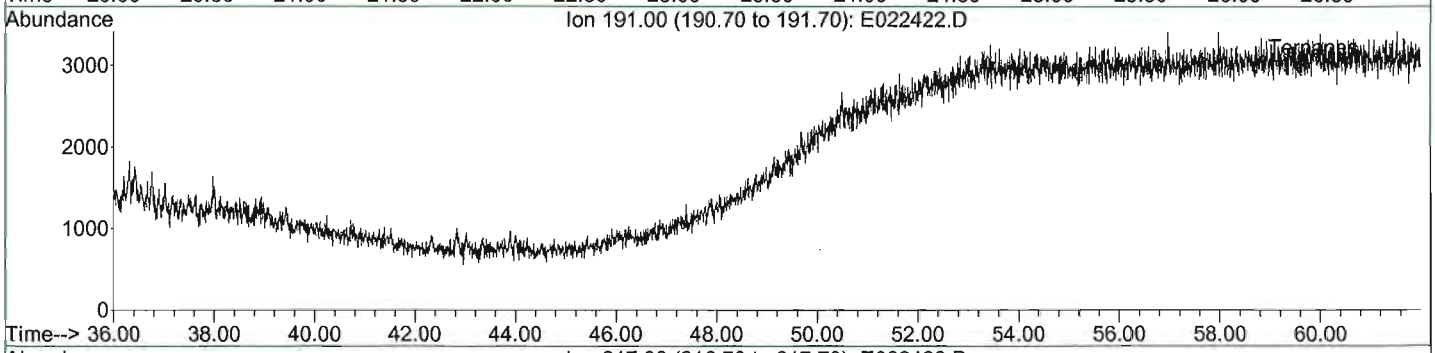

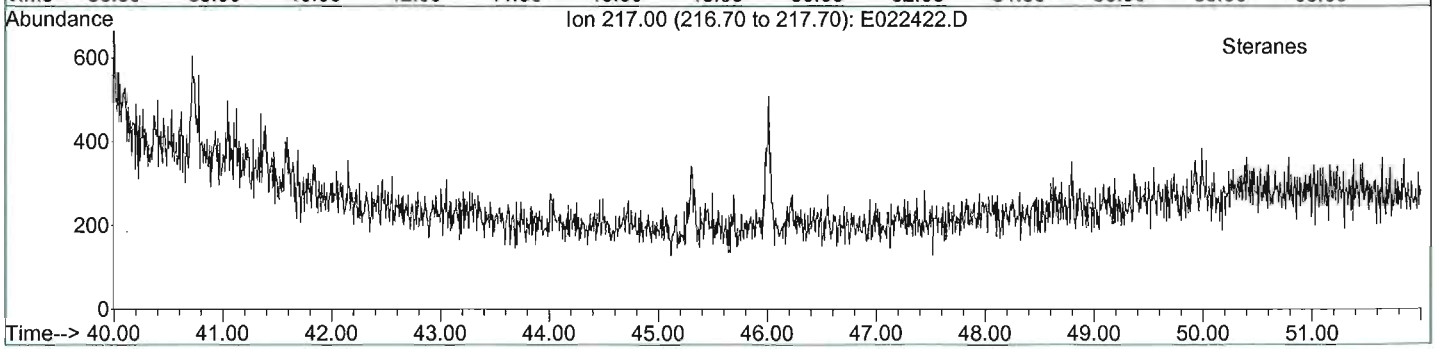

META Environmental, Inc.

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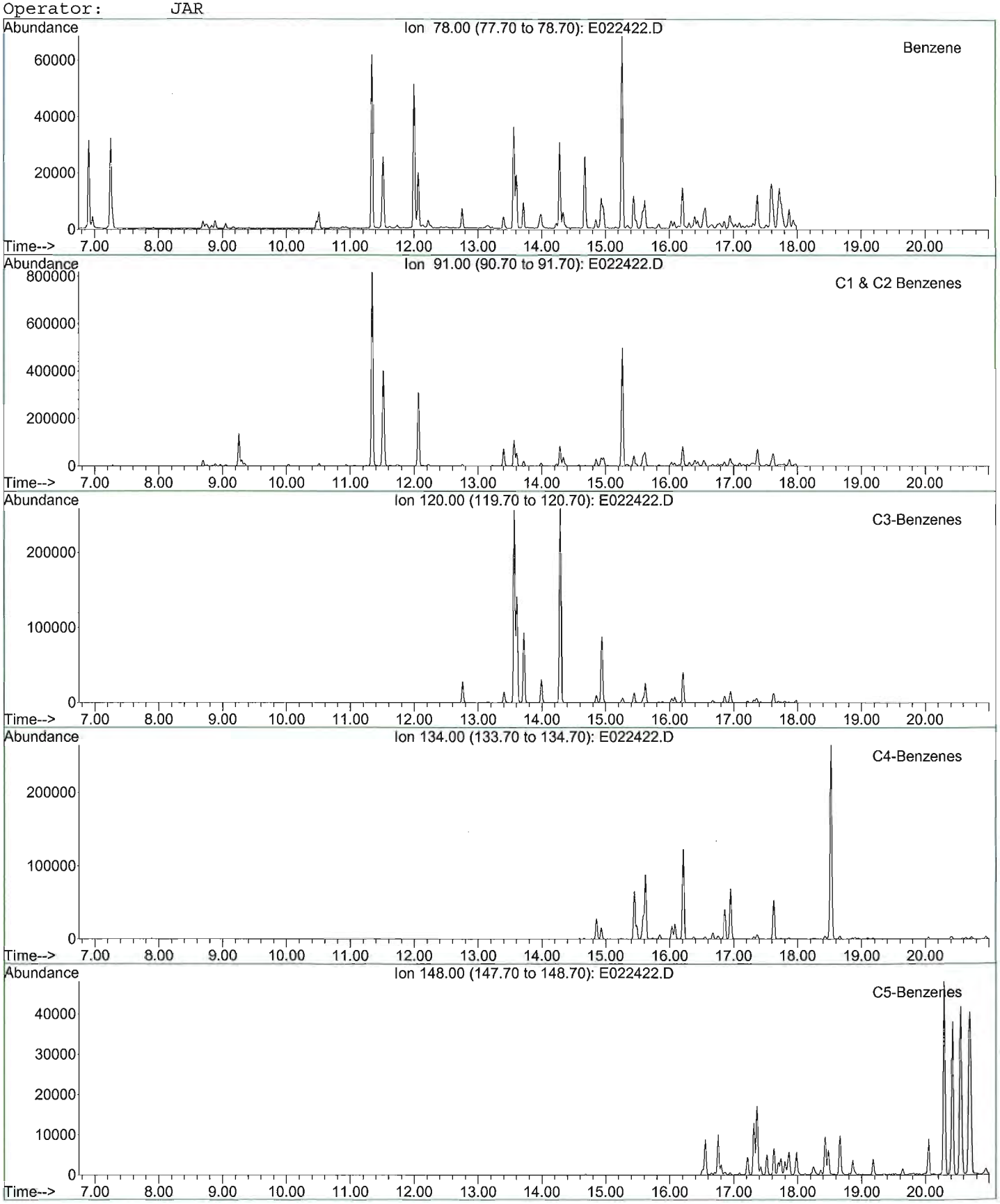

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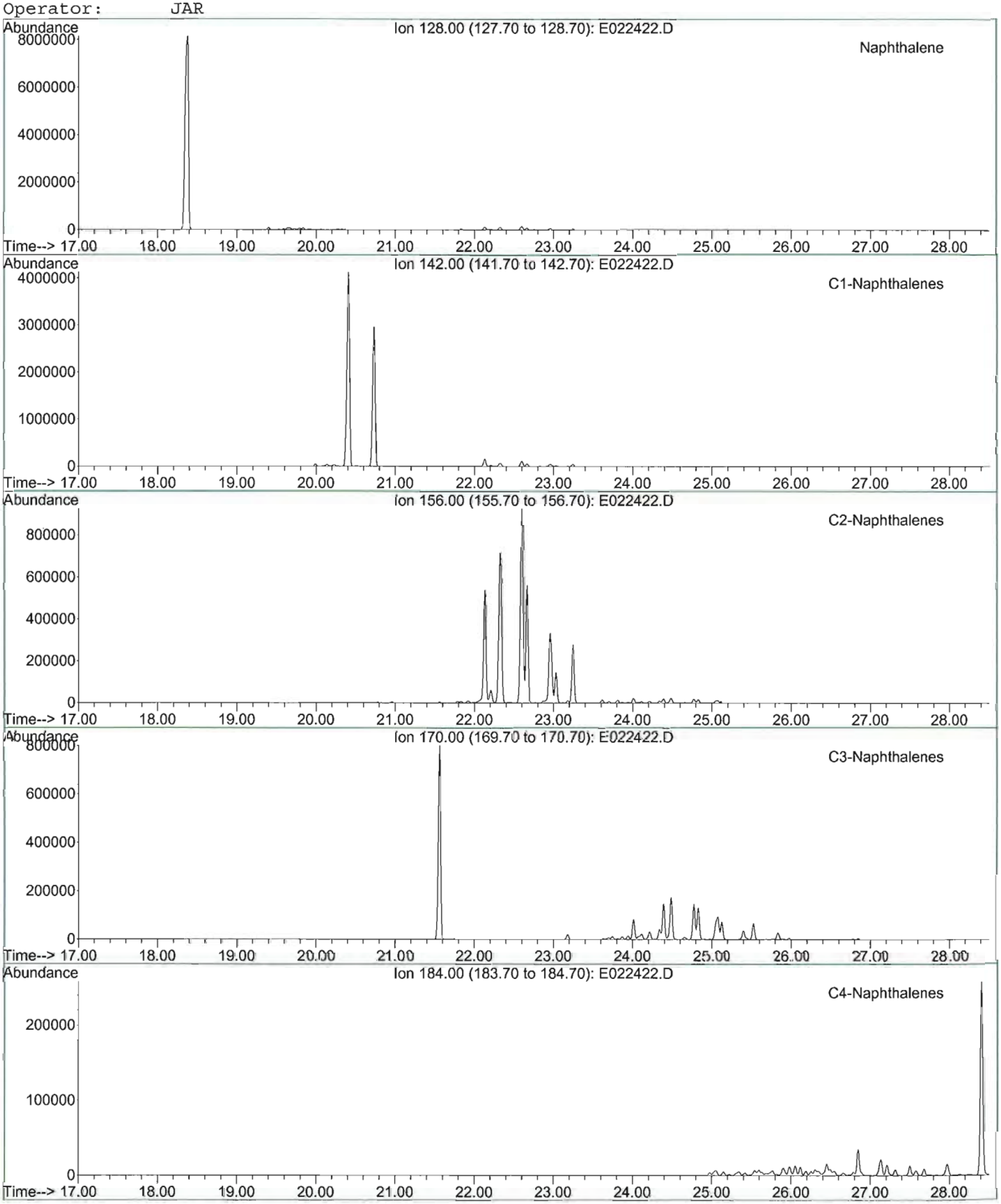

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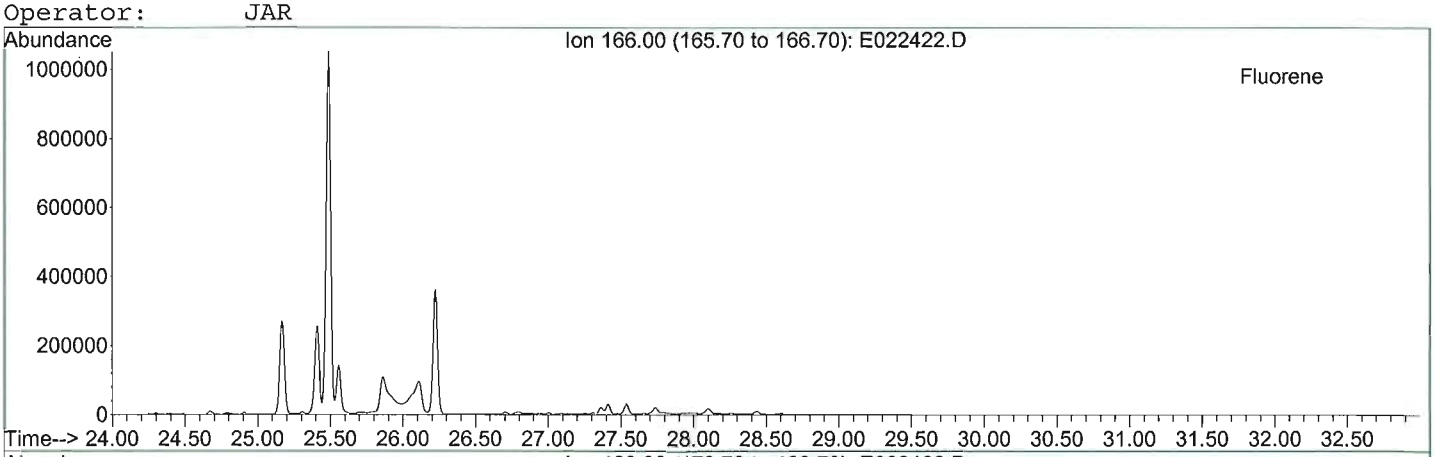

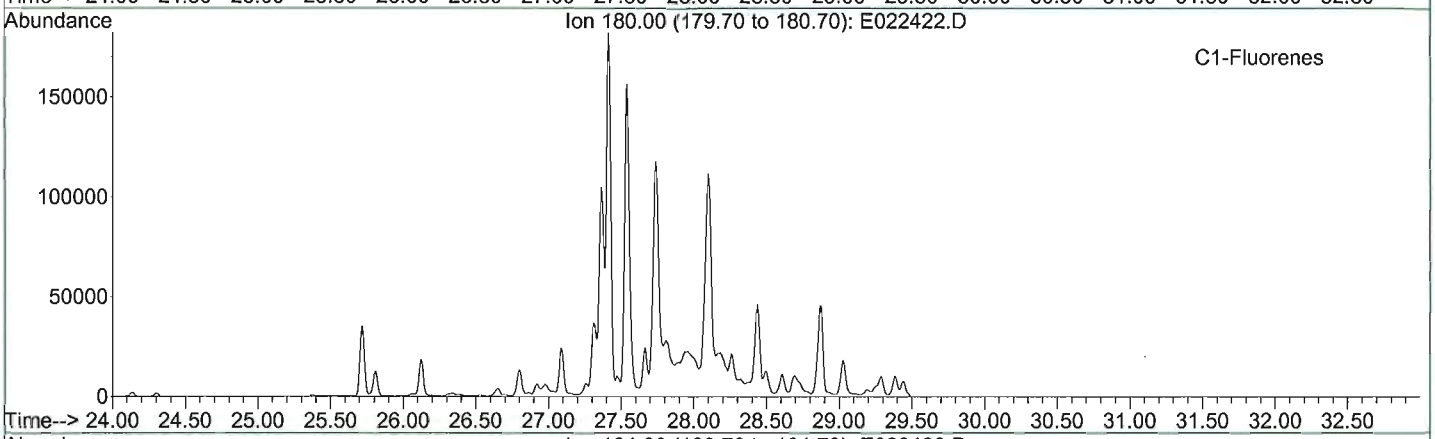

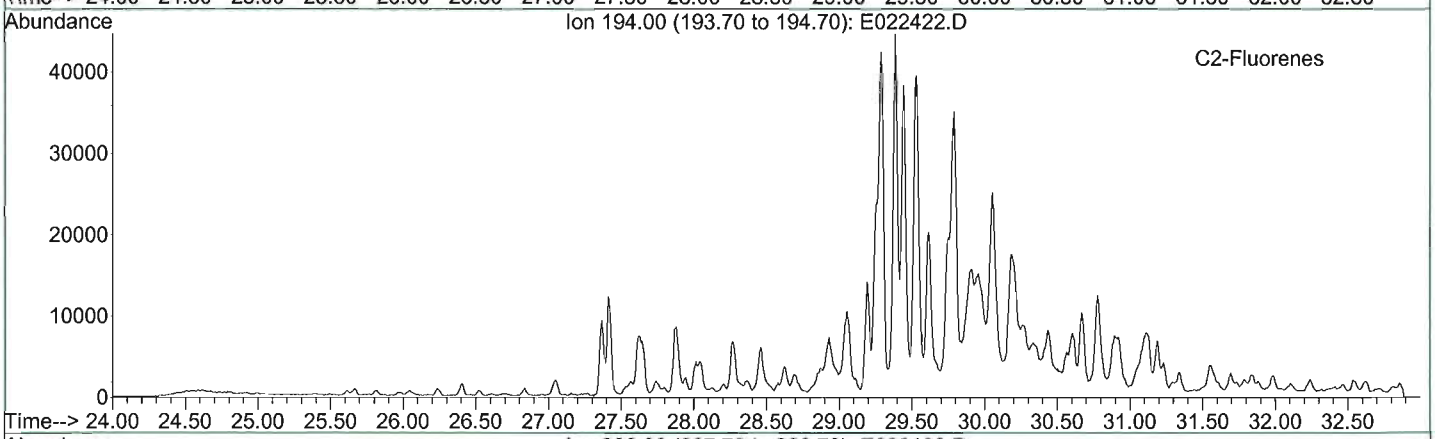

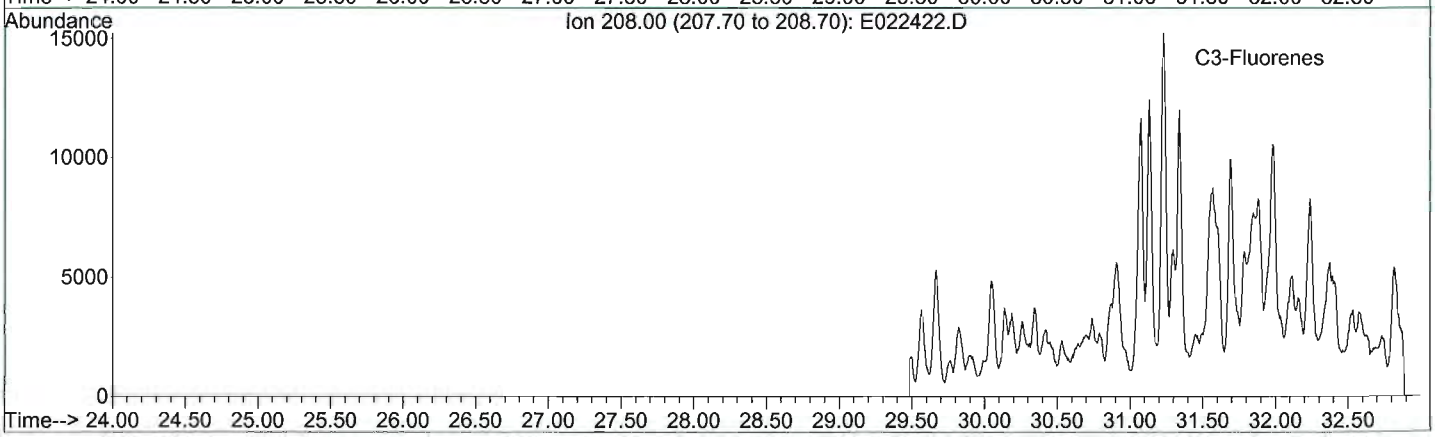

META Environmental, Inc.

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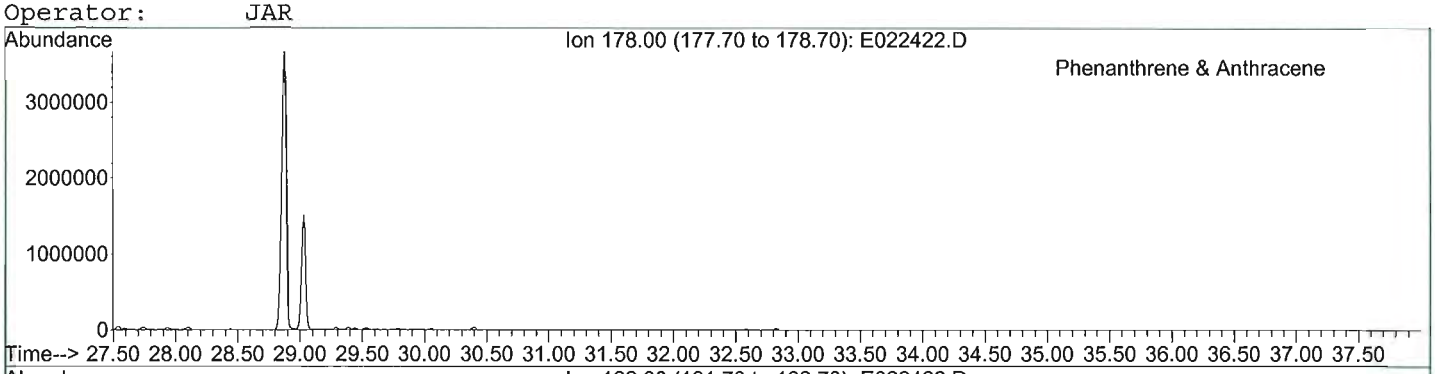

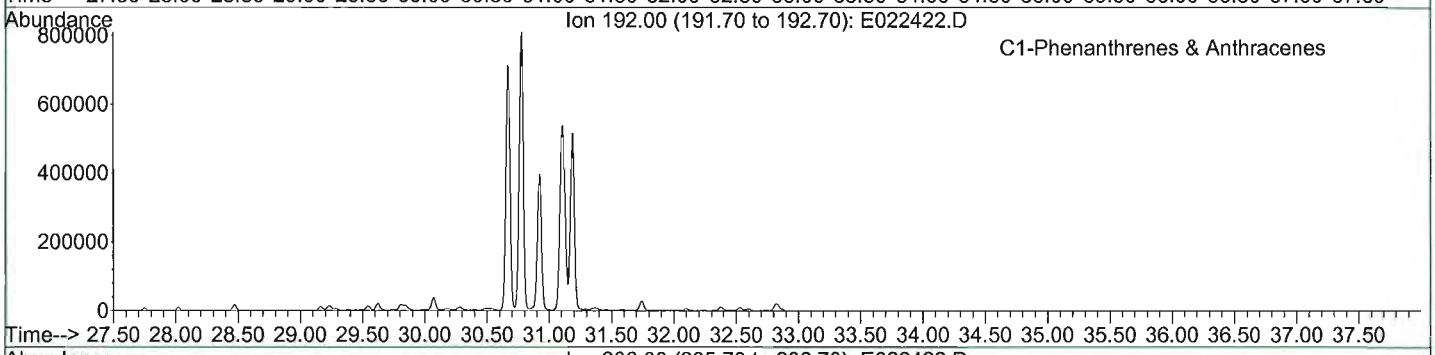

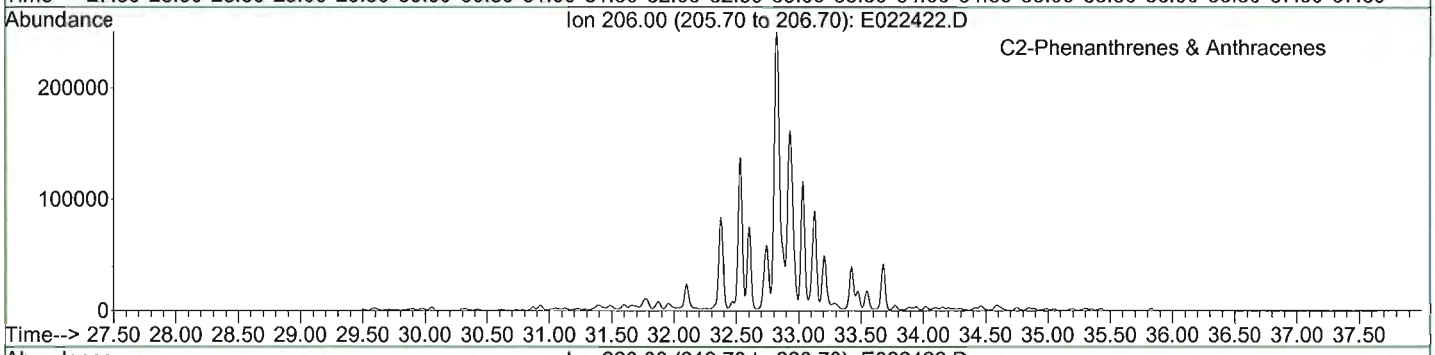

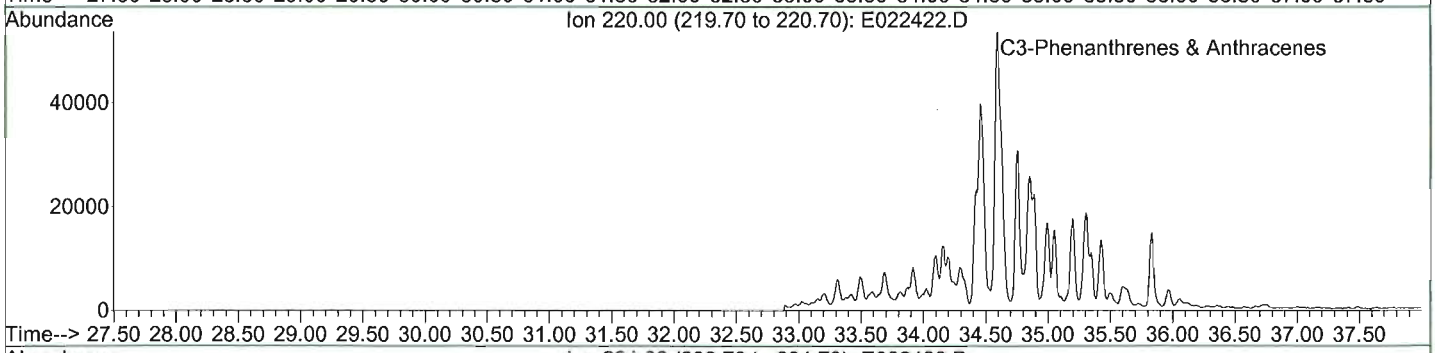

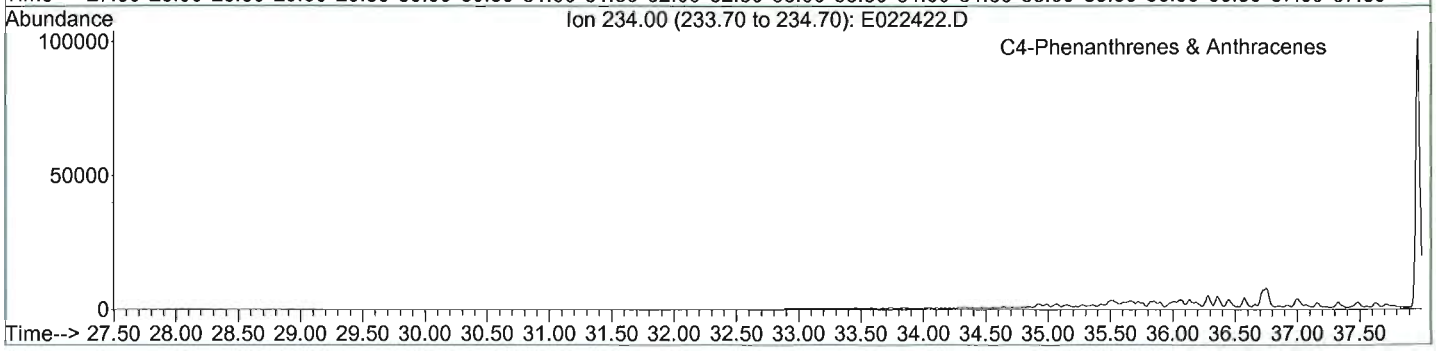

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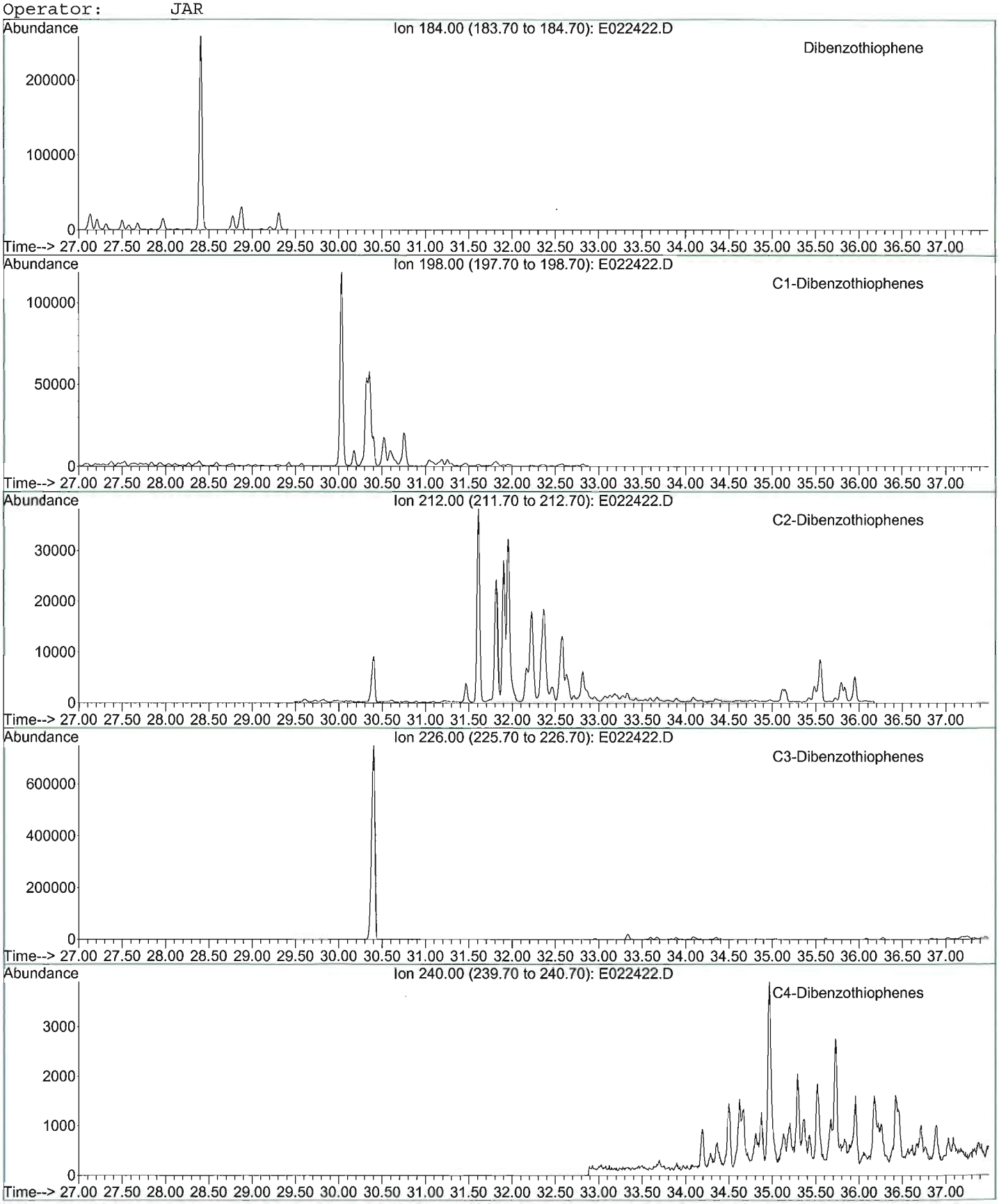

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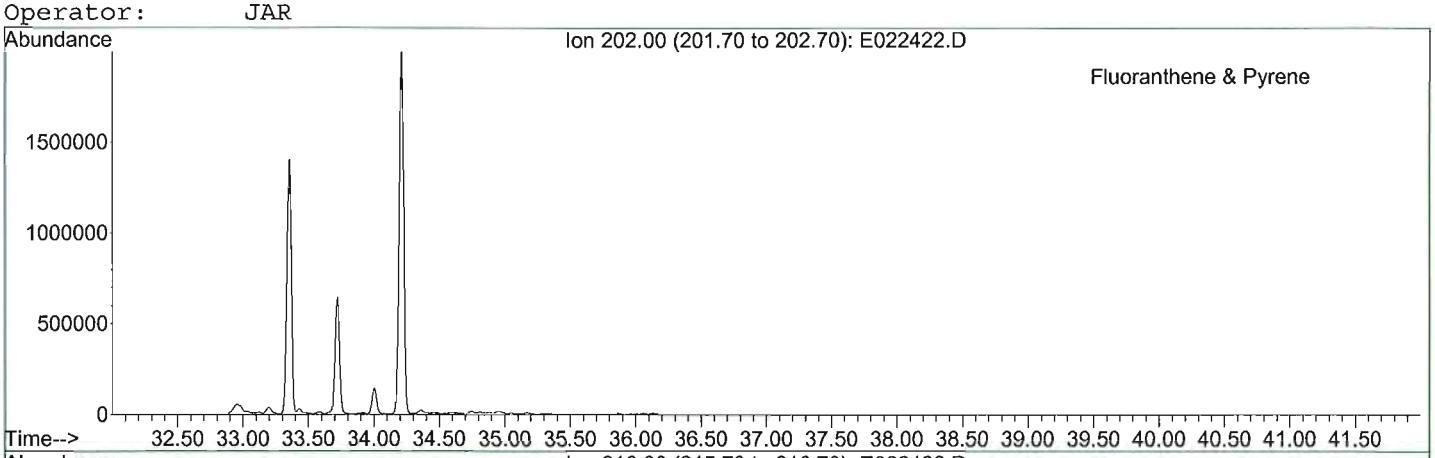
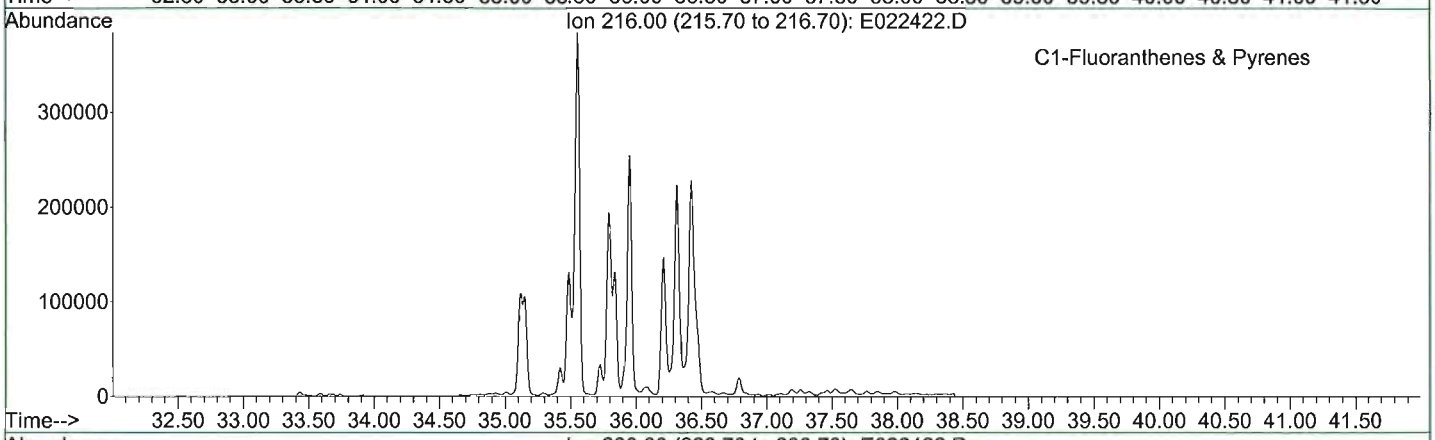
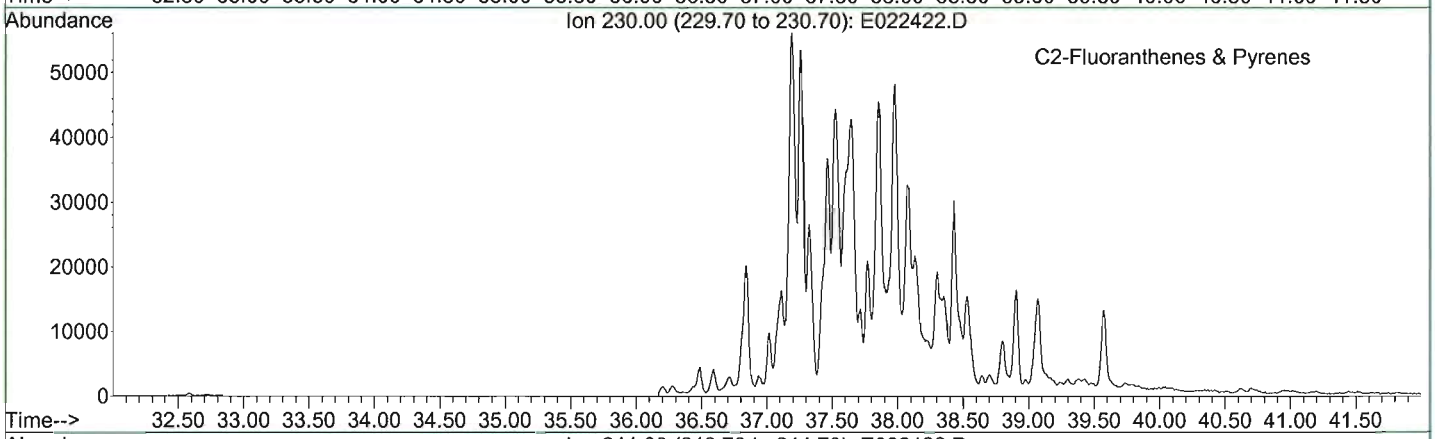
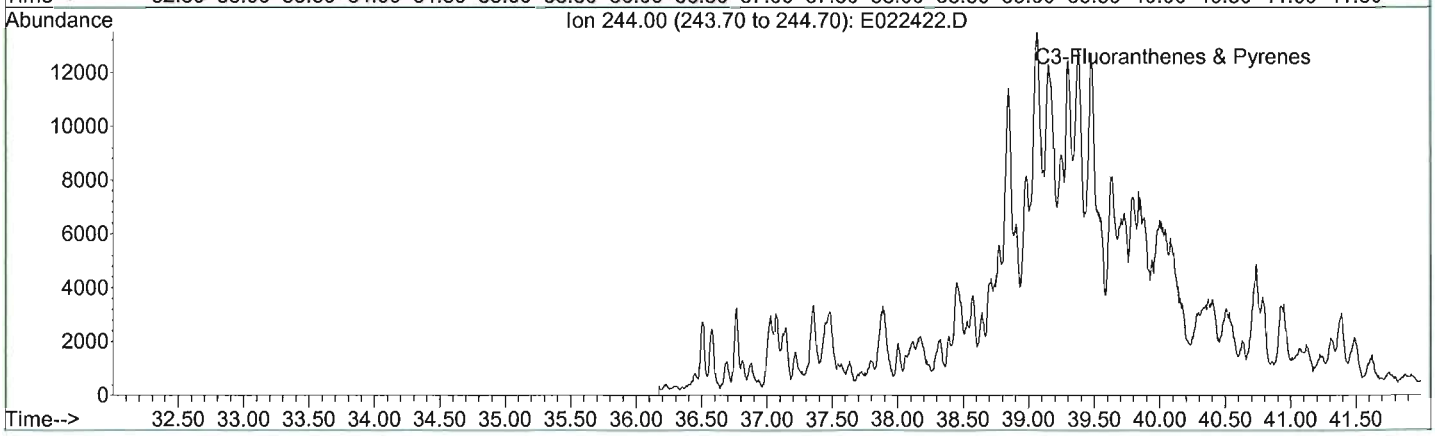




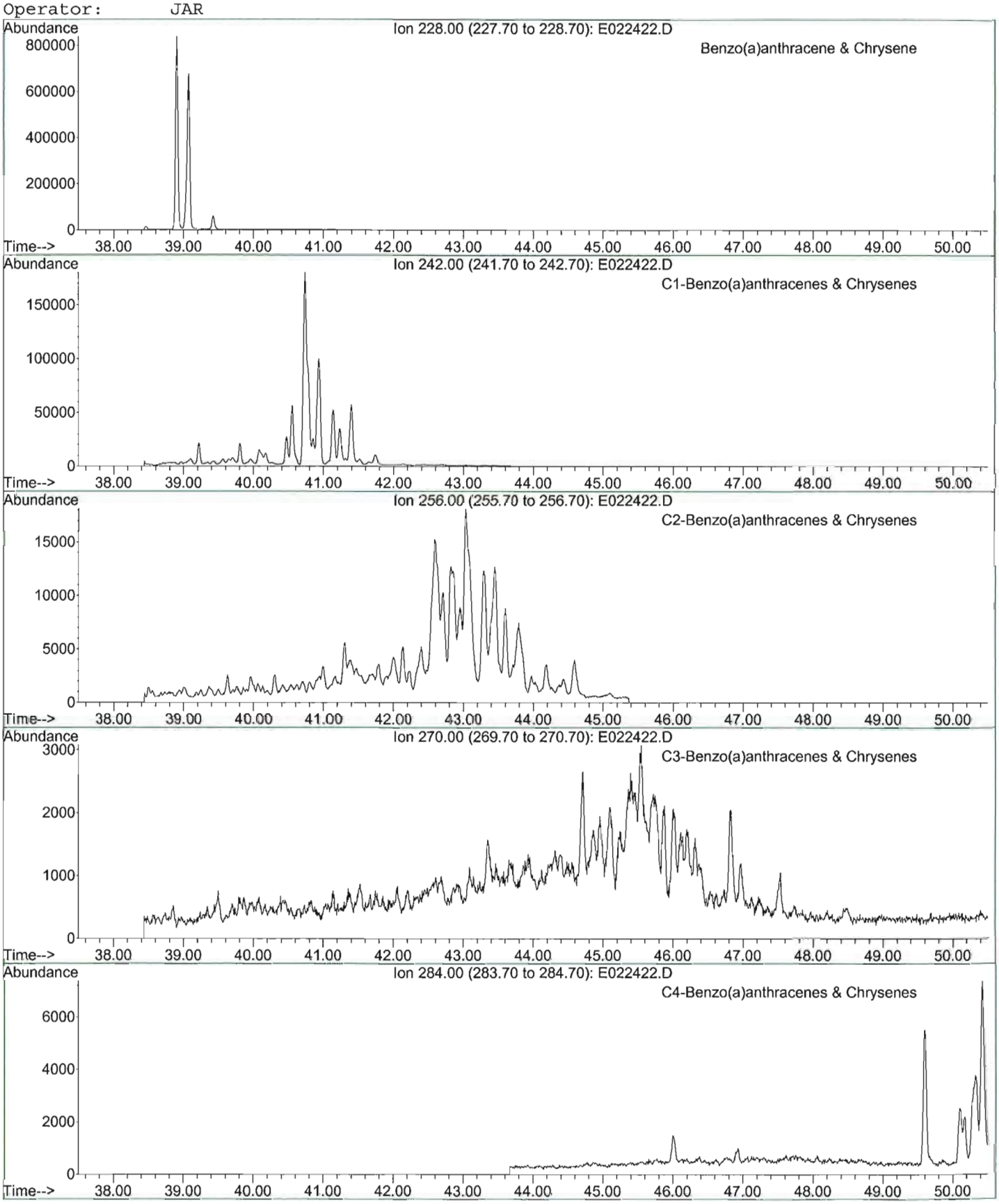




META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

File: J:\1\DATA\E060224\E022422.D
Date Acquired: 25 Feb 2006 5:11 pm
Method File: 4008SIM2.M
Sample Name: PA060216-02
Misc Info:
Operator: JAR



META Environmental, Inc.

GC/MS TOTAL ION CHROMATOGRAM

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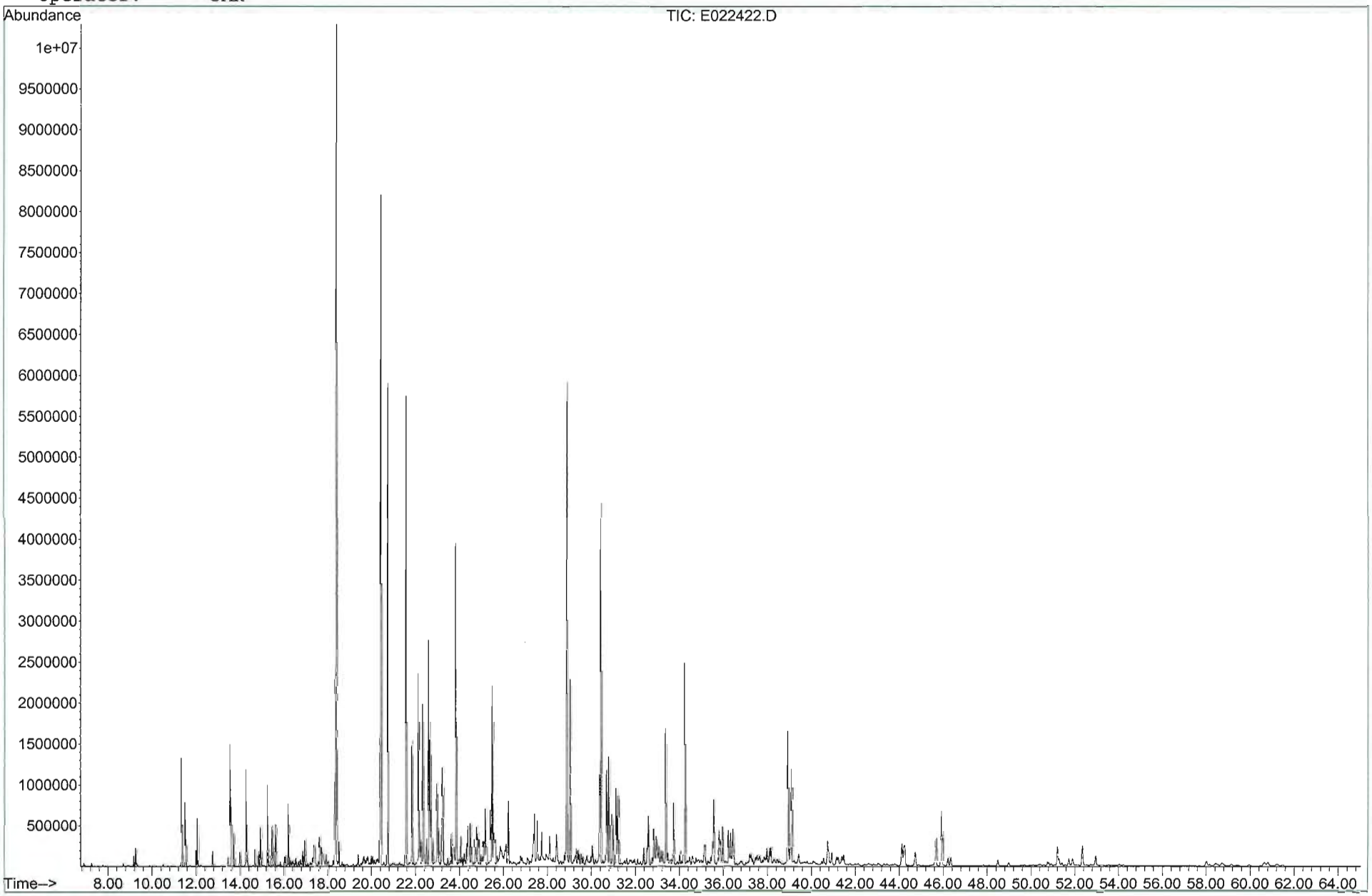
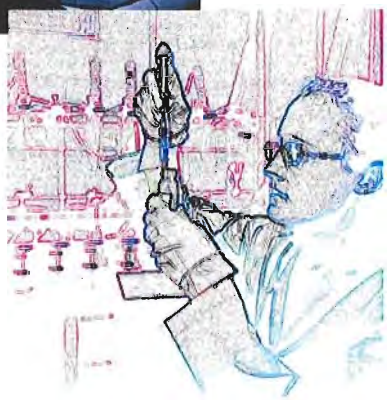
Date Acquired: 25 Feb 2006 5:11 pm
Method File: 4008SIM2.M
Sample Name: PA060216-02
Misc Info:
Operator: JAR



Environmental Forensic Report

Con Edison – W45th Street

SDG: PA060314



Report To:

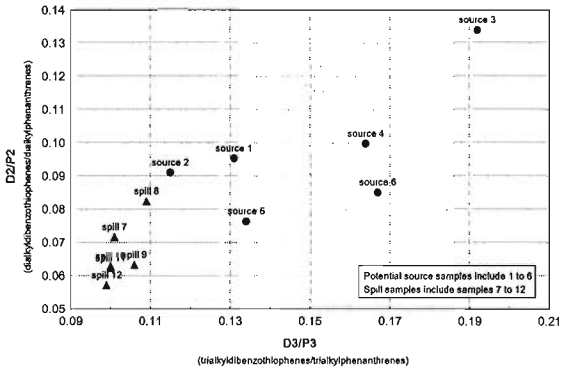
Parsons
290 Elwood Davis Road
Suite 312
Liverpool, NY 13088

Report By:

META Environmental, Inc.
49 Clarendon Street
Watertown, MA 02472

Date: April 6, 2006

Figure 1. Double Ratio Plot



Identifying and allocating sources of pollutants in complex environments.

META Environmental, Inc.
ENGINEERING & CHEMISTRY

Final Laboratory Report

META Environmental, Inc.
49 Clarendon Street
Watertown, MA 02472

Phone: 617-923-4662
Fax: 617-923-4610
E-Mail meta@metaenv.com

Certification

This certifies that this package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed herein. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager and Quality Assurance Officer, as verified by the following signatures.

Raymond Siegener, Ph.D.
Senior Chemist

April 6, 2006
Date

David M. Mauro
Senior Scientist, Quality Assurance Officer

Date

Sample Delivery Group Narrative

Project:	W 45th Street Parsons 290 Elwood Davis Road, Suite 312 Liverpool, NY 13088
Report Contact:	Mr. Shane Blauvelt
Dates of Receipt:	03/14/06
Sample Summary:	The sample received for this project is summarized in the attached sample login forms.
META Project Number:	P06009

Chain of Custody

The sample was received in good condition. The internal temperature of the shipment container was as follows:

Sample received: 15.3°C

Internal chain of custody procedures were followed after sample receipt. The sample was stored in a locked refrigerator. A sample custody logbook contains the record of sample removal from the secure sample storage area to the sample preparation laboratory. The custody record for the sample extracts is present on the sample extraction logbook page.

The disposal of samples and extracts will be authorized one month after the release of this data report. Sample disposal will be documented.

Methods

The soil sample was prepared by solvent extraction (EPA 3570) using dichloromethane (DCM). The extract was spiked with internal standard and analyzed by GC/FID (EPA 8100M) and GC/MS/SIM (EPA 8270M).

Results

Sample results are presented in summary forms (CLP Form 1 equivalent) which follow this narrative.

Quality Control

Analyte Flags
The detection limits were determined as the sample equivalent of the lowest linear initial calibration standard. Analytes measured between 50% and 100% of the lowest standard were reported as "estimated" and flagged with the letter "J." Undetected analytes were reported as null and flagged with the letter, "U." Analytes marked with a "B" were detected in the associated blank and should be reviewed for a possible positive bias. No deviations were thought significant enough to compromise the integrity of the reported values.

Holding Times
The soil and water samples were extracted within holding times. The samples and extracts were stored at 4°C ± 2°C prior to extraction and analysis. The extracts were analyzed within 40 days of sample preparation.

Surrogate Spikes
Extraction surrogates were added to all samples prior to extraction. All surrogate compounds were recovered within the 50%-120% acceptable criterion with the following exceptions;

Blanks
Toluene was detected in the soil blank at just above the EDL. Due to the high concentrations of these compounds in the samples (greater than 10x the blank levels) relative to these blanks, the

data should not be considered biased.

Blank Spikes
A Blank Spike sample was extracted with each soil batch. All spiked compounds were recovered within criteria (50% - 120%).

Internal Standards
Internal standards were recovered within acceptable QC limits (50%-200%) relative to the continuing calibration standards.

Interpretation

SB-43 (3.5')

Sample SB-43 (3.5') contained pyrogenic material (see definitions). The pyrogenic material was characterized by a wide range distribution of parent PAHs, with the 2- 3-ring PAHs dominant. The reduced concentrations of naphthalene and the methylnaphthalenes indicate that this material has been moderately weathered. Several diagnostic source and weathering ratios, in particular the fluoranthene/pyrene (Fl/Py), benzofluorene/methylpyrenes (BF/MP), and dibenzofuran/fluorene (D/F), are presented in Table 1 and Figures 1-3. These data indicate that the pyrogenic material in *SB-43 (3.5')* was formed under low relative temperatures, and is similar to carbureted water gas (CWG) tar from our in-house library.

Discussion
Sample *SB-43 (3.5')* is compared to two samples, *MW-9 (21-23')*.and *SB-39 (29-31'),* previously analyzed from this site in Table 1 and Figures 1-3. Based on the Fl/Py, BF/MP, and D/F ratios it appears that the petrogenic material in *SB-43 (3.5')* is similar in composition to the material in *MW-9 (21-23')*.and *SB-39 (29-31').*

Definitions

Pyrogenic substances are complex mixtures of primarily hydrocarbons produced from organic matter subjected to high temperatures but with insufficient oxygen for complete combustion. Pyrogenic materials are produced by fires, internal combustion engines, and furnaces. They also are formed when coke or gas are produced from coal or oil. Coal-tar based products, such as roofing, pavement sealers, waterproofing, pesticides, and some shampoos contain pyrogenic materials.

Petrogenic substances include crude oil and crude oil derivatives such as gasoline, heating oil, and asphalt.

Pitch is the semi-solid or solid material consisting of high molecular weight hydrocarbons that remain following coal tar distillation.

References

1) Christensen, L.B. and T.H. Larsen. "Method for determining the age of diesel oil spills in the soil." Ground Water Monitoring and Remediation, 13(4): 142-149, 1993.
2) Kaplan, I.R., Y. Galperin, H. Alimi, R. Lee, and S. Lu. "Patterns of chemical changes during environmental alteration of hydrocarbon fuels." Ground Water Monitoring and Remediation, 16(4): 113-125, 1996.
3) Schmidt, G.W. "Forensic petroleum hydrocarbon fingerprinting and age of release developments." Hydrocarbon Pattern Recognition and Dating Conference, University of Wisconsin-Madison, Nov. 1997.
4) McNicoll, D., Tousignant, L.P., Augustine, P. "Facts and Fallacies: Petroleum Degradation in a Subsurface Environment." Contaminated Soil Sediment and Water, 17-21, June,July 2001
5) "Chemical Fingerprinting of Hydrocarbons," in: Introduction to Environmental Forensics. B.L. Murphy and R.D. Morrison editors, Academic Press, San Diego, CA 2002.
6) Hurst, Richard W. and Schmidt, Gene W. "Age Significance of nC17/Pr Ratios in Forensic Investigations of Refined Product and Crude Oil Releases," Environmental Geosciences, 12(3): 177-192, 2005.
7) Mauro, D.M., "Chemical Source Attribution at former MGP Sites," EPRI Report 1000728, December 2000.

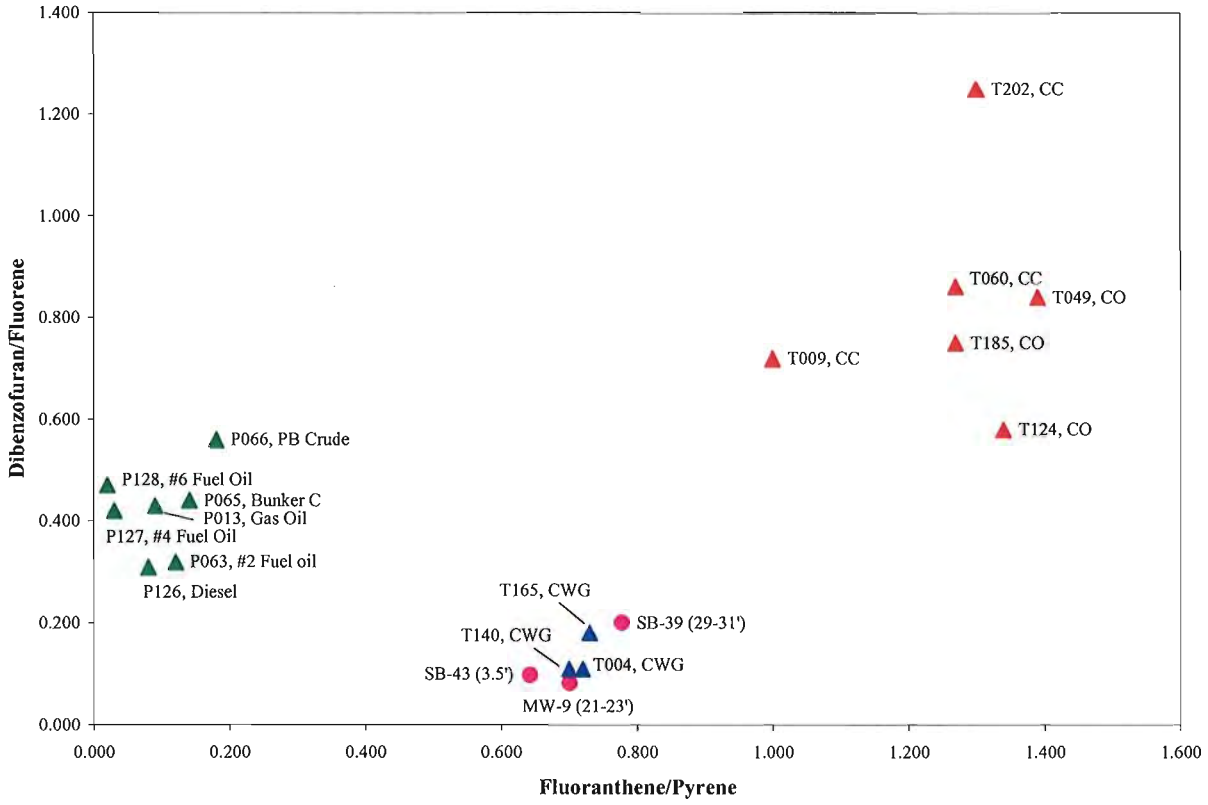
Table 1. Selected Source and Weathering Ratios

	Fl/Py	D/F	BF/MP	C17/Pris	C18/Phy	Pris/ Phy	C3D/ C3PA	C2D/ C2PA
SB-43 (3.5')	0.642	0.098	0.302	0.823	1.425	1.510	0.326	0.226
SB-39 (29-31')	0.778	0.200	0.355	1.845	1.827	1.053	0.381	0.241
MW-9 (21-23')	0.701	0.083	0.373	4.128	5.179	1.441	0.290	0.171

Ratios:

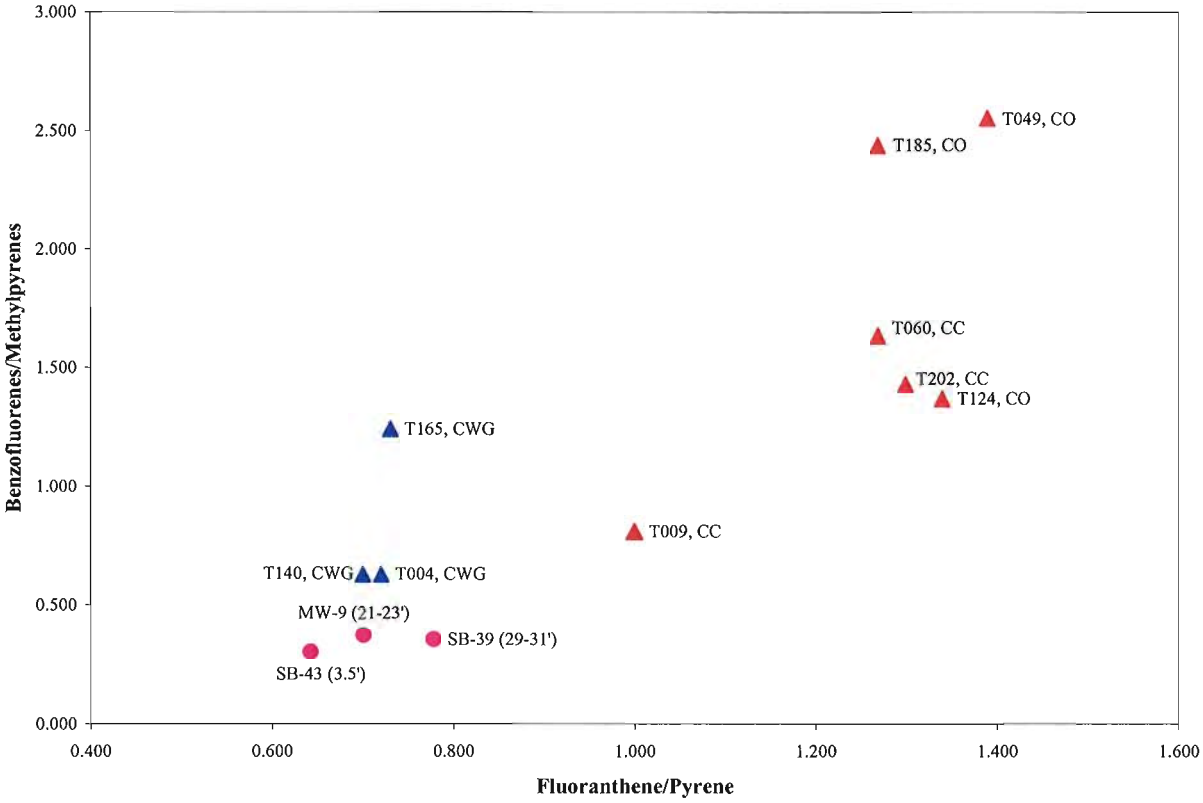
Fl/Py	fluoranthene/pyrene
D/F	dibenzofuran/fluorene
C17/Pris	heptadecane/pristane
C18/Phy	octadecane/phytane
Pris/Phy	pristane/phytane
C3D/C3PA	trialkyldibenzothiophenes/trialkylphenanthrenes/anthracenes
C2D/C2PA	dialkyldibenzothiophenes/dialkylphenanthrenes/anthracenes
BF/MP	benzofluorenes/methylpyrenes

Figure 1. Selected Diagnostic Ratios – Fl/Py v. D/F



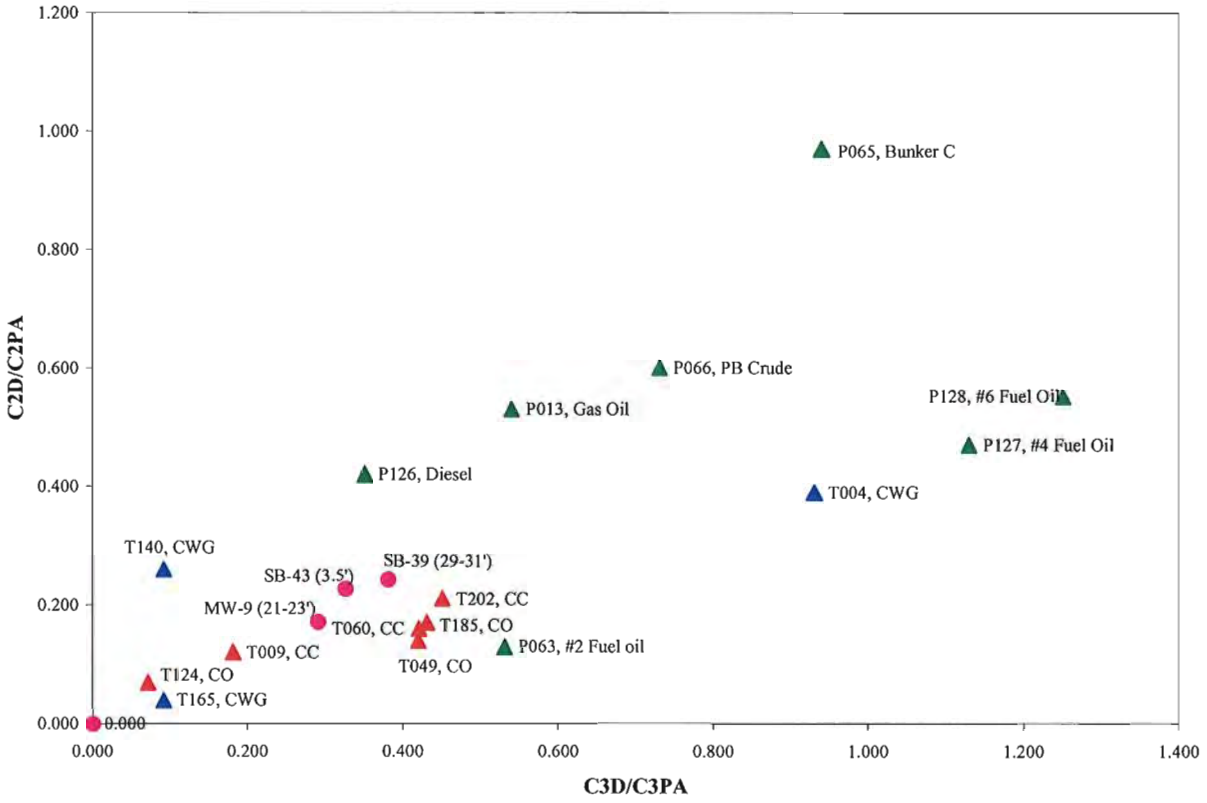
TXXX	Tar Sample from META's in house source library
CC	Coal Carbonization Tar
CO	Coke Oven Tar
CWG	Carbureted Water Gas Tar
●	Field Samples

Figure 2. Selected Diagnostic Ratios – Fl/Py v. BF/MP



TXXX	Tar Sample from META's in house source library
CC	Coal Carbonization Tar
CO	Coke Oven Tar
CWG	Carbureted Water Gas Tar
●	Field Samples

Figure 3. Selected Diagnostic Ratios – C3D/C3PA v. C2D/C2PA



TXXX	Tar Sample from META's in house source library
CC	Coal Carbonization Tar
CO	Coke Oven Tar
CWG	Carbureted Water Gas Tar
●	Field Samples

Appendix A

Chains of Custody

META ENVIRONMENTAL SAMPLE RECEIPT

Lab ID	Field ID	Matrix	Prep Method	Cleanup Method	Analysis Method	Date Sampled	Date Received	Client/ Project	Container/ Storage	Comments/Logger	Client Name	Project Name
PA060314-01	SB-43 (3.5')	Soil	2508		4007/4008	3/10/2006	3/14/2006	P06009-60	8 oz. jar		Parsons	Con Ed - W. 45th street

Logged By: DB

Date: 03/14/06

Reviewed By: MS

Date: 3/14/06

CHEMTECH
CHAIN OF CUSTODY RECORD

Meta Environmental, Inc 49 Clarendon Street
~~284 Sheffield Street, Mountainside, NJ 07092~~
~~(908) 789-8900~~ ~~Fax (908) 789-8922~~ Watertown, MA 02472
~~www.chemtech.net~~ (617) 923-4662

CHEMTECH PROJECT NO.

COC Number 057749

CLIENT INFORMATION (REPORT TO BE SENT TO:)

COMPANY: Parsons
ADDRESS: 290 Elwood Davis Rd. Suite 312
CITY: Liverpool STATE: NY ZIP: 13088
ATTENTION: Shane Blanchett
PHONE: (315) 451-9560 FAX: (315) 451-9570

CLIENT PROJECT INFORMATION

PROJECT NAME: Con Edison
PROJECT NO.: 442145-01000 LOCATION: W. 45th Street
PROJECT MANAGER: Rich Rhyan
e-mail:
PHONE: (718) 204-4288 FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: Standard DAYS *
HARD COPY: DAYS *
EDD: DAYS *
* TO BE APPROVED BY CHEMTECH
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP
☐ RESULTS + QC ☐ New York State ASP "B"
☐ New Jersey REDUCED ☐ New York State ASP "A"
☐ New Jersey CLP ☐ Other
☐ EDD FORMAT

ANALYSIS

1 GC/FID (EPA 8100 mod.) 2 GC/MS/SIM (EPA 8260/8270 mod.) 3 4 5 6 7 8 9

PRESERVATIVES / **COMMENTS**

← Specify Preservatives
A–HCl B–HNO_3
C–H_2SO_4 D–NaOH
E–ICE F–Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	1 (E)	2 (E)	3 (E)	4	5	6	7	8	9	COMMENTS
1.	SB-43 (3.5')	TAR		X	3/10/06	1500	1	X	X	X							PA060314-01
2.																	
3.																	
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE/TIME:	RECEIVED BY:
1. [signature]	3/10/06 1520	1.
RELINQUISHED BY: 2.	DATE/TIME:	RECEIVED BY: 2.
RELINQUISHED BY: 3.	DATE/TIME:	RECEIVED FOR LAB BY: 3. Dixon Berhanu 3/14/06 12:15

Conditions of bottles or coolers at receipt: ☐ Compliant ☐ Non Compliant
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments: # FED EX 8532 4068 9380

Cooler Temp. 15.3
Ice in Cooler?: NO

Page 1 of 1

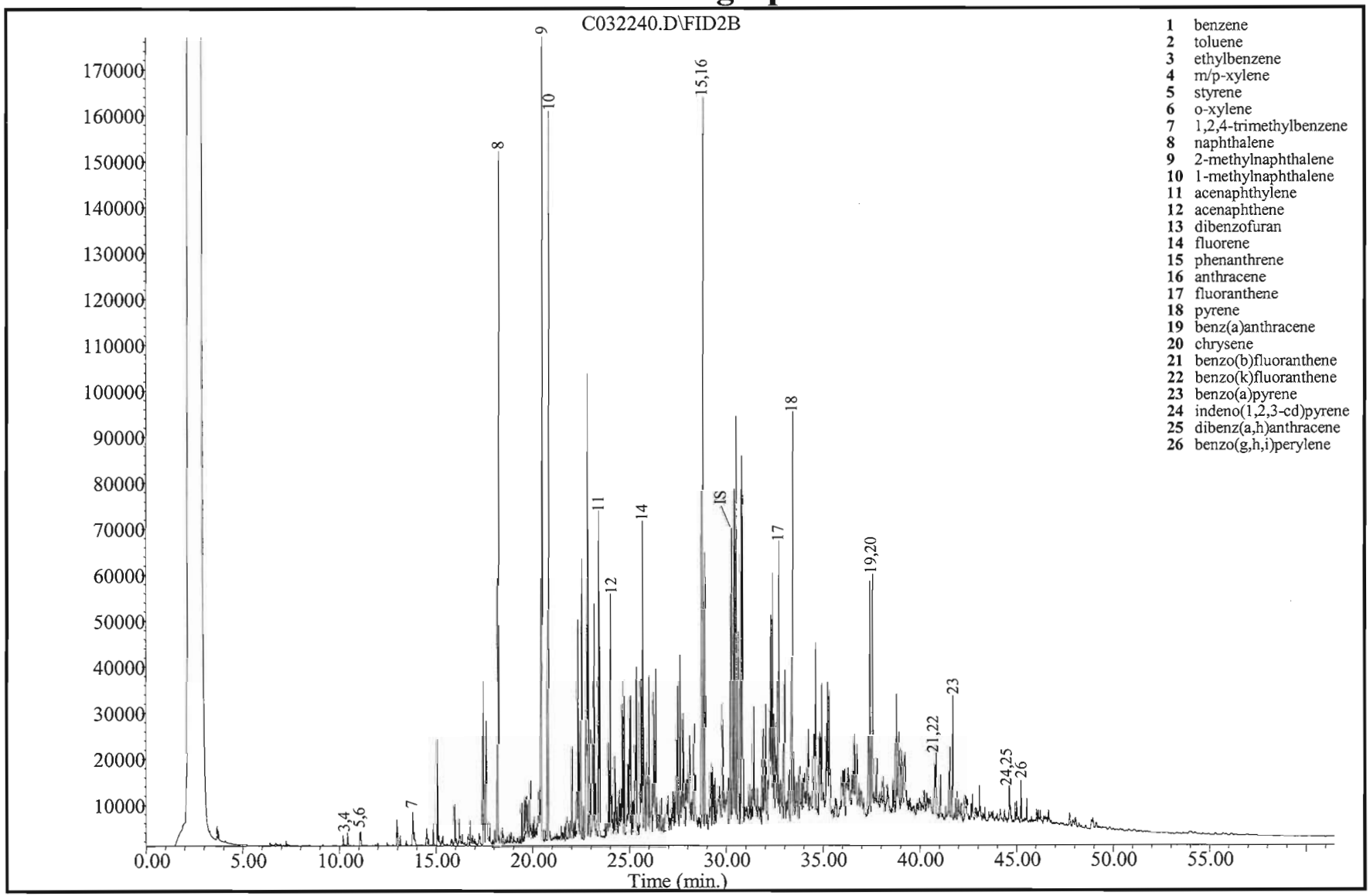
SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☐ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☐ YES ☐ NO

Appendix B

GC/FID Fingerprints

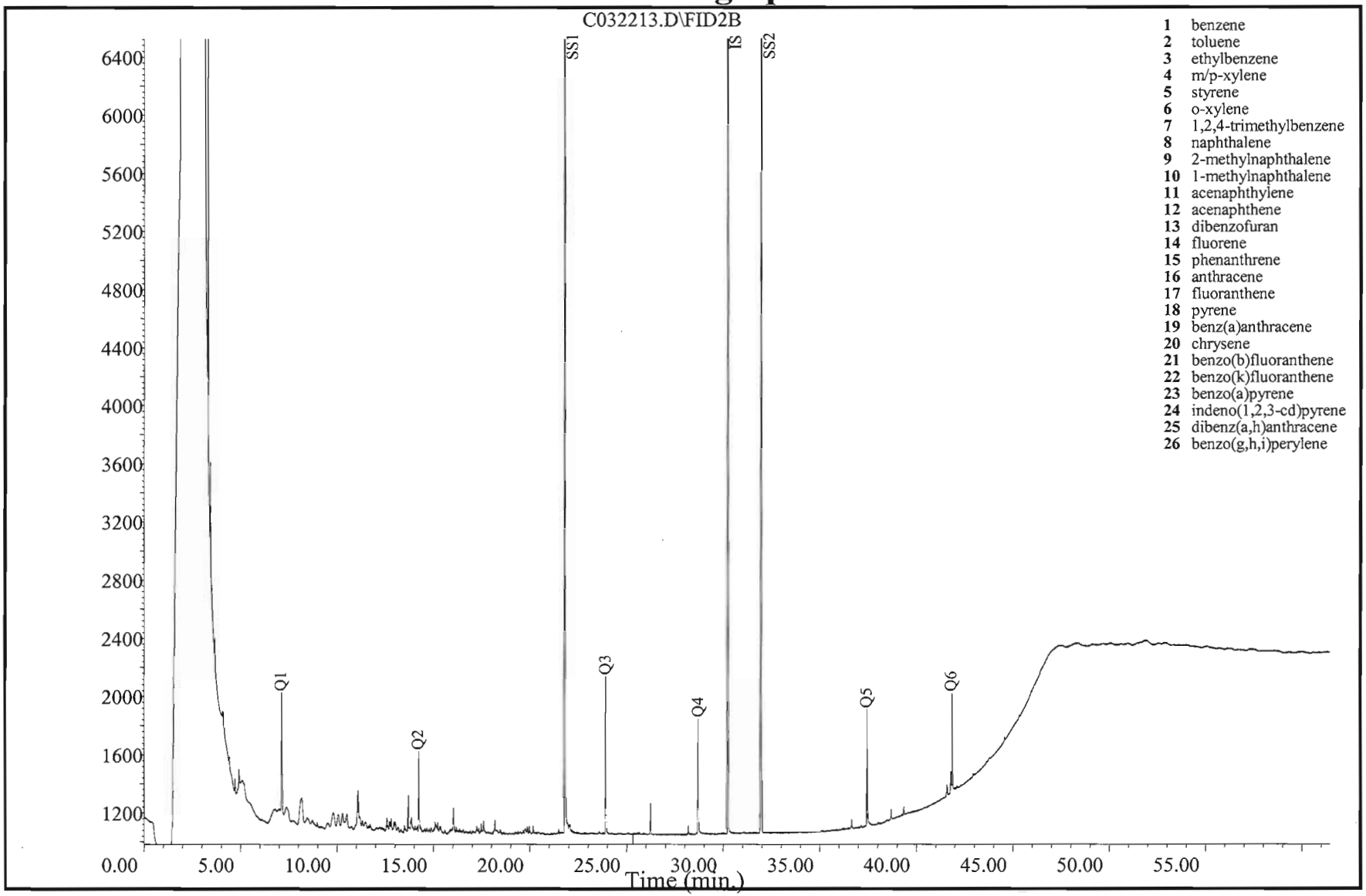
GC/FID Fingerprint



IS – o-terphenyl
SS1 – 2-fluorobiphenyl
SS2 – 5a-androstane

Field ID:	SB-43 (3.5')
Laboratory ID:	PA060314-01/10x
Method:	EPA 8100 mod.

GC/FID Fingerprint



IS – o-terphenyl
SS1 – 2-fluorobiphenyl
SS2 – 5a-androstane

Field ID:	Soil Blank
Laboratory ID:	PA060316-SB
Method:	EPA 8100 mod.

Appendix C

MAH/PAH Concentrations

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: SB-43 (3.5')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060314-01-D		
File ID:	E040520.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	3/10/2006	Decanted:	None
Date Received:	3/14/2006		
Date Prepared:	3/16/2006	Sample Size (g):	0.59
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	20.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)		RL	EDL	Comments
PAH COMPOUNDS:					
Benzene	7.84		4.59	2.3	
Toluene	31.9	B	0.918	0.459	
Ethylbenzene	84.0		0.918	0.459	
m/p-Xylenes	95.2		0.918	0.459	
Styrene	133		0.918	0.459	
o-Xylene	74.8		0.918	0.459	
Isopropylbenzene	16.9		0.918	0.459	
n-Propylbenzene	7.04		0.918	0.459	
1,3,5-Trimethylbenzene	58.4		0.918	0.459	
1,2,4-Trimethylbenzene	186		0.918	0.459	
t-Butylbenzene	30.6		0.918	0.459	
sec-Butylbenzene	0.711	J	0.918	0.459	
p-Isopropyltoluene	37.1		0.918	0.459	
n-Butylbenzene	21.4		0.918	0.459	
C1 - Benzene	26.6		4.59	2.3	
C2 - Benzene	154		0.918	0.459	
C3 - Benzene	397		0.918	0.459	
C4 - Benzene	488		0.918	0.459	
C5 - Benzene	193		0.918	0.459	
trans-Decalin	1.05		0.918	0.459	
cis-Decalin	0.617	J	0.918	0.459	
Naphthalene	4,510	D	0.918	0.459	
2-Methylnaphthalene	6,380	D	0.918	0.459	
1-Methylnaphthalene	5,630	D	0.918	0.459	
C1 - Naphthalene	7,540	D	0.918	0.459	
C2 - Naphthalene	6,320		0.918	0.459	
C3- Naphthalene	3,420		0.918	0.459	
C4- Naphthalene	1,160		0.918	0.459	
Acenaphthylene	3,530	D	0.918	0.459	
Acenaphthene	1,510		0.918	0.459	
Dibenzofuran	230		0.918	0.459	
Fluorene	2,340	D	0.918	0.459	
C1 - Fluorene	3,070		0.918	0.459	
C2 - Fluorene	2,560		0.918	0.459	
C3 - Fluorene	1,060		0.918	0.459	
Phenanthrene	6,900	D	0.918	0.459	
Anthracene	3,200	D	0.918	0.459	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: SB-43 (3.5')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060314-01-D		
File ID:	E040520.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	3/10/2006	Decanted:	None
Date Received:	3/14/2006		
Date Prepared:	3/16/2006	Sample Size (g):	0.59
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	20.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)		RL	EDL	Comments
C1 - Phenanthrene/Anthracene	10,200	D	0.918	0.459	
C2 - Phenanthrene/Anthracene	5,440		0.918	0.459	
C3 - Phenanthrene/Anthracene	2,060		0.918	0.459	
C4 - Phenanthrene/Anthracene	467		0.918	0.459	
Dibenzothiophene	719		0.918	0.459	
C1 - Dibenzothiophene	1,320		0.918	0.459	
C2 - Dibenzothiophene	1,230		0.918	0.459	
C3 - Dibenzothiophene	671		0.918	0.459	
C4 - Dibenzothiophene	198		0.918	0.459	
Benzo(b)naphtho(2,1-d)thiophene	389		0.918	0.459	
Fluoranthene	2,390	D	0.918	0.459	
Pyrene	3,720	D	0.918	0.459	
C1 - Fluoranthene/Pyrene	6,530		0.918	0.459	
C2 - Fluoranthene/Pyrene	3,630		0.918	0.459	
C3 - Fluoranthene/Pyrene	1,270		0.918	0.459	
Benz[a]anthracene	1,740		0.918	0.459	
Chrysene*	1,800		0.918	0.459	
C1 - Benz(a)anthracene/Chrysene	2,760		0.918	0.459	
C2 - Benz(a)anthracene/Chrysene	1,340		0.918	0.459	
C3 - Benz(a)anthracene/Chrysene	377		0.918	0.459	
C4 - Benz(a)anthracene/Chrysene	133		0.918	0.459	
Benzo[b]fluoranthene	512		0.918	0.459	
Benzo[j/k]fluoranthene	573		0.918	0.459	
Benzo(e)pyrene	609		0.918	0.459	
Benzo[a]pyrene	1,170		0.918	0.459	
Perylene	181		0.918	0.459	
Indeno[1,2,3-cd]pyrene	331		0.918	0.459	
Dibenz[a,h]anthracene	145		0.918	0.459	
Benzo[g,h,i]perylene	297		0.918	0.459	
Coronene	46.5		0.918	0.459	
Retene	27.5		0.918	0.459	
Benzo(b/c)fluorenes	838		0.918	0.459	
2-Methylpyrene	808		0.918	0.459	
4-Methylpyrene	923		0.918	0.459	
1-Methylpyrene	1,040		0.918	0.459	
Heptadecane	102		0.918	0.459	
Pristane	124		0.918	0.459	
Octadecane	117		0.918	0.459	
Phytane	82.1		0.918	0.459	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: SB-43 (3.5')

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060314-01-D		
File ID:	E040520.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	3/10/2006	Decanted:	None
Date Received:	3/14/2006		
Date Prepared:	3/16/2006	Sample Size (g):	0.59
Date Cleanup:	NA	Percent Solid:	74%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	20.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	16.0	0.918	0.459	
2,6,10-trimethyltridecane	42.8	0.918	0.459	
Norpristane	65.3	0.918	0.459	
Total PAH (16)	34,700	0.918	0.459	
Total PAH (43)	99,200	0.918	0.459	

Extraction Surrogate Recoveries (%)			Limits
Toluene-d8	58		50 - 120
Phenanthrene-d10	79		50 - 120
Perylene-d12	293	I	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: Soil Blank

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060316-SB		
File ID:	E040514.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	3/16/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
PAH COMPOUNDS:				
Benzene	U	0.050	0.025	
Toluene	0.007 J	0.010	0.005	
Ethylbenzene	U	0.010	0.005	
m/p-Xylenes	U	0.010	0.005	
Styrene	U	0.010	0.005	
o-Xylene	U	0.010	0.005	
Isopropylbenzene	U	0.010	0.005	
n-Propylbenzene	U	0.010	0.005	
1,3,5-Trimethylbenzene	U	0.010	0.005	
1,2,4-Trimethylbenzene	U	0.010	0.005	
t-Butylbenzene	U	0.010	0.005	
sec-Butylbenzene	U	0.010	0.005	
p-Isopropyltoluene	U	0.010	0.005	
n-Butylbenzene	U	0.010	0.005	
C1 - Benzene	U	0.050	0.025	
C2 - Benzene	U	0.010	0.005	
C3 - Benzene	U	0.010	0.005	
C4 - Benzene	U	0.010	0.005	
C5 - Benzene	U	0.010	0.005	
trans-Decalin	U	0.010	0.005	
cis-Decalin	U	0.010	0.005	
Naphthalene	U	0.010	0.005	
2-Methylnaphthalene	U	0.010	0.005	
1-Methylnaphthalene	U	0.010	0.005	
C1 - Naphthalene	U	0.010	0.005	
C2 - Naphthalene	U	0.010	0.005	
C3- Naphthalene	U	0.010	0.005	
C4- Naphthalene	U	0.010	0.005	
Acenaphthylene	U	0.010	0.005	
Acenaphthene	U	0.010	0.005	
Dibenzofuran	U	0.010	0.005	
Fluorene	U	0.010	0.005	
C1 - Fluorene	U	0.010	0.005	
C2 - Fluorene	U	0.010	0.005	
C3 - Fluorene	U	0.010	0.005	
Phenanthrene	U	0.010	0.005	
Anthracene	U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: Soil Blank

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060316-SB		
File ID:	E040514.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	3/16/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene	U	0.010	0.005	
C2 - Phenanthrene/Anthracene	U	0.010	0.005	
C3 - Phenanthrene/Anthracene	U	0.010	0.005	
C4 - Phenanthrene/Anthracene	U	0.010	0.005	
Dibenzothiophene	U	0.010	0.005	
C1 - Dibenzothiophene	U	0.010	0.005	
C2 - Dibenzothiophene	U	0.010	0.005	
C3 - Dibenzothiophene	U	0.010	0.005	
C4 - Dibenzothiophene	U	0.010	0.005	
Benzo(b)naphtho(2,1-d)thiophene	U	0.010	0.005	
Fluoranthene	U	0.010	0.005	
Pyrene	U	0.010	0.005	
C1 - Fluoranthene/Pyrene	U	0.010	0.005	
C2 - Fluoranthene/Pyrene	U	0.010	0.005	
C3 - Fluoranthene/Pyrene	U	0.010	0.005	
Benz[a]anthracene	U	0.010	0.005	
Chrysene*	U	0.010	0.005	
C1 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
C2 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
C3 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
C4 - Benz(a)anthracene/Chrysene	U	0.010	0.005	
Benzo[b]fluoranthene	U	0.010	0.005	
Benzo[j/k]fluoranthene	U	0.010	0.005	
Benzo(e)pyrene	U	0.010	0.005	
Benzo[a]pyrene	U	0.010	0.005	
Perylene	U	0.010	0.005	
Indeno[1,2,3-cd]pyrene	U	0.010	0.005	
Dibenz[a,h]anthracene	U	0.010	0.005	
Benzo[g,h,i]perylene	U	0.010	0.005	
Coronene	U	0.010	0.005	
Retene	U	0.010	0.005	
Benzo(b/c)fluorenes	U	0.010	0.005	
2-Methylpyrene	U	0.010	0.005	
4-Methylpyrene	U	0.010	0.005	
1-Methylpyrene	U	0.010	0.005	
Heptadecane	U	0.010	0.005	
Pristane	U	0.010	0.005	
Octadecane	U	0.010	0.005	
Phytane	U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060316-SB		
File ID:	E040514.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	3/16/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	U	0.010	0.005	
2,6,10-trimethyltridecane	U	0.010	0.005	
Norpristane	U	0.010	0.005	
Total PAH (16)	U	0.010	0.005	
Total PAH (43)	U	0.010	0.005	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	97	50 - 120
Phenanthrene-d10	87	50 - 120
Perylene-d12	65	50 - 120

NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank Spike**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060316-SBS		
File ID:	E040515.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	3/16/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)		RL	EDL	Comments
PAH COMPOUNDS:	Spike Amount				% Recovery
Benzene	1	0.547	0.050	0.025	55 %
Toluene	1	0.786 B	0.010	0.005	79 %
Ethylbenzene	1	0.838	0.010	0.005	84 %
m/p-Xylenes	1	0.815	0.010	0.005	82 %
Styrene	1	0.799	0.010	0.005	80 %
o-Xylene	1	0.817	0.010	0.005	82 %
Isopropylbenzene	1	0.830	0.010	0.005	83 %
n-Propylbenzene	1	0.848	0.010	0.005	85 %
1,3,5-Trimethylbenzene	1	0.832	0.010	0.005	83 %
1,2,4-Trimethylbenzene	1	0.835	0.010	0.005	84 %
t-Butylbenzene	1	0.834	0.010	0.005	83 %
sec-Butylbenzene	1	0.841	0.010	0.005	84 %
p-Isopropyltoluene	1	0.843	0.010	0.005	84 %
n-Butylbenzene	1	0.864	0.010	0.005	86 %
C1 - Benzene		U	0.050	0.025	
C2 - Benzene		U	0.010	0.005	
C3 - Benzene		U	0.010	0.005	
C4 - Benzene		U	0.010	0.005	
C5 - Benzene		U	0.010	0.005	
trans-Decalin		U	0.010	0.005	
cis-Decalin		U	0.010	0.005	
Naphthalene	1	0.867	0.010	0.005	87 %
2-Methylnaphthalene	1	0.869	0.010	0.005	87 %
1-Methylnaphthalene	1	0.870	0.010	0.005	87 %
C1 - Naphthalene		U	0.010	0.005	
C2 - Naphthalene		U	0.010	0.005	
C3- Naphthalene		U	0.010	0.005	
C4- Naphthalene		U	0.010	0.005	
Acenaphthylene	1	0.823	0.010	0.005	82 %
Acenaphthene	1	0.885	0.010	0.005	89 %
Dibenzofuran	1	0.921	0.010	0.005	92 %
Fluorene	1	0.869	0.010	0.005	87 %
C1 - Fluorene		U	0.010	0.005	
C2 - Fluorene		U	0.010	0.005	
C3 - Fluorene		U	0.010	0.005	
Phenanthrene	1	0.904	0.010	0.005	90 %
Anthracene	1	0.805	0.010	0.005	81 %

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank Spike**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060316-SBS		
File ID:	E040515.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	3/16/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte		Concentration (mg/kg dry wt.)	RL	EDL	Comments
C1 - Phenanthrene/Anthracene		U	0.010	0.005	
C2 - Phenanthrene/Anthracene		U	0.010	0.005	
C3 - Phenanthrene/Anthracene		U	0.010	0.005	
C4 - Phenanthrene/Anthracene		U	0.010	0.005	
Dibenzothiophene		U	0.010	0.005	
C1 - Dibenzothiophene		U	0.010	0.005	
C2 - Dibenzothiophene		U	0.010	0.005	
C3 - Dibenzothiophene		U	0.010	0.005	
C4 - Dibenzothiophene		U	0.010	0.005	
Benzo(b)naphtho(2,1-d)thiophene		U	0.010	0.005	
Fluoranthene	1	0.943	0.010	0.005	94 %
Pyrene	1	0.888	0.010	0.005	89 %
C1 - Fluoranthene/Pyrene		U	0.010	0.005	
C2 - Fluoranthene/Pyrene		U	0.010	0.005	
C3 - Fluoranthene/Pyrene		U	0.010	0.005	
Benz[a]anthracene	1	0.732	0.010	0.005	73 %
Chrysene*	1	0.870	0.010	0.005	87 %
C1 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
C2 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
C3 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
C4 - Benz(a)anthracene/Chrysene		U	0.010	0.005	
Benzo[b]fluoranthene	1	0.757	0.010	0.005	76 %
Benzo[j/k]fluoranthene	1	0.788	0.010	0.005	79 %
Benzo(e)pyrene		U	0.010	0.005	
Benzo[a]pyrene	1	0.664	0.010	0.005	66 %
Perylene		U	0.010	0.005	
Indeno[1,2,3-cd]pyrene	1	0.635	0.010	0.005	64 %
Dibenz[a,h]anthracene	1	0.714	0.010	0.005	71 %
Benzo[g,h,i]perylene	1	0.668	0.010	0.005	67 %
Coronene		U	0.010	0.005	
Retene		U	0.010	0.005	
Benzo(b/c)fluorenes		U	0.010	0.005	
2-Methylpyrene		U	0.010	0.005	
4-Methylpyrene		U	0.010	0.005	
1-Methylpyrene		U	0.010	0.005	
Heptadecane		U	0.010	0.005	
Pristane		U	0.010	0.005	
Octadecane		U	0.010	0.005	
Phytane		U	0.010	0.005	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Soil Blank Spike**

Client:	Parsons	Preparation Method:	EPA 3570
Project:	W 45th Street	Cleanup Method(s):	NA
		Analysis Method:	EPA 8270M
Lab ID	PA060316-SBS		
File ID:	E040515.D	Matrix:	Soil
		Preservation:	None
Date Sampled:	NA	Decanted:	None
Date Received:	NA		
Date Prepared:	3/16/2006	Sample Size (g):	2.00
Date Cleanup:	NA	Percent Solid:	100%
Date Analyzed:	4/6/2006	Extract Volume (µl):	2000
Instrument:	El Camino	Prep DF:	1.00
Operator:	RS	Analysis DF:	1.00
		Injection Volume (µl):	1.00
Batch QC:	PA060316-SB		

Analyte	Concentration (mg/kg dry wt.)	RL	EDL	Comments
2,6,10-trimethyldodecane	U	0.010	0.005	
2,6,10-trimethyltridecane	U	0.010	0.005	
Norpristane	U	0.010	0.005	

Extraction Surrogate Recoveries (%)		Limits
Toluene-d8	91	50 - 120
Phenanthrene-d10	85	50 - 120
Perylene-d12	69	50 - 120

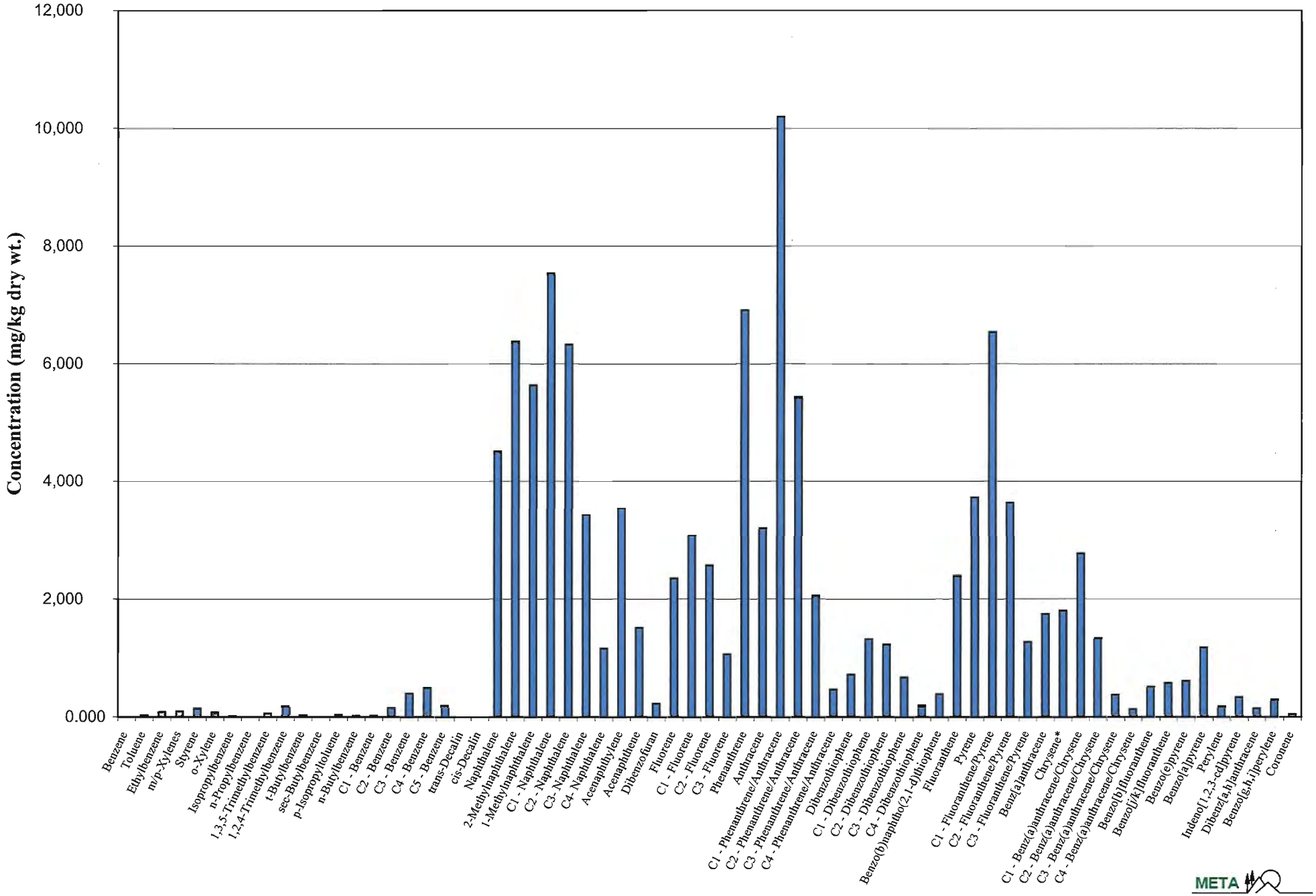
NA - Not applicable.
B - Analyte detected in the Blank.
J - Estimated value; detected between the RL and DL.
U - Analyte not detected above DL.
D - Analyte reported from a diluted extract.
E - Estimate, result detected above calibration range.
I - Concentration/Peak ID uncertain due to potential interference.
RL - Reporting limit is the sample equivalent of the lowest linear calibration concentration.
EDL - Estimated detection limit is 50% of RL.
* - Triphenylene is known to coelute with this compound.

Appendix D

Extended MAH/PAH Profiles – Histograms

SB-43 (3.5')

PA060314-01-D



META

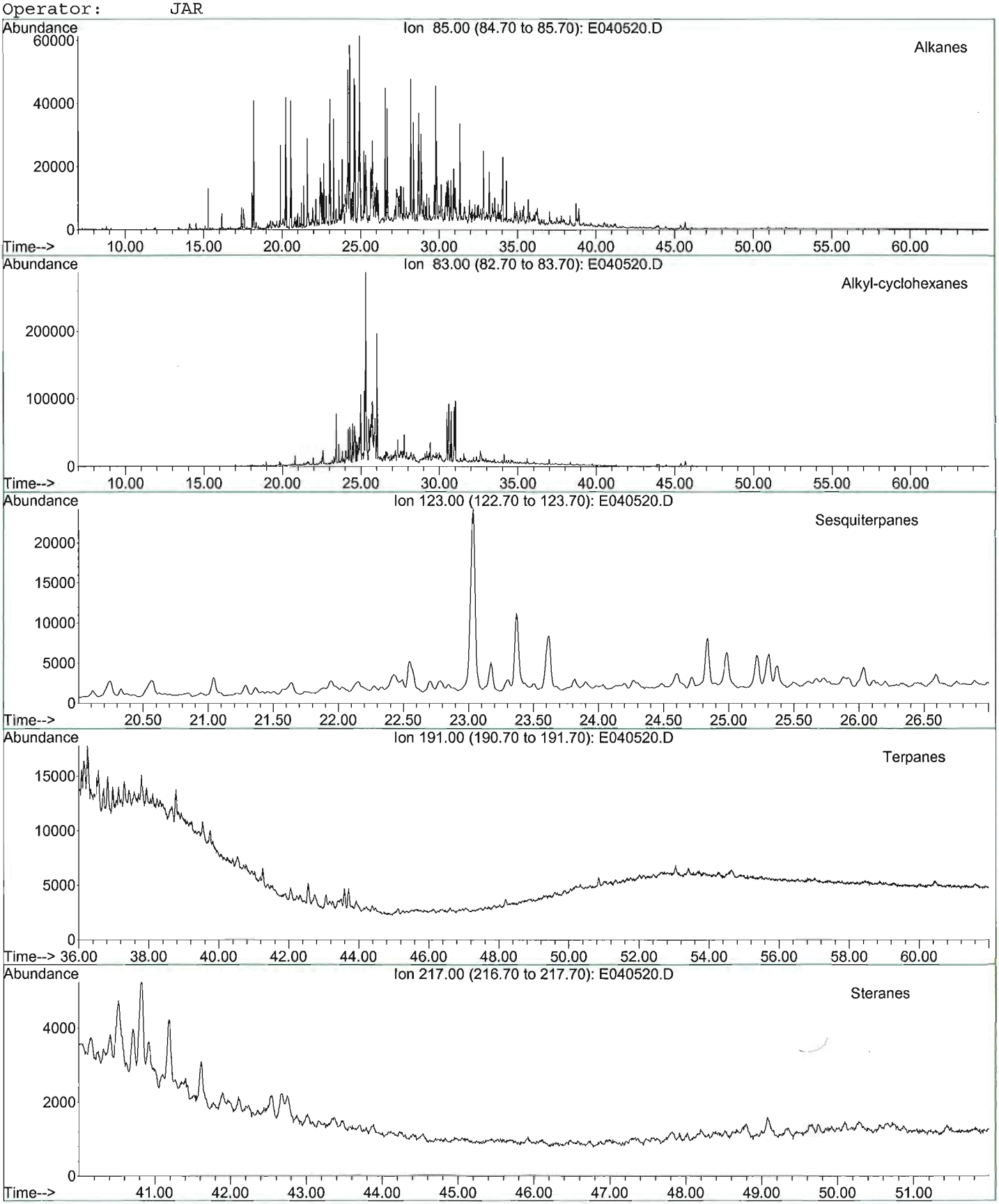
Appendix E

Extracted Ion Current Profiles (EICPs)

META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

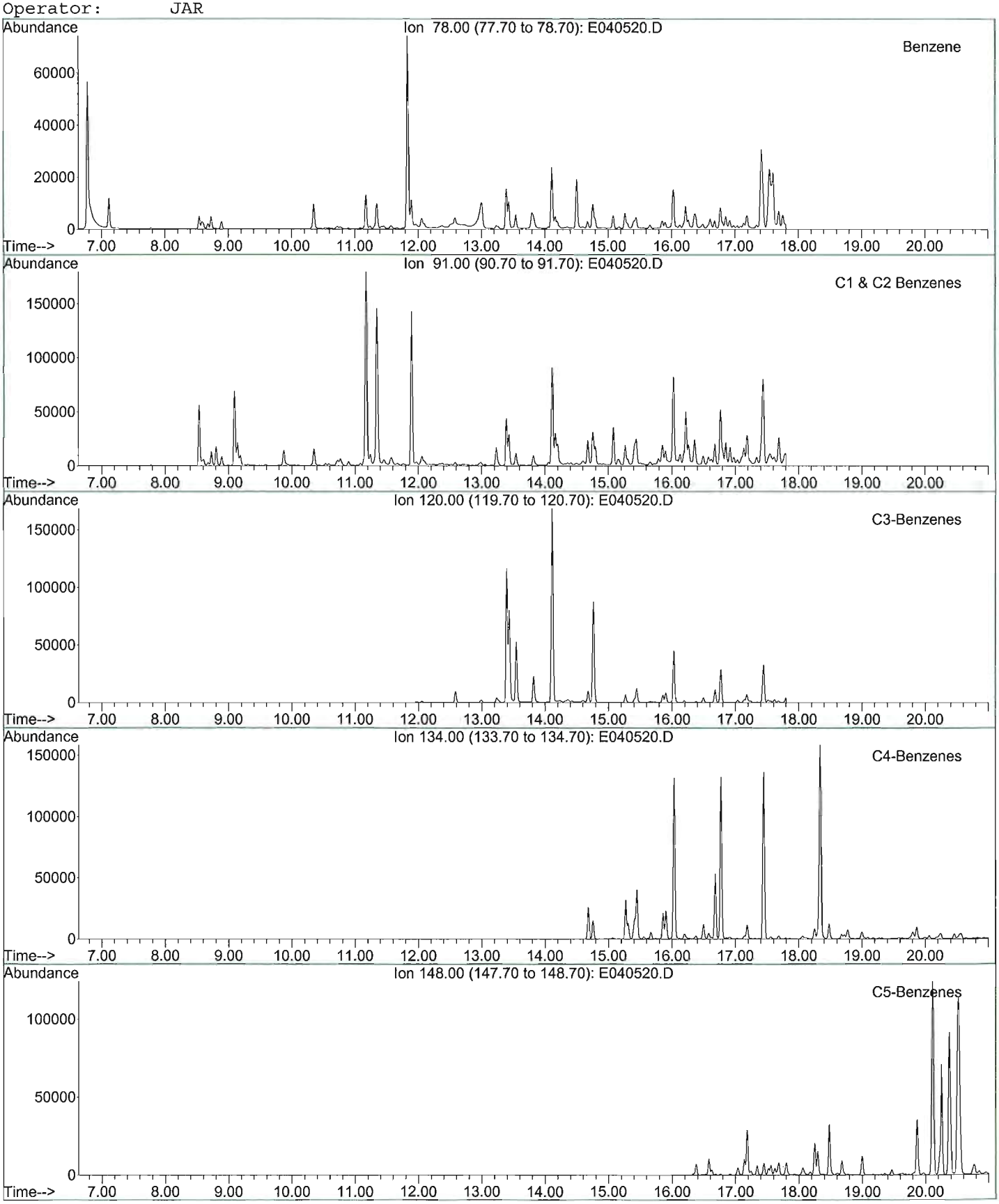
File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR



META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

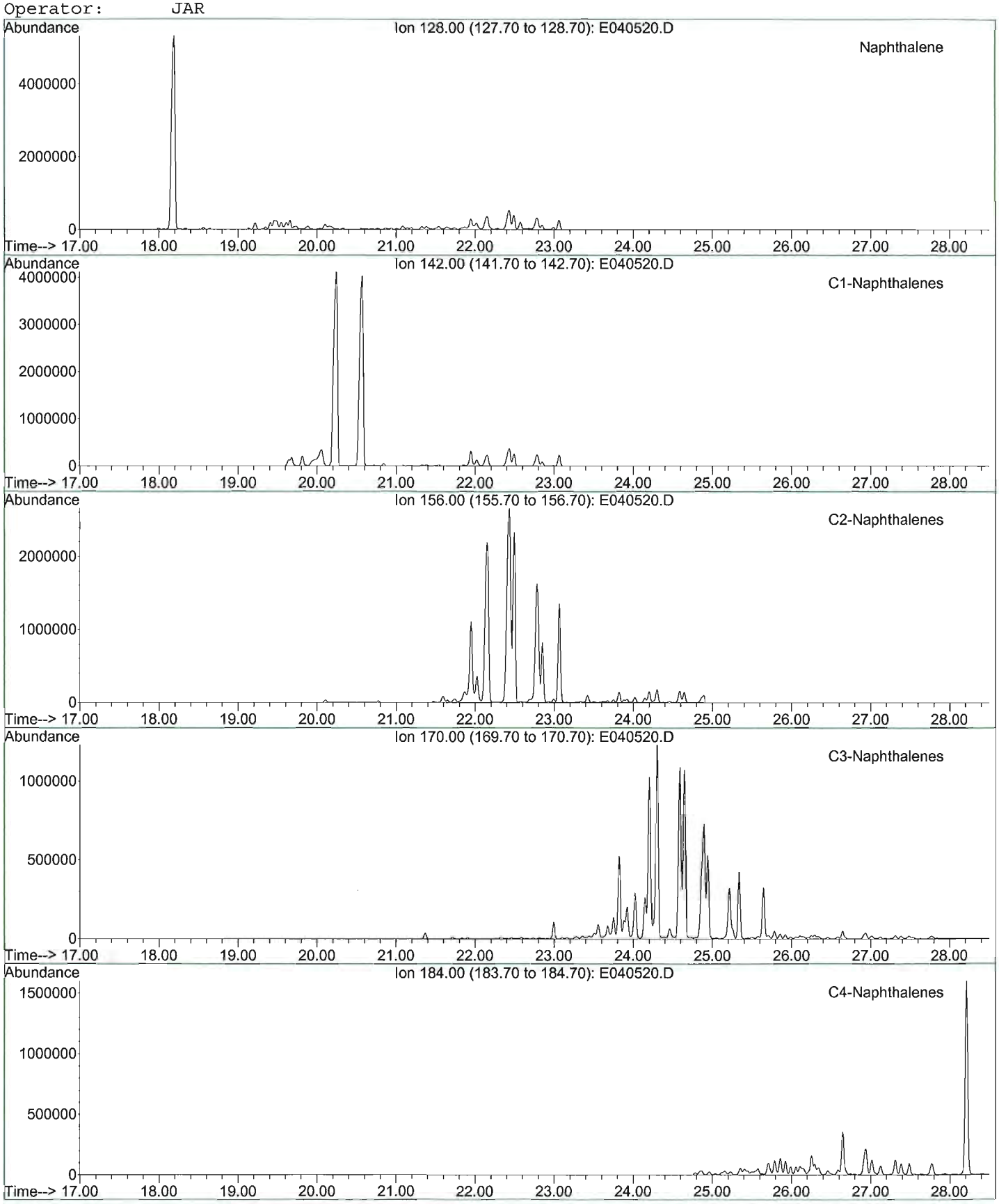
File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR



META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

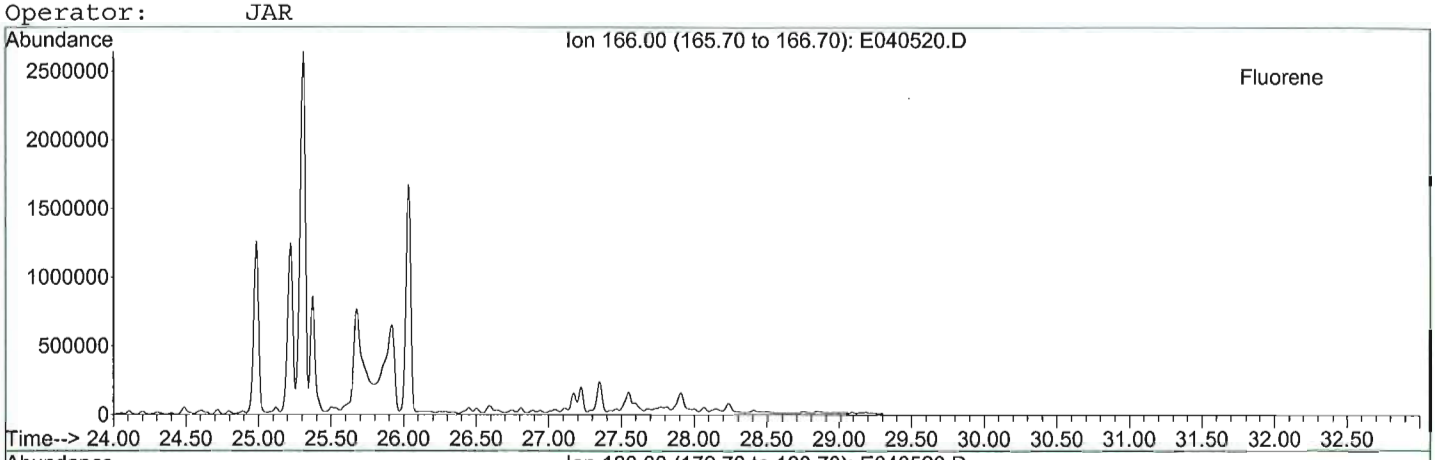
File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR

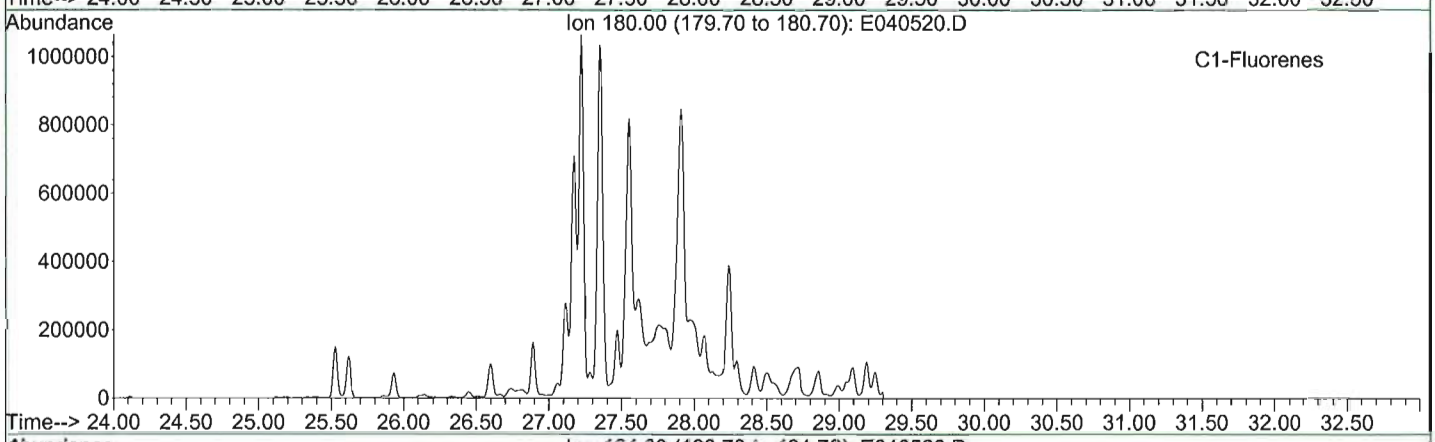


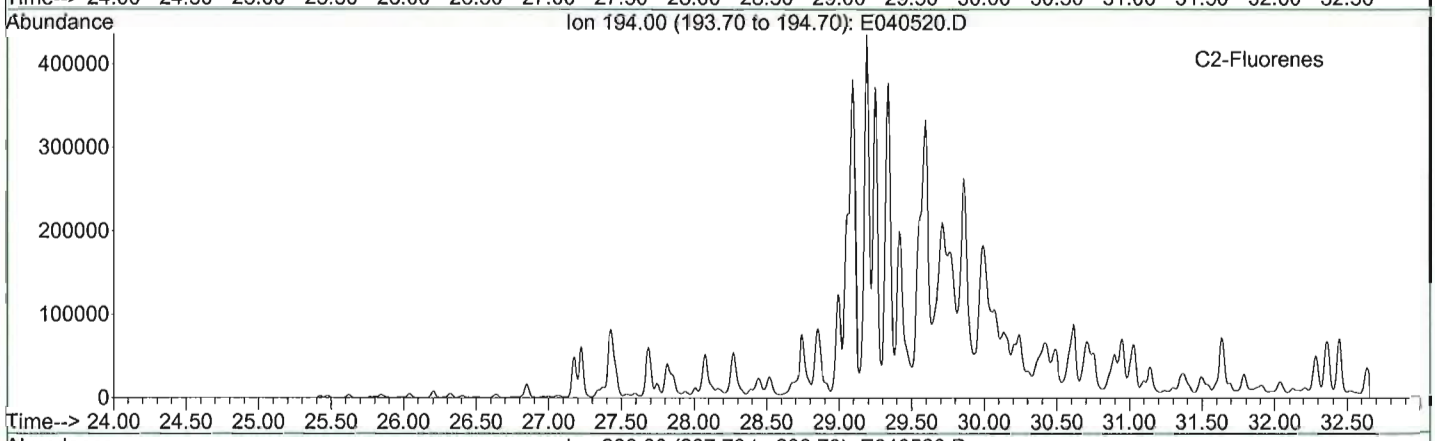
META Environmental, Inc.

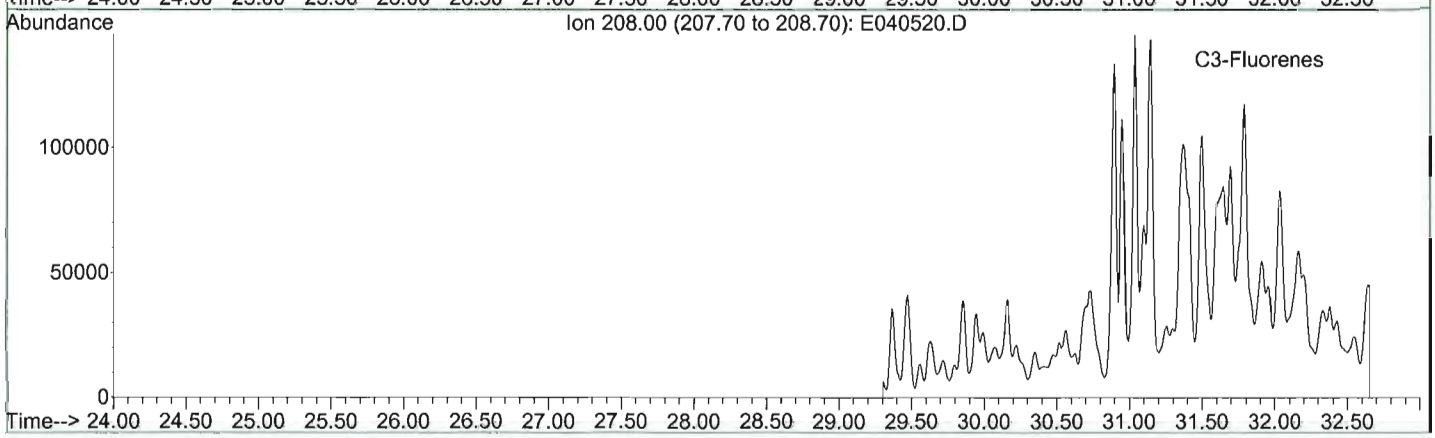
GC/MS EXTRACTED ION CHROMATOGRAM

File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR





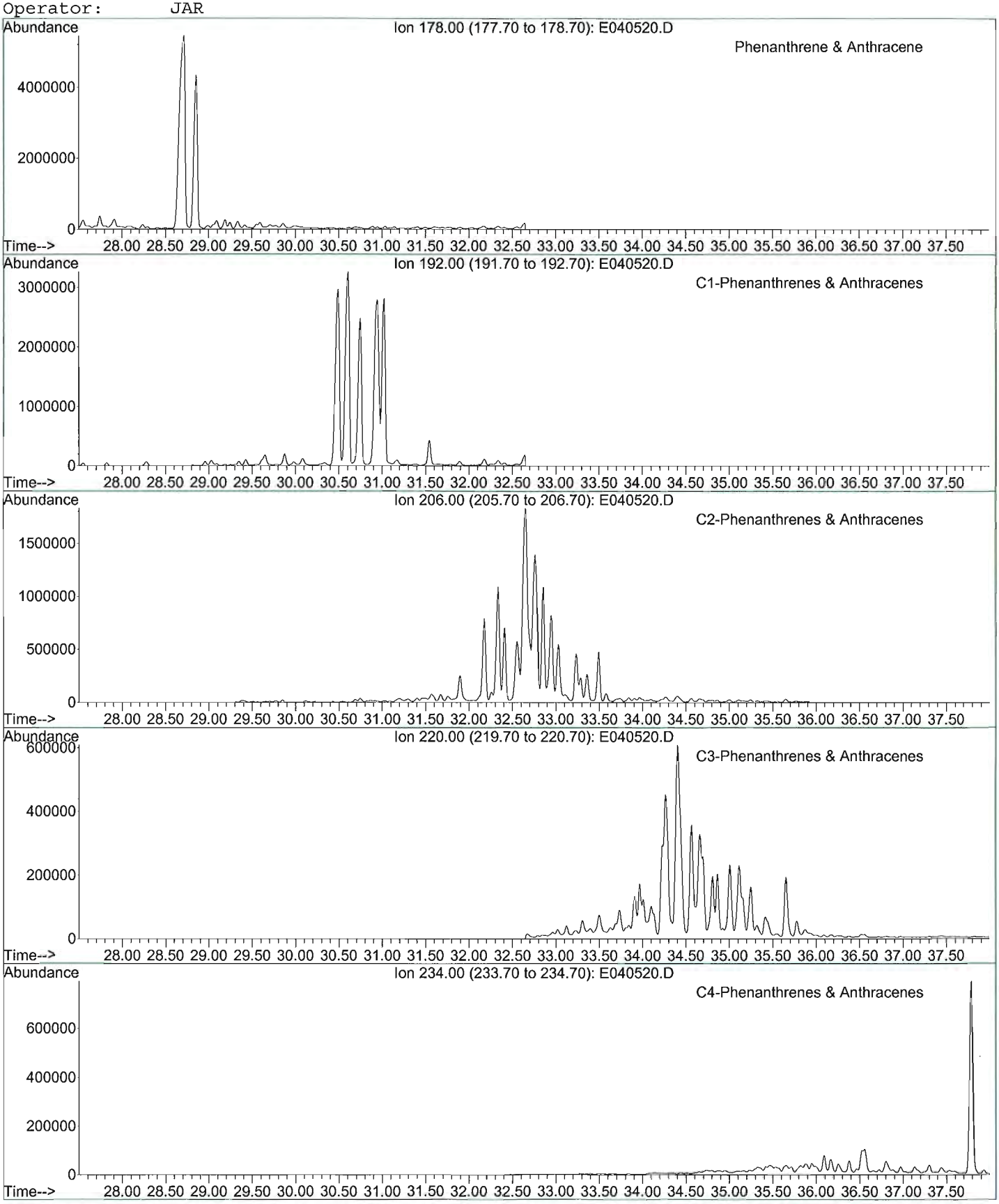




META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

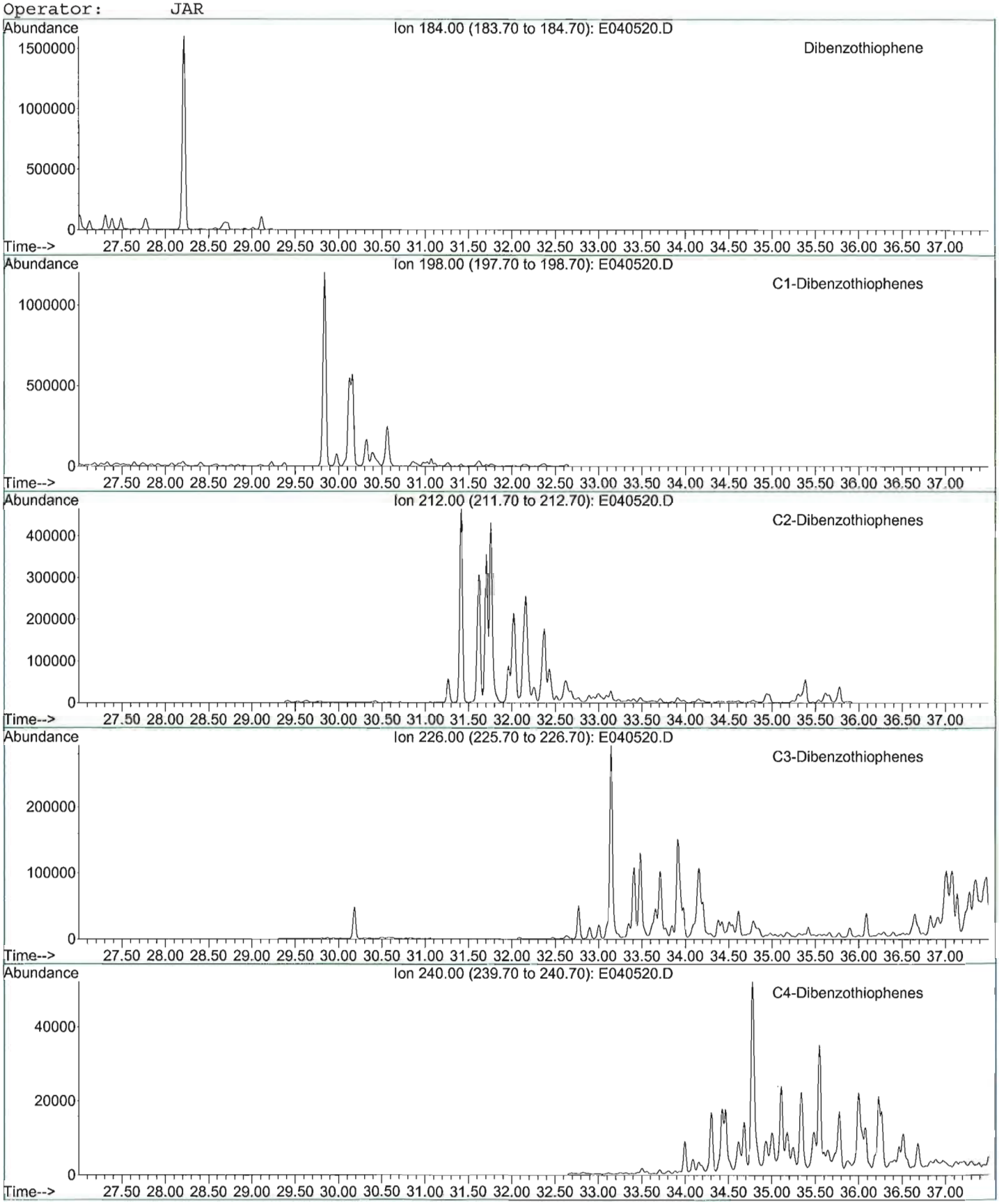
File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR



META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

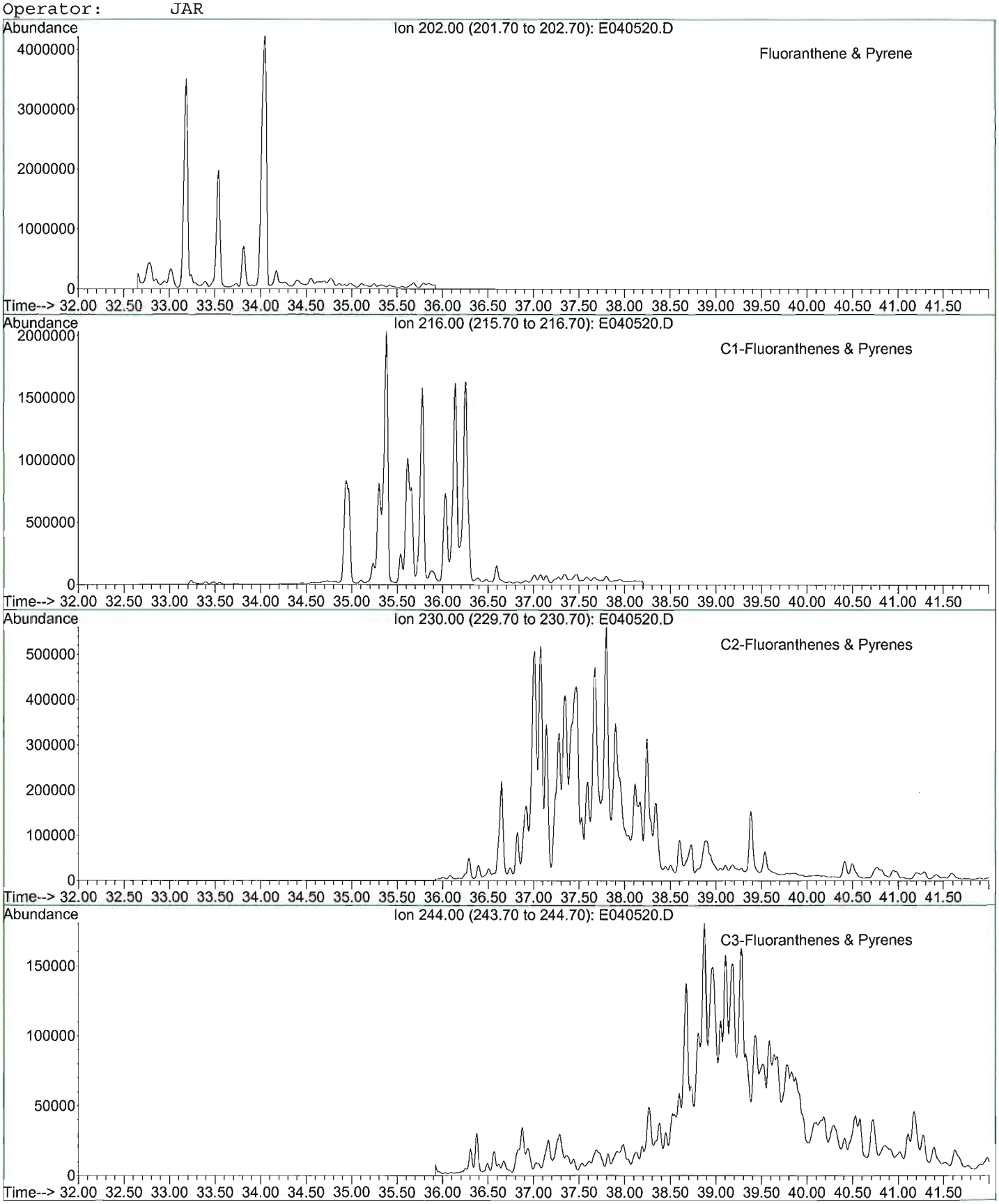
File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR



META Environmental, Inc.

GC/MS EXTRACTED ION CHROMATOGRAM

File: J:\1\DATA\E060405\E040520.D
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR



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GC/MS EXTRACTED ION CHROMATOGRAM

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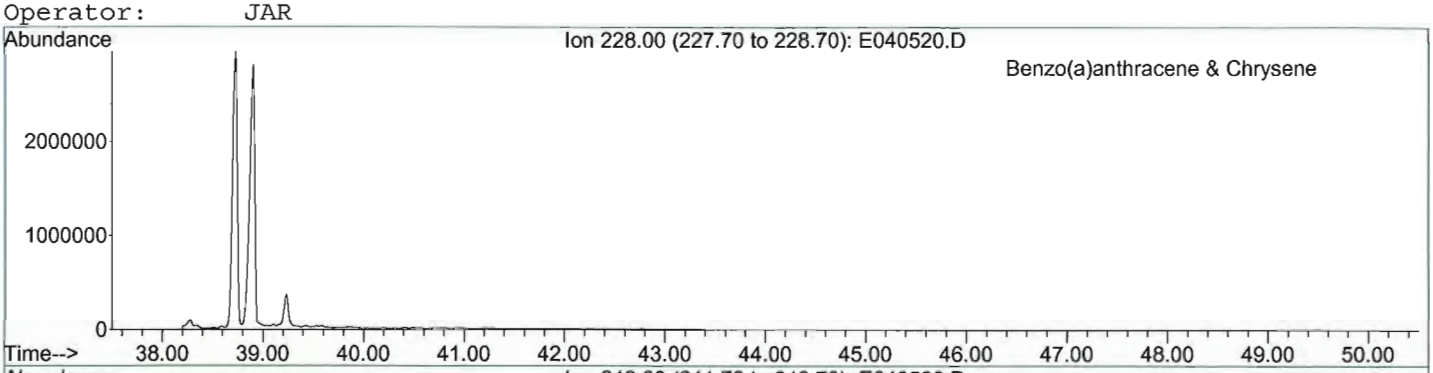
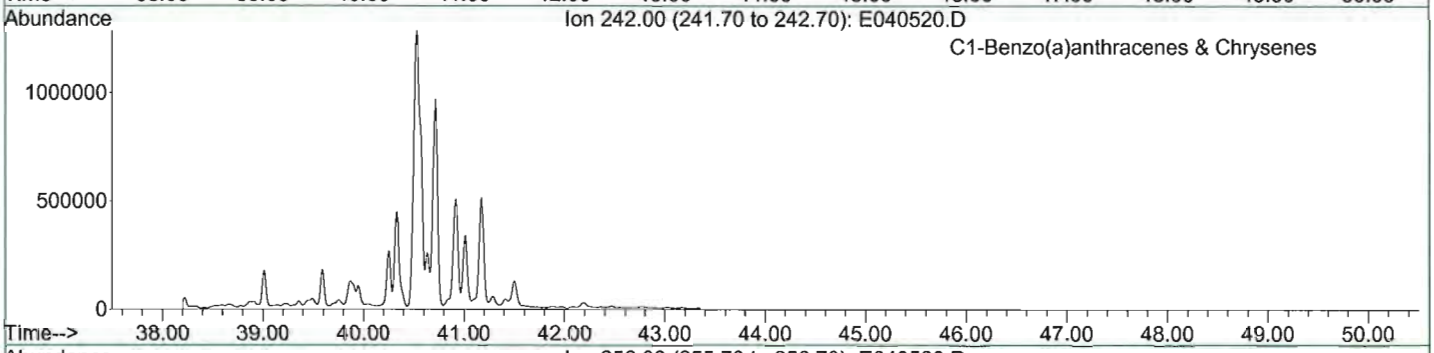
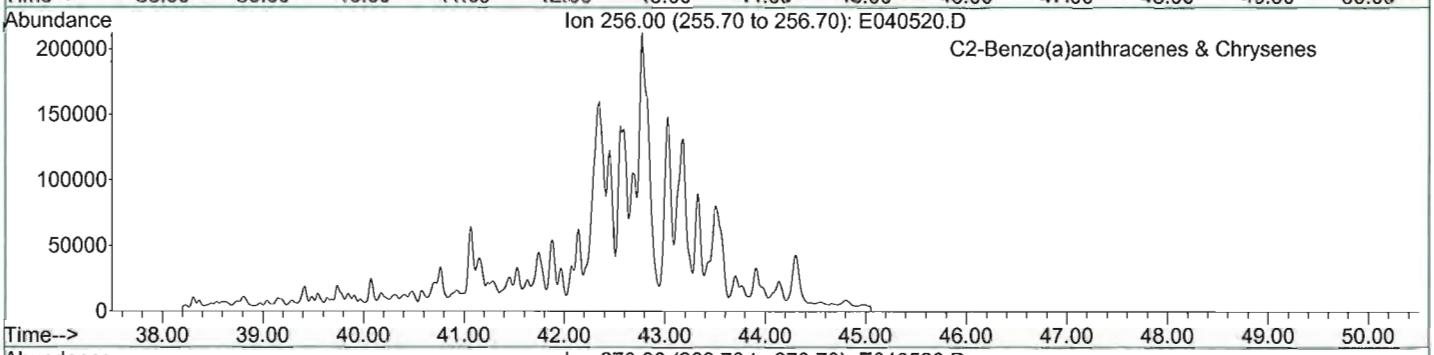
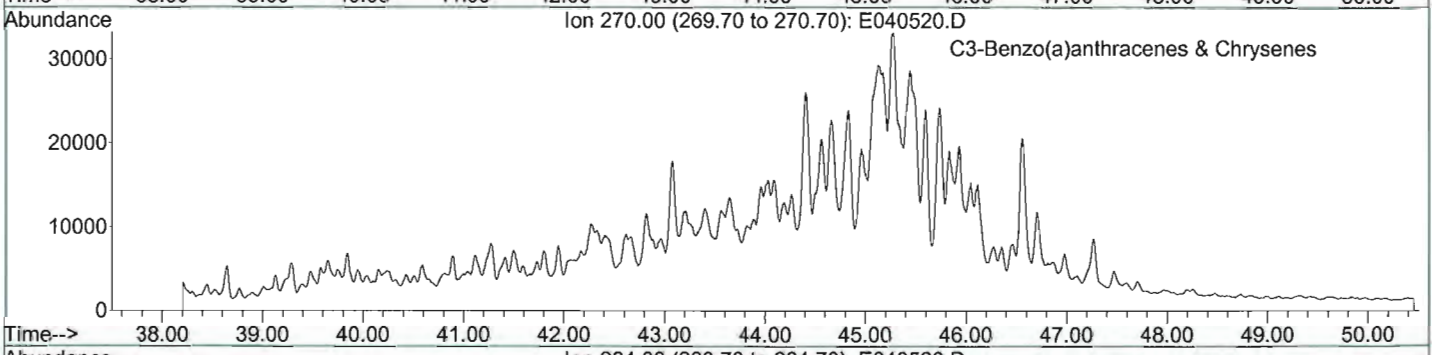
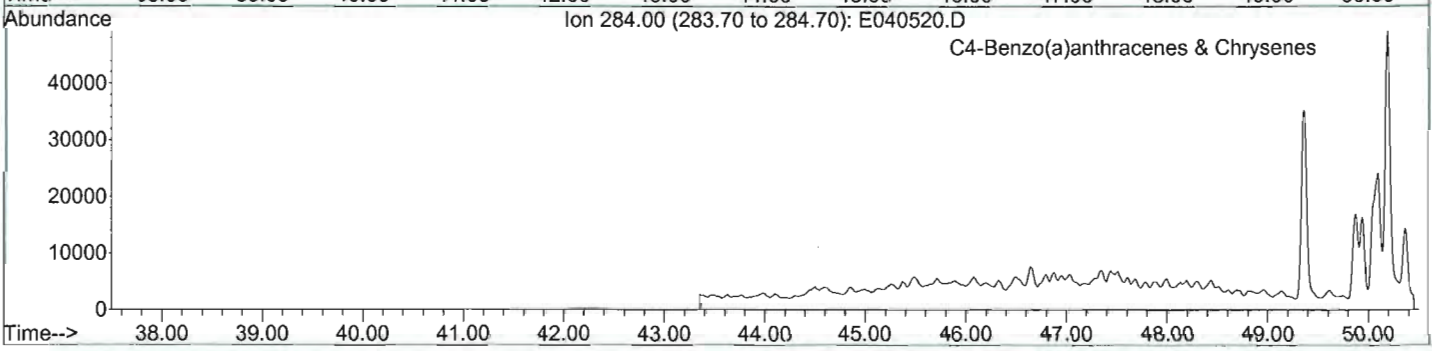
Date Acquired: 6 Apr 2006 10:54 am
Method File: 4008SIM2.M
Sample Name: PA060314-01-D
Misc Info: 20X
Operator: JAR











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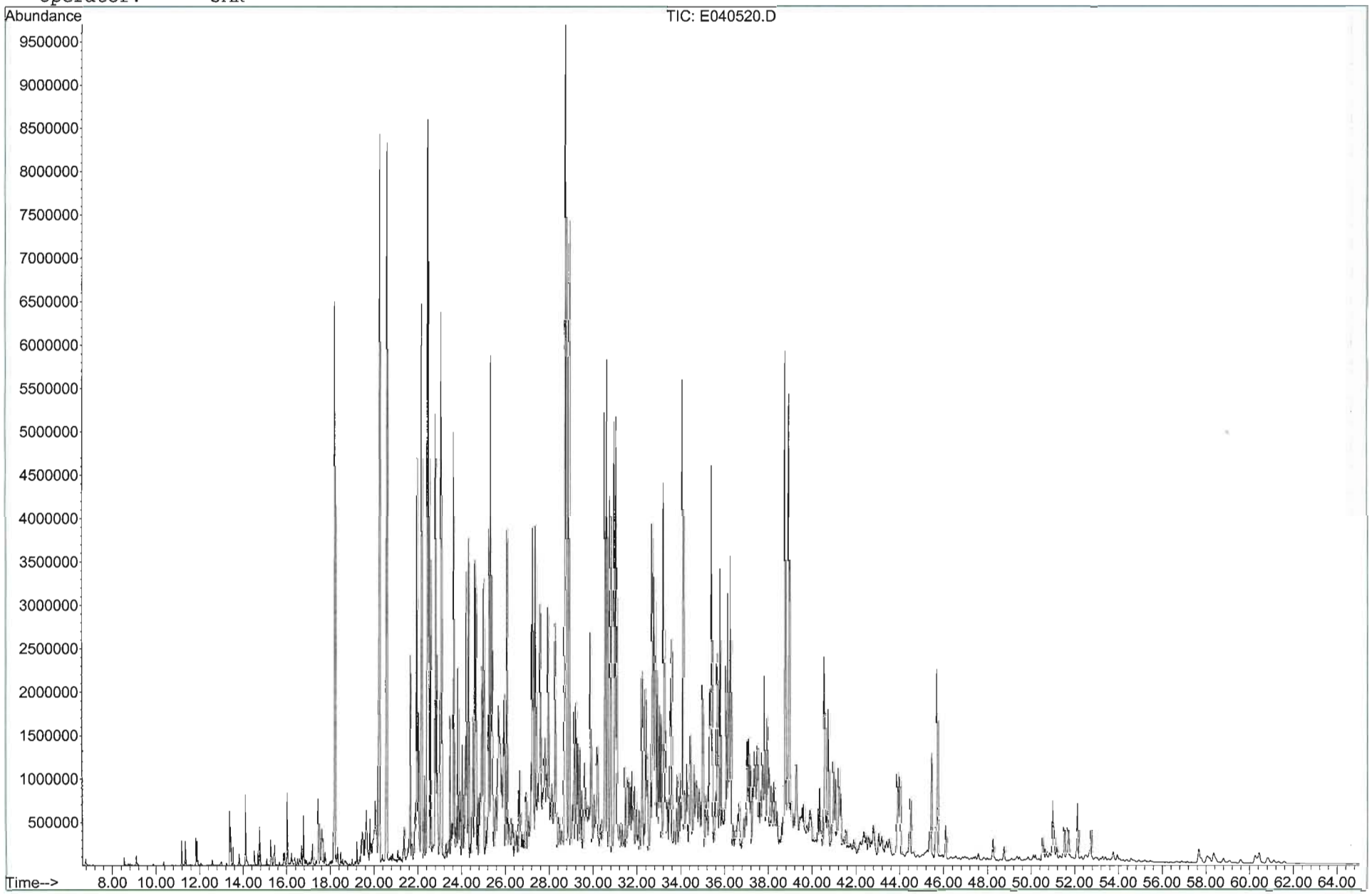
GC/MS TOTAL ION CHROMATOGRAM

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