US EPA RECORDS CENTER REGION 5
514058

ANNUAL MONITORING REPORT FOR 1991

REILLY TAR & CHEMICAL CORP. N.P.L. SITE ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 16, 1992

ANNUAL MONITORING REPORT
FOR 1991
REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA
SUBMITTED MARCH 16, 1992
(INCLUDES APPENDICES C-E)

CITY

ENSR — RMAL

(INCLUDES APPENDICES C-E)

RAP SECTION 7.3.(D) MONITORING

1ST HALF - 1991

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014812

Introduction

Eleven aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on May 08, 1991. The samples were logged in under RMAL project number 014781. Sample PCJ-SLP16FBD-050791 (RMA # 014812-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, sample 014812-08 required reanalysis at a dilution. Results from both the original and reanalysis are reported. Surrogates could not be measured in the sample due to the dilution performed.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax· 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 06-12-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel S. Holtz **Date:** 6-21-91
Joel Holtz
Program Administrator

Enseco
A Coming Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014812-0001-SA	PCJ-SLP16-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0001-MS	PCJ-SLP16MS-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0001-SD	PCJ-SLP16MSD-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0002-SA	PCJ-SLP16D-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0003-SA	PCJ-SLP16FB-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0004-SA	PCJ-SLP16FBD-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0005-SA	PCJ-SLP5-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0006-SA	PCJ-W401-050791	AQUEOUS	07 MAY 91	10:01	08 MAY 91
014812-0007-SA	PCJ-H605-050791	AQUEOUS	07 MAY 91	10:35	08 MAY 91
014812-0008-SA	DPV-W434-050791	AQUEOUS	07 MAY 91	12:12	08 MAY 91
014812-0009-SA	PCJ-E2-050791	AQUEOUS	07 MAY 91	08:35	08 MAY 91
014812-0010-SA	PCJ-E13-050791	AQUEOUS	07 MAY 91	09:30	08 MAY 91
014812-0011-SA	PCJ-E15-050791	AQUEOUS	07 MAY 91	09:05	08 MAY 91

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TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014812

PPT PAH

QC Summary.....0001

Sample Data.....0011

Standards Data.....0601

Raw QC Data.....1047

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
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Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of St Louis Park	PACKED BY: MZH
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: ENSR	SEALED FOR SHIPPING BY: MZH
SAMPLING SITE: SLP	SEAL NUMBER:
TEAM LEADER:	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:	CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C	SAMPLING STATUS: ☒ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS RMA#
5/7/91	1001	PCJ W401C50791	Water	6	PAH - PPT	-06
"	1035	PCJ H6C50791	↓	↓	↓	-07
"	1212	RE OPV W434 050791	↓	↓	↓	-08

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[signature]	Mike Higgins	5-7-91	2:00PM

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: Mike Higgins	
METHOD OF SHIPMENT: FED EXP	AIRBILL NUMBER: 2865076303
RECEIVED FOR LAB: RMAL	SIGNED: [signature] DATE/TIME: 5/8/91 0800
ENSECO PROJECT NUMBER: 14812	

ENS—1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	CITY OF ST LOUIS PARK
PROJECT	
SAMPLING COMPANY	SAME
SAMPLING SITE	SAME
TEAM LEADER	M2H

SAMPLE SAFE™ CONDITIONS

PACKED BY	M2H
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	M2H
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	°C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS RMA#
5-7-91		PCU-SLP16-050791	1XLAMBER	6	PPT PAH	-01
5-7-91		PCU-SLP16D-050791	1XLAMBER	6	PPT PAH	-02

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	M2H
METHOD OF SHIPMENT	FED EXP
AIRBILL NUMBER	2865076303
RECEIVED FOR LAB	RMAC
SIGNED	Joel E. Hall
DATE/TIME	5/8/91 0800
ENSECO PROJECT NUMBER	14812

ENS-1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
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303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	PACKED BY: MZH
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZH
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: MZH	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:	CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5-7-91		PCU-SLP16MS-050791	1XLAMBER	6	PPL PAH	-01MS
5-7-91		PCU-SLP16MSD-050791	1XLAMBER	6	PPL PAH	-01MSD
~~5-7-91~~		~~PC~~				

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZH		
METHOD OF SHIPMENT: FED EXP.		AIRBILL NUMBER: 2865076303
RECEIVED FOR LAB: RMA	SIGNED: Jul G. Holt	DATE/TIME: 5/8/91 0800
ENSECO PROJECT NUMBER: 14812		

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of St Louis Park
PROJECT	H-20
SAMPLING COMPANY	ENSR
SAMPLING SITE	SLP
TEAM LEADER	

SAMPLE SAFE™ CONDITIONS

PACKED BY	McMac Donald
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	McMac Donald
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	°C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS RMA#
5/7/91	835	PCJ E2050791	water	6	PAH PPT	-09
↓	930	PCJ E13050791	↓		↓	-10
↓	905 ~~805~~	PCJ E15050791	↓		↓	-11

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[signature]	Mike Higgins	5-7-91	2:00PM

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	Mike Higgins
METHOD OF SHIPMENT	FED Exp
AIRBILL NUMBER	2865076303
RECEIVED FOR LAB	RMAe
SIGNED	Jul E. Hartz
DATE/TIME	5/8/91 0800
ENSECO PROJECT NUMBER	14812

ENS—1133

White – CLIENT Pink – LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

RMA # 14812

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-01

Sample wt/vol: 4070 (g/ml) ML Lab File ID: X3097

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/06/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	5.3	
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.7	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	2.2	
90-12-0	1-Methylnaphthalene	1.3	J *
92-52-4	Biphenyl	2.1	J
208-96-8	Acenaphthylene	1.5	
83-32-9	Acenaphthene	5.9	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	2.5	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.2	*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-02

Sample wt/vol: 4120 (g/ml) ML Lab File ID: X3107

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.121

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	5.2	
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.0	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.0	
90-12-0	1-Methylnaphthalene	1.7	*
92-52-4	Biphenyl	1.9	J
208-96-8	Acenaphthylene	1.7	*
83-32-9	Acenaphthene	6.2	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	2.6	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.0	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	J
129-00-0	Pyrene	1.7	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.2	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-03

Sample wt/vol: 3900 (g/ml) ML Lab File ID: X3108

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.128

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.2	U
496-11-7	2,3-Dihydroindene	2.7	
95-13-6	1H-Indene	4.7	
91-20-3	Naphthalene	12	
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.6	U
91-57-6	2-Methylnaphthalene	10	
90-12-0	1-Methylnaphthalene	5.7	
92-52-4	Biphenyl	1.7	J *
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.2	*
86-73-7	Fluorene	1.2	*
132-65-0	Dibenzothiophene	1.3	
85-01-8	Phenanthrene	7.1	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	3.0	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.9	
129-00-0	Pyrene	2.5	
56-55-3	Benzo(A)Anthracene	2.6	U
218-01-9	Chrysene	2.9	U
205-99-2	Benzo(B)Fluoranthene	2.6	U
207-08-9	Benzo(K)Fluoranthene	2.4	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.4	U
198-55-0	Perylene	2.6	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.2	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.9	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-09

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-09

Sample wt/vol: 4090 (g/ml) ML Lab File ID: X3114

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.122

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	2.0	
95-13-6	1H-Indene	1.0	
91-20-3	Naphthalene	2.9	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	2.7	
90-12-0	1-Methylnaphthalene	1.2	J *
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.3	*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.7	
129-00-0	Pyrene	2.0	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-10

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-10

Sample wt/vol: 4140 (g/ml) ML Lab File ID: X3115

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.121

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	3.1	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.0	
90-12-0	1-Methylnaphthalene	1.3	J *
92-52-4	Biphenyl	1.1	J
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.4	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.2	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-01MS

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-01MS

Sample wt/vol: 3950 (g/ml) ML Lab File ID: X3098

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/06/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.127

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.2	U
496-11-7	2,3-Dihydroindene	5.3	
95-13-6	1H-Indene	6.4	
91-20-3	Naphthalene	11	
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	9.6	
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	18	
90-12-0	1-Methylnaphthalene	6.0	
92-52-4	Biphenyl	2.8	J
208-96-8	Acenaphthylene	1.6	
83-32-9	Acenaphthene	6.2	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	11	
132-65-0	Dibenzothiophene	2.0	*
85-01-8	Phenanthrene	5.5	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	1.5	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	4.0	
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	1.2	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-01MSD

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-01MSD

Sample wt/vol: 4070 (g/ml) ML Lab File ID: X3099

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/06/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	6.4	
95-13-6	1H-Indene	7.7	
91-20-3	Naphthalene	10	
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	8.2	
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	13	
90-12-0	1-Methylnaphthalene	2.7	*
92-52-4	Biphenyl	2.3	J
208-96-8	Acenaphthylene	1.8	
83-32-9	Acenaphthene	6.9	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	12	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.9	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.5	
129-00-0	Pyrene	1.8	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	3.7	
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	14812-01	74	85	42
2	14812-01MS	68	84	46
3	14812-01MSD	80	92	40
4	14812-02	68	74	44
5	14812-03	85	91	93
6	14812-05	86	90	38
7	14812-06	75	77	32
8	14812-07	79	84	41
9	14812-08	53	111	35
10	14881-08DL	D	D	D
11	14812-09	65	73	40
12	14812-10	80	88	46
13	14812-11	68	74	35
14	BLK01	70	68	65

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 14812-01 LEVEL: LOW

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	10.2	0.569	6.40	57
Naphthalene	10.2	2.69	11.0	81
Quinoline	10.2	ND	9.57	94
2-Methylnaphthalene	10.2	2.22	18.2 *	157
Fluorene	10.2	2.48	11.1	85
Chrysene	10.2	ND	4.03	40
Benzo(E)Pyrene	10.2	ND	ND	ND

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	9.84	7.66	72	23
Naphthalene	9.84	10.1	75	8
Quinoline	9.84	8.18	83	12
2-Methylnaphthalene	9.84	12.7	107	38
Fluorene	9.84	11.5	92	8
Chrysene	9.84	3.68	37	8
Benzo(E)Pyrene	9.84	ND	ND	ND

Comments:

4B
SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Lab File ID: X3100 Lab Sample ID: BL051191

Instrument ID: 4500-X Date Extracted: 05/11/91

Matrix: (soil/water) WATER Date Analyzed: 06/06/91

Level:(low/med) LOW Time Analyzed: 0256

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14812-01	14812-01	X3097	06/06/91
2	14812-01MS	14812-01MS	X3098	06/06/91
3	14812-01MSD	14812-01MSD	X3099	06/06/91
4	14812-02	14812-02	X3107	06/07/91
5	14812-03	14812-03	X3108	06/07/91
6	14812-05	14812-05	X3110	06/07/91
7	14812-06	14812-06	X3111	06/07/91
8	14812-07	14812-07	X3112	06/07/91
9	14812-08	14812-08	X3113	06/07/91
10	14812-08DL	14812-08DL	X3132	06/11/91
11	14812-09	14812-09	X3114	06/07/91
12	14812-10	14812-10	X3115	06/07/91
13	14812-11	14812-11	X3116	06/07/91

Comments:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3100

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/06/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	6.5	U
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	0.9	U
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	U
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14812 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3088	06/05/91	1534
14812-01	X3097	06/06/91	0024
14812-01MS	X3098	06/06/91	0115
14812-01MSD	X3099	06/06/91	0206
BLK01	X3100	06/06/91	0256

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14812 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3105	06/07/91	0922
14812-02	X3107	06/07/91	1307
14812-03	X3108	06/07/91	1357
14812-05	X3110	06/07/91	1540
14812-06	X3111	06/07/91	1633
14812-07	X3112	06/07/91	1724
14812-08	X3113	06/07/91	1814
14812-09	X3114	06/07/91	1904
14812-10	X3115	06/07/91	1954
14812-11	X3116	06/07/91	2044

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14812 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3119	06/11/91	1014
14812-08DL	X3132	06/11/91	2147

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14812

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= X2941 RRF 40= X2940
RRF 240= X2942 RRF 1200= X2943 RRF 4800= X2944

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

FORM VI

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14812

Instrument ID: 4500-X Calibration Date(s): 06/05/91 Time: 1534

Lab ID: X3088 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.015	-10.3
2,3-Dihydroindene	0.775	0.912	-17.7
1H-Indene	0.776	0.862	-11.1
Naphthalene	1.740	1.845	-6.0
Benzo(B)Thiophene	1.300	1.237	4.8
Quinoline	0.827	0.709	14.3
1H-Indole	0.928	0.696	25.0
2-Methylnaphthalene	0.756	0.750	0.8
1-Methylnaphthalene	0.810	0.842	-4.0
Biphenyl	1.183	1.090	7.9
Acenaphthylene	1.534	1.736	-13.2
Acenaphthene	1.057	1.087	-2.8
Dibenzofuran	1.376	1.372	0.3
Fluorene	1.150	1.159	-0.8
Dibenzothiophene	0.825	0.808	2.1
Phenanthrene	0.886	0.884	0.2
Anthracene	0.833	0.825	1.0
Acridine	0.534	0.468	12.4
Carbazole	0.701	0.635	9.4
Fluoranthene	1.006	1.089	-8.3
Pyrene	1.123	1.265	-12.6
Benzo(A)Anthracene	1.155	1.057	8.5
Chrysene	1.307	1.142	12.6
Benzo(B)Fluoranthene	1.047	1.044	0.3
Benzo(K)Fluoranthene	1.423	1.116	21.6
Benzo(E)Pyrene	1.063	0.999	6.0
Benzo(A)Pyrene	1.020	0.964	5.5
Perylene	0.715	0.752	-5.2
Indeno(1,2,3-CD)Pyrene	1.196	0.867	27.5
Dibenz(A,H)Anthracene	1.039	0.773	25.6
Benzo(G,H,I)Perylene	1.073	0.832	22.5
D8-Naphthalene	1.578	1.660	-5.2
D10-Flourene	0.936	0.906	3.2
D12-Chrysene	1.143	1.073	6.1

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14812

Instrument ID: 4500-X Calibration Date(s): 06/07/91 Time: 0922

Lab ID: X3105 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	0.950	-3.3
2,3-Dihydroindene	0.775	0.832	-7.4
1H-Indene	0.776	0.806	-3.9
Naphthalene	1.740	1.736	0.2
Benzo(B)Thiophene	1.300	1.252	3.7
Quinoline	0.827	0.939	-13.5
1H-Indole	0.928	1.097	-18.2
2-Methylnaphthalene	0.756	0.767	-1.5
1-Methylnaphthalene	0.810	0.831	-2.6
Biphenyl	1.183	1.214	-2.6
Acenaphthylene	1.534	1.636	-6.6
Acenaphthene	1.057	1.015	4.0
Dibenzofuran	1.376	1.374	0.1
Fluorene	1.150	1.152	-0.2
Dibenzothiophene	0.825	0.717	13.1
Phenanthrene	0.886	0.875	1.2
Anthracene	0.833	0.858	-3.0
Acridine	0.534	0.518	3.0
Carbazole	0.701	0.776	-10.7
Fluoranthene	1.006	0.980	2.6
Pyrene	1.123	1.095	2.5
Benzo(A)Anthracene	1.155	1.026	11.2
Chrysene	1.307	1.033	21.0
Benzo(B)Fluoranthene	1.047	1.100	-5.1
Benzo(K)Fluoranthene	1.423	0.988	30.6
Benzo(E)Pyrene	1.063	0.937	11.9
Benzo(A)Pyrene	1.020	0.908	11.0
Perylene	0.715	0.746	-4.3
Indeno(1,2,3-CD)Pyrene	1.196	0.934	21.9
Dibenz(A,H)Anthracene	1.039	0.837	19.4
Benzo(G,H,I)Perylene	1.073	0.933	13.0
D8-Naphthalene	1.578	1.598	-1.3
D10-Flourene	0.936	0.937	-0.1
D12-Chrysene	1.143	1.059	7.3

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14812

Instrument ID: 4500-X Calibration Date(s): 06/11/91 Time: 1014

Lab ID: X3119 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.030	-12.0
2,3-Dihydroindene	0.775	0.913	-17.8
1H-Indene	0.776	0.874	-12.6
Naphthalene	1.740	1.890	-8.6
Benzo(B)Thiophene	1.300	1.324	-1.8
Quinoline	0.827	0.857	-3.6
1H-Indole	0.928	0.851	8.3
2-Methylnaphthalene	0.756	0.801	-6.0
1-Methylnaphthalene	0.810	0.867	-7.0
Biphenyl	1.183	1.259	-6.4
Acenaphthylene	1.534	1.577	-2.8
Acenaphthene	1.057	1.063	-0.6
Dibenzofuran	1.376	1.443	-4.9
Fluorene	1.150	1.138	1.0
Dibenzothiophene	0.825	0.901	-9.2
Phenanthrene	0.886	0.937	-5.8
Anthracene	0.833	0.798	4.2
Acridine	0.534	0.448	16.1
Carbazole	0.701	0.606	13.6
Fluoranthene	1.006	1.029	-2.3
Pyrene	1.123	1.068	4.9
Benzo(A)Anthracene	1.155	1.268	-9.8
Chrysene	1.307	1.305	0.2
Benzo(B)Fluoranthene	1.047	1.176	-12.3
Benzo(K)Fluoranthene	1.423	1.189	16.4
Benzo(E)Pyrene	1.063	1.086	-2.2
Benzo(A)Pyrene	1.020	0.998	2.2
Perylene	0.715	0.748	-4.6
Indeno(1,2,3-CD)Pyrene	1.196	0.957	20.0
Dibenz(A,H)Anthracene	1.039	0.767	26.2
Benzo(G,H,I)Perylene	1.073	0.971	9.5
D8-Naphthalene	1.578	1.711	-8.4
D10-Flourene	0.936	0.921	1.6
D12-Chrysene	1.143	1.244	-8.8

FORM VII

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14812 SAS No.: SDG No:

Lab File ID (Standard): X3088 Date Analyzed: 06/05/91

Instrument ID: 4500-X Time Analyzed: 1534

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	67400	121000	97800
UPPER LIMIT	134000	242000	196000
LOWER LIMIT	34000	60000	49000
SAMPLE NO.			
14812-01	106000	171000	123000
14812-01MS	88800	149000	92200
14812-01MSD	78400	124000	78400
BLK01	50900	82900	49700

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14812 SAS No.: SDG No:

Lab File ID (Standard): X3105 Date Analyzed: 06/07/91

Instrument ID: 4500-X Time Analyzed: 0922

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	91600	170000	132000
UPPER LIMIT	183000	340000	264000
LOWER LIMIT	45800	85000	66000
SAMPLE NO.			
14812-02	129000	223000	167000
14812-03	150000	236000	174000
14812-05	145000	233000	170000
14812-06	169000	270000	210000
14812-07	124000	203000	146000
14812-08	155000	271000	168000
14812-09	135000	212000	145000
14812-10	127000	216000	148000
14812-11	109000	179000	138000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14812 SAS No.: SDG No:

Lab File ID (Standard): X3119 Date Analyzed: 06/11/91

Instrument ID: 4500-M Time Analyzed: 1014

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	94000	159000	103000
UPPER LIMIT	188000	318000	206000
LOWER LIMIT	47000	80000	52000
SAMPLE NO.			
14812-08DL	118000	203000	140000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014781

Introduction

Nine aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on May 02, 1991. The samples were logged in under RMAL project number 014781. Sample IGV-W105FBD-050191 (RMA # 014781-08) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 014781-01 and 02 were reanalyzed at dilutions due to 2,3-dihydroindene, benzo(B)thiophene and acenapthene which were saturated in the original analysis. Both the original and the reanalyses are submitted for each sample. Surrogates could not be measured in the reanalyses due to the dilutions performed.

Due to concentrations of target compounds present in excess of calibration range, samples 014781-03 and 09 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

All samples and one of the the associated method blanks show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax· 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Susan Della for Date: 6-21-91
Joel Holtz
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014781-0001-SA	W133	AQUEOUS	01 MAY 91	10:50	02 MAY 91
014781-0002-SA	W24	AQUEOUS	01 MAY 91	13:30	02 MAY 91
014781-0003-SA	W33	AQUEOUS	01 MAY 91	16:45	02 MAY 91
014781-0004-SA	IGV-W105-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0005-SA	IGV-W105D-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0006-SA	PCJ-SLP10-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0007-SA	IGV-W105FB-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0008-SA	IGV-W105FBD-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0009-SA	W412	AQUEOUS	30 APR 91	16:10	02 MAY 91

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-06

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-06

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3036

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	19	
95-13-6	1H-Indene	2.3	
91-20-3	Naphthalene	8.6	B
4565-32-6	Benzo(B)Thiophene	2.9	*
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	13	B*
90-12-0	1-Methylnaphthalene	6.9	B*
92-52-4	Biphenyl	1.7	J *
208-96-8	Acenaphthylene	19	
83-32-9	Acenaphthene	110	
132-64-9	Dibenzofuran	3.7	*
86-73-7	Fluorene	23	
132-65-0	Dibenzothiophene	3.3	
85-01-8	Phenanthrene	2.5	B
120-12-7	Anthracene	1.7	*
260-94-6	Acridine	4.7	
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	22	
129-00-0	Pyrene	71	B
56-55-3	Benzo(A)Anthracene	2.9	*
218-01-9	Chrysene	2.3	J
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

= Compound is saturated.

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014886

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on May 09, 1991. The samples were logged in under RMAL project number 014886. Sample PCJ-SLP14FBD-050891 (RMA # 014886-12) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, sample 014886-05 was analyzed and reported at a dilution. Surrogates could not be measured in the sample due to the dilution performed.

The surrogate D10-Fluorene is reported below quality control limits in the method blank extracted May 12, 1991 The blank was realiquoted and reanalyzed showing similar results. All associated samples show surrogates within limits therefore, the data appears to have not been adversely affected. Corrective action consisting of reextracting the samples could not be taken due to limited sample and extract.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Susan Dalla for **Date:** 6-21-91
Joel Holtz
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014886-0001-SA	STP-W410-050891	AQUEOUS	08 MAY 91	13:45	09 MAY 91
014886-0002-SA	PCJ-W29-050891	AQUEOUS	08 MAY 91	13:30	09 MAY 91
014886-0003-SA	PCJ-W402-050891	AQUEOUS	08 MAY 91	11:50	09 MAY 91
014886-0004-SA	PCJ-W70-050891	AQUEOUS	08 MAY 91	16:27	09 MAY 91
014886-0005-SA	PCJ-W403-050891	AQUEOUS	08 MAY 91	14:10	09 MAY 91
014886-0006-SA	PCJ-W40-050891	AQUEOUS	08 MAY 91	10:55	09 MAY 91
014886-0007-SA	PCJ-W406-050891	AQUEOUS	08 MAY 91	10:35	09 MAY 91
014886-0008-SA	PCJ-MTK6-050891	AQUEOUS	08 MAY 91	09:10	09 MAY 91
014886-0009-SA	PCJ-SLP14-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0010-SA	PCJ-SLP14D-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0011-SA	PCJ-SLP14FB-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0012-SA	PCJ-SLP14FBD-050891	AQUEOUS	08 MAY 91		09 MAY 91

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014886

PPT PAH

QC Summary.....0001

Sample Data.....0010

Standards Data.....0613

Raw QC Data.....1049

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax· 303/431-7171

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of Saint Louis Park
PROJECT	SLP
SAMPLING COMPANY	LMSR
SAMPLING SITE	SLP
TEAM LEADER	M. McDonald

SAMPLE SAFE™ CONDITIONS

PACKED BY	
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	D Lazarus
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	1100
SAMPLING STATUS	☑ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	12.2°C °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5/8/91	1345	STP W410 050891	WATER	C	PAHs (ppt)	-01
↓	1330	PCJ 029 050891	↓	↓	↓	-02
↓	1150	PCJ W402 050891	↓	↓	↓	-03

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[signature]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	
METHOD OF SHIPMENT	FED EX
AIRBILL NUMBER	[illegible]
RECEIVED FOR LAB	ENSECO-RMAL
SIGNED	Robert R. Rotz
DATE/TIME	0600hrs 09 MAY 91
ENSECO PROJECT NUMBER	14886

ENS—1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of Saint Louis Park
PROJECT	SLP
SAMPLING COMPANY	ENSR
SAMPLING SITE	SLP
TEAM LEADER	M. MacDonald

SAMPLE SAFE™ CONDITIONS

PACKED BY	
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	D. Lalaeus
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	#102
SAMPLING STATUS	☑ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☑ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	15.3°C °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5/8/91	1627	PCJ W70 050891	WATER	6		-04
"	1410	PCJ W403 050891	"	"		-05

plus empty bottles

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[signature]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	M. MacDonald
METHOD OF SHIPMENT	FEDEX
AIRBILL NUMBER	2865076 3/4
RECEIVED FOR LAB	ENSECO-RMAL
SIGNED	Robert M. Reitz
DATE/TIME	0800hrs, 09 MAY 91
ENSECO PROJECT NUMBER	14886

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of Saint Louis Park
PROJECT	SLP
SAMPLING COMPANY	ENSR
SAMPLING SITE	SLP
TEAM LEADER	M. MacDonald

SAMPLE SAFE™ CONDITIONS

PACKED BY	
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	J. Lazarus
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	#101
SAMPLING STATUS	☒ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	(#361) 15.3° °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5-8-91	0910	PCJ MTK1 6 050891	Water	6	Bulb (gpm)	-~~06~~ 08
↓	1055	PCJ W406 050891	↓	↓	↓	-07
↓	1055	PCJ W40 050891	↓	↓	↓	-~~08~~ 06

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
Diane [illegible]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	M MacDonald
METHOD OF SHIPMENT	FED EX
AIRBILL NUMBER	2865076314
RECEIVED FOR LAB	ENSECO RMAL
SIGNED	Robert M. Reitz
DATE/TIME	0800 hrs, 09 MAY 91
ENSECO PROJECT NUMBER	14886

ENS-1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of St Louis Park
PROJECT	
SAMPLING COMPANY	SAME
SAMPLING SITE	SAME
TEAM LEADER	MZH

SAMPLE SAFE™ CONDITIONS

PACKED BY	MZH
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	MZH
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	(#1079) °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5-8-91		PCU-SLP14-050891	1XL AMBER	6	PPT PAH	-09
5-8-91		PCU-SLP14DA-050891	1XL AMBER	6	PPT PAH	-10

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	MZH
METHOD OF SHIPMENT	FED EXP
AIRBILL NUMBER	2865076314
RECEIVED FOR LAB	ENSECO - RMAL
SIGNED	Robert M. Reitz
DATE/TIME	0800 hrs, 09 MAY 91
ENSECO PROJECT NUMBER	14886

ENS-1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	SAMPLE SAFE™ CONDITIONS — PACKED BY: TJZ
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: TJZ
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: TJZ	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SEAL NUMBER:
CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C
SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: (#2120) °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5-8-91		PCU-SLP14FB-050891	1XL AMBER	6	PPL PAH	-11
5-8-91		PCU-SLP14FBD-050891	1XL AMBER	6	PPL PAH	-12

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: TJZ
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 286 507 6314
RECEIVED FOR LAB: ENSECO - RMAL
SIGNED: Robert M Roth
DATE/TIME: 0800hrs, 09 MAY 91
ENSECO PROJECT NUMBER: 14886

ENS—1133

White – CLIENT Pink – LAB

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile: 303/431-7171

CHAIN OF CUSTODY

No.

Attn: _____

Enseco Client: CITY OF ST LOUIS PARK

Project: _____

Sampling Co.: SAME

Sampling Site: SAME

Team Leader: MZR

SAMPLE SAFE™ CONDITIONS

1. Packed by: MZR Seal # _____
2. Seal Intact Upon Receipt by Sampling Co.. Yes No
3. Condition of Contents _____
4. Sealed for Shipping by MZR
5. Initial Contents Temp.: _____ °C Seal # _____
6. Sampling Status: Done Continuing Until _____
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab. (#3167) 12.9 °C
9. Condition of Contents: _____

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
01 5-8-91		STP-W410-050891	1XL AMBER	6	PPT PAH	LOW LEVEL PPT

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: MZR

Method of Shipment: FED EXP Airbill # 2865076314

Received for Lab: RMAL Signed. Bob Berg Date/Time 09 MAY 91 0800 hrs

Enseco Project No. 14886

White and Pink Copies to Lab Yellow to Sampler

SS-001

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

RMAL # 14886

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-03

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3125

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	39	
95-13-6	1H-Indene	23	
91-20-3	Naphthalene	110	
4565-32-6	Benzo(B)Thiophene	44	*
91-22-5	Quinoline	6.7	*
120-72-9	1H-Indole	39	*
91-57-6	2-Methylnaphthalene	110	
90-12-0	1-Methylnaphthalene	61	
92-52-4	Biphenyl	8.2	*
208-96-8	Acenaphthylene	3.2	
83-32-9	Acenaphthene	1.6	
132-64-9	Dibenzofuran	1.3	*
86-73-7	Fluorene	2.3	*
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	11	
120-12-7	Anthracene	2.5	*
260-94-6	Acridine	2.9	*
86-74-8	Carbazole	5.9	*
206-44-0	Fluoranthene	9.1	*
129-00-0	Pyrene	17	
56-55-3	Benzo(A)Anthracene	3.0	*
218-01-9	Chrysene	2.4	J *
205-99-2	Benzo(B)Fluoranthene	1.9	J
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.3	J *
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	5.3	*
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.2	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-05

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-05

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3145

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/13/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.595

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	24	U
496-11-7	2,3-Dihydroindene	29	
95-13-6	1H-Indene	11	
91-20-3	Naphthalene	110	*
4565-32-6	Benzo(B)Thiophene	33	*
91-22-5	Quinoline	110	*
120-72-9	1H-Indole	110	*
91-57-6	2-Methylnaphthalene	130	
90-12-0	1-Methylnaphthalene	61	*
92-52-4	Biphenyl	100	*
208-96-8	Acenaphthylene	31	*
83-32-9	Acenaphthene	5.3	J *
132-64-9	Dibenzofuran	250	*
86-73-7	Fluorene	8.0	
132-65-0	Dibenzothiophene	7.3	
85-01-8	Phenanthrene	21	*
120-12-7	Anthracene	9.4	*
260-94-6	Acridine	11	*
86-74-8	Carbazole	9.2	
206-44-0	Fluoranthene	12	*
129-00-0	Pyrene	28	
56-55-3	Benzo(A)Anthracene	12	U
218-01-9	Chrysene	13	U
205-99-2	Benzo(B)Fluoranthene	12	U
207-08-9	Benzo(K)Fluoranthene	11	U
192-97-2	Benzo(E)Pyrene	9.0	U
50-32-8	Benzo(A)Pyrene	11	U
198-55-0	Perylene	12	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	7.6	U
191-24-2	Benzo(G,H,I)Perylene	13	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-07

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-07

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3129

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	1.3	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.0	J *
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	3.0	*
91-57-6	2-Methylnaphthalene	2.2	
90-12-0	1-Methylnaphthalene	1.3	J *
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.4	*
120-12-7	Anthracene	1.0	*
260-94-6	Acridine	1.2	J *
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.9	
129-00-0	Pyrene	15	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.0	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-09

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-09

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3131

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	20	
95-13-6	1H-Indene	1.7	
91-20-3	Naphthalene	3.9	J
4565-32-6	Benzo(B)Thiophene	3.2	
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.0	J *
91-57-6	2-Methylnaphthalene	5.2	
90-12-0	1-Methylnaphthalene	3.3	*
92-52-4	Biphenyl	3.7	J
208-96-8	Acenaphthylene	11	
83-32-9	Acenaphthene	26	
132-64-9	Dibenzofuran	1.3	*
86-73-7	Fluorene	2.0	
132-65-0	Dibenzothiophene	1.6	
85-01-8	Phenanthrene	4.7	
120-12-7	Anthracene	1.5	
260-94-6	Acridine	1.1	J *
86-74-8	Carbazole	1.4	J *
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	3.9	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.0	J *

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-10

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-10

Sample wt/vol: 4050 (g/ml) ML Lab File ID: X3137

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	21	
95-13-6	1H-Indene	1.6	
91-20-3	Naphthalene	2.7	J
4565-32-6	Benzo(B)Thiophene	3.2	*
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	1.0	J
91-57-6	2-Methylnaphthalene	2.6	
90-12-0	1-Methylnaphthalene	1.4	J *
92-52-4	Biphenyl	3.5	J
208-96-8	Acenaphthylene	11	
83-32-9	Acenaphthene	26	
132-64-9	Dibenzofuran	1.1	*
86-73-7	Fluorene	1.5	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.4	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.3	J *
206-44-0	Fluoranthene	1.2	J
129-00-0	Pyrene	3.4	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-11

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-11

Sample wt/vol: 4100 (g/ml) ML Lab File ID: X3138

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.122

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	1.7	
95-13-6	1H-Indene	21	
91-20-3	Naphthalene	6.3	
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	1.4	J *
91-57-6	2-Methylnaphthalene	0.9	U
90-12-0	1-Methylnaphthalene	2.8	
92-52-4	Biphenyl	1.0	J *
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.2	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.5	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3122

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	6.5	U
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	0.9	U
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	U
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 13183 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP)	#	S2 (FLU)	#	S3 (CHR)	#
1	14886-01	62		77		48	
2	14886-02	81		95		49	
3	14886-03	46		73		21	
4	14886-04	69		83		48	
5	14886-05	0	D	0	D	0	D
6	14886-06	65		84		43	
7	14886-07	78		93		51	
8	14886-08	84		101		44	
9	14886-09	70		82		40	
10	14886-10	76		88		78	
11	14886-11	70		84		83	
12	BLK01	26		33	*	34	

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Lab File ID: X3122 Lab Sample ID: BLK01

Instrument ID: 4500-X Date Extracted: 05/12/91

Matrix: (soil/water) WATER Date Analyzed: 06/11/91

Level:(low/med) LOW Time Analyzed: 1309

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14886-01	14886-01	X3123	06/11/91
2	14886-02	14886-02	X3124	06/11/91
3	14886-03	14886-03	X3125	06/11/91
4	14886-04	14886-04	X3126	06/11/91
5	14886-05	14886-05	X3145	06/13/91
6	14886-06	14886-06	X3128	06/11/91
7	14886-07	14886-07	X3129	06/11/91
8	14886-08	14886-08	X3130	06/11/91
9	14886-09	14886-09	X3131	06/11/91
10	14886-10	14886-10	X3137	06/12/91
11	14886-11	14886-11	X3138	06/12/91

Comments:

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14886 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3119	06/11/91	1014
BLK01	X3122	06/11/91	1309
14886-01	X3123	06/11/91	1400
14886-02	X3124	06/11/91	1452
14886-03	X3125	06/11/91	1544
14886-04	X3126	06/11/91	1636
14886-06	X3128	06/11/91	1821
14886-07	X3129	06/11/91	1913
14886-08	X3130	06/11/91	2005
14886-09	X3131	06/11/91	2056

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14886 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3134	06/12/91	1903
14886-10	X3137	06/12/91	2248
14886-11	X3138	06/12/91	2339

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14886 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3143	06/13/91	1116
14886-05	X3145	06/13/91	1423

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14886

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= X2941 RRF 40= X2940
RRF 240= X2942 RRF 1200= X2943 RRF 4800= X2944

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14886

Instrument ID: 4500-X Calibration Date(s): 06/11/91 Time: 1014

Lab ID: X3119 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.030	-12.0
2,3-Dihydroindene	0.775	0.913	-17.8
1H-Indene	0.776	0.874	-12.6
Naphthalene	1.740	1.890	-8.6
Benzo(B)Thiophene	1.300	1.324	-1.8
Quinoline	0.827	0.857	-3.6
1H-Indole	0.928	0.851	8.3
2-Methylnaphthalene	0.756	0.801	-6.0
1-Methylnaphthalene	0.810	0.867	-7.0
Biphenyl	1.183	1.259	-6.4
Acenaphthylene	1.534	1.577	-2.8
Acenaphthene	1.057	1.063	-0.6
Dibenzofuran	1.376	1.443	-4.9
Fluorene	1.150	1.138	1.0
Dibenzothiophene	0.825	0.901	-9.2
Phenanthrene	0.886	0.937	-5.8
Anthracene	0.833	0.798	4.2
Acridine	0.534	0.448	16.1
Carbazole	0.701	0.606	13.6
Fluoranthene	1.006	1.029	-2.3
Pyrene	1.123	1.068	4.9
Benzo(A)Anthracene	1.155	1.268	-9.8
Chrysene	1.307	1.305	0.2
Benzo(B)Fluoranthene	1.047	1.176	-12.3
Benzo(K)Fluoranthene	1.423	1.189	16.4
Benzo(E)Pyrene	1.063	1.086	-2.2
Benzo(A)Pyrene	1.020	0.998	2.2
Perylene	0.715	0.748	-4.6
Indeno(1,2,3-CD)Pyrene	1.196	0.957	20.0
Dibenz(A,H)Anthracene	1.039	0.767	26.2
Benzo(G,H,I)Perylene	1.073	0.971	9.5
D8-Naphthalene	1.578	1.711	-8.4
D10-Flourene	0.936	0.921	1.6
D12-Chrysene	1.143	1.244	-8.8

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14886

Instrument ID: 4500-X Calibration Date(s): 06/12/91 Time: 1903

Lab ID: X3134 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.071	-16.4
2,3-Dihydroindene	0.775	0.914	-17.9
1H-Indene	0.776	0.854	-10.1
Naphthalene	1.740	2.012	-15.6
Benzo(B)Thiophene	1.300	1.352	-4.0
Quinoline	0.827	0.910	-10.0
1H-Indole	0.928	0.944	-1.7
2-Methylnaphthalene	0.756	0.829	-9.7
1-Methylnaphthalene	0.810	0.907	-12.0
Biphenyl	1.183	1.281	-8.3
Acenaphthylene	1.534	1.639	-6.8
Acenaphthene	1.057	1.069	-1.1
Dibenzofuran	1.376	1.463	-6.3
Fluorene	1.150	1.166	-1.4
Dibenzothiophene	0.825	0.867	-5.1
Phenanthrene	0.886	0.931	-5.1
Anthracene	0.833	0.815	2.2
Acridine	0.534	0.434	18.7
Carbazole	0.701	0.670	4.4
Fluoranthene	1.006	1.008	-0.2
Pyrene	1.123	1.065	5.2
Benzo(A)Anthracene	1.155	1.179	-2.1
Chrysene	1.307	1.227	6.1
Benzo(B)Fluoranthene	1.047	1.189	-13.6
Benzo(K)Fluoranthene	1.423	1.071	24.7
Benzo(E)Pyrene	1.063	1.032	2.9
Benzo(A)Pyrene	1.020	0.976	4.3
Perylene	0.715	0.807	-12.9
Indeno(1,2,3-CD)Pyrene	1.196	0.969	19.0
Dibenz(A,H)Anthracene	1.039	0.860	17.2
Benzo(G,H,I)Perylene	1.073	0.940	12.4
D8-Naphthalene	1.578	1.743	-10.5
D10-Flourene	0.936	0.939	-0.3
D12-Chrysene	1.143	1.177	-3.0

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14886

Instrument ID: 4500-X Calibration Date(s): 06/13/91 Time: 1116

Lab ID: X3143 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	0.956	-3.9
2,3-Dihydroindene	0.775	0.904	-16.6
1H-Indene	0.776	0.797	-2.7
Naphthalene	1.740	1.841	-5.8
Benzo(B)Thiophene	1.300	1.272	2.2
Quinoline	0.827	0.878	-6.2
1H-Indole	0.928	1.039	-12.0
2-Methylnaphthalene	0.756	0.809	-7.0
1-Methylnaphthalene	0.810	0.908	-12.1
Biphenyl	1.183	1.203	-1.7
Acenaphthylene	1.534	1.417	7.6
Acenaphthene	1.057	1.000	5.4
Dibenzofuran	1.376	1.333	3.1
Fluorene	1.150	1.074	6.6
Dibenzothiophene	0.825	0.859	-4.1
Phenanthrene	0.886	0.953	-7.6
Anthracene	0.833	0.788	5.4
Acridine	0.534	0.452	15.4
Carbazole	0.701	0.669	4.6
Fluoranthene	1.006	1.050	-4.4
Pyrene	1.123	1.215	-8.2
Benzo(A)Anthracene	1.155	1.324	-14.6
Chrysene	1.307	1.375	-5.2
Benzo(B)Fluoranthene	1.047	1.333	-27.3
Benzo(K)Fluoranthene	1.423	1.212	14.8
Benzo(E)Pyrene	1.063	1.141	-7.3
Benzo(A)Pyrene	1.020	1.076	-5.5
Perylene	0.715	0.841	-17.6
Indeno(1,2,3-CD)Pyrene	1.196	1.026	14.2
Dibenz(A,H)Anthracene	1.039	0.921	11.4
Benzo(G,H,I)Perylene	1.073	0.945	11.9
D8-Naphthalene	1.578	1.638	-3.8
D10-Flourene	0.936	0.878	6.2
D12-Chrysene	1.143	1.303	-14.0

FORM VII

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14886 SAS No.: SDG No:

Lab File ID (Standard): X3119 Date Analyzed: 06/11/91

Instrument ID: 4500-X Time Analyzed: 1014

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	94000	159000	103000
UPPER LIMIT	188000	318000	206000
LOWER LIMIT	47000	80000	52000
SAMPLE NO.			
14886-01	134000	190000	118000
14886-02	88900	141000	92400
14886-03	170000	212000	158000
14886-04	133000	192000	132000
14886-06	122000	198000	126000
14886-07	145000	222000	158000
14886-08	123000	195000	145000
14886-09	106000	174000	133000
BLK01	123000	191000	114000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14886 SAS No.: SDG No:

Lab File ID (Standard): X3134 Date Analyzed: 06/12/91

Instrument ID: 4500-X Time Analyzed: 1903

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	131000	234000	168000
UPPER LIMIT	262000	468000	336000
LOWER LIMIT	65500	117000	84000
SAMPLE NO.			
14886-10	173000	315000	212000
14886-11	167000	275000	188000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14886 SAS No.: SDG No:

Lab File ID (Standard): X3143 Date Analyzed: 06/13/91

Instrument ID: 4500-X Time Analyzed: 1116

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	148000	250000	157000
UPPER LIMIT	296000	500000	310000
LOWER LIMIT	74000	12500	78500
SAMPLE NO.			
14886-05	0 D	0 D	0 D

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

D Internal standards diluted out

RAP SECTION 7.3.(D) MONITORING

2ND HALF - 1991

Enseco
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CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016687

Introduction

Fifteen aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on August 28, 1991. The samples were logged in under RMAL project number 016687. Sample PCJ-SLP6FBD-082791 (RMA # 016687-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, samples 016687-08, 10, 11, 12 and 13 were analyzed at a dilution. Surrogates could not be measured in the samples due to the dilutions performed.

In the matrix spike/spike duplicate analyses for sample 16687-01, several spike components are outside control limits. Indene and Napthalene results are biased due to the presence of these compounds in the original sample. Chrysene and Benzene show low recoveries. All quantitations were checked and found to be correct. Due to limited sample available, reextractions could not be performed.

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Arvada, Colorado 80002
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Samples 16687-02, 03, 05, 06, 01MSD show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in both method blanks indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy — **Date:** 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio — **Date:** 10/26/91
Debbie Fazio
Program Administrator

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SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016687-0001-SA	PCJ-SLP6-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0001-MS	PCJ-SLP6MS-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0001-SD	PCJ-SLP6MSD-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0002-SA	PCJ-SLP6D-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0003-SA	PCJ-SLP6FB-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0004-SA	PCJ-SLP6FBD-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0005-SA	PCJ-SLP14-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0006-SA	PCJ-SLP16-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0007-SA	PCJ-SLP7-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0008-SA	STPW411082791	AQUEOUS	27 AUG 91	15:30	28 AUG 91
016687-0009-SA	STPP116082791	AQUEOUS	27 AUG 91	14:10	28 AUG 91
016687-0010-SA	STPW409082791	AQUEOUS	27 AUG 91	14:30	28 AUG 91
016687-0011-SA	STPW408082791	AQUEOUS	27 AUG 91	11:20	28 AUG 91
016687-0012-SA	STPW122082791	AQUEOUS	27 AUG 91	10:10	28 AUG 91
016687-0013-SA	STPW129082791	AQUEOUS	27 AUG 91	09:00	28 AUG 91

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-05

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-05

Sample wt/vol: 4190 (g/ml) ML Lab File ID: C4723

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	1.4	J *
496-11-7	2,3-Dihydroindene	5.0	B *
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.4	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.2	B *
90-12-0	1-Methylnaphthalene	1.6	*
92-52-4	Biphenyl	1.2	J *
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.1	B
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-06

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-06

Sample wt/vol: 4010 (g/ml) ML Lab File ID: C4724

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	16	B *
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.4	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	5.1	B
90-12-0	1-Methylnaphthalene	2.1	*
92-52-4	Biphenyl	4.9	*
208-96-8	Acenaphthylene	3.1	
83-32-9	Acenaphthene	14	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	4.1	
132-65-0	Dibenzothiophene	1.3	
85-01-8	Phenanthrene	5.2	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.8	
129-00-0	Pyrene	2.0	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

Enseco
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CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016727

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on August 29, 1991. The samples were logged in under RMAL project number 016727. Sample STP-SLP3FBD-082891 (RMA # 016727-10) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 16727-03 and 04 were originally analyzed within the holding time at a dilution due to elevated target compounds. Several target compounds were saturated in this original analysis, therefore the samples were reanalyzed outside of the holding time at an additional dilution. Data for both sets of analyses are reported.

Samples 16727-11 and 12 were originally analyzed within the holding time at a dilution due to target compounds present in excess of calibration range. In the original analysis, results for sample 16727-12 showed 2,3-dihydroindene above linear range. Sample was further diluted and analyzed outside of the analysis holding time. Both sets of data are reported.

Surrogates could not be measured in samples 16727-03, 03DL, 04, 04DL, 11, 12 and 12DL due to the dilutions performed.

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Samples 16727-01, 02, 06 and 09 show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Samples 16727-09 and the associated method blank showed low or no recoveries on the D12-benzo(a)pyrene internal standard. Since this internal standard responded very poorly in the blank and not at all in sample -09 an alternate internal standard (D10-phenanthrene) was used to calculate the compounds normally associated with D12-benzo(a)pyrene.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in the method blank extracted 08-31 (BLK01) and in the method blank extracted 09-01 (D8-napthalene only) indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples with the exception of 16727-12DL show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy — Date: 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio — Date: 10/26/91
Debbie Fazio
Program Administrator

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SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016727-0001-SA	STP-SLP3-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0002-SA	STP-SLP3D-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0003-SA	PCJW402082891	AQUEOUS	28 AUG 91	13:55	29 AUG 91
016727-0004-SA	PCJW403082891	AQUEOUS	28 AUG 91	13:25	29 AUG 91
016727-0005-SA	PCJW406082891	AQUEOUS	28 AUG 91	13:00	29 AUG 91
016727-0006-SA	PCJE2082891	AQUEOUS	28 AUG 91	08:15	29 AUG 91
016727-0007-SA	PCJE3082891	AQUEOUS	28 AUG 91	08:30	29 AUG 91
016727-0008-SA	PCJE13082891	AQUEOUS	28 AUG 91	08:55	29 AUG 91
016727-0009-SA	STP-SLP3FB-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0010-SA	STP-SLP3FBD-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0011-SA	IGV-W105-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0012-SA	STP-W410-082891	AQUEOUS	28 AUG 91		29 AUG 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-03

Sample wt/vol: 4220 (g/ml) ML Lab File ID: C4742

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.18

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	380	#
496-11-7	2,3-Dihydroindene	660	B*#
95-13-6	1H-Indene	550	#
91-20-3	Naphthalene	320	B*#
4565-32-6	Benzo(B)Thiophene	140	
91-22-5	Quinoline	17	*
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	450	B*#
90-12-0	1-Methylnaphthalene	370	*#
92-52-4	Biphenyl	18	J *
208-96-8	Acenaphthylene	13	U
83-32-9	Acenaphthene	12	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	260	*#
85-01-8	Phenanthrene	16	B
120-12-7	Anthracene	10	U
260-94-6	Acridine	27	U
86-74-8	Carbazole	18	U
206-44-0	Fluoranthene	11	*
129-00-0	Pyrene	23	*
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	26	U
205-99-2	Benzo(B)Fluoranthene	24	U
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	22	U
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	26	U

= Compound is saturated

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-03DL

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-03DL

Sample wt/vol: 4220 (g/ml) ML Lab File ID: C4801

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 11.8

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	550	
496-11-7	2,3-Dihydroindene	9600	B
95-13-6	1H-Indene	1700	*
91-20-3	Naphthalene	4100	B
4565-32-6	Benzo(B)Thiophene	180	
91-22-5	Quinoline	132	U
120-72-9	1H-Indole	236	U
91-57-6	2-Methylnaphthalene	1200	B
90-12-0	1-Methylnaphthalene	610	*
92-52-4	Biphenyl	406	U
208-96-8	Acenaphthylene	132	U
83-32-9	Acenaphthene	123	U
132-64-9	Dibenzofuran	94	U
86-73-7	Fluorene	94	U
132-65-0	Dibenzothiophene	380	*
85-01-8	Phenanthrene	123	U
120-12-7	Anthracene	104	U
260-94-6	Acridine	274	U
86-74-8	Carbazole	179	U
206-44-0	Fluoranthene	132	U
129-00-0	Pyrene	132	U
56-55-3	Benzo(A)Anthracene	236	U
218-01-9	Chrysene	264	U
205-99-2	Benzo(B)Fluoranthene	236	U
207-08-9	Benzo(K)Fluoranthene	217	U
192-97-2	Benzo(E)Pyrene	179	U
50-32-8	Benzo(A)Pyrene	217	U
198-55-0	Perylene	236	U
193-39-5	Indeno(1,2,3-CD)Pyrene	198	U
53-70-3	Dibenz(A,H)Anthracene	151	U
191-24-2	Benzo(G,H,I)Perylene	264	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-04

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-04

Sample wt/vol: 3990 (g/ml) ML Lab File ID: C4743

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.25

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	360	*#
496-11-7	2,3-Dihydroindene	790	B*#
95-13-6	1H-Indene	590	#
91-20-3	Naphthalene	380	B*#
4565-32-6	Benzo(B)Thiophene	110	*
91-22-5	Quinoline	27	*
120-72-9	1H-Indole	25	U
91-57-6	2-Methylnaphthalene	550	B*#
90-12-0	1-Methylnaphthalene	460	*#
92-52-4	Biphenyl	43	U
208-96-8	Acenaphthylene	14	U
83-32-9	Acenaphthene	13	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	11	U
85-01-8	Phenanthrene	19	B
120-12-7	Anthracene	11	U
260-94-6	Acridine	29	U
86-74-8	Carbazole	19	U
206-44-0	Fluoranthene	14	U
129-00-0	Pyrene	12	J *
56-55-3	Benzo(A)Anthracene	25	U
218-01-9	Chrysene	28	U
205-99-2	Benzo(B)Fluoranthene	24	U
207-08-9	Benzo(K)Fluoranthene	23	U
192-97-2	Benzo(E)Pyrene	19	U
50-32-8	Benzo(A)Pyrene	23	U
198-55-0	Perylene	25	U
193-39-5	Indeno(1,2,3-CD)Pyrene	21	U
53-70-3	Dibenz(A,H)Anthracene	16	U
191-24-2	Benzo(G,H,I)Perylene	28	U

= Compound is saturated

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-04DL

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-04DL

Sample wt/vol: 3990 (g/ml) ML Lab File ID: C4802

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 12.5

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	360	J
496-11-7	2,3-Dihydroindene	5500	B
95-13-6	1H-Indene	800	*
91-20-3	Naphthalene	3100	B
4565-32-6	Benzo(B)Thiophene	110	*
91-22-5	Quinoline	140	U
120-72-9	1H-Indole	250	U
91-57-6	2-Methylnaphthalene	1100	B
90-12-0	1-Methylnaphthalene	600	*
92-52-4	Biphenyl	430	U
208-96-8	Acenaphthylene	140	U
83-32-9	Acenaphthene	130	U
132-64-9	Dibenzofuran	100	U
86-73-7	Fluorene	100	U
132-65-0	Dibenzothiophene	110	U
85-01-8	Phenanthrene	130	U
120-12-7	Anthracene	110	U
260-94-6	Acridine	290	U
86-74-8	Carbazole	190	U
206-44-0	Fluoranthene	140	U
129-00-0	Pyrene	140	U
56-55-3	Benzo(A)Anthracene	250	U
218-01-9	Chrysene	280	U
205-99-2	Benzo(B)Fluoranthene	250	U
207-08-9	Benzo(K)Fluoranthene	230	U
192-97-2	Benzo(E)Pyrene	190	U
50-32-8	Benzo(A)Pyrene	230	U
198-55-0	Perylene	250	U
193-39-5	Indeno(1,2,3-CD)Pyrene	210	U
53-70-3	Dibenz(A,H)Anthracene	160	U
191-24-2	Benzo(G,H,I)Perylene	280	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-05

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-05

Sample wt/vol: 4180 (g/ml) ML Lab File ID: C4760

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	5.6	B*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.0	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	*
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.2	B*
90-12-0	1-Methylnaphthalene	1.5	*
92-52-4	Biphenyl	1.0	J *
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.8	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.1	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	1.7	J
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	18	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-06

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-06

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4761

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.121

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	7.3	B*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	3.1	JB*
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.1	J
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	2.4	B*
90-12-0	1-Methylnaphthalene	1.1	J *
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.1	J *
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.6	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.6	
129-00-0	Pyrene	2.1	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.6	J *

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-08

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-08

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4773

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	5.3	B*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.6	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	1.8	B*
90-12-0	1-Methylnaphthalene	1.5	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.7	B*
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.4	J *

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CASE NARRATIVE

FOR

City of St. Louis Park

November 06, 1991

Enseco - RMAL Project Number 016769

Introduction

Ten aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on August 30, 1991. The samples were logged in under RMAL project number 016769. Sample PCJ-SLP10FBD-082991 (RMA # 016769-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for medium level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 16769-01, 05, 06, 07, 08 and the associated method blank show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

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Samples 016769-02, 05, 06, 08, 01MS and 01MSD show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy
Tracy Conroy
Data Control Supervisor

Date: 11/06/91

Approved by: Debbie Fazio
Debbie Fazio
Program Administrator

Date: 11/06/91

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SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016769-0001-SA	PCJ-SLP10-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0001-MS	PCJ-SLP10MS-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0001-SD	PCJ-SLP10MSD-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0002-SA	PCJ-SLP10D-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0003-SA	PCJ-SLP10FB-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0004-SA	PCJ-SLP10FBD-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0005-SA	STPW133082991	AQUEOUS	29 AUG 91	10:00	30 AUG 91
016769-0006-SA	STPW33082991	AQUEOUS	29 AUG 91	11:45	30 AUG 91
016769-0007-SA	STPW24082991	AQUEOUS	29 AUG 91	09:45	30 AUG 91
016769-0008-SA	STP-W412082991	AQUEOUS	29 AUG 91	08:20	30 AUG 91

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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TABLE OF CONTENTS

FOR

CITY OF ST LOUIS PARK

RMAL PROJECT NO: 016769

VOLATILES

QC Summary.....N/A

Sample Data .....N/A

Standards Data.....N/A

Raw QC Data.....N/A

SEMIVOLATILES

QC Summary.....001

Sample Data.....011

Standards Data.....364

Raw QC Data.....768

PESTICIDE/PCB

QC Summary.....N/A

Sample Data.....N/A

Standards Data.....N/A

Raw QC Data.....N/A

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Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	SAMPLE SAFE™ CONDITIONS — PACKED BY: MZR
PROJECT	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY
SAMPLING SITE: SAME	SEAL NUMBER
TEAM LEADER: MZR	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SEAL NUMBER

CONDITION OF CONTENTS

INITIAL CONTENTS TEMP °C

SAMPLING STATUS: ☐ Done ☐ Continuing Until

CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8-29-91		PCU-SLP10-082991 -01	1XL AMBER	6	PPL PAH	
8-29-91		PCU-SLP10D-082991 -02	1XL AMBER	6	PPL PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR

METHOD OF SHIPMENT: FED EXP

AIRBILL NUMBER: 2864993412

RECEIVED FOR LAB: RMAL

SIGNED:

DATE/TIME: 08-30-91 0800

ENSECO PROJECT NUMBER

ENS—1133 White – CLIENT Pink – LAB

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile: 303/431-7171

CHAIN OF CUSTODY

No.

Attn:

Enseco Client: CITY OF ST LOUIS PARK
Project:
Sampling Co.: SAME
Sampling Site: SAME
Team Leader: JZW

SAMPLE SAFE™ CONDITIONS

1. Packed by: JZW Seal #
2. Seal Intact Upon Receipt by Sampling Co.: Yes No
3. Condition of Contents:
4. Sealed for Shipping by:
5. Initial Contents Temp.: °C Seal #
6. Sampling Status: Done Continuing Until
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab: °C
9. Condition of Contents:

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
8-29-91		PCU-SLP10MS-082991 -01MS	1XL AMBER	6	PPL PAH	
8-29-91		PCU-SLP10MSD-082991 -01SD	1XL AMBER	6	PPL PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: JZW
Method of Shipment: FED EXP AIRBILL # 2864993412
Received for Lab: RMAL Signed: Date/Time 08-30-91 0800
Enseco Project No.

White and Pink Copies to Lab Yellow to Sampler

SS-001

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK		SAMPLE SAFE™ CONDITIONS — PACKED BY: MZH	SEAL NUMBER
PROJECT		SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	CONDITION OF CONTENTS
SAMPLING COMPANY: SAME		SEALED FOR SHIPPING BY	INITIAL CONTENTS TEMP °C
SAMPLING SITE: SAME		SEAL NUMBER	SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZH		SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8-29-91		PCU-SLP10FB-082991 03	IXL AMBER	6	PPT PAH	
8-29-91		PCU-SLP10FBD-082991 04	IXL AMBER	6	PPT PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZH		
METHOD OF SHIPMENT: FED Exp		AIRBILL NUMBER: 2864993912
RECEIVED FOR LAB: RMAL	SIGNED: [signature]	DATE/TIME: 08-30-91 0800
ENSECO PROJECT NUMBER		

ENS—1133 White: CLIENT Pink: LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT

PROJECT: CITY OF ST LOUIS PARK

SAMPLING COMPANY: ENSR CONSULTING & ENGINEERING

SAMPLING SITE: S.L.P.

TEAM LEADER: MA

SAMPLE SAFE™ CONDITIONS

PACKED BY

SEAL NUMBER

SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY

CONDITION OF CONTENTS

SEALED FOR SHIPPING BY: [signature]

INITIAL CONTENTS TEMP: 4°C

SEAL NUMBER: 1

SAMPLING STATUS: ☐ Done ☐ Continuing Until

SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

CONTENTS TEMPERATURE UPON RECEIPT BY LAB

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8/9/91	1000	STP W133082991 .05	WATER		PPT & PAH	
	1145	STP W33082991 .04				
	945	STP W24082991 .07				

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[signature]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: [signature]

METHOD OF SHIPMENT: FED EX

AIRBILL NUMBER: ?

RECEIVED FOR LAB: RMAL

SIGNED: [signature]

DATE/TIME: 08-30-91 0800

ENSECO PROJECT NUMBER

White Pink LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

Rmal #16769

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-01

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4779

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	1500	
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	520	U
4565-32-6	Benzo(B)Thiophene	320	
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	91	J
92-52-4	Biphenyl	280	J
208-96-8	Acenaphthylene	230	
83-32-9	Acenaphthene	100	U
132-64-9	Dibenzofuran	250	
86-73-7	Fluorene	780	
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	120	
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	190	
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-02

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4782

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	1200	
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	520	U
4565-32-6	Benzo(B)Thiophene	280	
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	130	U
92-52-4	Biphenyl	290	J
208-96-8	Acenaphthylene	140	
83-32-9	Acenaphthene	690	
132-64-9	Dibenzofuran	290	
86-73-7	Fluorene	860	
132-65-0	Dibenzothiophene	80	J *
85-01-8	Phenanthrene	130	
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	220	
129-00-0	Pyrene	190	
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-03

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4783

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	110	U
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	520	U
4565-32-6	Benzo(B)Thiophene	72	U
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	130	U
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	100	U
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-01MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-01MS

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4780

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	1300	
95-13-6	1H-Indene	3500	SC
91-20-3	Naphthalene	3200	SC
4565-32-6	Benzo(B)Thiophene	280	
91-22-5	Quinoline	4600	*SC
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	4300	SC
90-12-0	1-Methylnaphthalene	120	J *
92-52-4	Biphenyl	310	J
208-96-8	Acenaphthylene	440	
83-32-9	Acenaphthene	1200	
132-64-9	Dibenzofuran	310	
86-73-7	Fluorene	5500	SC
132-65-0	Dibenzothiophene	84	J
85-01-8	Phenanthrene	130	
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	230	
129-00-0	Pyrene	290	
56-55-3	Benzo(A)Anthracene	4600	
218-01-9	Chrysene	3900	SC
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	1700	SC
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-01MSD

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-01MSD

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4781

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	1300	
95-13-6	1H-Indene	2600	SC
91-20-3	Naphthalene	3100	SC
4565-32-6	Benzo(B)Thiophene	290	
91-22-5	Quinoline	3500	*SC
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	4200	SC
90-12-0	1-Methylnaphthalene	110	J *
92-52-4	Biphenyl	310	J
208-96-8	Acenaphthylene	410	
83-32-9	Acenaphthene	1200	
132-64-9	Dibenzofuran	310	
86-73-7	Fluorene	5500	SC
132-65-0	Dibenzothiophene	88	
85-01-8	Phenanthrene	130	
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	230	
129-00-0	Pyrene	280	
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	4100	SC
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	1800	SC
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NAP)	#	S2 (FLU)	#	S3 (CHR)	#
1	16767-01	118	*	114		94	
2	16767-01MS	104		124		116	
3	16767-01MSD	100		118		115	
4	16767-02	103		122		98	
5	16767-03	103		123		131	
6	16767-05	110	*	117		76	
7	16767-06	112	*	121		87	
8	16767-07	113	*	120		80	
9	16767-08	118	*	116		84	
10	BLK01	96		118		128	*

		QC LIMITS
S1 (NAP)	= D8-NAPHTHALENE	(14-108)
S2 (FLU)	= D10-FLUORENE	(41-162)
S3 (CHR)	= D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 16769-01 LEVEL: MED

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	4000	36.4	3450	85
Naphthalene	4000	ND	3150	79
Quinoline	4000	ND	4620	116
2-Methylnaphthalene	4000	ND	4340	108
Fluorene	4000	850	5500	116
Chrysene	4000	ND	3950	99
Benzo(E)Pyrene	4000	ND	1750	44

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	4000	2630	65	27
Naphthalene	4000	3090	77	3
Quinoline	4000	3490	87	29
2-Methylnaphthalene	4000	4180	104	4
Fluorene	4000	5460	115	1
Chrysene	4000	4070	102	3
Benzo(E)Pyrene	4000	1820	46	4

Comments:

4B
SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Lab File ID: C4767 Lab Sample ID: BL100991

Instrument ID: 4500-C Date Extracted: 09/01/91

Matrix: (soil/water) WATER Date Analyzed: 10/09/91

Level:(low/med) MED Time Analyzed: 0218

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	16769-01	16769-01	C4779	10/09/91
2	16769-01MS	16769-01MS	C4780	10/09/91
3	16769-01MSD	16769-01MSD	C4781	10/09/91
4	16769-02	16769-02	C4782	10/09/91
5	16769-03	16769-03	C4783	10/09/91
6	16769-05	16769-05	C4789	10/10/91
7	16769-06	16769-06	C4790	10/10/91
8	16769-07	16769-07	C4791	10/10/91
9	16769-08	16769-08	C4792	10/10/91

Comments:

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4767

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	110	U
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	520	U
4565-32-6	Benzo(B)Thiophene	72	U
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	130	U
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	100	U
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16769 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4757	10/08/91	1456
BLK01	C4767	10/09/91	0218

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16769 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4770	10/09/91	1125
16769-01	C4779	10/09/91	1901
16769-01MS	C4780	10/09/91	1954
16769-01MSD	C4781	10/09/91	2046
16769-02	C4782	10/09/91	2139
16769-03	C4783	10/09/91	2233

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16769 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4788	10/10/91	1545
16769-05	C4789	10/10/91	1700
16769-06	C4790	10/10/91	1753
16769-07	C4791	10/10/91	1846
16769-08	C4792	10/10/91	1940

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16769 SAS No.: SDG No:

Lab File ID (Standard): C4757 Date Analyzed: 10/08/91

Instrument ID: 4500-C Time Analyzed: 1456

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	276000	370000	342000
UPPER LIMIT	552000	740000	684000
LOWER LIMIT	138000	185000	171000
SAMPLE NO.			
BLK01	515000	720000	488000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16769 SAS No.: SDG No:

Lab File ID (Standard): C4770 Date Analyzed: 10/09/91

Instrument ID: 4500-C Time Analyzed: 1125

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	353000	540000	607000
UPPER LIMIT	706000	1080000	1214000
LOWER LIMIT	176500	270000	304000
SAMPLE NO.			
16769-01	315000	492000	484000
16769-01MS	312000	477000	503000
16769-01MSD	271000	417000	406000
16769-02	203000	316000	313000
16769-03	228000	342000	336000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16769 SAS No.: SDG No:

Lab File ID (Standard): C4788 Date Analyzed: 10/10/91

Instrument ID: 4500-C Time Analyzed: 1545

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	595000	1040000	1410000
UPPER LIMIT	1190000	2080000	2820000
LOWER LIMIT	298000	520000	705000
SAMPLE NO.			
16769-05	617000	1054000	1360000
16769-06	739000	1336000	1606000
16769-07	593000	1010000	1221000
16769-08	546000	952000	1200000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

RAP SECTION 7.3.(E) MONITORING

ANNUAL - 1991

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014812

Introduction

Eleven aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on May 08, 1991. The samples were logged in under RMAL project number 014781. Sample PCJ-SLP16FBD-050791 (RMA # 014812-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, sample 014812-08 required reanalysis at a dilution. Results from both the original and reanalysis are reported. Surrogates could not be measured in the sample due to the dilution performed.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-12-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel S. Holtz Date: 6-21-91
Joel Holtz
Program Administrator

Enseco
A Coming Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014812-0001-SA	PCJ-SLP16-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0001-MS	PCJ-SLP16MS-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0001-SD	PCJ-SLP16MSD-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0002-SA	PCJ-SLP16D-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0003-SA	PCJ-SLP16FB-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0004-SA	PCJ-SLP16FBD-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0005-SA	PCJ-SLP5-050791	AQUEOUS	07 MAY 91		08 MAY 91
014812-0006-SA	PCJ-W401-050791	AQUEOUS	07 MAY 91	10:01	08 MAY 91
014812-0007-SA	PCJ-H605-050791	AQUEOUS	07 MAY 91	10:35	08 MAY 91
014812-0008-SA	DPV-W434-050791	AQUEOUS	07 MAY 91	12:12	08 MAY 91
014812-0009-SA	PCJ-E2-050791	AQUEOUS	07 MAY 91	08:35	08 MAY 91
014812-0010-SA	PCJ-E13-050791	AQUEOUS	07 MAY 91	09:30	08 MAY 91
014812-0011-SA	PCJ-E15-050791	AQUEOUS	07 MAY 91	09:05	08 MAY 91

Rocky Mountain
Analytical Laboratory

Enseco
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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-05

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-05

Sample wt/vol: 4240 (g/ml) ML Lab File ID: X3110

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.118

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	2.3	
95-13-6	1H-Indene	0.8	U
91-20-3	Naphthalene	4.6	J
4565-32-6	Benzo(B)Thiophene	0.8	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	4.8	
90-12-0	1-Methylnaphthalene	2.6	*
92-52-4	Biphenyl	1.4	J
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.6	
132-64-9	Dibenzofuran	1.4	*
86-73-7	Fluorene	3.6	
132-65-0	Dibenzothiophene	2.1	
85-01-8	Phenanthrene	4.7	
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	1.1	J *
86-74-8	Carbazole	1.0	J *
206-44-0	Fluoranthene	4.6	
129-00-0	Pyrene	6.1	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	1.1	J
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.6	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-06

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-06

Sample wt/vol: 4130 (g/ml) ML Lab File ID: X3111

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.121

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	1.2	J
95-13-6	1H-Indene	3.1	
91-20-3	Naphthalene	8.3	
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	6.2	
90-12-0	1-Methylnaphthalene	3.1	*
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.0	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.2	J
129-00-0	Pyrene	1.5	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-07

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-07

Sample wt/vol: 4060 (g/ml) ML Lab File ID: X3112

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	1.6	
91-20-3	Naphthalene	3.1	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	3.8	
90-12-0	1-Methylnaphthalene	1.9	*
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.5	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.1	J
129-00-0	Pyrene	1.5	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14812-11

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14812 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14812-11

Sample wt/vol: 3970 (g/ml) ML Lab File ID: X3116

Level: (low/med) LOW Date Received: 05/08/91

% Moisture: not dec. dec. Date Extracted: 05/11/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.126

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.4	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	2.7	
90-12-0	1-Methylnaphthalene	1.5	J *
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.9	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.5	
129-00-0	Pyrene	1.8	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014886

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on May 09, 1991. The samples were logged in under RMAL project number 014886. Sample PCJ-SLP14FBD-050891 (RMA # 014886-12) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, sample 014886-05 was analyzed and reported at a dilution. Surrogates could not be measured in the sample due to the dilution performed.

The surrogate D10-Fluorene is reported below quality control limits in the method blank extracted May 12, 1991 The blank was realiquoted and reanalyzed showing similar results. All associated samples show surrogates within limits therefore, the data appears to have not been adversely affected. Corrective action consisting of reextracting the samples could not be taken due to limited sample and extract.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Susan Dalla for Date: 6-21-91
Joel Holtz
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014886-0001-SA	STP-W410-050891	AQUEOUS	08 MAY 91	13:45	09 MAY 91
014886-0002-SA	PCJ-W29-050891	AQUEOUS	08 MAY 91	13:30	09 MAY 91
014886-0003-SA	PCJ-W402-050891	AQUEOUS	08 MAY 91	11:50	09 MAY 91
014886-0004-SA	PCJ-W70-050891	AQUEOUS	08 MAY 91	16:27	09 MAY 91
014886-0005-SA	PCJ-W403-050891	AQUEOUS	08 MAY 91	14:10	09 MAY 91
014886-0006-SA	PCJ-W40-050891	AQUEOUS	08 MAY 91	10:55	09 MAY 91
014886-0007-SA	PCJ-W406-050891	AQUEOUS	08 MAY 91	10:35	09 MAY 91
014886-0008-SA	PCJ-MTK6-050891	AQUEOUS	08 MAY 91	09:10	09 MAY 91
014886-0009-SA	PCJ-SLP14-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0010-SA	PCJ-SLP14D-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0011-SA	PCJ-SLP14FB-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0012-SA	PCJ-SLP14FBD-050891	AQUEOUS	08 MAY 91		09 MAY 91

Rocky Mountain
Analytical Laboratory

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-02

Sample wt/vol: 4080 (g/ml) ML Lab File ID: X3124

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	220	
95-13-6	1H-Indene	3.7	
91-20-3	Naphthalene	3.6	J *
4565-32-6	Benzo(B)Thiophene	3.8	*
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	3.9	
90-12-0	1-Methylnaphthalene	2.5	*
92-52-4	Biphenyl	2.8	J *
208-96-8	Acenaphthylene	5.7	
83-32-9	Acenaphthene	44	
132-64-9	Dibenzofuran	1.3	*
86-73-7	Fluorene	24	
132-65-0	Dibenzothiophene	4.6	
85-01-8	Phenanthrene	6.0	
120-12-7	Anthracene	4.3	
260-94-6	Acridine	6.5	
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	35	
129-00-0	Pyrene	33	
56-55-3	Benzo(A)Anthracene	2.7	J *
218-01-9	Chrysene	2.1	J
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	1.1	J *

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-04

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-04

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3126

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	20	
95-13-6	1H-Indene	1.6	
91-20-3	Naphthalene	20	
4565-32-6	Benzo(B)Thiophene	1.2	*
91-22-5	Quinoline	2.6	*
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	39	
90-12-0	1-Methylnaphthalene	18	
92-52-4	Biphenyl	2.9	J
208-96-8	Acenaphthylene	33	
83-32-9	Acenaphthene	320	
132-64-9	Dibenzofuran	2.5	*
86-73-7	Fluorene	23	
132-65-0	Dibenzothiophene	26	
85-01-8	Phenanthrene	47	
120-12-7	Anthracene	9.2	
260-94-6	Acridine	3.2	
86-74-8	Carbazole	2.0	*
206-44-0	Fluoranthene	9.1	
129-00-0	Pyrene	91	
56-55-3	Benzo(A)Anthracene	2.2	J
218-01-9	Chrysene	1.8	J *
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.0	J *

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-06

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-06

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3128

Level: (low/med) LOW Date Received: 05/19/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	1.0	J
496-11-7	2,3-Dihydroindene	210	
95-13-6	1H-Indene	8.9	
91-20-3	Naphthalene	4.0	J *
4565-32-6	Benzo(B)Thiophene	8.0	*
91-22-5	Quinoline	1.4	*
120-72-9	1H-Indole	4.9	*
91-57-6	2-Methylnaphthalene	4.0	*
90-12-0	1-Methylnaphthalene	3.3	*
92-52-4	Biphenyl	1.6	J *
208-96-8	Acenaphthylene	4.8	*
83-32-9	Acenaphthene	140	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	
132-65-0	Dibenzothiophene	4.2	*
85-01-8	Phenanthrene	2.9	*
120-12-7	Anthracene	5.4	*
260-94-6	Acridine	35	
86-74-8	Carbazole	2.9	*
206-44-0	Fluoranthene	1.5	
129-00-0	Pyrene	31	
56-55-3	Benzo(A)Anthracene	1.6	J
218-01-9	Chrysene	1.0	J *
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.0	J *

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-08

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-08

Sample wt/vol: 3950 (g/ml) ML Lab File ID: X3130

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.127

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.2	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.2	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	2.7	
90-12-0	1-Methylnaphthalene	1.5	J *
92-52-4	Biphenyl	4.4	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.8	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	2.6	
129-00-0	Pyrene	4.2	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

Enseco
A Corning Company

CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016727

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on August 29, 1991. The samples were logged in under RMAL project number 016727. Sample STP-SLP3FBD-082891 (RMA # 016727-10) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 16727-03 and 04 were originally analyzed within the holding time at a dilution due to elevated target compounds. Several target compounds were saturated in this original analysis, therefore the samples were reanalyzed outside of the holding time at an additional dilution. Data for both sets of analyses are reported.

Samples 16727-11 and 12 were originally analyzed within the holding time at a dilution due to target compounds present in excess of calibration range. In the original analysis, results for sample 16727-12 showed 2,3-dihydroindene above linear range. Sample was further diluted and analyzed outside of the analysis holding time. Both sets of data are reported.

Surrogates could not be measured in samples 16727-03, 03DL, 04, 04DL, 11, 12 and 12DL due to the dilutions performed.

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Samples 16727-01, 02, 06 and 09 show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Samples 16727-09 and the associated method blank showed low or no recoveries on the D12-benzo(a)pyrene internal standard. Since this internal standard responded very poorly in the blank and not at all in sample -09 an alternate internal standard (D10-phenanthrene) was used to calculate the compounds normally associated with D12-benzo(a)pyrene.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in the method blank extracted 08-31 (BLK01) and in the method blank extracted 09-01 (D8-napthalene only) indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples with the exception of 16727-12DL show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy — Date: 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio — Date: 10/26/91
Debbie Fazio
Program Administrator

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SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016727-0001-SA	STP-SLP3-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0002-SA	STP-SLP3D-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0003-SA	PCJW402082891	AQUEOUS	28 AUG 91	13:55	29 AUG 91
016727-0004-SA	PCJW403082891	AQUEOUS	28 AUG 91	13:25	29 AUG 91
016727-0005-SA	PCJW406082891	AQUEOUS	28 AUG 91	13:00	29 AUG 91
016727-0006-SA	PCJE2082891	AQUEOUS	28 AUG 91	08:15	29 AUG 91
016727-0007-SA	PCJE3082891	AQUEOUS	28 AUG 91	08:30	29 AUG 91
016727-0008-SA	PCJE13082891	AQUEOUS	28 AUG 91	08:55	29 AUG 91
016727-0009-SA	STP-SLP3FB-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0010-SA	STP-SLP3FBD-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0011-SA	IGV-W105-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0012-SA	STP-W410-082891	AQUEOUS	28 AUG 91		29 AUG 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-07

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-07

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4772

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	3.7	B*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.9	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	2.2	B*
90-12-0	1-Methylnaphthalene	1.0	J *
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	2.2	B
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	U
129-00-0	Pyrene	1.3	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

PRAIRIE DU CHIEN - JORDAN AQUIFER MONITORING

SLP8 - 03/27/91

SLP6 - 04/30/91

SLP6 - 07/18/91

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 2, 1991

Enseco - RMAL Project Number 014223

Introduction

Thirteen aqueous samples (including MS and MSD) were received at Enseco - Rocky Mountain Analytical Laboratory on March 28, 1991. The samples were logged in under RMAL project number 014223. Sample PCJ-SLP6FBD-032791 (RMAL # 014223-05) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low and medium level part-per-trillion (PPT) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

All the samples and the associated method blank BLK01 show target compounds that do not meet secondary ion confirmation criteria. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
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Arvada, Colorado 80002
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This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 05-02-91
Tracy Conroy
Data Control Supervisor

Approved by: for Date: 2 MAY 1991
Joel Holtz
Program Administrator

Rocky Mountain
Analytical Laboratory

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
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A Coming Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014223-0001-SA	PCJ-SLP7-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0002-SA	PCJ-SLP8-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0003-SA	MSH-SLP13-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0004-FB	PCJ-SLP6FB-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0005-FD	PCJ-SLP6FBD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SA	PCJ-SLP6-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-MS	PCJ-SLP6MS-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SD	PCJ-SLP6MSD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0007-SA	PCJ-SLP6D-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0008-SA	IGV-WI05-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0009-SA	MSH-SLP11-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0010-SA	MSH-SLP17-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0011-SA	MSH-SLP12-032791	AQUEOUS	27 MAR 91		28 MAR 91

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14223-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-02

Sample wt/vol: 4050 (g/ml) ML Lab File ID: X2969

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	2.0	
95-13-6	1H-Indene	1.1	*
91-20-3	Naphthalene	4.4	JB*
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	3.2	B
90-12-0	1-Methylnaphthalene	1.4	JB*
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.4	*
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.5	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014773

Introduction

Twelve aqueous samples (including MS and MSD) were received at Enseco Rocky Mountain Analytical Laboratory on May 1, 1991. The samples were logged in under RMAL project number 014773. Sample PCJ-SLP6FB-043091 (RMAL# 014773-03) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1989 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 014773-06 and 09 were analyzed and reported at dilutions due to interference with the internal standards during the original analysis. The reanalysis data are reported. Surrogates could not be measured in these samples due to the dilutions performed.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the asterisk (*) on the data sheets (Form I) as per the 1989 QAPP.

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This data package is in compliance with the terms and conditions of the 1989 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel S. Holtz **Date:** 6-21-91
Joel Holtz
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014773-0001-SA	PCJ-SLP6-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0001-MS	PCJ-SLP6MS-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0001-SD	PCJ-SLP6MSD-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0002-SA	PCJ-SLP6D-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0003-SA	PCJ-SLP6FB-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0004-SA	PCJ-SLP7-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0005-SA	W122	AQUEOUS	30 APR 91	12:25	01 MAY 91
014773-0006-SA	W409	AQUEOUS	30 APR 91	10:25	01 MAY 91
014773-0007-SA	W408	AQUEOUS	30 APR 91	09:15	01 MAY 91
014773-0008-SA	P116	AQUEOUS	30 APR 91	13:40	01 MAY 91
014773-0009-SA	W411	AQUEOUS	30 APR 91	14:20	01 MAY 91
014773-0010-SA	W129	AQUEOUS	30 APR 91	15:15	01 MAY 91

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TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014773

PPT PAH

QC Summary.....0001

Sample Data.....0015

Standards Data.....0512

Raw QC Data.....1055

Rocky Mountain
Analytical Laboratory

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	SAMPLE SAFE™ CONDITIONS — PACKED BY: MZR; SEAL NUMBER:
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY: ; CONDITION OF CONTENTS:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZR; INITIAL CONTENTS TEMP: °C
SAMPLING SITE: SAME	SEAL NUMBER: ; SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZR	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No; CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4-30-91		PCU-SLP6-043091 01	IXL AMBER	6	PPT PAH	
4-30-91		PCU-SLP6D-043091 02	IXL AMBER	6	PPT PAH	
4-30-91		PCU-SLP6FB-043091 03	IXL AMBER	6	PPT PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR

METHOD OF SHIPMENT: FED EXP.

AIRBILL NUMBER: 2865076292

RECEIVED FOR LAB: ENSECO - RMAL

SIGNED: Robert M. Pitz

DATE/TIME: 0900hrs, 01 MAY 91

ENSECO PROJECT NUMBER: 14773 (cooler temp: 15.9°C)

ENS—1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	PACKED BY: MZB
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZB
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: MZB	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER	CONDITION OF CONTENTS
INITIAL CONTENTS TEMP °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4-30-91		PCU-SLPG MS-043091 01MS	1XLAMBER	6	PPT PAH	
4-30-91		PCU-SLPG MSD-043091 01MSD	1XLAMBER	6	PPT PAH	
4-30-91		PCU-SLP 7-043091 04	1XLAMBER	6	PPT PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZB		
METHOD OF SHIPMENT: FED EXP.		AIRBILL NUMBER: 2865076292
RECEIVED FOR LAB: ENSECO-RMAL	SIGNED: Robert M. Rice	DATE/TIME: 0900 hrs, 01 May 91
ENSECO PROJECT NUMBER: 14773		(cooler temp: 8.0°C)

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of St. Louis Park	PACKED BY: M. MacDonald
PROJECT: SLP	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: ENSR	SEALED FOR SHIPPING BY: M. MAC DONALD
SAMPLING SITE: SLP	SEAL NUMBER: #1
TEAM LEADER: M. MacDonald	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:	CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4/30/91	1225	W122 05	WATER	6	PAHs (ppt)	
↓	1025	W409 06	↓	6	↓	
↓	0915	W408 07	↓	6	↓	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[signature]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY:		
METHOD OF SHIPMENT:		AIRBILL NUMBER:
RECEIVED FOR LAB: ENSECO — RMAL	SIGNED: Robert M. [illegible]	DATE/TIME: 0900hrs, 01 MAY 91
ENSECO PROJECT NUMBER: 14773		(cooler temp: 10.1°C)

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of St. Louis Park	PACKED BY:
PROJECT: SLP	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: ENSR	SEALED FOR SHIPPING BY: M. MACDONALD
SAMPLING SITE: SLP	SEAL NUMBER: #2
TEAM LEADER: M. MACDONALD	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:	CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4/30/91	1340	P116 08	WATER	6	PAHs (ppt)	
↓	1420	W411 09	↓	↓	↓	
↓	1515	W129 10	↓	↓	↓	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
Diane J. [illegible]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY:		
METHOD OF SHIPMENT:		AIRBILL NUMBER:
RECEIVED FOR LAB: ENSECO RMAL	SIGNED: Robert M. [illegible]	DATE/TIME: 0900hrs, 01 MAY 91
ENSECO PROJECT NUMBER: 14773 (cooler temp: 13.5°C)		

ENS-1133

White - CLIENT Pink - LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

Spill # 14773

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-01

Sample wt/vol: 4150 (g/ml) ML Lab File ID: X3079

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	42	
95-13-6	1H-Indene	5.2	
91-20-3	Naphthalene	2.6	JB
4565-32-6	Benzo(B)Thiophene	2.8	*
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	19	*
91-57-6	2-Methylnaphthalene	2.4	B
90-12-0	1-Methylnaphthalene	1.4	J
92-52-4	Biphenyl	2.7	J *
208-96-8	Acenaphthylene	2.1	
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.0	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.1	J
129-00-0	Pyrene	1.5	B
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-02

Sample wt/vol: 4115 (g/ml) ML Lab File ID: X3082

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.121

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	46	
95-13-6	1H-Indene	5.6	
91-20-3	Naphthalene	44	B
4565-32-6	Benzo(B)Thiophene	3.2	
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	20	
91-57-6	2-Methylnaphthalene	89	B
90-12-0	1-Methylnaphthalene	50	
92-52-4	Biphenyl	10	
208-96-8	Acenaphthylene	2.5	
83-32-9	Acenaphthene	12	
132-64-9	Dibenzofuran	2.3	*
86-73-7	Fluorene	2.1	
132-65-0	Dibenzothiophene	1.1	*
85-01-8	Phenanthrene	2.8	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.0	J
129-00-0	Pyrene	1.1	JB
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-03

Sample wt/vol: 4115 (g/ml) ML Lab File ID: X3065

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.121

RECEIVED JUL 23 1991 CITY OF ST. LOUIS PARK

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	2.4	
95-13-6	1H-Indene	1.9	
91-20-3	Naphthalene	7.1	B
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	6.0	B*
90-12-0	1-Methylnaphthalene	3.4	
92-52-4	Biphenyl	1.1	J *
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.0	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.9	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-01MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-01MS

Sample wt/vol: 3950 (g/ml) ML Lab File ID: X3080

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.127

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.2	U	
496-11-7	2,3-Dihydroindene	41		
95-13-6	1H-Indene	13		SC
91-20-3	Naphthalene	8.6		SC
4565-32-6	Benzo(B)Thiophene	2.7	*	
91-22-5	Quinoline	9.5		SC
120-72-9	1H-Indole	16		
91-57-6	2-Methylnaphthalene	11		SC
90-12-0	1-Methylnaphthalene	1.2	J	
92-52-4	Biphenyl	2.5	J *	
208-96-8	Acenaphthylene	2.0		
83-32-9	Acenaphthene	12		
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	8.5		SC
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	1.8		
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.9	U	
86-74-8	Carbazole	1.9	U	
206-44-0	Fluoranthene	1.0	J	
129-00-0	Pyrene	1.5		
56-55-3	Benzo(A)Anthracene	2.5	U	
218-01-9	Chrysene	3.4		SC
205-99-2	Benzo(B)Fluoranthene	2.5	U	
207-08-9	Benzo(K)Fluoranthene	2.3	U	SC
192-97-2	Benzo(E)Pyrene	1.9	U	
50-32-8	Benzo(A)Pyrene	2.3	U	
198-55-0	Perylene	2.5	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U	
53-70-3	Dibenz(A,H)Anthracene	1.6	U	
191-24-2	Benzo(G,H,I)Perylene	2.8	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-01MSD

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-1MSD

Sample wt/vol: 3980 (g/ml) ML Lab File ID: X3081

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.126

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	40	
95-13-6	1H-Indene	13	SC
91-20-3	Naphthalene	9.4	SC
4565-32-6	Benzo(B)Thiophene	2.6	
91-22-5	Quinoline	9.1	SC
120-72-9	1H-Indole	14	*
91-57-6	2-Methylnaphthalene	12	SC
90-12-0	1-Methylnaphthalene	2.2	
92-52-4	Biphenyl	2.7	
208-96-8	Acenaphthylene	2.0	*
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	8.6	SC
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.5	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	2.0	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	3.6	SC
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U SC
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	1.3	J *
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	14773-01	80	86	36
2	14773-01MS	80	89	37
3	14773-01MSD	77	82	36
4	14773-02	77	82	42
5	14773-03	74	82	74
6	14773-04	76	81	41
7	14773-05	52	74	38
8	14773-06	D	D	D
9	14773-07	71	84	37
10	14773-08	74	84	23
11	14773-09	D	D	D
12	14773-10	71	88	32
13	BLK01	90	104	75

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 14773-01 LEVEL: LOW

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	10.2	5.20	13.1	77
Naphthalene	10.2	2.56	8.62	59
Quinoline	10.2	0.901	9.51	84
2-Methylnaphthalene	10.2	2.38	10.6	81
Fluorene	10.2	0.466	8.48	79
Chrysene	10.2	ND	3.37	33
Benzo(E)Pyrene	10.2	ND	0.818	8

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	10.1	12.51	72	7
Naphthalene	10.1	9.42	68	14
Quinoline	10.1	9.13	81	4
2-Methylnaphthalene	10.1	12.2	97	18
Fluorene	10.1	8.56	80	1
Chrysene	10.1	3.62	36	9
Benzo(E)Pyrene	10.1	0.874	9	12

Comments:

4B
SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Lab File ID: X3039 Lab Sample ID: BL050491

Instrument ID: 4500-X Date Extracted: 05/04/91

Matrix: (soil/water) WATER Date Analyzed: 05/31/91

Level:(low/med) LOW Time Analyzed: 0753

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14773-01	14773-01	X3079	06/04/91
2	14773-01MS	14773-01MS	X3080	06/04/91
3	14773-01MSD	14773-01MSD	X3081	06/04/91
4	14773-02	14773-02	X3082	06/04/91
5	14773-03	14773-03	X3065	06/04/91
6	14773-04	14773-04	X3066	06/04/91
7	14773-05	14773-05	X3067	06/04/91
8	14773-06	14773-06	X3096	06/05/91
9	14773-07	14773-07	X3092	06/05/91
11	14773-08	14773-08	X3093	06/05/91
12	14773-09	14773-09	X3120	06/11/91
13	14773-10	14773-10	X3095	06/05/91

Comments:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3039

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	1.7	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.8	
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.0	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.2	J
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14773 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3029	05/30/91	2300
BLK01	X3039	05/31/91	0753

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14773 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3054	06/03/91	1515
14773-04	X3066	06/04/91	0133
14773-05	X3067	06/04/91	0225

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14773 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3054	06/03/91	1515
14773-03	X3065	06/04/91	0040
14773-04	X3066	06/04/91	0133
14773-05	X3067	06/04/91	0225

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14773 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3088	06/05/91	1534
14773-07	X3092	06/05/91	1953
14773-08	X3093	06/05/91	2058
14773-10	X3095	06/05/91	2240
14773-06	X3096	06/05/91	2331

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14773 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3119	06/11/91	1014
14773-09	X3120	06/11/91	1125

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14773

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= X2941 RRF 40= X2940
RRF 240= X2942 RRF 1200= X2943 RRF 4800= X2944

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14773

Instrument ID: 4500-X Calibration Date(s): 05/30/91 Time: 2300

Lab ID: X3029 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.144	-24.3
2,3-Dihydroindene	0.775	0.987	-27.4
1H-Indene	0.776	0.956	-23.2
Naphthalene	1.740	2.108	-21.1
Benzo(B)Thiophene	1.300	1.456	-12.0
Quinoline	0.827	0.937	-13.3
1H-Indole	0.928	0.974	-5.0
2-Methylnaphthalene	0.756	0.827	-9.4
1-Methylnaphthalene	0.810	0.911	-12.5
Biphenyl	1.183	1.273	-7.6
Acenaphthylene	1.534	1.574	-2.6
Acenaphthene	1.057	1.052	0.5
Dibenzofuran	1.376	1.418	-3.1
Fluorene	1.150	1.139	1.0
Dibenzothiophene	0.825	0.781	5.3
Phenanthrene	0.886	0.881	0.6
Anthracene	0.833	0.832	0.1
Acridine	0.534	0.491	8.1
Carbazole	0.701	0.732	-4.4
Fluoranthene	1.006	0.928	7.8
Pyrene	1.123	1.025	8.7
Benzo(A)Anthracene	1.155	1.222	-5.8
Chrysene	1.307	1.287	1.5
Benzo(B)Fluoranthene	1.047	1.159	-10.7
Benzo(K)Fluoranthene	1.423	1.147	19.4
Benzo(E)Pyrene	1.063	1.069	-0.6
Benzo(A)Pyrene	1.020	1.026	-0.6
Perylene	0.715	0.828	-15.8
Indeno(1,2,3-CD)Pyrene	1.196	1.011	15.5
Dibenz(A,H)Anthracene	1.039	0.881	15.2
Benzo(G,H,I)Perylene	1.073	0.953	11.2
D8-Naphthalene	1.578	1.770	-12.2
D10-Flourene	0.936	0.911	2.7
D12-Chrysene	1.143	1.272	-11.3

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14773

Instrument ID: 4500-X Calibration Date(s): 06/03/91 Time: 1515

Lab ID: X3054 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.058	-15.0
2,3-Dihydroindene	0.775	0.932	-20.3
1H-Indene	0.776	0.883	-13.8
Naphthalene	1.740	1.929	-10.9
Benzo(B)Thiophene	1.300	1.359	-4.5
Quinoline	0.827	0.895	-8.2
1H-Indole	0.928	0.877	5.5
2-Methylnaphthalene	0.756	0.815	-7.8
1-Methylnaphthalene	0.810	0.886	-9.4
Biphenyl	1.183	1.261	-6.6
Acenaphthylene	1.534	1.580	-3.0
Acenaphthene	1.057	1.085	-2.6
Dibenzofuran	1.376	1.493	-8.5
Fluorene	1.150	1.228	-6.8
Dibenzothiophene	0.825	0.927	-12.4
Phenanthrene	0.886	0.982	-10.8
Anthracene	0.833	0.891	-7.0
Acridine	0.534	0.530	0.7
Carbazole	0.701	0.786	-12.1
Fluoranthene	1.006	1.059	-5.3
Pyrene	1.123	1.183	-5.3
Benzo(A)Anthracene	1.155	1.231	-6.6
Chrysene	1.307	1.212	7.3
Benzo(B)Fluoranthene	1.047	1.217	-16.2
Benzo(K)Fluoranthene	1.423	1.243	12.6
Benzo(E)Pyrene	1.063	1.059	0.4
Benzo(A)Pyrene	1.020	1.191	-16.8
Perylene	0.715	0.793	-10.9
Indeno(1,2,3-CD)Pyrene	1.196	0.918	23.2
Dibenz(A,H)Anthracene	1.039	0.826	20.5
Benzo(G,H,I)Perylene	1.073	0.901	16.0
D8-Naphthalene	1.578	1.720	-9.0
D10-Flourene	0.936	0.917	2.0
D12-Chrysene	1.143	1.115	2.4

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14773

Instrument ID: 4500-X Calibration Date(s): 06/04/91 Time: 1624

Lab ID: X3074 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.052	-14.3
2,3-Dihydroindene	0.775	0.922	-19.0
1H-Indene	0.776	0.874	-12.6
Naphthalene	1.740	1.886	-8.4
Benzo(B)Thiophene	1.300	1.332	-2.5
Quinoline	0.827	0.793	4.1
1H-Indole	0.928	0.659	29.0
2-Methylnaphthalene	0.756	0.837	-10.7
1-Methylnaphthalene	0.810	0.926	-14.3
Biphenyl	1.183	1.194	-0.9
Acenaphthylene	1.534	1.600	-4.3
Acenaphthene	1.057	1.042	1.4
Dibenzofuran	1.376	1.373	0.2
Fluorene	1.150	1.150	0.0
Dibenzothiophene	0.825	0.804	2.5
Phenanthrene	0.886	0.875	1.2
Anthracene	0.833	0.810	2.8
Acridine	0.534	0.474	11.2
Carbazole	0.701	0.662	5.6
Fluoranthene	1.006	1.044	-3.8
Pyrene	1.123	1.254	-11.7
Benzo(A)Anthracene	1.155	1.106	4.2
Chrysene	1.307	1.071	18.1
Benzo(B)Fluoranthene	1.047	1.177	-12.4
Benzo(K)Fluoranthene	1.423	1.084	23.8
Benzo(E)Pyrene	1.063	0.932	12.3
Benzo(A)Pyrene	1.020	0.940	7.8
Perylene	0.715	0.736	-2.9
Indeno(1,2,3-CD)Pyrene	1.196	0.940	21.4
Dibenz(A,H)Anthracene	1.039	0.864	16.8
Benzo(G,H,I)Perylene	1.073	0.897	16.4
D8-Naphthalene	1.578	1.768	-12.0
D10-Flourene	0.936	0.942	-0.6
D12-Chrysene	1.143	1.026	10.2

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14773

Instrument ID: 4500-X Calibration Date(s): 06/05/91 Time: 1534

Lab ID: X3088 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.015	-10.3
2,3-Dihydroindene	0.775	0.912	-17.7
1H-Indene	0.776	0.862	-11.1
Naphthalene	1.740	1.845	-6.0
Benzo(B)Thiophene	1.300	1.237	4.8
Quinoline	0.827	0.709	14.3
1H-Indole	0.928	0.696	25.0
2-Methylnaphthalene	0.756	0.750	0.8
1-Methylnaphthalene	0.810	0.842	-4.0
Biphenyl	1.183	1.090	7.9
Acenaphthylene	1.534	1.736	-13.2
Acenaphthene	1.057	1.087	-2.8
Dibenzofuran	1.376	1.372	0.3
Fluorene	1.150	1.159	-0.8
Dibenzothiophene	0.825	0.808	2.1
Phenanthrene	0.886	0.884	0.2
Anthracene	0.833	0.825	1.0
Acridine	0.534	0.468	12.4
Carbazole	0.701	0.635	9.4
Fluoranthene	1.006	1.089	-8.3
Pyrene	1.123	1.265	-12.6
Benzo(A)Anthracene	1.155	1.057	8.5
Chrysene	1.307	1.142	12.6
Benzo(B)Fluoranthene	1.047	1.044	0.3
Benzo(K)Fluoranthene	1.423	1.116	21.6
Benzo(E)Pyrene	1.063	0.999	6.0
Benzo(A)Pyrene	1.020	0.964	5.5
Perylene	0.715	0.752	-5.2
Indeno(1,2,3-CD)Pyrene	1.196	0.867	27.5
Dibenz(A,H)Anthracene	1.039	0.773	25.6
Benzo(G,H,I)Perylene	1.073	0.832	22.5
D8-Naphthalene	1.578	1.660	-5.2
D10-Flourene	0.936	0.906	3.2
D12-Chrysene	1.143	1.073	6.1

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14773

Instrument ID: 4500-X Calibration Date(s): 06/11/91 Time: 1014

Lab ID: X3119 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.030	-12.0
2,3-Dihydroindene	0.775	0.913	-17.8
1H-Indene	0.776	0.874	-12.6
Naphthalene	1.740	1.890	-8.6
Benzo(B)Thiophene	1.300	1.324	-1.8
Quinoline	0.827	0.857	-3.6
1H-Indole	0.928	0.851	8.3
2-Methylnaphthalene	0.756	0.801	-6.0
1-Methylnaphthalene	0.810	0.867	-7.0
Biphenyl	1.183	1.259	-6.4
Acenaphthylene	1.534	1.577	-2.8
Acenaphthene	1.057	1.063	-0.6
Dibenzofuran	1.376	1.443	-4.9
Fluorene	1.150	1.138	1.0
Dibenzothiophene	0.825	0.901	-9.2
Phenanthrene	0.886	0.937	-5.8
Anthracene	0.833	0.798	4.2
Acridine	0.534	0.448	16.1
Carbazole	0.701	0.606	13.6
Fluoranthene	1.006	1.029	-2.3
Pyrene	1.123	1.068	4.9
Benzo(A)Anthracene	1.155	1.268	-9.8
Chrysene	1.307	1.305	0.2
Benzo(B)Fluoranthene	1.047	1.176	-12.3
Benzo(K)Fluoranthene	1.423	1.189	16.4
Benzo(E)Pyrene	1.063	1.086	-2.2
Benzo(A)Pyrene	1.020	0.998	2.2
Perylene	0.715	0.748	-4.6
Indeno(1,2,3-CD)Pyrene	1.196	0.957	20.0
Dibenz(A,H)Anthracene	1.039	0.767	26.2
Benzo(G,H,I)Perylene	1.073	0.971	9.5
D8-Naphthalene	1.578	1.711	-8.4
D10-Flourene	0.936	0.921	1.6
D12-Chrysene	1.143	1.244	-8.8

FORM VII

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14773 SAS No.: SDG No:

Lab File ID (Standard): X3029 Date Analyzed: 05/30/91

Instrument ID: 4500-X Time Analyzed: 2300

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	365000	606000	37200
UPPER LIMIT	730000	1212000	74400
LOWER LIMIT	183000	303000	18600
SAMPLE NO.			
BLK01	342000	541000	356000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14773 SAS No.: SDG No:

Lab File ID (Standard): X3054 Date Analyzed: 06/03/91

Instrument ID: 4500-X Time Analyzed: 1515

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	115000	198000	155000
UPPER LIMIT	230000	396000	310000
LOWER LIMIT	58000	99000	76000
SAMPLE NO.			
14773-03	151000	239000	198000
14773-04	138000	210000	169000
14773-05	179000	260000	231000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14773 SAS No.: SDG No:

Lab File ID (Standard): X3074 Date Analyzed: 06/04/91

Instrument ID: 4500-X Time Analyzed: 1624

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	67800	117000	92200
UPPER LIMIT	136000	234000	184000
LOWER LIMIT	34000	58500	46000
SAMPLE NO.			
14771-01	105000	172000	122000
14771-01MS	101000	166000	131000
14771-01MSD	98000	157000	120000
14771-2	127000	213000	158000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14773 SAS No.: SDG No.:

Lab File ID (Standard): X3088 Date Analyzed: 06/05/91

Instrument ID: 4500-X Time Analyzed: 1534

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	67400	121000	97800
UPPER LIMIT	134000	242000	196000
LOWER LIMIT	34000	60000	49000
SAMPLE NO.			
14773-06	85000	146000	110000
14773-07	131000	200000	171000
14773-08	94000	148000	110000
14773-10	108000	179000	134000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14773 SAS No.: SDG No:

Lab File ID (Standard): X3119 Date Analyzed: 06/11/91

Instrument ID: 4500-M Time Analyzed: 1014

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	94000	159000	103000
UPPER LIMIT	188000	318000	206000
LOWER LIMIT	47000	80000	52000
SAMPLE NO.			
14773-09	118000	202000	131000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

August 19, 1991

Enseco - RMAL Project Number 015889

Introduction

Six aqueous samples (including MS and MSD) were received at Enseco-Rocky Mountain Analytical Laboratory on July 19, 1991. The samples were logged in under RMAL project number 015889. Sample SLP-6FBD-071891 (RMAL# 015889-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Mary Ellen Kelan for **Date:** 8/19/91
Tracy Conroy
Data Control Supervisor

Approved by: Joel E. Holtz **Date:** 8-19-91
Joel E. Holtz
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
015889-0001-SA	SLP-6-071891	AQUEOUS	18 JUL 91		19 JUL 91
015889-0001-MS	SLP-6MS-071891	AQUEOUS	18 JUL 91		19 JUL 91
015889-0001-SD	SLP-6MSD-071891	AQUEOUS	18 JUL 91		19 JUL 91
015889-0002-SA	SLP-6D-071891	AQUEOUS	18 JUL 91		19 JUL 91
015889-0003-SA	SLP-6FB-071891	AQUEOUS	18 JUL 91		19 JUL 91
015889-0004-SA	SLP-6FBD-071891	AQUEOUS	18 JUL 91		19 JUL 91

Enseco
A Corning Company

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 015889

PPT-PAH

QC Summary.....0001

Sample Data.....0007

Standards Data.....0173

Raw QC Data.....0501

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile: 303/431-7171

CHAIN OF CUSTODY

No.

Attn:

Enseco Client: CITY OF ST LOUIS PARK
Project:
Sampling Co.: SAME
Sampling Site: SAME
Team Leader: MAH

SAMPLE SAFE™ CONDITIONS

1. Packed by: MAH Seal #
2. Seal Intact Upon Receipt by Sampling Co.: Yes No
3. Condition of Contents:
4. Sealed for Shipping by: MAH
5. Initial Contents Temp.: °C Seal #
6. Sampling Status: Done Continuing Until
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab: °C
9. Condition of Contents:

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
7-18-91		SLP-6 -071891 01	1XL AMBER	6	PPL PAH	LOW LEVEL PPL
7-18-91		SLP-6D-071891 02	1XL AMBER	6	PPL PAH	LOW LEVEL PPL
~~7-18-91~~		~~SLP-6FB-071891~~	~~1XL AMBER~~	~~6~~	~~PPL PAH~~	1/21 DAY TURN AROUND

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by. (signed)	Received by: (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: MAH
Method of Shipment: FEd Exp Airbill # 2865076406
Received for Lab: RMAL Signed: [signature] Date/Time 7-19-91 0800
Enseco Project No.: 15889

White and Pink Copies to Lab Yellow to Sampler

SS-001

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile: 303/431-7171

Attn: _____

CHAIN OF CUSTODY

No.

Enseco Client: CITY OF ST LOUIS PARK
Project: _____
Sampling Co.: SAME
Sampling Site: SAME
Team Leader: MZH

SAMPLE SAFE™ CONDITIONS

1. Packed by: MZH Seal # _____
2. Seal Intact Upon Receipt by Sampling Co.: Yes No
3. Condition of Contents: _____
4. Sealed for Shipping by: MZH
5. Initial Contents Temp.: _____ °C Seal # _____
6. Sampling Status: Done Continuing Until _____
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab: _____ °C
9. Condition of Contents: _____

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
7-18-91		SLP-GMS-071891	0/MS 1XL AMBER	6	PPT PAH	LOW LEVEL PPT
7-18-91		SLP-GMSD-071891	0/MSD 1XL AMBER	6	PPT PAH	LOW LEVEL PPT
~~7-18-91~~		~~SLP-GFB-071891~~	~~1XL AMBER~~	~~6~~	~~PPT PAH~~	W/21 DAY TURN AROUND

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: MZH
Method of Shipment: FED EXP Airbill # 2865076406
Received for Lab: RMAL Signed: [signature] Date/Time 7-19-91 0800
Enseco Project No.: 15889

White and Pink Copies to Lab - Yellow to Sampler

SS-001

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of St Louis Park		SAMPLE SAFE™ CONDITIONS — PACKED BY: MZH	SEAL NUMBER:
PROJECT:		SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:	CONDITION OF CONTENTS:
SAMPLING COMPANY: SAME		SEALED FOR SHIPPING BY: MZH	INITIAL CONTENTS TEMP: °C
SAMPLING SITE: SAME		SEAL NUMBER:	SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZH		SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
7-18-91		SLP GFB-071891 03	1XLAMBER	5	PPT PAH	LOW-LEVEL PPT
7-18-91		SLP GFBD-071891 04	1XLAMBER	5	PPT PAH	LOW LEVEL-PPT
						W/21 DAY TURN
						AROUND

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
	ENSECO A Turner	7-19-91	8:00

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZH		
METHOD OF SHIPMENT: Fed Exp		AIRBILL NUMBER: 2865076406
RECEIVED FOR LAB: RMAL	SIGNED: [signature]	DATE/TIME: 7-19-91 0800
ENSECO PROJECT NUMBER: 15884		

ENS—1133

White - CLIENT Pink - LAB

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park
RMAL #15889

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15889-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15889-01

Sample wt/vol: 4060 (g/ml) ML Lab File ID: X3288

Level: (low/med) LOW Date Received: 07/19/91

% Moisture: not dec. dec. Date Extracted: 07/22/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	1.4	J *
496-11-7	2,3-Dihydroindene	48	
95-13-6	1H-Indene	12	*
91-20-3	Naphthalene	62	B
4565-32-6	Benzo(B)Thiophene	7.5	*
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	5.5	B
90-12-0	1-Methylnaphthalene	4.0	*
92-52-4	Biphenyl	2.6	J
208-96-8	Acenaphthylene	1.7	
83-32-9	Acenaphthene	12	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.5	B *
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.0	J
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	1.3	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15889-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15889-02

Sample wt/vol: 4090 (g/ml) ML Lab File ID: X3291

Level: (low/med) LOW Date Received: 07/19/91

% Moisture: not dec. dec. Date Extracted: 07/22/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.122

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	37	
95-13-6	1H-Indene	8.7	*
91-20-3	Naphthalene	41	B
4565-32-6	Benzo(B)Thiophene	5.4	
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	5.0	B
90-12-0	1-Methylnaphthalene	3.2	*
92-52-4	Biphenyl	2.3	J
208-96-8	Acenaphthylene	1.2	J
83-32-9	Acenaphthene	9.2	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.6	B *
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.1	J
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15889-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15889-03

Sample wt/vol: 3710 (g/ml) ML Lab File ID: X3292

Level: (low/med) LOW Date Received: 07/19/91

% Moisture: not dec. dec. Date Extracted: 07/22/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.135

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.5	U
496-11-7	2,3-Dihydroindene	3.0	
95-13-6	1H-Indene	1.0	U
91-20-3	Naphthalene	11	B
4565-32-6	Benzo(B)Thiophene	1.0	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.7	U
91-57-6	2-Methylnaphthalene	6.4	B *
90-12-0	1-Methylnaphthalene	3.4	*
92-52-4	Biphenyl	1.2	J *
208-96-8	Acenaphthylene	1.5	U
83-32-9	Acenaphthene	1.4	U
132-64-9	Dibenzofuran	1.1	U
86-73-7	Fluorene	1.1	U
132-65-0	Dibenzothiophene	1.2	U
85-01-8	Phenanthrene	2.3	B
120-12-7	Anthracene	1.2	U
260-94-6	Acridine	3.1	U
86-74-8	Carbazole	2.1	U
206-44-0	Fluoranthene	1.5	U
129-00-0	Pyrene	1.5	U
56-55-3	Benzo(A)Anthracene	2.7	U
218-01-9	Chrysene	3.0	U
205-99-2	Benzo(B)Fluoranthene	2.7	U
207-08-9	Benzo(K)Fluoranthene	2.5	U
192-97-2	Benzo(E)Pyrene	2.1	U
50-32-8	Benzo(A)Pyrene	2.5	U
198-55-0	Perylene	2.7	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.3	U
53-70-3	Dibenz(A,H)Anthracene	1.7	U
191-24-2	Benzo(G,H,I)Perylene	3.2	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15889-01MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15889-01MS

Sample wt/vol: 4050 (g/ml) ML Lab File ID: X3289

Level: (low/med) LOW Date Received: 07/19/91

% Moisture: not dec. dec. Date Extracted: 07/22/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	42	
95-13-6	1H-Indene	17	
91-20-3	Naphthalene	46	B
4565-32-6	Benzo(B)Thiophene	5.4	
91-22-5	Quinoline	11	
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	17	B
90-12-0	1-Methylnaphthalene	4.5	*
92-52-4	Biphenyl	2.7	
208-96-8	Acenaphthylene	1.6	*
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	9.3	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.0	B *
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.4	J *
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.3	J *
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	4.5	
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.8	J
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15889-01MSD

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15889-01MSD

Sample wt/vol: 3970 (g/ml) ML Lab File ID: X3290

Level: (low/med) LOW Date Received: 07/19/91

% Moisture: not dec. dec. Date Extracted: 07/22/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.126

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	1.9	J *
496-11-7	2,3-Dihydroindene	44	
95-13-6	1H-Indene	20	*
91-20-3	Naphthalene	53	B
4565-32-6	Benzo(B)Thiophene	6.0	*
91-22-5	Quinoline	10	
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	16	B
90-12-0	1-Methylnaphthalene	3.9	*
92-52-4	Biphenyl	2.4	J
208-96-8	Acenaphthylene	1.6	
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	9.7	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.5	B *
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.6	J
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.0	J
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	4.6	
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.6	J
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	15889-01	104	107	58
2	15889-02	82	86	42
3	15889-03	86	92	119 *
4	15889-01MS	98	100	45
5	15889-01MSD	101	103	48
6	BLK01	103	105	103

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 15889-01 LEVEL: LOW

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	9.84	11.9	17.4	56
Naphthalene	9.84	62.1	45.7	-167
Quinoline	9.84	ND	10.7	109
2-Methylnaphthalene	9.84	5.50	16.6 *	113
Fluorene	9.84	1.00	9.32	88
Chrysene	9.84	ND	4.47	45
Benzo(E)Pyrene	9.84	ND	1.76	18

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	10.1	19.8	78	33
Naphthalene	10.1	53.0	-90	0
Quinoline	10.1	10.3	102	7
2-Methylnaphthalene	10.1	15.8	102	10
Fluorene	10.1	9.66	89	1
Chrysene	10.1	4.56	45	0
Benzo(E)Pyrene	10.1	1.58	16	12

Comments:

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Lab File ID: X3284 Lab Sample ID: BLK01

Instrument ID: 4500-X Date Extracted: 07/22/91

Matrix: (soil/water) WATER Date Analyzed: 07/31/91

Level:(low/med) LOW Time Analyzed: 1257

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	15889-01	15889-01	X3288	07/31/91
2	15889-02	15889-02	X3291	07/31/91
3	15889-03	15889-03	X3292	07/31/91
4	15889-01MS	15889-01MS	X3289	07/31/91
5	15889-01MSD	15889-01MSD	X3290	07/31/91

Comments:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15889 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3284

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 07/22/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	1.6	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.1	
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.0	J *
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 15889 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3282	07/31/91	1029
BLK01	X3284	07/31/91	1257
15889-01	X3288	07/31/91	1623
15889-01MS	X3289	07/31/91	1715
15889-01MSD	X3290	07/31/91	1808
15889-02	X3291	07/31/91	1859
15889-03	X3292	07/31/91	1950

6B
INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 15889

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= X2941 RRF 40= X2940
RRF 240= X2942 RRF 1200= X2943 RRF 4800= X2944

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 15889

Instrument ID: 4500-X Calibration Date(s): 07/31/91 Time: 1059

Lab ID: X3282 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	0.746	18.9
2,3-Dihydroindene	0.775	0.664	14.3
1H-Indene	0.776	0.668	13.9
Naphthalene	1.740	1.435	17.5
Benzo(B)Thiophene	1.300	1.018	21.7
Quinoline	0.827	0.765	7.5
1H-Indole	0.928	0.837	9.8
2-Methylnaphthalene	0.756	0.659	12.8
1-Methylnaphthalene	0.810	0.716	11.6
Biphenyl	1.183	0.944	20.2
Acenaphthylene	1.534	1.374	10.4
Acenaphthene	1.057	0.896	15.2
Dibenzofuran	1.376	1.171	14.9
Fluorene	1.150	1.018	11.5
Dibenzothiophene	0.825	0.569	31.0
Phenanthrene	0.886	0.831	6.2
Anthracene	0.833	0.738	11.4
Acridine	0.534	0.412	22.8
Carbazole	0.701	0.585	16.5
Fluoranthene	1.006	0.965	4.1
Pyrene	1.123	1.082	3.7
Benzo(A)Anthracene	1.155	0.935	19.0
Chrysene	1.307	0.973	25.6
Benzo(B)Fluoranthene	1.047	0.936	10.6
Benzo(K)Fluoranthene	1.423	0.932	34.5
Benzo(E)Pyrene	1.063	0.844	20.6
Benzo(A)Pyrene	1.020	0.858	15.9
Perylene	0.715	0.679	5.0
Indeno(1,2,3-CD)Pyrene	1.196	0.895	25.2
Dibenz(A,H)Anthracene	1.039	0.756	27.2
Benzo(G,H,I)Perylene	1.073	0.778	27.5
D8-Naphthalene	1.578	1.253	20.6
D10-Flourene	0.936	0.751	19.8
D12-Chrysene	1.143	0.836	26.9

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 15481 SAS No.: SDG No:

Lab File ID (Standard): X3282 Date Analyzed: 07/31/91

Instrument ID: 4500-X Time Analyzed: 1029

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	222000	426000	363000
UPPER LIMIT	444000	852000	726000
LOWER LIMIT	111000	106000	182000
SAMPLE NO.			
15889-01	278000	504000	308000
15889-02	274000	492000	317000
15889-03	273000	499000	245000
15889-01MS	285000	497000	364000
15889-01MSD	364000	499000	379000
BLK01	288000	549000	446000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

APPENDIX D

LABORATORY DATA SUMMARY PACKAGE:

ST. PETER AQUIFER

ST. PETER AQUIFER
PAH QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
SLP3	NOT SAMPLED					
W24	05/01/91	14781-BLK01	IGV-W105D-050191	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	IGV-W105FB-050191
W33	05/01/91	14781-BLK01	IGV-W105D-050191	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	IGV-W105FB-050191
W122	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	NOT SAMPLED
W129	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	NOT SAMPLED
W133	05/01/91	14781-BLK01	IGV-W105D-050191	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	IGV-W105FB-050191
W408	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043191	PCJ-SLP6MSD-043091	NOT SAMPLED
W409	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	NOT SAMPLED
W410	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP6MSD-050791	PCJ-SLP14FB-050891
W411	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	NOT SAMPLED
W412	05/01/91	14781-BLK02	IGV-W105D-050191	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	IGV-W105FB-050191
P116	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	NOT SAMPLED
SLP3	08/28/91	16727-BLK01	STP-SLP3D-082891	PCJ-SLP5MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082791
W24	08/29/91	16769-BLK01	PCJ-SLP10D-082991	PCJ-SLP10MS-082991	PCJ-SLP10MSD-082991	PCJ-SLP10FB-082991
W33	08/29/91	16769-BLK01	PCJ-SLP10D-082991	PCJ-SLP10MS-082991	PCJ-SLP10MSD-082991	PCJ-SLP10FB-082991

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W122	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
W129	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
W133	08/29/91	16769-BLK01	PCJ-SLP10D-082991	PCJ-SLP10MS-082991	PCJ-SLP10MSD-082991	PCJ-SLP10FB-082991
W408	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
W409	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
W410	08/28/91	16727-BLK02	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082891
W411	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
W412	08/29/91	16769-BLK01	PCJ-SLP10D-082991	PCJ-SLP10MS-082791	PCJ-SLP10MSD-082991	PCJ-SLP10FB-082991
P116	08/27/91	16687-BLK01	PCJ-SLP6D-082791	STP-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791

PHENOLICS QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W410	06/27/91	15612-BLK	DPV-W421TPD-062791	DPV-W421TPMS-062791	DPV-W421TPMSD-062791	DPV-W421TPFB-062791
W410	09/18/91	17193-BLK	DPV-W420TPD-091891	DPV-W420TPMS-091891	DPV-W420TPMSD-091891	DPV-W420TPFB-091891

RAP SECTION 8.1.3. MONITORING

1ST HALF - 1991

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014773

Introduction

Twelve aqueous samples (including MS and MSD) were received at Enseco Rocky Mountain Analytical Laboratory on May 1, 1991. The samples were logged in under RMAL project number 014773. Sample PCJ-SLP6FB-043091 (RMAL# 014773-03) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1989 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 014773-06 and 09 were analyzed and reported at dilutions due to interference with the internal standards during the original analysis. The reanalysis data are reported. Surrogates could not be measured in these samples due to the dilutions performed.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the asterisk (*) on the data sheets (Form I) as per the 1989 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

This data package is in compliance with the terms and conditions of the 1989 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel S. Holtz Date: 6-21-91
Joel Holtz
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014773-0001-SA	PCJ-SLP6-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0001-MS	PCJ-SLP6MS-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0001-SD	PCJ-SLP6MSD-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0002-SA	PCJ-SLP6D-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0003-SA	PCJ-SLP6FB-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0004-SA	PCJ-SLP7-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0005-SA	W122	AQUEOUS	30 APR 91	12:25	01 MAY 91
014773-0006-SA	W409	AQUEOUS	30 APR 91	10:25	01 MAY 91
014773-0007-SA	W408	AQUEOUS	30 APR 91	09:15	01 MAY 91
014773-0008-SA	P116	AQUEOUS	30 APR 91	13:40	01 MAY 91
014773-0009-SA	W411	AQUEOUS	30 APR 91	14:20	01 MAY 91
014773-0010-SA	W129	AQUEOUS	30 APR 91	15:15	01 MAY 91

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax· 303/431-7171

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-05

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-05

Sample wt/vol: 4170 (g/ml) ML Lab File ID: X3067

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	2.8	J *
496-11-7	2,3-Dihydroindene	29	
95-13-6	1H-Indene	61	
91-20-3	Naphthalene	180	B
4565-32-6	Benzo(B)Thiophene	11	*
91-22-5	Quinoline	3.3	*
120-72-9	1H-Indole	62	*
91-57-6	2-Methylnaphthalene	140	B
90-12-0	1-Methylnaphthalene	76	
92-52-4	Biphenyl	12	*
208-96-8	Acenaphthylene	30	
83-32-9	Acenaphthene	3.8	J
132-64-9	Dibenzofuran	5.0	*
86-73-7	Fluorene	6.6	
132-65-0	Dibenzothiophene	8.0	*
85-01-8	Phenanthrene	22	B
120-12-7	Anthracene	4.3	*
260-94-6	Acridine	4.2	*
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	24	*
129-00-0	Pyrene	53	B
56-55-3	Benzo(A)Anthracene	3.9	*
218-01-9	Chrysene	8.2	*
205-99-2	Benzo(B)Fluoranthene	6.1	
207-08-9	Benzo(K)Fluoranthene	3.1	
192-97-2	Benzo(E)Pyrene	5.4	
50-32-8	Benzo(A)Pyrene	3.6	*
198-55-0	Perylene	13	*
193-39-5	Indeno(1,2,3-CD)Pyrene	3.1	
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	7.6	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-06

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-06

Sample wt/vol: 3920 (g/ml) ML Lab File ID: X3096

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/05/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 1.28

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	52	U
496-11-7	2,3-Dihydroindene	13	J
95-13-6	1H-Indene	19	
91-20-3	Naphthalene	43	JB
4565-32-6	Benzo(B)Thiophene	9.2	U
91-22-5	Quinoline	14	U
120-72-9	1H-Indole	130	*
91-57-6	2-Methylnaphthalene	60	B
90-12-0	1-Methylnaphthalene	33	
92-52-4	Biphenyl	44	U
208-96-8	Acenaphthylene	14	U
83-32-9	Acenaphthene	13	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	11	U
85-01-8	Phenanthrene	18	B
120-12-7	Anthracene	11	U
260-94-6	Acridine	19	J
86-74-8	Carbazole	19	U
206-44-0	Fluoranthene	14	U
129-00-0	Pyrene	25	B
56-55-3	Benzo(A)Anthracene	26	U
218-01-9	Chrysene	29	U
205-99-2	Benzo(B)Fluoranthene	26	U
207-08-9	Benzo(K)Fluoranthene	24	U
192-97-2	Benzo(E)Pyrene	19	U
50-32-8	Benzo(A)Pyrene	24	U
198-55-0	Perylene	26	U
193-39-5	Indeno(1,2,3-CD)Pyrene	22	U
53-70-3	Dibenz(A,H)Anthracene	16	U
191-24-2	Benzo(G,H,I)Perylene	28	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-07

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-07

Sample wt/vol: 4070 (g/ml) ML Lab File ID: X3092

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/05/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	13	
95-13-6	1H-Indene	6.6	
91-20-3	Naphthalene	29	B
4565-32-6	Benzo(B)Thiophene	6.5	*
91-22-5	Quinoline	4.7	*
120-72-9	1H-Indole	140	*
91-57-6	2-Methylnaphthalene	52	B*
90-12-0	1-Methylnaphthalene	27	
92-52-4	Biphenyl	13	*
208-96-8	Acenaphthylene	3.2	*
83-32-9	Acenaphthene	1.1	J
132-64-9	Dibenzofuran	1.2	*
86-73-7	Fluorene	1.9	*
132-65-0	Dibenzothiophene	14	
85-01-8	Phenanthrene	6.5	B*
120-12-7	Anthracene	1.1	*
260-94-6	Acridine	2.2	J *
86-74-8	Carbazole	4.1	
206-44-0	Fluoranthene	5.9	*
129-00-0	Pyrene	9.7	B*
56-55-3	Benzo(A)Anthracene	2.3	J *
218-01-9	Chrysene	2.6	J *
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.4	J
50-32-8	Benzo(A)Pyrene	1.4	J
198-55-0	Perylene	3.6	*
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.1	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-08

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-08

Sample wt/vol: 4260 (g/ml) ML Lab File ID: X3093

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/05/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.117

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.7	U
496-11-7	2,3-Dihydroindene	1.6	
95-13-6	1H-Indene	0.8	U
91-20-3	Naphthalene	7.6	B
4565-32-6	Benzo(B)Thiophene	0.8	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.3	U
91-57-6	2-Methylnaphthalene	14	B
90-12-0	1-Methylnaphthalene	7.2	
92-52-4	Biphenyl	2.3	J
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.9	U
86-73-7	Fluorene	1.0	*
132-65-0	Dibenzothiophene	2.2	*
85-01-8	Phenanthrene	4.8	B
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.2	J
86-74-8	Carbazole	1.7	U
206-44-0	Fluoranthene	2.3	*
129-00-0	Pyrene	2.9	B*
56-55-3	Benzo(A)Anthracene	2.3	U
218-01-9	Chrysene	2.6	U
205-99-2	Benzo(B)Fluoranthene	2.3	U
207-08-9	Benzo(K)Fluoranthene	6.6	*
192-97-2	Benzo(E)Pyrene	1.7	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	6.2	*
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.6	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-09

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-09

Sample wt/vol: 4180 (g/ml) ML Lab File ID: X3120

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 1.20

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	49	U
496-11-7	2,3-Dihydroindene	13	U
95-13-6	1H-Indene	8.6	U
91-20-3	Naphthalene	15	JB*
4565-32-6	Benzo(B)Thiophene	8.6	U
91-22-5	Quinoline	13	U
120-72-9	1H-Indole	52	*
91-57-6	2-Methylnaphthalene	61	B*
90-12-0	1-Methylnaphthalene	34	*
92-52-4	Biphenyl	12	J
208-96-8	Acenaphthylene	13	U
83-32-9	Acenaphthene	12	U
132-64-9	Dibenzofuran	9.6	U
86-73-7	Fluorene	11	
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	46	B
120-12-7	Anthracene	10	U
260-94-6	Acridine	100	
86-74-8	Carbazole	10	J *
206-44-0	Fluoranthene	12	J
129-00-0	Pyrene	31	B
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	27	U
205-99-2	Benzo(B)Fluoranthene	24	U
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	12	J *
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	27	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14773-10

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-10

Sample wt/vol: 4300 (g/ml) ML Lab File ID: X3095

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/05/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.116

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.7	U
496-11-7	2,3-Dihydroindene	3.5	
95-13-6	1H-Indene	6.5	
91-20-3	Naphthalene	24	B*
4565-32-6	Benzo(B)Thiophene	1.1	*
91-22-5	Quinoline	2.0	*
120-72-9	1H-Indole	5.4	*
91-57-6	2-Methylnaphthalene	29	B
90-12-0	1-Methylnaphthalene	15	
92-52-4	Biphenyl	5.5	
208-96-8	Acenaphthylene	2.4	*
83-32-9	Acenaphthene	1.1	J
132-64-9	Dibenzofuran	1.5	*
86-73-7	Fluorene	2.2	
132-65-0	Dibenzothiophene	4.9	*
85-01-8	Phenanthrene	15	B
120-12-7	Anthracene	2.5	
260-94-6	Acridine	2.0	J
86-74-8	Carbazole	3.1	*
206-44-0	Fluoranthene	12	
129-00-0	Pyrene	12	B
56-55-3	Benzo(A)Anthracene	5.2	
218-01-9	Chrysene	4.5	
205-99-2	Benzo(B)Fluoranthene	5.2	
207-08-9	Benzo(K)Fluoranthene	2.1	*
192-97-2	Benzo(E)Pyrene	3.2	
50-32-8	Benzo(A)Pyrene	3.6	
198-55-0	Perylene	4.9	*
193-39-5	Indeno(1,2,3-CD)Pyrene	2.8	*
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	4.1	*

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014781

Introduction

Nine aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on May 02, 1991. The samples were logged in under RMAL project number 014781. Sample IGV-W105FBD-050191 (RMA # 014781-08) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 014781-01 and 02 were reanalyzed at dilutions due to 2,3-dihydroindene, benzo(B)thiophene and acenapthene which were saturated in the original analysis. Both the original and the reanalyses are submitted for each sample. Surrogates could not be measured in the reanalyses due to the dilutions performed.

Due to concentrations of target compounds present in excess of calibration range, samples 014781-03 and 09 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

All samples and one of the the associated method blanks show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Susan Dalla for Date: 6-21-91
Joel Holtz
Program Administrator

Enseco
A Coming Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014781-0001-SA	W133	AQUEOUS	01 MAY 91	10:50	02 MAY 91
014781-0002-SA	W24	AQUEOUS	01 MAY 91	13:30	02 MAY 91
014781-0003-SA	W33	AQUEOUS	01 MAY 91	16:45	02 MAY 91
014781-0004-SA	IGV-W105-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0005-SA	IGV-W105D-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0006-SA	PCJ-SLP10-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0007-SA	IGV-W105FB-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0008-SA	IGV-W105FBD-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0009-SA	W412	AQUEOUS	30 APR 91	16:10	02 MAY 91

Rocky Mountain
Analytical Laboratory

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3031

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	1.5	*
496-11-7	2,3-Dihydroindene	380	*#
95-13-6	1H-Indene	100	
91-20-3	Naphthalene	51	B
4565-32-6	Benzo(B)Thiophene	210	*#
91-22-5	Quinoline	1.7	*
120-72-9	1H-Indole	7	*
91-57-6	2-Methylnaphthalene	100	B
90-12-0	1-Methylnaphthalene	73	B
92-52-4	Biphenyl	9.9	
208-96-8	Acenaphthylene	8.6	*
83-32-9	Acenaphthene	8.2	
132-64-9	Dibenzofuran	1.6	*
86-73-7	Fluorene	6.4	
132-65-0	Dibenzothiophene	2.8	*
85-01-8	Phenanthrene	14	B
120-12-7	Anthracene	5.3	*
260-94-6	Acridine	19	
86-74-8	Carbazole	4.5	*
206-44-0	Fluoranthene	7.1	*
129-00-0	Pyrene	9.8	B
56-55-3	Benzo(A)Anthracene	5.1	*
218-01-9	Chrysene	1.4	J *
205-99-2	Benzo(B)Fluoranthene	1.6	J
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.2	J *
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	4.7	*
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	1.4	J

= Compound is saturated.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-01DL

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-01DL

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3089

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/05/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.500

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	20	U
496-11-7	2,3-Dihydroindene	1900	D
95-13-6	1H-Indene	94	D
91-20-3	Naphthalene	56	DB*
4565-32-6	Benzo(B)Thiophene	280	D *
91-22-5	Quinoline	5.6	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	100	DB
90-12-0	1-Methylnaphthalene	72	DB
92-52-4	Biphenyl	8.1	DJ
208-96-8	Acenaphthylene	8.6	D *
83-32-9	Acenaphthene	7.1	D
132-64-9	Dibenzofuran	4	U
86-73-7	Fluorene	5	D
132-65-0	Dibenzothiophene	4.4	U
85-01-8	Phenanthrene	9.9	DB
120-12-7	Anthracene	4.4	U
260-94-6	Acridine	36	D *
86-74-8	Carbazole	7.6	U
206-44-0	Fluoranthene	4.3	DJ
129-00-0	Pyrene	5.5	DJB
56-55-3	Benzo(A)Anthracene	4.6	DJ*
218-01-9	Chrysene	11	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	9.2	U
192-97-2	Benzo(E)Pyrene	7.6	U
50-32-8	Benzo(A)Pyrene	9.2	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	8.4	U
53-70-3	Dibenz(A,H)Anthracene	6.4	U
191-24-2	Benzo(G,H,I)Perylene	11	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-02

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3032

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	3.7	J
496-11-7	2,3-Dihydroindene	350	*#
95-13-6	1H-Indene	42	
91-20-3	Naphthalene	9.3	B*
4565-32-6	Benzo(B)Thiophene	7.8	*
91-22-5	Quinoline	2.9	
120-72-9	1H-Indole	5.4	
91-57-6	2-Methylnaphthalene	9.9	B*
90-12-0	1-Methylnaphthalene	8.2	B*
92-52-4	Biphenyl	6.2	
208-96-8	Acenaphthylene	16	
83-32-9	Acenaphthene	300	#
132-64-9	Dibenzofuran	2	*
86-73-7	Fluorene	4.0	
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	6.1	B*
120-12-7	Anthracene	30	*
260-94-6	Acridine	20	
86-74-8	Carbazole	15	*
206-44-0	Fluoranthene	4.1	
129-00-0	Pyrene	7.3	B
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

= Compound is saturated.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-02DL

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-02DL

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3076

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.19

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	48	U
496-11-7	2,3-Dihydroindene	3000	D
95-13-6	1H-Indene	51	D
91-20-3	Naphthalene	13	DJB*
4565-32-6	Benzo(B)Thiophene	9.6	D *
91-22-5	Quinoline	2.9	U
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	13	DB*
90-12-0	1-Methylnaphthalene	12	DJB*
92-52-4	Biphenyl	41	U
208-96-8	Acenaphthylene	18	D
83-32-9	Acenaphthene	840	D
132-64-9	Dibenzofuran	9.5	U
86-73-7	Fluorene	9.5	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	12	U
120-12-7	Anthracene	26	D *
260-94-6	Acridine	16	DJ*
86-74-8	Carbazole	15	DJ
206-44-0	Fluoranthene	13	U
129-00-0	Pyrene	9.8	DJB
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	27	U
205-99-2	Benzo(B)Fluoranthene	24	U
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	22	U
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	27	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-03

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3075

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 2.38

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	97	U
496-11-7	2,3-Dihydroindene	5300	
95-13-6	1H-Indene	4900	
91-20-3	Naphthalene	2700	B
4565-32-6	Benzo(B)Thiophene	1700	
91-22-5	Quinoline	27	U
120-72-9	1H-Indole	90	*
91-57-6	2-Methylnaphthalene	1700	B
90-12-0	1-Methylnaphthalene	1100	B
92-52-4	Biphenyl	67	J *
208-96-8	Acenaphthylene	27	U
83-32-9	Acenaphthene	160	
132-64-9	Dibenzofuran	19	U
86-73-7	Fluorene	24	
132-65-0	Dibenzothiophene	21	U
85-01-8	Phenanthrene	31	B*
120-12-7	Anthracene	21	U
260-94-6	Acridine	54	J *
86-74-8	Carbazole	66	
206-44-0	Fluoranthene	27	U
129-00-0	Pyrene	20	JB
56-55-3	Benzo(A)Anthracene	48	U
218-01-9	Chrysene	53	U
205-99-2	Benzo(B)Fluoranthene	48	U
207-08-9	Benzo(K)Fluoranthene	44	U
192-97-2	Benzo(E)Pyrene	36	U
50-32-8	Benzo(A)Pyrene	44	U
198-55-0	Perylene	48	U
193-39-5	Indeno(1,2,3-CD)Pyrene	40	U
53-70-3	Dibenz(A,H)Anthracene	30	U
191-24-2	Benzo(G,H,I)Perylene	53	U

= Compound is saturated.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14781-09

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-09

Sample wt/vol: 4270 (g/ml) ML Lab File ID: X3078

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.472

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	19	U
496-11-7	2,3-Dihydroindene	57	
95-13-6	1H-Indene	44	
91-20-3	Naphthalene	110	B
4565-32-6	Benzo(B)Thiophene	9.3	*
91-22-5	Quinoline	9.5	*
120-72-9	1H-Indole	780	*
91-57-6	2-Methylnaphthalene	75	B*
90-12-0	1-Methylnaphthalene	61	*
92-52-4	Biphenyl	13	J *
208-96-8	Acenaphthylene	8.9	
83-32-9	Acenaphthene	16	
132-64-9	Dibenzofuran	3.8	U
86-73-7	Fluorene	16	
132-65-0	Dibenzothiophene	71	*
85-01-8	Phenanthrene	68	B
120-12-7	Anthracene	6.8	
260-94-6	Acridine	55	
86-74-8	Carbazole	9.4	
206-44-0	Fluoranthene	18	*
129-00-0	Pyrene	32	B*
56-55-3	Benzo(A)Anthracene	5.4	J *
218-01-9	Chrysene	11	*
205-99-2	Benzo(B)Fluoranthene	6.8	J
207-08-9	Benzo(K)Fluoranthene	9.4	*
192-97-2	Benzo(E)Pyrene	9.9	*
50-32-8	Benzo(A)Pyrene	6.3	J
198-55-0	Perylene	9.2	J *
193-39-5	Indeno(1,2,3-CD)Pyrene	7.9	U
53-70-3	Dibenz(A,H)Anthracene	6.0	U
191-24-2	Benzo(G,H,I)Perylene	10	U

= Compound is saturated.

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CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014886

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on May 09, 1991. The samples were logged in under RMAL project number 014886. Sample PCJ-SLP14FBD-050891 (RMA # 014886-12) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, sample 014886-05 was analyzed and reported at a dilution. Surrogates could not be measured in the sample due to the dilution performed.

The surrogate D10-Fluorene is reported below quality control limits in the method blank extracted May 12, 1991 The blank was realiquoted and reanalyzed showing similar results. All associated samples show surrogates within limits therefore, the data appears to have not been adversely affected. Corrective action consisting of reextracting the samples could not be taken due to limited sample and extract.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

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This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Susan Dalla for Date: 6-21-91
Joel Holtz
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014886-0001-SA	STP-W410-050891	AQUEOUS	08 MAY 91	13:45	09 MAY 91
014886-0002-SA	PCJ-W29-050891	AQUEOUS	08 MAY 91	13:30	09 MAY 91
014886-0003-SA	PCJ-W402-050891	AQUEOUS	08 MAY 91	11:50	09 MAY 91
014886-0004-SA	PCJ-W70-050891	AQUEOUS	08 MAY 91	16:27	09 MAY 91
014886-0005-SA	PCJ-W403-050891	AQUEOUS	08 MAY 91	14:10	09 MAY 91
014886-0006-SA	PCJ-W40-050891	AQUEOUS	08 MAY 91	10:55	09 MAY 91
014886-0007-SA	PCJ-W406-050891	AQUEOUS	08 MAY 91	10:35	09 MAY 91
014886-0008-SA	PCJ-MTK6-050891	AQUEOUS	08 MAY 91	09:10	09 MAY 91
014886-0009-SA	PCJ-SLP14-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0010-SA	PCJ-SLP14D-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0011-SA	PCJ-SLP14FB-050891	AQUEOUS	08 MAY 91		09 MAY 91
014886-0012-SA	PCJ-SLP14FBD-050891	AQUEOUS	08 MAY 91		09 MAY 91

Rocky Mountain
Analytical Laboratory

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14886-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 14886 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14886-01

Sample wt/vol: 3830 (g/ml) ML Lab File ID: X3123

Level: (low/med) LOW Date Received: 05/09/91

% Moisture: not dec. dec. Date Extracted: 05/12/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.131

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.3	U
496-11-7	2,3-Dihydroindene	16	
95-13-6	1H-Indene	5.0	
91-20-3	Naphthalene	4.0	J *
4565-32-6	Benzo(B)Thiophene	6.5	*
91-22-5	Quinoline	1.5	U
120-72-9	1H-Indole	1.2	J *
91-57-6	2-Methylnaphthalene	4.5	
90-12-0	1-Methylnaphthalene	3.0	*
92-52-4	Biphenyl	2.7	J *
208-96-8	Acenaphthylene	1.5	U
83-32-9	Acenaphthene	1.4	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.3	
85-01-8	Phenanthrene	8.8	
120-12-7	Anthracene	1.3	
260-94-6	Acridine	24	
86-74-8	Carbazole	1.9	J *
206-44-0	Fluoranthene	1.7	
129-00-0	Pyrene	2.9	
56-55-3	Benzo(A)Anthracene	2.6	U
218-01-9	Chrysene	2.9	U
205-99-2	Benzo(B)Fluoranthene	2.6	U
207-08-9	Benzo(K)Fluoranthene	2.4	U
192-97-2	Benzo(E)Pyrene	2.0	U
50-32-8	Benzo(A)Pyrene	2.4	U
198-55-0	Perylene	2.6	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.2	U
53-70-3	Dibenz(A,H)Anthracene	1.7	U
191-24-2	Benzo(G,H,I)Perylene	2.9	U

RAP SECTION 8.1.3. MONITORING

2ND HALF - 1991

Enseco
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CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016687

Introduction

Fifteen aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on August 28, 1991. The samples were logged in under RMAL project number 016687. Sample PCJ-SLP6FBD-082791 (RMA # 016687-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, samples 016687-08, 10, 11, 12 and 13 were analyzed at a dilution. Surrogates could not be measured in the samples due to the dilutions performed.

In the matrix spike/spike duplicate analyses for sample 16687-01, several spike components are outside control limits. Indene and Napthalene results are biased due to the presence of these compounds in the original sample. Chrysene and Benzene show low recoveries. All quantitations were checked and found to be correct. Due to limited sample available, reextractions could not be performed.

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Samples 16687-02, 03, 05, 06, 01MSD show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in both method blanks indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy — Date: 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio — Date: 10/26/91
Debbie Fazio
Program Administrator

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SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016687-0001-SA	PCJ-SLP6-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0001-MS	PCJ-SLP6MS-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0001-SD	PCJ-SLP6MSD-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0002-SA	PCJ-SLP6D-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0003-SA	PCJ-SLP6FB-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0004-SA	PCJ-SLP6FBD-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0005-SA	PCJ-SLP14-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0006-SA	PCJ-SLP16-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0007-SA	PCJ-SLP7-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0008-SA	STPW411082791	AQUEOUS	27 AUG 91	15:30	28 AUG 91
016687-0009-SA	STPP116082791	AQUEOUS	27 AUG 91	14:10	28 AUG 91
016687-0010-SA	STPW409082791	AQUEOUS	27 AUG 91	14:30	28 AUG 91
016687-0011-SA	STPW408082791	AQUEOUS	27 AUG 91	11:20	28 AUG 91
016687-0012-SA	STPW122082791	AQUEOUS	27 AUG 91	10:10	28 AUG 91
016687-0013-SA	STPW129082791	AQUEOUS	27 AUG 91	09:00	28 AUG 91

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Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-08

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-08

Sample wt/vol: 4090 (g/ml) ML Lab File ID: C4725

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.26

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	51	U
496-11-7	2,3-Dihydroindene	20	B *
95-13-6	1H-Indene	9.1	U
91-20-3	Naphthalene	66	U
4565-32-6	Benzo(B)Thiophene	9.1	U
91-22-5	Quinoline	14	U
120-72-9	1H-Indole	25	U
91-57-6	2-Methylnaphthalene	9.1	U
90-12-0	1-Methylnaphthalene	16	U
92-52-4	Biphenyl	14	J *
208-96-8	Acenaphthylene	14	U
83-32-9	Acenaphthene	13	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	11	U
85-01-8	Phenanthrene	45	B
120-12-7	Anthracene	11	U
260-94-6	Acridine	100	*
86-74-8	Carbazole	22	*
206-44-0	Fluoranthene	17	
129-00-0	Pyrene	33	
56-55-3	Benzo(A)Anthracene	25	U
218-01-9	Chrysene	28	U
205-99-2	Benzo(B)Fluoranthene	25	U
207-08-9	Benzo(K)Fluoranthene	23	U
192-97-2	Benzo(E)Pyrene	19	U
50-32-8	Benzo(A)Pyrene	23	U
198-55-0	Perylene	25	U
193-39-5	Indeno(1,2,3-CD)Pyrene	21	U
53-70-3	Dibenz(A,H)Anthracene	16	U
191-24-2	Benzo(G,H,I)Perylene	28	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-09

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-09

Sample wt/vol: 4150 (g/ml) ML Lab File ID: C4714

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	3.5	B *
95-13-6	1H-Indene	0.97	
91-20-3	Naphthalene	8.8	B
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	6.8	B
90-12-0	1-Methylnaphthalene	3.2	*
92-52-4	Biphenyl	1.7	J *
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.6	*
85-01-8	Phenanthrene	4.6	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.0	J *
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	3.5	
129-00-0	Pyrene	3.0	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	1.3	J
205-99-2	Benzo(B)Fluoranthene	1.3	J
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-10

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-10

Sample wt/vol: 3960 (g/ml) ML Lab File ID: C4726

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/01/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.26

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	13	J *
496-11-7	2,3-Dihydroindene	520	B
95-13-6	1H-Indene	760	
91-20-3	Naphthalene	370	B
4565-32-6	Benzo(B)Thiophene	240	
91-22-5	Quinoline	14	U
120-72-9	1H-Indole	25	U
91-57-6	2-Methylnaphthalene	170	B
90-12-0	1-Methylnaphthalene	470	
92-52-4	Biphenyl	110	
208-96-8	Acenaphthylene	120	
83-32-9	Acenaphthene	280	
132-64-9	Dibenzofuran	170	
86-73-7	Fluorene	190	
132-65-0	Dibenzothiophene	11	U
85-01-8	Phenanthrene	130	B
120-12-7	Anthracene	11	U
260-94-6	Acridine	29	U
86-74-8	Carbazole	280	
206-44-0	Fluoranthene	14	U
129-00-0	Pyrene	30	
56-55-3	Benzo(A)Anthracene	25	U
218-01-9	Chrysene	28	U
205-99-2	Benzo(B)Fluoranthene	25	U
207-08-9	Benzo(K)Fluoranthene	23	U
192-97-2	Benzo(E)Pyrene	19	U
50-32-8	Benzo(A)Pyrene	23	U
198-55-0	Perylene	25	U
193-39-5	Indeno(1,2,3-CD)Pyrene	21	U
53-70-3	Dibenz(A,H)Anthracene	16	U
191-24-2	Benzo(G,H,I)Perylene	28	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-11

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-11

Sample wt/vol: 4220 (g/ml) ML Lab File ID: C4727

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/01/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.18

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	31	J *
496-11-7	2,3-Dihydroindene	370	B
95-13-6	1H-Indene	61	
91-20-3	Naphthalene	16	JB*
4565-32-6	Benzo(B)Thiophene	8.5	U
91-22-5	Quinoline	13	U
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	95	B
90-12-0	1-Methylnaphthalene	170	
92-52-4	Biphenyl	15	J *
208-96-8	Acenaphthylene	13	U
83-32-9	Acenaphthene	12	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	270	*
85-01-8	Phenanthrene	24	B
120-12-7	Anthracene	15	
260-94-6	Acridine	27	U
86-74-8	Carbazole	23	
206-44-0	Fluoranthene	20	*
129-00-0	Pyrene	42	
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	12	J
205-99-2	Benzo(B)Fluoranthene	13	J
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	22	U
198-55-0	Perylene	11	J *
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	26	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-12

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-12

Sample wt/vol: 4240 (g/ml) ML Lab File ID: C4728

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/01/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.18

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	10	J *
496-11-7	2,3-Dihydroindene	120	B
95-13-6	1H-Indene	59	
91-20-3	Naphthalene	210	B
4565-32-6	Benzo(B)Thiophene	12	
91-22-5	Quinoline	13	U
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	170	B
90-12-0	1-Methylnaphthalene	100	
92-52-4	Biphenyl	11	J *
208-96-8	Acenaphthylene	13	
83-32-9	Acenaphthene	12	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	10	*
132-65-0	Dibenzothiophene	52	*
85-01-8	Phenanthrene	27	B
120-12-7	Anthracene	10	U
260-94-6	Acridine	27	U
86-74-8	Carbazole	10	J
206-44-0	Fluoranthene	22	*
129-00-0	Pyrene	27	
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	26	U
205-99-2	Benzo(B)Fluoranthene	10	J
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	22	U
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	26	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-13

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-13

Sample wt/vol: 4040 (g/ml) ML Lab File ID: C4738

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.24

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	50	U
496-11-7	2,3-Dihydroindene	100	B
95-13-6	1H-Indene	18	*
91-20-3	Naphthalene	130	B *
4565-32-6	Benzo(B)Thiophene	8.9	U
91-22-5	Quinoline	14	U
120-72-9	1H-Indole	25	U
91-57-6	2-Methylnaphthalene	80	B
90-12-0	1-Methylnaphthalene	42	*
92-52-4	Biphenyl	43	U
208-96-8	Acenaphthylene	14	U
83-32-9	Acenaphthene	13	U
132-64-9	Dibenzofuran	9.9	U
86-73-7	Fluorene	9.9	U
132-65-0	Dibenzothiophene	18	*
85-01-8	Phenanthrene	16	B
120-12-7	Anthracene	11	U
260-94-6	Acridine	29	U
86-74-8	Carbazole	19	U
206-44-0	Fluoranthene	13	J *
129-00-0	Pyrene	13	J
56-55-3	Benzo(A)Anthracene	25	U
218-01-9	Chrysene	28	U
205-99-2	Benzo(B)Fluoranthene	25	U
207-08-9	Benzo(K)Fluoranthene	23	U
192-97-2	Benzo(E)Pyrene	19	U
50-32-8	Benzo(A)Pyrene	23	U
198-55-0	Perylene	25	U
193-39-5	Indeno(1,2,3-CD)Pyrene	21	U
53-70-3	Dibenz(A,H)Anthracene	16	U
191-24-2	Benzo(G,H,I)Perylene	28	U

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CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016727

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on August 29, 1991. The samples were logged in under RMAL project number 016727. Sample STP-SLP3FBD-082891 (RMA # 016727-10) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 16727-03 and 04 were originally analyzed within the holding time at a dilution due to elevated target compounds. Several target compounds were saturated in this original analysis, therefore the samples were reanalyzed outside of the holding time at an additional dilution. Data for both sets of analyses are reported.

Samples 16727-11 and 12 were originally analyzed within the holding time at a dilution due to target compounds present in excess of calibration range. In the original analysis, results for sample 16727-12 showed 2,3-dihydroindene above linear range. Sample was further diluted and analyzed outside of the analysis holding time. Both sets of data are reported.

Surrogates could not be measured in samples 16727-03, 03DL, 04, 04DL, 11, 12 and 12DL due to the dilutions performed.

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Samples 16727-01, 02, 06 and 09 show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Samples 16727-09 and the associated method blank showed low or no recoveries on the D12-benzo(a)pyrene internal standard. Since this internal standard responded very poorly in the blank and not at all in sample -09 an alternate internal standard (D10-phenanthrene) was used to calculate the compounds normally associated with D12-benzo(a)pyrene.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in the method blank extracted 08-31 (BLK01) and in the method blank extracted 09-01 (D8-napthalene only) indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples with the exception of 16727-12DL show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy — Date: 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio — Date: 10/26/91
Debbie Fazio
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016727-0001-SA	STP-SLP3-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0002-SA	STP-SLP3D-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0003-SA	PCJW402082891	AQUEOUS	28 AUG 91	13:55	29 AUG 91
016727-0004-SA	PCJW403082891	AQUEOUS	28 AUG 91	13:25	29 AUG 91
016727-0005-SA	PCJW406082891	AQUEOUS	28 AUG 91	13:00	29 AUG 91
016727-0006-SA	PCJE2082891	AQUEOUS	28 AUG 91	08:15	29 AUG 91
016727-0007-SA	PCJE3082891	AQUEOUS	28 AUG 91	08:30	29 AUG 91
016727-0008-SA	PCJE13082891	AQUEOUS	28 AUG 91	08:55	29 AUG 91
016727-0009-SA	STP-SLP3FB-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0010-SA	STP-SLP3FBD-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0011-SA	IGV-W105-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0012-SA	STP-W410-082891	AQUEOUS	28 AUG 91		29 AUG 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX. 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	SAMPLE SAFE™ CONDITIONS — PACKED BY: MJH
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY:
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: MJH	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No
	SEAL NUMBER:
	CONDITION OF CONTENTS:
	INITIAL CONTENTS TEMP: °C
	SAMPLING STATUS: ☐ Done ☐ Continuing Until
	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8-28-91		STP-SLP3-082891 01	IXL AMBER	6	PPT [illegible]	
8-28-91		STP-SLP3D-082891 02	IXL AMBER	6	PPT [illegible]	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MJH

METHOD OF SHIPMENT: FED EXP

AIRBILL NUMBER: [illegible]

RECEIVED FOR LAB: Rmark

SIGNED: B Magor

DATE/TIME: 8/29/91 0530

ENSECO PROJECT NUMBER: 16727

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	
PROJECT	CITY OF ST LOUIS PARK
SAMPLING COMPANY	ENSR CONSULTING & ENGINEERING
SAMPLING SITE	SLP
TEAM LEADER	MM

SAMPLE SAFE™ CONDITIONS

PACKED BY:	SEAL NUMBER
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	CONDITION OF CONTENTS
SEALED FOR SHIPPING BY	INITIAL CONTENTS TEMP °C
SEAL NUMBER #2	SAMPLING STATUS ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
11/11	1115	PCJ1U4,12CR28 9/ 03	WATER		PPT & PH!	
11	1325	PCJ1U4,030X28 9/1 04				
11	1300	PCJ1U4C6CR28 9/ 05				

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY		
METHOD OF SHIPMENT	AIRBILL NUMBER	
RECEIVED FOR LAB: RMax	SIGNED: B Mayos	DATE/TIME: 5/29/91 0830
ENSECO PROJECT NUMBER: 16727		

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX. 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	
PROJECT	CITY OF ST. LOUIS PARK
SAMPLING COMPANY	LASH CONSULTING + ENGINEERING
SAMPLING SITE	S.L.P
TEAM LEADER	MM

SAMPLE SAFE™ CONDITIONS

PACKED BY	[illegible]
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	#1
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	°C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
[illegible]	815	PCJT2C8289/ 06	WATER		PPT + PAH	
	830	PCJE3C8289/ 07				
	855	PCJF15C8289/ 08				

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
[illegible]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	[illegible]
METHOD OF SHIPMENT	FEC FX
AIRBILL NUMBER	
RECEIVED FOR LAB	RMAL
SIGNED	B Magor
DATE/TIME	8/29/91 0830
ENSECO PROJECT NUMBER	16727

ENS-1133

White - CLIENT [illegible]k - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	
PROJECT:	
SAMPLING COMPANY: SAME	
SAMPLING SITE: SAME	
TEAM LEADER: MZR	

SAMPLE SAFE™ CONDITIONS

PACKED BY:	SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:	CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY:	INITIAL CONTENTS TEMP: °C
SEAL NUMBER:	SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8-28-91		STP-SLP3FB-082891 09	1XL AMBER	6	PPT [illegible]	
8-28-91		STP-SLP3FBD-082891 10	1XL AMBER	6	PPT PA7	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR		
METHOD OF SHIPMENT: FED EXP		AIRBILL NUMBER: [illegible]
RECEIVED FOR LAB: RMAL	SIGNED: B Mayor	DATE/TIME: 8/29/91 0830
ENSECO PROJECT NUMBER: 16727		

ENS—1133

White – CLIENT [illegible]k – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	PACKED BY: MZR
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY:
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: MZR	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:	CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8-28-91		IGV-W105-082891 11	1XL AMBER	6	PPC PAH	
8-28-91		STP-W410-082891 12	1XL AMBER	6	PPC PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR		
METHOD OF SHIPMENT: FED Exp		AIRBILL NUMBER: [illegible]
RECEIVED FOR LAB: RMAL	SIGNED: B Moore	DATE/TIME: 8/29/91 0830
ENSECO PROJECT NUMBER: 16727		

ENS—1133

White – CLIENT Pink – LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

Rmal # 16727

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-01

Sample wt/vol: 4100 (g/ml) ML Lab File ID: C4740

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.122

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	6.8	B*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.8	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.1	B*
90-12-0	1-Methylnaphthalene	1.6	
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.6	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.5	
129-00-0	Pyrene	1.1	J
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-02

Sample wt/vol: 4240 (g/ml) ML Lab File ID: C4741

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.118

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	6.4	B*
95-13-6	1H-Indene	0.8	U
91-20-3	Naphthalene	5.0	JB
4565-32-6	Benzo(B)Thiophene	0.8	U
91-22-5	Quinoline	1.2	J *
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.9	B*
90-12-0	1-Methylnaphthalene	1.9	*
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.9	U
86-73-7	Fluorene	0.9	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	3.1	B
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.7	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	
129-00-0	Pyrene	1.0	J
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.6	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.6	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-09

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-09

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4764

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	6.3	B*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.2	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	2.9	B
90-12-0	1-Methylnaphthalene	1.3	
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.7	B
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-12

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-12

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4798

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.19

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	48	U
496-11-7	2,3-Dihydroindene	2200	B E
95-13-6	1H-Indene	1400	
91-20-3	Naphthalene	46	B
4565-32-6	Benzo(B)Thiophene	630	
91-22-5	Quinoline	13	U
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	8.6	U
90-12-0	1-Methylnaphthalene	450	
92-52-4	Biphenyl	41	*
208-96-8	Acenaphthylene	21	*
83-32-9	Acenaphthene	260	
132-64-9	Dibenzofuran	12	
86-73-7	Fluorene	18	
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	12	B
120-12-7	Anthracene	10	U
260-94-6	Acridine	45	
86-74-8	Carbazole	100	
206-44-0	Fluoranthene	13	U
129-00-0	Pyrene	13	U
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	27	U
205-99-2	Benzo(B)Fluoranthene	24	U
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	22	U
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	27	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-12DL

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-12DL

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4803

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 11.9

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	485	U
496-11-7	2,3-Dihydroindene	3000	B
95-13-6	1H-Indene	1600	
91-20-3	Naphthalene	619	U
4565-32-6	Benzo(B)Thiophene	730	
91-22-5	Quinoline	133	U
120-72-9	1H-Indole	238	U
91-57-6	2-Methylnaphthalene	86	U
90-12-0	1-Methylnaphthalene	152	U
92-52-4	Biphenyl	409	U
208-96-8	Acenaphthylene	133	U
83-32-9	Acenaphthene	124	U
132-64-9	Dibenzofuran	95	U
86-73-7	Fluorene	95	U
132-65-0	Dibenzothiophene	105	U
85-01-8	Phenanthrene	124	U
120-12-7	Anthracene	105	U
260-94-6	Acridine	276	U
86-74-8	Carbazole	181	U
206-44-0	Fluoranthene	133	U
129-00-0	Pyrene	133	U
56-55-3	Benzo(A)Anthracene	238	U
218-01-9	Chrysene	266	U
205-99-2	Benzo(B)Fluoranthene	238	U
207-08-9	Benzo(K)Fluoranthene	219	U
192-97-2	Benzo(E)Pyrene	181	U
50-32-8	Benzo(A)Pyrene	219	U
198-55-0	Perylene	238	U
193-39-5	Indeno(1,2,3-CD)Pyrene	200	U
53-70-3	Dibenz(A,H)Anthracene	152	U
191-24-2	Benzo(G,H,I)Perylene	266	U

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NAP)	#	S2 (FLU)	#	S3 (CHR)	#
1	16727-01	140	*	111		55	
2	16727-02	124	*	110		48	
3	16727-03	D		D		D	
4	16727-03DL	D		D		D	
5	16727-04	D		D		D	
6	16727-04DL	D		D		D	
7	16727-05	107		119		75	
8	16727-06	104		120		134	*
9	16727-07	96		113		59	
10	16727-08	102		121		117	
11	16727-09	121	*	138		118	
12	16727-11	D		D		D	
13	16727-12	D		D		D	
14	16727-12DL	D		D		D	
15	BLK01	120	*	124		123	*
16	BLK02	111	*	123		105	

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Lab File ID: C4758 Lab Sample ID: BLK01

Instrument ID: 4500-X Date Extracted: 08/31/91

Matrix: (soil/water) WATER Date Analyzed: 10/08/91

Level:(low/med) LOW Time Analyzed: 1658

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	16727-01	16727-01	C4740	10/05/91
2	16727-02	16727-02	C4741	10/05/91
3	16727-03	16727-03	C4742	10/05/91
4	16727-04	16727-04	C4743	10/05/91
5	16727-05	16727-05	C4760	10/08/91
6	16727-06	16727-06	C4761	10/08/91
7	16727-07	16727-07	C4772	10/09/91
8	16727-03DL	16727-03DL	C4801	10/14/91
9	16727-04DL	16727-04DL	C4802	10/14/91

Comments:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: C4758

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.7	*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	1.5	J *
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.1	*
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.2	J
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK02

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Lab File ID: C4759 Lab Sample ID: BLK02

Instrument ID: 4500-X Date Extracted: 09/01/91

Matrix: (soil/water) WATER Date Analyzed: 10/08/91

Level:(low/med) LOW Time Analyzed: 1750

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	16727-09	16727-09	C4764	10/08/91
2	16727-08	16727-08	C4773	10/09/91
3	16727-11	16727-11	C4797	10/11/91
4	16727-12	16727-12	C4798	10/11/91
5	16727-12DL	16727-12DL	C4803	10/14/91

Comments:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 4000 (g/ml) ML Lab File ID: C4759

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.7	*
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.2	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.9	*
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16727 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4697	09/25/91	1245
1200_PPB_PAH_STD	C4699	09/25/91	1651
20_PPB_PAH_STD	C4700	09/25/91	1742
240_PPB_PAH_STD	C4701	09/25/91	1834
600_PPB_PAH_STD	C4702	09/25/91	1927

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16727 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4736	10/05/91	1348
16727-01	C4740	10/05/91	1756
16727-02	C4741	10/05/91	1850
16727-03	C4742	10/05/91	1943
16727-04	C4743	10/05/91	2036

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16727 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4757	10/08/91	1456
BLK01	C4758	10/08/91	1658
BLK02	C4759	10/08/91	1750
16727-05	C4760	10/08/91	1850
16727-06	C4761	10/08/91	1943
16727-09	C4764	10/08/91	2222

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16727 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4770	10/09/91	1125
16727-07	C4772	10/09/91	1345
16727-08	C4773	10/09/91	1437

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16727 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4796	10/11/91	1606
16727-11	C4797	10/11/91	1722
16727-12	C4798	10/11/91	1818

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16727 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4800	10/14/91	1046
16727-03	C4801	10/14/91	1207
16727-04	C4802	10/14/91	1301
16727-12DL	C4803	10/14/91	1441

6B
INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16727

Instrument ID: 4500-C Calibration Date(s): 09/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= C4700 RRF 40= C4697
RRF 240= C4701 RRF 600= C4702 RRF 1200= C4699

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	600PPB RRF	1200PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.829	0.782	0.991	0.947	0.859	0.882	9.7
2,3-Dihydroindene	0.781	0.717	0.905	0.856	0.795	0.811	8.9
1H-Indene	0.664	0.637	0.758	0.777	0.710	0.709	8.4
Naphthalene	1.791	2.456	1.744	1.736	1.536	1.853	19.0
Benzo(B)Thiophene	1.164	1.055	1.278	1.170	1.170	1.167	6.8
Quinoline	0.663	0.714	0.705	0.749	0.749	0.716	5.0
1H-Indole	0.714	0.730	0.819	0.810	0.857	0.786	7.8
2-Methylnaphthalene	0.754	0.857	0.762	0.704	0.734	0.762	7.5
1-Methylnaphthalene	0.783	0.768	0.834	0.761	0.810	0.791	3.8
Biphenyl	1.198	1.120	1.257	1.103	1.165	1.169	5.3
Acenaphthylene	1.121	1.189	1.237	1.306	1.381	1.247	8.1
Acenaphthene	0.949	0.886	1.010	0.955	0.994	0.959	5.0
Dibenzofuran	1.445	1.254	1.502	1.329	1.383	1.383	7.0
Fluorene	1.177	1.011	1.154	1.065	1.118	1.105	6.1
Dibenzothiophene	1.031	0.898	1.072	0.997	0.971	0.994	6.6
Phenanthrene	1.290	1.107	1.104	1.024	0.990	1.103	10.5
Anthracene	0.779	0.829	0.862	0.962	0.921	0.871	8.3
Acridine	0.450	0.579	0.510	0.588	0.610	0.547	12.1
Carbazole	0.601	0.763	0.720	0.771	0.764	0.724	9.9
Fluoranthene	0.960	1.015	1.108	1.031	0.980	1.019	5.6
Pyrene	1.337	1.201	1.316	1.077	0.961	1.178	13.6
Benzo(A)Anthracene	0.911	1.004	1.079	1.162	1.302	1.092	13.7
Chrysene	1.193	1.097	1.361	1.270	1.410	1.266	10.0
Benzo(B)Fluoranthene	1.603	1.169	1.664	1.582	1.714	1.546	14.1
Benzo(K)Fluoranthene	1.288	1.148	1.388	1.258	1.501	1.317	10.2
Benzo(E)Pyrene	1.342	1.023	1.431	1.276	1.440	1.302	13.1
Benzo(A)Pyrene	1.188	0.874	1.313	1.157	1.371	1.181	16.3
Perylene	0.869	0.804	1.012	0.830	1.082	0.919	13.2
Indeno(1,2,3-CD)Pyrene	1.485	1.161	1.552	1.352	1.664	1.443	13.4
Dibenz(A,H)Anthracene	1.281	1.041	1.426	1.232	1.511	1.298	14.0
Benzo(G,H,I)Perylene	1.291	1.036	1.454	1.247	1.483	1.302	13.8
D8-Naphthalene	1.427	1.234	1.524	1.534	1.347	1.413	8.9
D10-Flourene	0.928	0.840	0.921	0.848	0.916	0.891	4.8
D12-Chrysene	1.014	1.009	1.123	1.107	1.183	1.087	6.9

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16727

Instrument ID: 4500-C Calibration Date(s): 10/05/91 Time: 1348

Lab ID: C4736 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	0.748	15.2
2,3-Dihydroindene	0.811	0.835	-3.0
1H-Indene	0.709	0.724	-2.1
Naphthalene	1.853	2.001	-8.0
Benzo(B)Thiophene	1.167	1.415	-21.3
Quinoline	0.716	0.891	-24.4
1H-Indole	0.786	0.779	0.9
2-Methylnaphthalene	0.762	0.845	-10.9
1-Methylnaphthalene	0.791	0.890	-12.5
Biphenyl	1.169	1.366	-16.9
Acenaphthylene	1.247	1.633	-31.0
Acenaphthene	0.959	1.200	-25.1
Dibenzofuran	1.383	1.673	-21.0
Fluorene	1.105	1.346	-21.8
Dibenzothiophene	0.994	1.133	-14.0
Phenanthrene	1.103	1.182	-7.2
Anthracene	0.871	0.954	-9.5
Acridine	0.547	0.626	-14.4
Carbazole	0.724	0.710	1.9
Fluoranthene	1.019	1.190	-16.8
Pyrene	1.178	1.484	-26.0
Benzo(A)Anthracene	1.092	1.077	1.4
Chrysene	1.266	1.207	4.7
Benzo(B)Fluoranthene	1.546	1.366	11.6
Benzo(K)Fluoranthene	1.317	1.226	6.9
Benzo(E)Pyrene	1.302	1.084	16.7
Benzo(A)Pyrene	1.181	1.104	6.5
Perylene	0.919	0.876	4.7
Indeno(1,2,3-CD)Pyrene	1.443	1.243	13.9
Dibenz(A,H)Anthracene	1.298	1.108	14.6
Benzo(G,H,I)Perylene	1.302	1.182	9.2
D8-Naphthalene	1.413	1.480	-4.7
D10-Flourene	0.891	0.969	-8.8
D12-Chrysene	1.087	0.824	24.2

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16727

Instrument ID: 4500-C Calibration Date(s): 10/08/91 Time: 1456

Lab ID: C4757 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	1.056	-19.7
2,3-Dihydroindene	0.811	0.900	-11.0
1H-Indene	0.709	0.799	-12.7
Naphthalene	1.853	1.955	-5.5
Benzo(B)Thiophene	1.167	1.414	-21.2
Quinoline	0.716	0.611	14.7
1H-Indole	0.786	0.606	22.9
2-Methylnaphthalene	0.762	0.782	-2.6
1-Methylnaphthalene	0.791	0.901	-13.9
Biphenyl	1.169	1.285	-9.9
Acenaphthylene	1.247	1.648	-32.2
Acenaphthene	0.959	1.140	-18.9
Dibenzofuran	1.383	1.479	-6.9
Fluorene	1.105	1.248	-12.9
Dibenzothiophene	0.994	1.276	-28.4
Phenanthrene	1.103	1.371	-24.3
Anthracene	0.871	1.111	-27.6
Acridine	0.547	0.564	-3.1
Carbazole	0.724	0.798	-10.2
Fluoranthene	1.019	1.348	-32.3
Pyrene	1.178	1.509	-28.1
Benzo(A)Anthracene	1.092	1.310	-20.0
Chrysene	1.266	1.426	-12.6
Benzo(B)Fluoranthene	1.546	1.484	4.0
Benzo(K)Fluoranthene	1.317	1.492	-13.3
Benzo(E)Pyrene	1.302	1.264	2.9
Benzo(A)Pyrene	1.181	1.234	-4.5
Perylene	0.919	1.053	-14.6
Indeno(1,2,3-CD)Pyrene	1.443	1.316	8.8
Dibenz(A,H)Anthracene	1.298	1.229	5.3
Benzo(G,H,I)Perylene	1.302	1.301	0.1
D8-Naphthalene	1.413	1.539	-8.9
D10-Flourene	0.891	0.934	-4.8
D12-Chrysene	1.087	0.938	13.7

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16727

Instrument ID: 4500-C Calibration Date(s): 10/09/91 Time: 1125

Lab ID: C4770 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	0.858	2.7
2,3-Dihydroindene	0.811	0.876	-8.0
1H-Indene	0.709	0.728	-2.7
Naphthalene	1.853	1.717	7.3
Benzo(B)Thiophene	1.167	1.242	-6.4
Quinoline	0.716	0.635	11.3
1H-Indole	0.786	0.561	28.6
2-Methylnaphthalene	0.762	0.737	3.3
1-Methylnaphthalene	0.791	0.834	-5.4
Biphenyl	1.169	1.083	7.4
Acenaphthylene	1.247	1.438	-15.3
Acenaphthene	0.959	0.990	-3.2
Dibenzofuran	1.383	1.307	5.5
Fluorene	1.105	1.094	1.0
Dibenzothiophene	0.994	1.058	-6.4
Phenanthrene	1.103	1.121	-1.6
Anthracene	0.871	0.919	-5.5
Acridine	0.547	0.491	10.2
Carbazole	0.724	0.584	19.3
Fluoranthene	1.019	1.201	-17.9
Pyrene	1.178	1.113	5.5
Benzo(A)Anthracene	1.092	0.771	29.4
Chrysene	1.266	0.891	29.6
Benzo(B)Fluoranthene	1.546	1.266	18.1
Benzo(K)Fluoranthene	1.317	1.089	17.3
Benzo(E)Pyrene	1.302	1.101	15.4
Benzo(A)Pyrene	1.181	1.001	15.2
Perylene	0.919	0.801	12.8
Indeno(1,2,3-CD)Pyrene	1.443	1.120	22.4
Dibenz(A,H)Anthracene	1.298	0.942	27.4
Benzo(G,H,I)Perylene	1.302	1.070	17.8
D8-Naphthalene	1.413	1.587	-12.3
D10-Flourene	0.891	0.939	-5.4
D12-Chrysene	1.087	0.832	23.5

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16727

Instrument ID: 4500-C Calibration Date(s): 10/11/91 Time: 1606

Lab ID: C4796 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	0.840	4.8
2,3-Dihydroindene	0.811	0.769	5.2
1H-Indene	0.709	0.668	5.8
Naphthalene	1.853	1.592	14.1
Benzo(B)Thiophene	1.167	1.141	2.2
Quinoline	0.716	0.647	9.6
1H-Indole	0.786	0.550	30.0
2-Methylnaphthalene	0.762	0.724	5.0
1-Methylnaphthalene	0.791	0.788	0.4
Biphenyl	1.169	1.145	2.1
Acenaphthylene	1.247	1.480	-18.7
Acenaphthene	0.959	0.996	-3.9
Dibenzofuran	1.383	1.410	-2.0
Fluorene	1.105	1.136	-2.8
Dibenzothiophene	0.994	1.130	-13.7
Phenanthrene	1.103	1.217	-10.3
Anthracene	0.871	1.030	-18.3
Acridine	0.547	0.582	-6.4
Carbazole	0.724	0.724	0.0
Fluoranthene	1.019	1.373	-34.7
Pyrene	1.178	1.471	-24.9
Benzo(A)Anthracene	1.092	0.930	14.8
Chrysene	1.266	0.930	26.5
Benzo(B)Fluoranthene	1.546	1.140	26.3
Benzo(K)Fluoranthene	1.317	1.104	16.2
Benzo(E)Pyrene	1.302	1.050	19.4
Benzo(A)Pyrene	1.181	0.936	20.7
Perylene	0.919	0.732	20.3
Indeno(1,2,3-CD)Pyrene	1.443	0.999	30.8
Dibenz(A,H)Anthracene	1.298	0.930	28.4
Benzo(G,H,I)Perylene	1.302	0.956	26.6
D8-Naphthalene	1.413	1.408	0.4
D10-Flourene	0.891	0.962	-8.0
D12-Chrysene	1.087	0.815	25.0

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16727

Instrument ID: 4500-C Calibration Date(s): 10/14/91 Time: 1046

Lab ID: C4800 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	0.776	12.0
2,3-Dihydroindene	0.811	0.730	10.0
1H-Indene	0.709	0.643	9.3
Naphthalene	1.853	1.549	16.4
Benzo(B)Thiophene	1.167	1.107	5.1
Quinoline	0.716	0.598	16.5
1H-Indole	0.786	0.515	34.5
2-Methylnaphthalene	0.762	0.696	8.7
1-Methylnaphthalene	0.791	0.784	0.9
Biphenyl	1.169	1.141	2.4
Acenaphthylene	1.247	1.449	-16.2
Acenaphthene	0.959	0.971	-1.3
Dibenzofuran	1.383	1.378	0.4
Fluorene	1.105	1.121	-1.4
Dibenzothiophene	0.994	1.007	-1.3
Phenanthrene	1.103	1.115	-1.1
Anthracene	0.871	0.915	-5.1
Acridine	0.547	0.547	0.0
Carbazole	0.724	0.585	19.2
Fluoranthene	1.019	1.209	-18.6
Pyrene	1.178	1.256	-6.6
Benzo(A)Anthracene	1.092	0.809	25.9
Chrysene	1.266	0.847	33.1
Benzo(B)Fluoranthene	1.546	1.058	31.6
Benzo(K)Fluoranthene	1.317	1.035	21.4
Benzo(E)Pyrene	1.302	0.948	27.2
Benzo(A)Pyrene	1.181	0.900	23.8
Perylene	0.919	0.711	22.6
Indeno(1,2,3-CD)Pyrene	1.443	1.069	25.9
Dibenz(A,H)Anthracene	1.298	0.920	29.1
Benzo(G,H,I)Perylene	1.302	0.973	25.3
D8-Naphthalene	1.413	1.382	2.2
D10-Flourene	0.891	0.974	-9.3
D12-Chrysene	1.087	0.807	25.8

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16727 SAS No.: SDG No:

Lab File ID (Standard): C4736 Date Analyzed: 10/05/91

Instrument ID: 4500-C Time Analyzed: 1348

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	2400000	4220000	4110000
UPPER LIMIT	4800000	8440000	8220000
LOWER LIMIT	1200000	2110000	2060000
SAMPLE NO.			
16727-01	2450000	3990000	3230000
16727-02	2380000	4730000	3580000
16727-03	2430000	4150000	3620000
16727-04	1850000	2710000	2520000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16727 SAS No.: SDG No:

Lab File ID (Standard): C4757 Date Analyzed: 10/08/91

Instrument ID: 4500-C Time Analyzed: 1456

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	276000	370000	342000
UPPER LIMIT	552000	740000	684000
LOWER LIMIT	138000	185000	171000
SAMPLE NO.			
16727-05	412000	557000	373000
16727-06	515000	686000	213000
16727-09	484000	683000	000 *
BLK01	362000	511000	424000
BLK02	426000	579000	49600

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16727 SAS No.: SDG No:

Lab File ID (Standard): C4770 Date Analyzed: 10/09/91

Instrument ID: 4500-C Time Analyzed: 1125

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	353000	540000	607000
UPPER LIMIT	706000	1080000	121400
LOWER LIMIT	176500	2700000	304000
SAMPLE NO.			
16727-07	515000	765000	673000
16727-08	481000	792000	362000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16727 SAS No.: SDG No:

Lab File ID (Standard): C4796 Date Analyzed: 10/11/91

Instrument ID: 4500-C Time Analyzed: 1606

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	342000	501000	709000
UPPER LIMIT	684000	1000000	1420000
LOWER LIMIT	171000	250000	354000
SAMPLE NO.			
16727-11	360000	537000	722000
16727 12	386000	666700	799000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16727 SAS No.: SDG No:

Lab File ID (Standard): C4800 Date Analyzed: 10/14/91

Instrument ID: 4500-C Time Analyzed: 1046

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	720000	1120000	1460000
UPPER LIMIT	1440000	2240000	2920000
LOWER LIMIT	360000	560000	730000
SAMPLE NO.			
16727-03DL	609000	1030000	1220000
16727-04DL	577000	919000	1110000
16727-12DL	421000	688000	8290000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

Enseco
A Corning Company

CASE NARRATIVE

FOR

City of St. Louis Park

November 06, 1991

Enseco - RMAL Project Number 016769

Introduction

Ten aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on August 30, 1991. The samples were logged in under RMAL project number 016769. Sample PCJ-SLP10FBD-082991 (RMA # 016769-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for medium level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 16769-01, 05, 06, 07, 08 and the associated method blank show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Samples 016769-02, 05, 06, 08, 01MS and 01MSD show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 11/06/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio **Date:** 11/06/91
Debbie Fazio
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016769-0001-SA	PCJ-SLP10-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0001-MS	PCJ-SLP10MS-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0001-SD	PCJ-SLP10MSD-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0002-SA	PCJ-SLP10D-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0003-SA	PCJ-SLP10FB-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0004-SA	PCJ-SLP10FBD-082991	AQUEOUS	29 AUG 91		30 AUG 91
016769-0005-SA	STPW133082991	AQUEOUS	29 AUG 91	10:00	30 AUG 91
016769-0006-SA	STPW33082991	AQUEOUS	29 AUG 91	11:45	30 AUG 91
016769-0007-SA	STPW24082991	AQUEOUS	29 AUG 91	09:45	30 AUG 91
016769-0008-SA	STP-W412082991	AQUEOUS	29 AUG 91	08:20	30 AUG 91

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-05

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-05

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4789

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	3500	
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	460	J
4565-32-6	Benzo(B)Thiophene	180	
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	280	
90-12-0	1-Methylnaphthalene	190	*
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	100	U
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-06

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-06

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4790

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	5500	
95-13-6	1H-Indene	3000	
91-20-3	Naphthalene	800	
4565-32-6	Benzo(B)Thiophene	760	*
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	1200	
90-12-0	1-Methylnaphthalene	1100	
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	180	
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	81	J
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-07

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-07

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4791

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	3300	
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	520	U
4565-32-6	Benzo(B)Thiophene	72	U
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	130	U
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	860	
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16769-08

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16769 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16769-08

Sample wt/vol: 500 (g/ml) ML Lab File ID: C4792

Level: (low/med) MED Date Received: 08/30/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	1200	
95-13-6	1H-Indene	290	
91-20-3	Naphthalene	1900	
4565-32-6	Benzo(B)Thiophene	92	
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	860	
90-12-0	1-Methylnaphthalene	580	
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	100	U
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	270	*
85-01-8	Phenanthrene	91	J
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

ST. PETER AQUIFER - MONITORING

W410 PHENOLICS - 06/27/91
- 09/18/91

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

July 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (includes QC) received at Rocky Mountain Analytical Laboratory on June 28, 1991.

If you have any questions, the Program Administrator assigned to this project is Joel Holtz.

Sincerely,

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL# 15612

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No. _____

Sample Numbers

RMA SAMPLE NO	CLIENT SAMPLE ID
1561201	DPV-W420TP-062791
1561202	DPV-W421TP-062791
1561202D	DPV-W421TPMSD-062791
1561202S	DPV-W421TPMS-062791
1561203	DPV-W421TPD-062791
1561204	DPV-W421TPFB-062791
1561205	DPV-W421TPFBD-062791
1561206	PCV-W23TP-062791
1561207	IGV-W10STP-062791
1561208	STP-W410TP-062791

PARAMETERS	METHOD NO.	DETECTION LIMIT	SOURCE
Phenol	420.1	5 ug/l	1

Comments:

EIGHT WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 15612.

SOURCE:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Ann Kang

Date: 7/18/91

Project # 15612

The samples for this project were prepped for phenol on 7/05/91. On that date 100 mls of sample were prepped. For a reporting limit of 0.05 ppb we distill 200 mls of sample. Since the samples had limited volume 100 more mls were distilled on 7/12/91 and added to the distillate from the first date for a final volume of 200 mls.

Laboratory Supervisor Ann Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

RMA SAMPLE NO
1561208

CLIENT ID NO
STP-W410TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

RECEIVED
CITY OF ST. LOUIS PARK

October 16, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on September 19, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Debbie Tejo (for)

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL #17193

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U.S.EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1719301	PCJ-W23TP-091891
1719302	IGV-W105TP-091891
1719303	STP-W410TP-091891
1719304	DPV-W422TP-091891
1719305	DPV-W421TP-091891
1719306	DPV-W420TP-091891
1719306MSD	DPV-W420TPMSD-091891
1719306MS	DPV-W420TPMS-091891
1719307	DPV-W420TPD-091891
1719308	DPV-W420TPFB-091891
1719309	DPV-W420TPFBD-091891

Parameters	Method No.	Detection Limits	Source
PHENOLICS	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC#17193

Sources:
1="Methods for Chemical Analysis of Water and Wastewater," USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 10/16/91

RESULT QUALIFIERS

C - **Concentration Qualifier:**

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - **Quality Control Qualifiers:**

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - **Method Qualifier:**

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719303

000005

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: STP-W410TP-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

APPENDIX E

LABORATORY DATA SUMMARY PACKAGE: DRIFT-PLATTEVILLE AQUIFER

DRIFT-PLATTEVILLE AQUIFER
PAH QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W420	03/28/91	14232-BLK01	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W421	03/28/91	14232-BLK01	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W422	03/28/91	14232-BLK01	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W420	06/27/91	15605-BLK02	DPV-W421D-062791	DPV-W421MS-062791	DPV-W422MSD-062791	DPV-W421FB-062791
W421	06/27/91	15605-BLK02	DPV-W421D-062791	DPV-W421MS-062791	DPV-W422MSD-062791	DPV-W421FB-062791
W422	04/11/91	14472-BLK01	DPV-W422D-041191	DPV-W422MS-041191	DPV-W422MSD-041191	DPV-W422FB-041191
W420	09/18/91	17191-BLK02	DPV-W420D-091891	DPV-W420MS-091891	DPV-W422MSD-091891	DPV-W420FB-091891
W421	09/18/91	17191-BLK01	DPV-W420D-091891	DPV-W420MS-091891	DPV-W422MSD-091891	DPV-W420FB-091891
W422	NOT SAMPLED					
W420	10/16/91	17977-BLK01	DPV-W422D-101691	DPV-W422MS-101691	DPV-W422MSD-101691	DPV-W422FB-101691
W421	10/16/91	17977-BLK01	DPV-W422D-101691	DPV-W422MS-101691	DPV-W422MSD-101691	DPV-W422FB-101691
W422	10/16/91	17977-BLK01	DPV-W422D-101691	DPV-W422MS-101691	DPV-W422MSD-101691	DPV-W422FB-101691

DRIFT-PLATTEVILLE AQUIFER
PHENOLICS QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W420	03/28/91	14236BLK	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W421	03/28/91	14236BLK	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W422	03/28/91	14236BLK	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W420	06/27/91	15612-BLK	DPV-W421D-062791	DPV-W421MS-062791	DPV-W421MSD-062791	DPV-W421FB-062791
W421	06/27/91	15612-BLK	DPV-W421D-062791	DPV-W421MS-062791	DPV-W421MSD-062791	DPV-W421FB-062791
W422	04/11/91	14472-BLK	DPV-W422D-041191	DPV-W422MS-041191	DPV-W422MSD-041191	DPV-W422FB-041191
W420	09/18/91	17193-BLK	DPV-W420TPD-091891	DPV-W420TPMS-091891	DPV-W420TPMSD-091891	DPV-W420TPFB-091891
W421	09/18/91	17193-BLK	DPV-W420TPD-091891	DPV-W420TPMS-091891	DPV-W420TPMSD-091891	DPV-W420TPFB-091891
W422	09/18/91	17193-BLK	DPV-W420TPD-091891	DPV-W420TPMS-091891	DPV-W420TPMSD-091891	DPV-W420TPFB-091891
W420	10/16/91	17984-BLK	DPV-422TPD-101691	DPV-W422TPMS-101691	DPV-W422TPMSD-101691	DPV-W422TPFB-101691
W421	10/16/91	17984-BLK	DPV-422TPD-101691	DPV-W422TPMS-101691	DPV-W422TPMSD-101691	DPV-W422TPFB-101691
W422	10/16/91	17984-BLK	DPV-422TPD-101691	DPV-W422TPMS-101691	DPV-W422TPMSD-101691	DPV-W422TPFB-101691

RAP SECTIONS 9.1.3. & 9.2.3. MONITORING

1ST QUARTER - 1991

PAH MONITORING

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 15, 1991

Enseco - RMAL Project Number 014232

Introduction

Nine aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on March 29, 1991. The samples were logged in under RMAL project number 014232. Sample DPV-W422FBD (RMA # 014232-07) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Due to concentrations of target compounds present in excess of calibration range, samples 014232-01 and 02 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 05-15-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel E. Holtz Date: 5-15-91
Joel Holtz
Program Administrator

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014232-0001-SA	DPV-W420-032891	AQUEOUS	28 MAR 91		29 MAR 91
014232-0002-SA	DPV-W421-032891	AQUEOUS	28 MAR 91		29 MAR 91
014232-0003-SA	~~DPV-W423~~-032891 PCJ-W23-	AQUEOUS	28 MAR 91		29 MAR 91
014232-0004-SA	DPV-W422	AQUEOUS	28 MAR 91		29 MAR 91
014232-0004-MS	DPV-W422MS	AQUEOUS	28 MAR 91		29 MAR 91
014232-0004-SD	DPV-W422MSD	AQUEOUS	28 MAR 91		29 MAR 91
014232-0005-SA	DPV-W422D	AQUEOUS	28 MAR 91		29 MAR 91
014232-0006-SA	DPV-W422FB	AQUEOUS	28 MAR 91		29 MAR 91
014232-0007-SA	DPV-W422FBD	AQUEOUS	28 MAR 91		29 MAR 91

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014232

PPT PAH

QC Summary.....001

Sample Data.....009

Standards Data.....138

Raw QC Data.....200

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	PACKED BY: MZR
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZR
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: MZR	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER	CONDITION OF CONTENTS
INITIAL CONTENTS TEMP °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
3-28-91		DPV-W420 -032891 01	1XL AMBER	2	PPB PAH	
		DPV-W421 -032891 02	1XL AMBER	2	PPB PAH	
		DPV-W23 -032891 03	1XL AMBER	2	PPB PAH	
		DPV-W422 04				
		DPV-W422D 05				
		DPV-W422MS 04MS				
		DPV-W422MSD 04MSD				
		DPV-W422FB 06				
		DPV-W422FBD 07				
3-28-91			1XL AMBER	2	PPB PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR		
METHOD OF SHIPMENT: FED EXP		AIRBILL NUMBER:
RECEIVED FOR LAB: RMAL	SIGNED: [signature]	DATE/TIME: 03-29-91 0800
ENSECO PROJECT NUMBER: 14232		

ENS—1133 White – CLIENT Pink – LAB

SUMMARY

DATA

PACKAGE

FOR

City of St Louis Park
PPB PAH
Rmal #14232

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14232-01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5577

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 20.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	65	J
496-11-7	2,3-Dihydroindene	200	
95-13-6	1H-Indene	500	
91-20-3	Naphthalene	2600	
4565-32-6	Benzo(B)Thiophene	200	
91-22-5	Quinoline	200	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	150	J
90-12-0	1-Methylnaphthalene	160	J
92-52-4	Biphenyl	30	J
208-96-8	Acenaphthylene	200	U
83-32-9	Acenaphthene	120	J
132-64-9	Dibenzofuran	40	J
86-73-7	Fluorene	38	J
132-65-0	Dibenzothiophene	200	U
85-01-8	Phenanthrene	24	J
120-12-7	Anthracene	200	U
260-94-6	Acridine	200	U
86-74-8	Carbazole	73	J
206-44-0	Fluoranthene	200	U
129-00-0	Pyrene	200	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	200	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	200	U
192-97-2	Benzo(E)Pyrene	200	U
50-32-8	Benzo(A)Pyrene	200	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	200	U
53-70-3	Dibenz(A,H)Anthracene	200	U
191-24-2	Benzo(G,H,I)Perylene	200	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14232-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5578

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	100	U
496-11-7	2,3-Dihydroindene	180	
95-13-6	1H-Indene	160	
91-20-3	Naphthalene	890	
4565-32-6	Benzo(B)Thiophene	97	J
91-22-5	Quinoline	100	U
120-72-9	1H-Indole	100	U
91-57-6	2-Methylnaphthalene	100	U
90-12-0	1-Methylnaphthalene	56	J
92-52-4	Biphenyl	100	U
208-96-8	Acenaphthylene	100	U
83-32-9	Acenaphthene	38	J
132-64-9	Dibenzofuran	100	U
86-73-7	Fluorene	100	U
132-65-0	Dibenzothiophene	100	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	100	U
260-94-6	Acridine	100	U
86-74-8	Carbazole	28	J
206-44-0	Fluoranthene	100	U
129-00-0	Pyrene	100	U
56-55-3	Benzo(A)Anthracene	100	U
218-01-9	Chrysene	100	U
205-99-2	Benzo(B)Fluoranthene	100	U
207-08-9	Benzo(K)Fluoranthene	100	U
192-97-2	Benzo(E)Pyrene	100	U
50-32-8	Benzo(A)Pyrene	100	U
198-55-0	Perylene	100	U
193-39-5	Indeno(1,2,3-CD)Pyrene	100	U
53-70-3	Dibenz(A,H)Anthracene	100	U
191-24-2	Benzo(G,H,I)Perylene	100	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14232-04

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-04

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5583

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	53	
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	3.4	J
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	7.4	J
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	2.3	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14232-05

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-05

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5580

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	54	
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	3	J
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	7.7	J
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	2.1	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14232-06

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-06

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5586

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14232-04MS

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-04MS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5584

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	55	
95-13-6	1H-Indene	41	SC
91-20-3	Naphthalene	34	SC
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	38	SC
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	43	SC
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	7.6	J
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	44	SC
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	2.5	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	34	SC
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	31	SC
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14232-04MSD

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-04MSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5585

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	53	
95-13-6	1H-Indene	41	SC
91-20-3	Naphthalene	34	SC
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	38	SC
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	43	SC
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	7.2	J
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	44	SC
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	2.2	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	25	SC
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	24	SC
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5576

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP)	#	S2 (FLU)	#	S3 (CHR)	#
1	14232-01		D		D		D
2	14232-02		D		D		D
4	14232-03	88		94		65	
5	14232-04	82		91		34	
6	14232-05	85		90		43	
7	14232-06	68		76		90	
8	14232-04MS	88		98		78	
9	14232-04MSD	84		91		42	
10	BLK01	86		98		84	

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(25-175)
S2 (FLU) = D10-FLUORENE	(25-175)
S3 (CHR) = D12-CHRYSENE	(25-175)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 14232-04 LEVEL: LOW

Compound	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
1H-Indene	50	3.37	34.3	62
Naphthalene	50	0	43.7	87
Quinoline	50	0	33.5	67
2-Methylnaphthalene	50	0	41.1	81
Fluorene	50	0	38.4	77
Chrysene	50	0	31.4	63
Benzo(E)Pyrene	50	0	42.6	85

Compound	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
1H-Indene	50	34.2	62	0
Naphthalene	50	43.6	87	0
Quinoline	50	25.2	50	29
2-Methylnaphthalene	50	41.4	82	1
Fluorene	50	37.6	75	3
Chrysene	50	24.3	48	27
Benzo(E)Pyrene	50	42.8	86	1

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Lab File ID: R5576 Lab Sample ID: BLK01

Date Extracted: 04/01/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 05/03/91 Time Analyzed: 1807

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14232-01	14232-01	R5577	05/03/91
2	14232-02	14232-02	R5578	05/03/91
4	14232-03	14232-03	R5579	05/03/91
5	14232-04	14232-04	R5583	05/05/91
6	14232-05	14232-05	R5580	05/03/91
7	14232-06	14232-06	R5586	05/05/91
8	14232-04MS	14232-04MS	R5584	05/05/91
9	14232-04MSD	14232-04MSD	R5585	05/05/91

COMMENTS:

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Lab File ID: R5570 DFTPP Injection Date: 05/03/91

Instrument ID: 4500-R DFTPP Injection Time: 1050

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.47
68	Less than 2.0% of mass 69	1.82 (0.0)1
69	Mass 69 relative abundance	37.68
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	41.49
197	Less than 1.0% of mass 198	0.00
198	Base peak, 100% relative abundance	100.00
199	5.0 - 9.0% of mass 198	6.77
275	10.0 - 30.0% of mass 198	21.43
365	Greater than 1.00% of mass 198	2.14
441	Present, but less than mass 443	7.58
442	Greater than 40.0% of mass 198	59.73
443	17.0 - 23.0% of mass 442	17.17 (19.5)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5571	05/03/91	1112
02	SSTD0160	160_PPM_PAH_STD	R5572	05/03/91	1220
03	SSTD0120	120_PPM_PAH_STD	R5573	05/03/91	1320
04	SSTD080	80_PPM_PAH_STD	R5574	05/03/91	1422
05	SSTD020	20_PPM_PAH_STD	R5575	05/03/91	1531
06	SBLK01	SBLK01	R5576	05/03/91	1807
07	14232-01	14232-01	R5577	05/03/91	1859
08	14232-02	14232-02	R5578	05/03/91	1952
09	14232-03	14232-03	R5579	05/03/91	2045
10	14232-05	14232-05	R5580	05/03/91	2137

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Lab File ID: R5581 DFTPP Injection Date: 05/05/91

Instrument ID: 4500-R DFTPP Injection Time: 1219

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.21
68	Less than 2.0% of mass 69	1.84 (0.0)1
69	Mass 69 relative abundance	36.80
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	41.79
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.54
275	10.0 - 30.0% of mass 198	21.81
365	Greater than 1.00% of mass 198	2.01
441	Present, but less than mass 443	7.68
442	Greater than 40.0% of mass 198	60.93
443	17.0 - 23.0% of mass 442	17.41 (19.5)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5582	05/05/91	1234
02	14232-04	14232-04	R5583	05/05/91	1346
03	14232-04MS	14232-04MS	R5584	05/05/91	1438
04	14232-04MSD	14232-04MSD	R5585	05/05/91	1530
05	14232-06	14232-06	R5586	05/05/91	1623

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14232

Instrument ID: 4500-R Calibration Date(s): 05/03/91
05/03/91

Maximum % RSD =35%

Lab File ID: RRF 20 = R5575 RRF 50 = R5571
RRF 80 = R5574 RRF 120 = R5573 RRF 160 = R5572

COMPOUND	20 RRF	50 RRF	80 RRF	120 RRF	160 RRF	AVE RRF	% RSD
2,3-Benzofuran	0.795	0.861	0.899	0.928	0.929	0.882	6.4
2,3-Dihydroindene	0.754	0.808	0.766	0.840	0.823	0.798	4.6
1H-Indene	0.707	0.759	0.727	0.814	0.773	0.756	5.5
Naphthalene	1.760	2.166	2.092	1.785	1.696	1.900	11.2
Benzo(B)Thiophene	1.264	1.342	1.519	1.396	1.348	1.374	6.8
Quinoline	1.050	1.134	1.189	1.195	1.178	1.149	5.3
IH-Indole	1.073	1.157	1.205	1.269	1.193	1.179	6.1
2-Methylnaphthalene	1.045	1.099	1.121	1.187	1.125	1.115	4.6
1-Methylnaphthalene	1.068	1.141	1.069	1.217	1.164	1.132	5.7
Biphenyl	1.340	1.363	1.423	1.435	1.410	1.394	2.9
Acenaphthylene	1.929	2.191	2.210	1.874	1.842	2.009	8.8
Acenaphthene	1.168	1.212	1.216	1.148	1.149	1.179	2.8
Dibenzofuran	1.626	1.875	1.872	1.644	1.562	1.716	8.6
Fluorene	1.325	1.416	1.491	1.414	1.365	1.402	4.4
Dibenzothiophene	0.912	1.140	1.048	0.977	0.903	0.996	10.0
Phenanthrene	0.918	1.166	1.061	1.037	0.907	1.018	10.6
Anthracene	0.995	1.255	1.160	1.085	0.976	1.094	10.6
Acridine	0.688	0.766	0.848	0.766	0.862	0.786	9.0
Carbazole	0.779	0.856	1.000	0.860	0.844	0.868	9.3
Fluoranthene	1.108	1.339	1.265	1.068	0.981	1.152	12.7
Pyrene	1.080	1.310	1.247	1.048	1.019	1.141	11.3
Benzo(A)Anthracene	1.287	1.286	1.357	1.359	1.263	1.310	3.4
Chrysene	1.226	1.200	1.387	1.097	1.040	1.190	11.2
Benzo(B)Fluoranthene	1.116	1.196	1.252	1.337	1.256	1.231	6.6
Benzo(K)Fluoranthene	1.100	1.030	1.164	0.948	0.957	1.040	8.9
Benzo(E)Pyrene	0.990	0.987	0.953	1.054	1.038	1.004	4.1
Benzo(A)Pyrene	0.991	0.987	1.022	1.070	1.022	1.018	3.3
Perylene	0.799	0.827	0.797	0.865	0.872	0.832	4.3
Indeno(1,2,3-CD)Pyrene	0.924	0.984	0.935	0.955	0.948	0.949	2.4
Dibenz(A,H)Anthracene	0.791	0.844	0.801	0.746	0.716	0.780	6.4
Benzo(G,H,I)Perylene	0.761	0.823	0.808	0.778	0.765	0.787	3.5
D8-Naphthalene	1.567	1.650	1.931	1.677	1.567	1.678	8.9
D10-Fluorene	1.098	1.152	1.057	1.124	1.057	1.098	3.8
D12-Chrysene	1.072	1.009	0.979	0.913	0.881	0.971	7.8

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14232

Instrument ID: 4500-R Calibration Date(s): 05/05/91 Time: 1234

Lab ID: R5582 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 35%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.906	-2.7
2,3-Dihydroindene	0.798	0.853	-6.9
1H-Indene	0.756	0.799	-5.7
Naphthalene	1.900	2.090	-10.0
Benzo(B)Thiophene	1.374	1.417	-3.1
Quinoline	1.149	1.174	-2.2
1H-Indole	1.179	1.195	-1.4
2-Methylnaphthalene	1.115	1.140	-2.2
1-Methylnaphthalene	1.132	1.172	-3.5
Biphenyl	1.394	1.413	-1.4
Acenaphthylene	2.009	2.072	-3.1
Acenaphthene	1.179	1.250	-6.0
Dibenzofuran	1.716	1.687	1.7
Fluorene	1.402	1.416	-1.0
Dibenzothiophene	0.996	0.979	1.7
Phenanthrene	1.018	1.037	-1.9
Anthracene	1.094	1.182	-8.0
Acridine	0.786	0.742	5.6
Carbazole	0.868	0.815	6.1
Fluoranthene	1.152	1.108	3.8
Pyrene	1.141	1.076	5.7
Benzo(A)Anthracene	1.310	1.210	7.6
Chrysene	1.190	1.176	1.2
Benzo(B)Fluoranthene	1.231	1.232	-0.1
Benzo(K)Fluoranthene	1.040	0.989	4.9
Benzo(E)Pyrene	1.004	0.990	1.4
Benzo(A)Pyrene	1.018	1.004	1.4
Perylene	0.832	1.818	1.7
Indeno(1,2,3-CD)Pyrene	0.949	0.981	-3.4
Dibenz(A,H)Anthracene	0.780	0.854	-9.5
Benzo(G,H,I)Perylene	0.787	0.790	-0.4
D8-Naphthalene	1.678	1.729	-3.0
D10-Fluorene	1.098	1.147	-4.5
D12-Chrysene	0.971	0.992	-2.2

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14232

Instrument ID: 4500-R Calibration Date(s): 05/03/91 Time: 1112

Lab ID: R5571 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 35%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.861	2.4
2,3-Dihydroindene	0.798	0.808	-1.3
1H-Indene	0.756	0.759	-0.4
Naphthalene	1.900	2.166	-14.0
Benzo(B)Thiophene	1.374	1.342	2.3
Quinoline	1.149	1.134	1.3
1H-Indole	1.179	1.157	1.9
2-Methylnaphthalene	1.115	1.099	1.4
1-Methylnaphthalene	1.132	1.141	-0.8
Biphenyl	1.394	1.363	2.2
Acenaphthylene	2.009	2.191	-9.1
Acenaphthene	1.179	1.212	-2.8
Dibenzofuran	1.716	1.875	-9.3
Fluorene	1.402	1.416	-1.0
Dibenzothiophene	0.996	0.140	-14.5
Phenanthrene	1.018	1.166	-14.5
Anthracene	1.094	1.255	-14.7
Acridine	0.786	0.766	2.5
Carbazole	0.868	0.856	1.4
Fluoranthene	1.152	1.339	-16.2
Pyrene	1.141	1.310	-14.8
Benzo(A)Anthracene	1.310	1.286	1.8
Chrysene	1.190	1.200	-0.8
Benzo(B)Fluoranthene	1.231	1.196	2.8
Benzo(K)Fluoranthene	1.040	1.030	1.0
Benzo(E)Pyrene	1.004	0.987	1.7
Benzo(A)Pyrene	1.018	0.987	3.0
Perylene	0.832	0.827	0.6
Indeno(1,2,3-CD)Pyrene	0.949	0.984	-3.7
Dibenz(A,H)Anthracene	0.780	0.844	-8.2
Benzo(G,H,I)Perylene	0.787	0.823	-4.6
D8-Naphthalene	1.678	1.650	1.7
D10-Fluorene	1.098	1.152	-4.9
D12-Chrysene	0.971	1.009	-3.9

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14232 SAS No.: SDG No:

Lab File ID (Standard): R5582 Date Analyzed: 05/05/91

Instrument ID: 4500-R Time Analyzed: 2134

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	31100	60500	39000
UPPER LIMIT	62200	121000	78000
LOWER LIMIT	15500	30200	19500
SAMPLE NO.			
14232-04	35000	68300	37300
14232-04MS	35400	69700	40700
14232-04MSD	36000	72200	41000
14232-06	35900	68100	36600

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14232 SAS No.: SDG No:

Lab File ID (Standard): R5571 Date Analyzed: 05/03/91

Instrument ID: 4500-R Time Analyzed: 1112

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	34900	68000	43000
UPPER LIMIT	69800	136000	86000
LOWER LIMIT	17500	34000	21500
SAMPLE NO.			
BLK01	35800	68000	42300
14232-01	33500	65100	45500
14232-02	33200	66200	44800
14232-03	34300	66100	48000
14232-05	39600	83200	56900

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

PHENOLICS MONITORING

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

April 24, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (including QC) received at Enseco-Rocky Mountain Analytical Laboratory on March 29, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Joel E. Holtz
Program Administrator

JH/dk

RMAL #14236

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U.S.EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

0000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1423601	DPV-W420TP-032891
1423602	DPV-W421TP-032891
1423603	DPV-W422TP-032891
1423603D	DPV-W422TPMSD-032891
1423603S	DPV-W422TPMS-032891
1423604	DPV-W422TPD-032891
1423605	DPV-W422TPFB-032891
1423606	DPV-W422TPFBD-032891
1423607	PCV-W23TP-032891
1423608	IGV-W10STP-032891

Parameters	Method No.	Detection Limits	Source
PPB PHENOLS	420.1	5 ug/L	1

Comments:
FIVE WATER SAMPLES FOR PPB PHENOLS ANALYSIS.
RMA QC#14236

Sources:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 4/19/91

Project# 14236

Samples 01 through 08 were analyzed on 4/01/91. We realize sample 06 is a duplicate of 05 and that this is a field blank. Sample 06 was slightly over the detection limit so we decided to reanalyze the sample on 4/18/91. The result for the latter date was reported. All raw data are included.

Laboratory Supervisor Anne Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"F"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

U.S. EPA - CLP

EPA SAMPLE NO.

1423601

1

INORGANIC ANALYSIS DATA SHEET

0000004

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W420TP-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	232		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1423602

1

INORGANIC ANALYSIS DATA SHEET

0000005

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W421TP-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	29.9		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1423603

1

INORGANIC ANALYSIS DATA SHEET

0000006

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TP-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	12.0		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1423604

1

INORGANIC ANALYSIS DATA SHEET

0000007

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TPD-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	12.7		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1423606

1

INORGANIC ANALYSIS DATA SHEET

0000008

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TPFBD-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK DUPLICATE.

U.S. EPA - CLP

EPA SAMPLE NO.

1423605

1

INORGANIC ANALYSIS DATA SHEET

0000009

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TPFB-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

2A
CALIBRATION AND BLANKS

0000012

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Calibration Date: 04/01/91

Initial Calibration Source: BAKER VER. #4409

Continuing Calibration Source: MALLINCKRODT VER. #4408

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration				
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)
PHENOLS	50.0	48.1	96.2	50.0	50.5	101.0	50.5	101.0
PHENOLS	50.0	51.2	102.4					

3
BLANKS

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blanks (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C
PHENOLS	5	U	5	U	5	U			5	U

2A
CALIBRATION AND BLANKS

0000013

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Calibration Date: 04/18/91

Initial Calibration Source: BAKER VER. #4409

Continuing Calibration Source: MALLINCKRODT VER. #4408

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)
PHENOLS	50.0	49.8	99.6	50.0	51.7	103.4	52.1	104.2
PHENOLS	50.0	49.1	102.4					

3
BLANKS

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blanks (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C
PHENOLS	5	U	5	U	5	U			5	U

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

0000014

EPA SAMPLE NO.

1423603S

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Level (low/medium): LOW

% Solids for Sample: 0.0

Concentration Units: ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
PHENOLS	75-125	61.2		12.0		50.00	98.4	

Comments:

U.S. EPA - CLP

6
DUPLICATES

0000015

EPA SAMPLE NO.

1423603D

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units: ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q
PHENOLS		12.7		12.0		5.7	

! !

COLORIMETRIC ANALYSIS

DCS STOCK #4409

0000016

PARAMETER ppb phenol CONTROL Baker = 50 ug/l DATE 4-1-91

ANALYST JSC SPIKE 50 ug/l UNITS ug/l

		Concentration	Absorbance
	Blank	0	0.047 → 0
Cal Stock #4408 Mallinckrodt	STD 1	5	0.071 → 0.024
	STD 2	10	0.081 → 0.034
	STD 3	20	0.111 → 0.064
	STD 4	50	0.198 → 0.151
	STD 5	100	0.342 → 0.295

Corr. Coef. = 0.9996

Slope = 343.8

Intercept = -1.715

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	~~COLOR B~~ ABS-BLK	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT	REPORTED CONC.	% REC.
BLANK										
ICV/DCS				0.192	0.145	48.14	1x	1x	48.1	96.2%
ICV/DCS				0.201	0.154	51.23	1x		51.2	102%
~~ICV/DCS~~ ICB				0.050	0.003	—			5u	
14236-PB				0.062	0.015	—	1x		5u	
01				OFF SCALE					Rerun (5x)	
02				0.139	0.092	29.92			29.9	
03				0.087	0.040	12.04			12.0	
03D				0.089	0.042	12.73			12.7	
03S				0.230	0.183	61.20			61.2	98.4%
04				0.089	0.042	12.73			12.7	
05				0.057	0.010	—			5u.	
06				0.070	0.023	6.19			6.2 Not Used	rer
07				0.060	0.013	—	↓		5u	
CCV (50)				0.199	0.152	50.54			50.5	101%
CCB				0.049	0.002	—			5u	
08				0.048	0.001	—	1x	↓	5u	
* 01				0.149	0.140	46.42	↓	5x	232	
CCV (50)				0.199	0.152	50.54		1x	50.5	101%
CCB				0.050	0.003	—		↓	5u	

*Sample diluted in Chloroform.

4/4/91

INORGANIC NONMETALS SAMPLE PREPARATION

0000017

PARAMETER Phenol ANALYST JSC DATE 4-1-91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
BLANK				200 ml	200 ml	1X
LCS 1		DCS STOCK #4409 (50 ug/l)				
LCS 2		Baker Exp. 6/20/91				
14236-01	<2		Sulfide = ND ResCl⁻ = ND			
02						
03						
03D						
03S						
04						
05						
06						
07						
08						

Samples Properly Preserved	Y	N	NA
Interferences Documented	Y		NA
Special Instructions Followed. Copy Attached:	Y	N	NA
Anomalies Observed and Documented:	Y		NA
Deviations From Method Documented:	Y		NA
Prep Documentation Complete and Reviewed:	Y	N	NA
Data Entered:	Y	N	NA

COLORIMETRIC ANALYSIS

0000018

DCS 4409 Baker

PARAMETER ppb Phenol CONTROL 50 ppb DATE 4/18/91

ANALYST L. Sullivan SPIKE 50 ppb UNITS ug/L

G Martinez

	Concentration	Absorbance	Bck
Blank	0	0.062	0.000
STD 1	5	0.076	0.014
STD 2	10	0.091	0.029
STD 3	20	0.109	0.047
STD 4	50	0.209	0.147
STD 5	100	0.360	0.298

4408 Mallinckrodt (CCV)

Corr. Coef. = 0.999110178

Slope = 332.867

Intercept = 1.15272

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	ABSORBANCE COLOR B	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT	REPORTED CONC.	% REC.
BLANK					- Bck					
ICV/DCS				0.208	0.142	49.75	1x	1x	49.8	99.6%
ICV/DCS				0.206	0.144	49.08			49.1	98.2%
~~ICV/DCS~~ ICB				0.050	—	—			Su	
PB				0.056	—	—			Su	
14491 -01				0.091	0.029	10.80			10.8	
-01D				0.091	0.029	10.80			10.8	RPD 0
-01S				0.228	0.166	56.40			56.4	91.2%
-02				0.078	0.016	6.47			6.5	
-03				0.062	—	—			Su	
-04				0.049	—	—			Su	
-05				0.114	0.052	18.46			18.5	
-06				0.090	0.028	10.47			10.5	
-07				0.126	~~22.456~~ 0.064 ~~0~~ 4/18/91	22.456			22.5	
CCV (50)				0.214	0.152	51.74			51.7	103%
CCB				0.063	0.001	—			Su	
-08				0.082	0.020	7.81			7.8	
-09				0.090	0.028	10.47			10.5	
-10				0.096	0.034	12.47			12.5	
-11				0.059	—	—			Su	
-12				0.077	0.015	6.145			6.1	
-13				0.056	—	—			Su	
14236-06				0.070	0.008	3.81			Su	
CCV (50)				0.215	0.153	52.08			52.1	104%
CCB				0.063	0.001	—			Su	

5/18/91

INORGANIC NONMETALS SAMPLE PREPARATION

0000019

PARAMETER ppb Phenols ANALYST J. Sullivan/GM DATE 4/17/91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
ICV ~~BLANK~~	<2		4/17/91	200ml	200ml	
ICV ~~LCS 1~~			1 ml of 10ppm (4408) 4409 TV= 50ppb			
ICB ~~LCS 2~~						
14491 -01	<2					
-01D						
-01S			1 ml of 10ppm (4408) TV= 50ppb			
-02						
-03						
-04						
-05						
-06						
-07						
-08						
-09						
-10						
-11						
-12						
-13						
14236 -06						

Samples Properly Preserved	Y	N	NA
Interferences Documented	Y		NA
Special Instructions Followed. Copy Attached:	Y	N	NA
Anomalies Observed and Documented:	Y		NA
Deviations From Method Documented:	Y		NA
Prep Documentation Complete and Reviewed:	Y	N	NA
[illegible]	Y	N	NA

CLP SAMPLE DESCRIPTION SHEET

0000020

RMA # 14236 CLIENT # City of St. Louis Park MATRIX: Water

CLP SAMPLE #	COLOR	CLARITY/TEXTURE	% LIQUID
14236-01	8	1	
-02	↓	↓	
-03			
-03D			
-03S			
-04			
-05			
-06			
-07			
-08			

KEY:

COLOR

1	RED	7	WHITE
2	BLUE	8	COLORLESS
3	YELLOW	9	BROWN
4	GREEN	10	GREY
5	ORANGE	11	BLACK
6	VIOLET	12	OTHER (SPECIFY)

CLARITY

1	CLEAR
2	CLOUDY
3	OPAQUE
4	OTHER (SPECIFY)

TEXTURE

1	FINE (POWDERY)
2	MEDIUM (SAND)
3	COARSE (LARGE CRYSTALS OR ROCKS)
4	CLAY
5	OTHER (SPECIFY)

COMMENTS:

28 Day TAT. Sample 03 is QC. Samples 5 & 6 are field blanks.

8 Phenolics

CLP SAMPLE LOG-IN/PREPARATION SHEET

RMA QC#: 14236 CLIENT #: St City of St Louis Park MATRIX: LOW___ WATER X MED___ SOIL___

CLP #	DATE RECEIVED	PARAMETERS
14236-01	3-29-91	PPB Phenolics
-02		
-03		
-03D		
-03S		
-04		
-05		
-06		
-07		
-08		

SPECIAL INSTRUCTIONS OR CAUTIONS:
28 Day TAT. Sample 03 is QC. Samples 5 & 6 are field blanks.

8 Phenolics

000022

CHAIN OF CUSTODY

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

ENSECO CLIENT	CITY OF ST LOUIS PARK
PROJECT	
SAMPLING COMPANY	SAME
SAMPLING SITE	SAME
TEAM LEADER	MZH

SAMPLE SAFE™ CONDITIONS

PACKED BY	MZH
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	MZH
INITIAL CONTENTS TEMP.	°C
SEAL NUMBER	
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	°C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
3-28-91		DPV-W420TP-032891/14236 -01	16oz clear	1	PPB Phenolics	2ML H2SO4
		DPV-W421TP-032891 -02		1		
		DPV-W422TP-032891 -03		1		
		DPV-W422TPD-032891 -04		1		
		DPV-W422TPFB-032891 -05		1		
		DPV-W422TPFBD-032891 -06		1		
		DPV-W422TPMS-032891 -03 S		1		
		DPV-W422TPMSD-032891 -03 D		1		
		PCJ-W23TP-032891 -07		1		
3-28-91		IGV-W105TP-032891 -08	16oz clear	1	PPB Phenolics	2ML H2SO4

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	MZH
METHOD OF SHIPMENT	FED EXP
AIRBILL NUMBER	
RECEIVED FOR LAB	RMAL
SIGNED	[signature]
DATE/TIME	03-29-91 0800
ENSECO PROJECT NUMBER	14236

ENS—1133

White - CLIEN Pink - LAB

RAP SECTIONS 9.1.3. & 9.2.3 MONITORING

2ND QUARTER - 1991

PAH MONITORING

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 30, 1991

Enseco - RMAL Project Number 014472

Introduction

Fifteen aqueous samples (including MS and MSD) were received at Enseco - Rocky Mountain Analytical Laboratory on April 12, 1991. The samples were logged in under RMAL project number 014472. Sample DPV-W422FBD-041191 (RMAL# 014472-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (PPB) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

In the original analysis of sample 014472-07, target compounds were present in excess of the calibration range. Therefore, the sample was reanalyzed at a dilution and results from both analyses are reported.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Sample 014472-08 was originally extracted within holding times; however, due to surrogate recoveries below the quality control limits, the sample required reextraction. The reanalysis was reported as it showed the surrogate recoveries to be higher, though the recovery of D12-Chrysene was now below the quality control limits. The reextraction took place outside of holding times. There was not enough sample available for an additional reextraction.

Sample 014472-12 was also originally extracted within holding times; however, due to surrogate recoveries below the quality control limits, the sample required reextraction. The reanalysis showed surrogate recoveries well within the limits and these results are reported. The reextraction took place outside of holding times.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 05/30/91
Tracy Conroy
Data Control Supervisor

Approved by: Joel G. Holtz **Date:** 5/30/91
Joel Holtz
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014472-0001-SA	DPV-W422-041191	AQUEOUS	11 APR 91		12 APR 91
014472-0002-SA	DPV-W422D-041191	AQUEOUS	11 APR 91		12 APR 91
014472-0002-MS	DPV-W422MS-041191	AQUEOUS	11 APR 91		12 APR 91
014472-0002-SD	DPV-W422MSD-041191	AQUEOUS	11 APR 91		12 APR 91
014472-0003-SA	DPV-W422FB-041191	AQUEOUS	11 APR 91		12 APR 91
014472-0004-SA	DPV-W422FBD-041191	AQUEOUS	11 APR 91		12 APR 91
014472-0005-SA	DPV-P307-041191	AQUEOUS	11 APR 91	17:55	12 APR 91
014472-0006-SA	DPV-P308-041191	AQUEOUS	11 APR 91	17:35	12 APR 91
014472-0007-SA	DPV-P309-041191	AQUEOUS	11 APR 91	15:55	12 APR 91
014472-0008-SA	DPV-P310-241191	AQUEOUS	11 APR 91	16:05	12 APR 91
014472-0009-SA	DPV-P311-241191	AQUEOUS	11 APR 91	13:30	12 APR 91
014472-0010-SA	DPV-P312-041191	AQUEOUS	11 APR 91	14:50	12 APR 91
014472-0011-SA	DPV-P313-041191	AQUEOUS	11 APR 91	10:15	12 APR 91
014472-0012-SA	DPV-W431-041191	AQUEOUS	11 APR 91	12:09	12 APR 91
014472-0013-SA	DPV-W432-041191	AQUEOUS	11 APR 91	11:10	12 APR 91

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TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014472

PPT PAH

QC Summary.....001

Sample Data.....016

Standards Data.....214

Raw QC Data.....281

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	SAMPLE SAFE™ CONDITIONS — PACKED BY: MZH; SEAL NUMBER:
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY: ; CONDITION OF CONTENTS:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZH; INITIAL CONTENTS TEMP: °C
SAMPLING SITE: SAME	SEAL NUMBER: ; SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZH	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No ; CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION		SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4-11-91		DPV-W422-041191	01	1XL AMBER	2	PPB PAH	
		DPV-W422D-041191	02				
		DPV-W422MS-041191	02MS				
		DPV-W422MSD-041191	02MSD				
		DPV-W422FB-041191	03				
4-11-91		DPV-W422FBD-041191	04	1XL AMBER	2	PPB PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZH		
METHOD OF SHIPMENT: FED EXP.		AIRBILL NUMBER: 2865076266
RECEIVED FOR LAB: R.M.A.L.	SIGNED: Justin Chappell	DATE/TIME: 4/12/91 0800
ENSECO PROJECT NUMBER: 14472		

ENS-1133

White - CLIENT Pink - LAB

ENSR LABORATORIES ©

CONSULTING AND ENGINEERING
2925 RICHMOND AVENUE HOUSTON, TX 77098 (713) 520-1495

Analysis Request and Chain of Custody Record

Project no.	Client/Project Name	Project Location
	City of St. Louis Park	St. Louis Park MN

Rnd #	Lab ID No	Field Sample No./ Identification	Date and Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid Sludge, Etc.)	Preservative	ANALYSIS REQUESTED	LABORATORY REMARKS
05		DPV P307-041191	4/11/91 1755			1 R amber	water	4°C	PPB PAH	2 bottles
06		DPV 308 041191	1735			~~[illegible]~~ clear			PPB ~~Pheadres~~ PAH	
07		DPV P309 041191	1555							
08		DPV P310 041191	1605							
09		DPV P311 041191	1330							
10		DPV P312 041191	1450							
11		DPV P313 041191	1015							
12		DPV W431 041191	1209							
13		DPV W432 041191	1110							

Samplers: (Signature)	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)	Date: Time:	COC Seal No.
[signature]	[signature]	Date: 4/11/91 Time: 1900			#1
David W Nicol	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)	Date: Time:	
Affiliation	Relinquished by: (Signature)	Date: Time:	Received by Laboratory: (Signature) Justin Chappell	Date: 4/12/91 Time: 0800	Intact: YES

REMARKS:

Data Results To:
1.
2.

Laboratory No.: 14470

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SUMMARY

DATA

PACKAGE

FOR

City
of
St. Louis Park
RMAL # 14472

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14472-01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14472-01

Sample wt/vol: 1050 (g/mL) ML Lab File ID: R5588

Level: (low/med) LOW Date Received: 04/12/91

% Moisture: not dec. dec. Date Extracted: 04/15/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.952

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.5	U
496-11-7	2,3-Dihydroindene	46	
95-13-6	1H-Indene	9.5	U
91-20-3	Naphthalene	2.5	J
4565-32-6	Benzo(B)Thiophene	9.5	U
91-22-5	Quinoline	9.5	U
120-72-9	1H-Indole	9.5	U
91-57-6	2-Methylnaphthalene	9.5	U
90-12-0	1-Methylnaphthalene	9.5	U
92-52-4	Biphenyl	9.5	U
208-96-8	Acenaphthylene	9.5	U
83-32-9	Acenaphthene	6.7	J
132-64-9	Dibenzofuran	9.5	U
86-73-7	Fluorene	9.5	U
132-65-0	Dibenzothiophene	9.5	U
85-01-8	Phenanthrene	9.5	U
120-12-7	Anthracene	9.5	U
260-94-6	Acridine	9.5	U
86-74-8	Carbazole	1.9	J
206-44-0	Fluoranthene	9.5	U
129-00-0	Pyrene	9.5	U
56-55-3	Benzo(A)Anthracene	9.5	U
218-01-9	Chrysene	9.5	U
205-99-2	Benzo(B)Fluoranthene	9.5	U
207-08-9	Benzo(K)Fluoranthene	9.5	U
192-97-2	Benzo(E)Pyrene	9.5	U
50-32-8	Benzo(A)Pyrene	9.5	U
198-55-0	Perylene	9.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.5	U
53-70-3	Dibenz(A,H)Anthracene	9.5	U
191-24-2	Benzo(G,H,I)Perylene	9.5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14472-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14472-02

Sample wt/vol: 1050 (g/mL) ML Lab File ID: R5589

Level: (low/med) LOW Date Received: 04/12/91

% Moisture: not dec. dec. Date Extracted: 04/15/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.952

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.5	U
496-11-7	2,3-Dihydroindene	46	
95-13-6	1H-Indene	9.5	U
91-20-3	Naphthalene	2.9	J
4565-32-6	Benzo(B)Thiophene	9.5	U
91-22-5	Quinoline	9.5	U
120-72-9	1H-Indole	9.5	U
91-57-6	2-Methylnaphthalene	9.5	U
90-12-0	1-Methylnaphthalene	9.5	U
92-52-4	Biphenyl	9.5	U
208-96-8	Acenaphthylene	9.5	U
83-32-9	Acenaphthene	7.4	J
132-64-9	Dibenzofuran	9.5	U
86-73-7	Fluorene	9.5	U
132-65-0	Dibenzothiophene	9.5	U
85-01-8	Phenanthrene	9.5	U
120-12-7	Anthracene	9.5	U
260-94-6	Acridine	9.5	U
86-74-8	Carbazole	2.4	J
206-44-0	Fluoranthene	9.5	U
129-00-0	Pyrene	9.5	U
56-55-3	Benzo(A)Anthracene	9.5	U
218-01-9	Chrysene	9.5	U
205-99-2	Benzo(B)Fluoranthene	9.5	U
207-08-9	Benzo(K)Fluoranthene	9.5	U
192-97-2	Benzo(E)Pyrene	9.5	U
50-32-8	Benzo(A)Pyrene	9.5	U
198-55-0	Perylene	9.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.5	U
53-70-3	Dibenz(A,H)Anthracene	9.5	U
191-24-2	Benzo(G,H,I)Perylene	9.5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14472-03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14472-03

Sample wt/vol: 1050 (g/mL) ML Lab File ID: R5592

Level: (low/med) LOW Date Received: 04/12/91

% Moisture: not dec. dec. Date Extracted: 04/15/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.952

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.5	U
496-11-7	2,3-Dihydroindene	9.5	U
95-13-6	1H-Indene	9.5	U
91-20-3	Naphthalene	9.5	U
4565-32-6	Benzo(B)Thiophene	9.5	U
91-22-5	Quinoline	9.5	U
120-72-9	1H-Indole	9.5	U
91-57-6	2-Methylnaphthalene	9.5	U
90-12-0	1-Methylnaphthalene	9.5	U
92-52-4	Biphenyl	9.5	U
208-96-8	Acenaphthylene	9.5	U
83-32-9	Acenaphthene	9.5	U
132-64-9	Dibenzofuran	9.5	U
86-73-7	Fluorene	9.5	U
132-65-0	Dibenzothiophene	9.5	U
85-01-8	Phenanthrene	9.5	U
120-12-7	Anthracene	9.5	U
260-94-6	Acridine	9.5	U
86-74-8	Carbazole	9.5	U
206-44-0	Fluoranthene	9.5	U
129-00-0	Pyrene	9.5	U
56-55-3	Benzo(A)Anthracene	9.5	U
218-01-9	Chrysene	9.5	U
205-99-2	Benzo(B)Fluoranthene	9.5	U
207-08-9	Benzo(K)Fluoranthene	9.5	U
192-97-2	Benzo(E)Pyrene	9.5	U
50-32-8	Benzo(A)Pyrene	9.5	U
198-55-0	Perylene	9.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.5	U
53-70-3	Dibenz(A,H)Anthracene	9.5	U
191-24-2	Benzo(G,H,I)Perylene	9.5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14472-02MS

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14472-02MS

Sample wt/vol: 1050 (g/mL) ML Lab File ID: R5590

Level: (low/med) LOW Date Received: 04/12/91

% Moisture: not dec. dec. Date Extracted: 04/15/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.952

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.5	U
496-11-7	2,3-Dihydroindene	49	
95-13-6	1H-Indene	36	SP
91-20-3	Naphthalene	29	SP
4565-32-6	Benzo(B)Thiophene	9.5	U
91-22-5	Quinoline	34	SP
120-72-9	1H-Indole	9.5	U
91-57-6	2-Methylnaphthalene	36	SP
90-12-0	1-Methylnaphthalene	9.5	U
92-52-4	Biphenyl	9.5	U
208-96-8	Acenaphthylene	9.5	U
83-32-9	Acenaphthene	6.9	J
132-64-9	Dibenzofuran	9.5	U
86-73-7	Fluorene	40	SP
132-65-0	Dibenzothiophene	9.5	U
85-01-8	Phenanthrene	9.5	U
120-12-7	Anthracene	9.5	U
260-94-6	Acridine	9.5	U
86-74-8	Carbazole	2.1	J
206-44-0	Fluoranthene	9.5	U
129-00-0	Pyrene	9.5	U
56-55-3	Benzo(A)Anthracene	9.5	U
218-01-9	Chrysene	39	SP
205-99-2	Benzo(B)Fluoranthene	9.5	U
207-08-9	Benzo(K)Fluoranthene	9.5	U
192-97-2	Benzo(E)Pyrene	36	SP
50-32-8	Benzo(A)Pyrene	9.5	U
198-55-0	Perylene	9.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.5	U
53-70-3	Dibenz(A,H)Anthracene	9.5	U
191-24-2	Benzo(G,H,I)Perylene	9.5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

14472-02MSD

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14472-02MSD

Sample wt/vol: 1050 (g/mL) ML Lab File ID: R5591

Level: (low/med) LOW Date Received: 04/12/91

% Moisture: not dec. dec. Date Extracted: 04/15/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.952

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.5	U
496-11-7	2,3-Dihydroindene	42	
95-13-6	1H-Indene	30	SP
91-20-3	Naphthalene	25	SP
4565-32-6	Benzo(B)Thiophene	9.5	U
91-22-5	Quinoline	31	SP
120-72-9	1H-Indole	9.5	U
91-57-6	2-Methylnaphthalene	31	SP
90-12-0	1-Methylnaphthalene	9.5	U
92-52-4	Biphenyl	9.5	U
208-96-8	Acenaphthylene	9.5	U
83-32-9	Acenaphthene	6.2	J
132-64-9	Dibenzofuran	9.5	U
86-73-7	Fluorene	35	SP
132-65-0	Dibenzothiophene	9.5	U
85-01-8	Phenanthrene	9.5	U
120-12-7	Anthracene	9.5	U
260-94-6	Acridine	9.5	U
86-74-8	Carbazole	1.9	J
206-44-0	Fluoranthene	9.5	U
129-00-0	Pyrene	9.5	U
56-55-3	Benzo(A)Anthracene	9.5	U
218-01-9	Chrysene	17	SP
205-99-2	Benzo(B)Fluoranthene	9.5	U
207-08-9	Benzo(K)Fluoranthene	9.5	U
192-97-2	Benzo(E)Pyrene	18	SP
50-32-8	Benzo(A)Pyrene	9.5	U
198-55-0	Perylene	9.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.5	U
53-70-3	Dibenz(A,H)Anthracene	9.5	U
191-24-2	Benzo(G,H,I)Perylene	9.5	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #	
1	14472-01	70	83	60	
2	14472-02	76	98	104	
3	14472-03	70	88	94	
4	14472-05	66	87	76	
5	14472-06	74	80	64	
6	14472-07	57	64	32	
7	14472-07DL	52	64	33	
8	14472-08	47	52	8	*
9	14472-09	74	78	26	
10	14472-10	64	82	50	
11	14472-11	58	74	36	
12	14472-12	85	92	70	
13	14472-13	59	78	71	
14	14472-02MS	76	94	97	
15	11074-02MSD	66	81	33	
16	BLK01	50	70	92	
17	BLK02	81	46	78	
18	BLK03	69	72	78	

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(25-175)
S2 (FLU) = D10-FLUORENE	(25-175)
S3 (CHR) = D12-CHRYSENE	(25-175)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 14472-02 LEVEL: LOW

Compound	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
1H-Indene	47.6	0	35.8	75
Naphthalene	47.6	2.87	29.5	56
Quinoline	47.6	0	34.5	72
2-Methylnaphthalene	47.6	0	36.1	76
Fluorene	47.6	0	39.6	83
Chrysene	47.6	0	39.0	82
Benzo(E)Pyrene	47.6	0	36.3	76

Compound	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
1H-Indene	47.6	30.2	63	17
Naphthalene	47.6	25.4	47	17
Quinoline	47.6	30.5	64	12
2-Methylnaphthalene	47.6	30.5	64	17
Fluorene	47.6	35.3	74	11
Chrysene	47.6	17.0	36	78
Benzo(E)Pyrene	47.6	17.9	38	67

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5587 Lab Sample ID: BLK01

Date Extracted: 04/15/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 05/05/91 Time Analyzed: 1715

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14472-01	14472-01	R5588	05/05/91
2	14472-02	14472-02	R5589	05/05/91
3	14472-03	14472-03	R5592	05/05/91
4	14472-05	14472-05	R5594	05/05/91
5	14472-06	14472-06	R5597	05/06/91
6	14472-07	14472-07	R5598	05/06/91
7	14472-07DL	14472-07DL	R5608	05/07/91
8	14472-09	14472-09	R5600	05/06/91
9	14472-10	14472-10	R5601	05/06/91
10	14472-11	14472-11	R5602	05/06/91
11	14472-13	14472-13	R5604	05/07/91
12	14472-02MS	14472-02MS	R5590	05/05/91
13	14472-02MSD	14472-02MSD	R5591	05/05/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5587

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 04/15/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/05/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5792 Lab Sample ID: BLK02

Date Extracted: 05/08/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 05/21/91 Time Analyzed: 1746

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14472-08	14472-08	R5794	05/21/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5792

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 05/08/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/21/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5792 Lab Sample ID: BLK03

Date Extracted: 05/17/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 05/21/91 Time Analyzed: 1838

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14472-12	14472-12	R5795	05/21/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK03

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5793

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 05/17/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/21/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5570 DFTPP Injection Date: 05/03/91

Instrument ID: 4500-R DFTPP Injection Time: 1050

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.5
68	Less than 2.0% of mass 69	0.7 (1.8)1
69	Mass 69 relative abundance	37.7
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	41.5
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	21.4
365	Greater than 1.00% of mass 198	2.14
441	Present, but less than mass 443	7.6
442	Greater than 40.0% of mass 198	59.7
443	17.0 - 23.0% of mass 442	10.2 (17.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5571	05/03/91	1112
02	SSTD160	160_PPM_PAH_STD	R5572	05/03/91	1220
03	SSTD120	120_PPM_PAH_STD	R5573	05/03/91	1320
04	SSTD080	80_PPM_PAH_STD	R5574	05/03/91	1422
05	SSTD020	20_PPM_PAH_STD	R5575	05/03/91	1531

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5581 DFTPP Injection Date: 05/05/91

Instrument ID: 4500-R DFTPP Injection Time: 1219

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.2
68	Less than 2.0% of mass 69	0.7 (1.8)1
69	Mass 69 relative abundance	36.8
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	41.8
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.5
275	10.0 - 30.0% of mass 198	21.8
365	Greater than 1.00% of mass 198	2.01
441	Present, but less than mass 443	7.7
442	Greater than 40.0% of mass 198	60.9
443	17.0 - 23.0% of mass 442	10.6 (17.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5582	05/05/91	1234
02	BLK01	BLK01	R5587	05/05/91	1715
03	14472-01	14472-01	R5588	05/05/91	1808
04	14472-02	14472-02	R5589	05/05/91	1900
05	14472-02MS	14472-02MS	R5590	05/05/91	1952
06	14472-02MSD	14472-02MSD	R5591	05/05/91	2045
07	14472-03	14472-03	R5592	05/05/91	2137
08	14472-05	14472-05	R5594	05/05/91	2322

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5595 DFTPP Injection Date: 05/06/91

Instrument ID: 4500-R DFTPP Injection Time: 1726

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	39.5
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	42.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	44.2
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.1
275	10.0 - 30.0% of mass 198	20.9
365	Greater than 1.00% of mass 198	2.37
441	Present, but less than mass 443	6.6
442	Greater than 40.0% of mass 198	50.5
443	17.0 - 23.0% of mass 442	8.9 (17.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5596	05/06/91	1749
02	14472-06	14472-06	R5597	05/06/91	1900
03	14472-07	14472-07	R5598	05/06/91	1952
04	14472-09	14472-09	R5600	05/06/91	2137
05	14472-10	14472-10	R5601	05/06/91	2229
06	14472-11	14472-11	R5602	05/06/91	2321
07	14472-13	14472-13	R5604	05/07/91	0104

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5605 DFTPP Injection Date: 05/07/91

Instrument ID: 4500-R DFTPP Injection Time: 1346

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	37.7
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	40.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	43.0
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	21.7
365	Greater than 1.00% of mass 198	2.22
441	Present, but less than mass 443	6.6
442	Greater than 40.0% of mass 198	54.0
443	17.0 - 23.0% of mass 442	9.8 (18.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5606	05/07/91	1409
02	14472-07DL	14472-07DL	R5608	05/07/91	1649

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14472 SAS No.: SDG No.:

Lab File ID: R5790 DFTPP Injection Date: 05/21/91

Instrument ID: 4500-R DFTPP Injection Time: 1243

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	57.2
68	Less than 2.0% of mass 69	1.0 (1.9)1
69	Mass 69 relative abundance	54.5
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	50.7
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	20.6
365	Greater than 1.00% of mass 198	2.37
441	Present, but less than mass 443	5.9
442	Greater than 40.0% of mass 198	43.6
443	17.0 - 23.0% of mass 442	8.1 (18.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5791	05/21/91	1258
02	BLK02	BLK02	R5792	05/21/91	1746
03	BLK03	BLK03	R5793	05/21/91	1838
04	14472-08	14472-08	R5794	05/21/91	1930
05	14472-12	14472-12	R5795	05/21/91	2022

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14472

Instrument ID: 4500-R Calibration Date(s): 05/03/91
05/03/91

Maximum % RSD =30%

Lab File ID: RRF 20 = R5575 RRF 50 = R5571
RRF 80 = R5574 RRF 120 = R5573 RRF 160 = R5572

COMPOUND	20 RRF	50 RRF	80 RRF	120 RRF	160 RRF	AVE RRF	% RSD
2,3-Benzofuran	0.795	0.861	0.899	0.928	0.929	0.882	6.4
2,3-Dihydroindene	0.754	0.808	0.766	0.840	0.823	0.798	4.6
1H-Indene	0.707	0.759	0.727	0.814	0.773	0.756	5.5
Naphthalene	1.760	2.166	2.092	1.785	1.696	1.900	11.2
Benzo(B)Thiophene	1.264	1.342	1.519	1.396	1.348	1.374	6.8
Quinoline	1.050	1.134	1.189	1.195	1.178	1.149	5.3
IH-Indole	1.073	1.157	1.205	1.269	1.193	1.179	6.1
2-Methylnaphthalene	1.045	1.099	1.121	1.187	1.125	1.115	4.6
1-Methylnaphthalene	1.068	1.141	1.069	1.217	1.164	1.132	5.7
Biphenyl	1.340	1.363	1.423	1.435	1.410	1.394	2.9
Acenaphthylene	1.929	2.191	2.210	1.874	1.842	2.009	8.8
Acenaphthene	1.168	1.212	1.216	1.148	1.149	1.179	2.8
Dibenzofuran	1.626	1.875	1.872	1.644	1.562	1.716	8.6
Fluorene	1.325	1.416	1.491	1.414	1.365	1.402	4.4
Dibenzothiophene	0.912	1.140	1.048	0.977	0.903	0.996	10.0
Phenanthrene	0.918	1.166	1.061	1.037	0.907	1.018	10.6
Anthracene	0.995	1.255	1.160	1.085	0.976	1.094	10.6
Acridine	0.688	0.766	0.848	0.766	0.862	0.786	9.0
Carbazole	0.779	0.856	1.000	0.860	0.844	0.868	9.3
Fluoranthene	1.108	1.339	1.265	1.068	0.981	1.152	12.7
Pyrene	1.080	1.310	1.247	1.048	1.019	1.141	11.3
Benzo(A)Anthracene	1.287	1.286	1.357	1.359	1.263	1.310	3.4
Chrysene	1.226	1.200	1.387	1.097	1.040	1.190	11.2
Benzo(B)Fluoranthene	1.116	1.196	1.252	1.337	1.256	1.231	6.6
Benzo(K)Fluoranthene	1.100	1.030	1.164	0.948	0.957	1.040	8.9
Benzo(E)Pyrene	0.990	0.987	0.953	1.054	1.038	1.004	4.1
Benzo(A)Pyrene	0.991	0.987	1.022	1.070	1.022	1.018	3.3
Perylene	0.799	0.827	0.797	0.865	0.872	0.832	4.3
Indeno(1,2,3-CD)Pyrene	0.924	0.984	0.935	0.955	0.948	0.949	2.4
Dibenz(A,H)Anthracene	0.791	0.844	0.801	0.746	0.716	0.780	6.4
Benzo(G,H,I)Perylene	0.761	0.823	0.808	0.778	0.765	0.787	3.5
D8-Naphthalene	1.567	1.650	1.931	1.677	1.567	1.678	8.9
D10-Fluorene	1.098	1.152	1.057	1.124	1.057	1.098	3.8
D12-Chrysene	1.072	1.009	0.979	0.913	0.881	0.971	7.8

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14472

Instrument ID: 4500-R Calibration Date(s): 05/05/91 Time: 1234

Lab ID: R5582 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.906	-2.7
2,3-Dihydroindene	0.798	0.853	-6.9
1H-Indene	0.756	0.799	-5.7
Naphthalene	1.900	2.090	-10.0
Benzo(B)Thiophene	1.374	1.417	-3.1
Quinoline	1.149	1.174	-2.2
1H-Indole	1.179	1.195	-1.4
2-Methylnaphthalene	1.115	1.140	-2.2
1-Methylnaphthalene	1.132	1.172	-3.5
Biphenyl	1.394	1.413	-1.4
Acenaphthylene	2.009	2.072	-3.1
Acenaphthene	1.179	1.250	-6.0
Dibenzofuran	1.716	1.687	1.7
Fluorene	1.402	1.416	-1.0
Dibenzothiophene	0.996	0.979	1.7
Phenanthrene	1.018	1.037	-1.9
Anthracene	1.094	1.182	-8.0
Acridine	0.786	0.742	5.6
Carbazole	0.868	0.815	6.1
Fluoranthene	1.152	1.108	3.8
Pyrene	1.141	1.076	5.7
Benzo(A)Anthracene	1.310	1.210	7.6
Chrysene	1.190	1.176	1.2
Benzo(B)Fluoranthene	1.231	1.232	-0.1
Benzo(K)Fluoranthene	1.040	0.989	4.9
Benzo(E)Pyrene	1.004	0.990	1.4
Benzo(A)Pyrene	1.018	1.004	1.4
Perylene	0.832	0.818	1.7
Indeno(1,2,3-CD)Pyrene	0.949	0.981	-3.4
Dibenz(A,H)Anthracene	0.780	0.854	-9.5
Benzo(G,H,I)Perylene	0.787	0.790	-0.4
D8-Naphthalene	1.678	1.729	-3.0
D10-Fluorene	1.098	1.147	-4.5
D12-Chrysene	0.971	0.992	-2.2

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14472

Instrument ID: 4500-R Calibration Date(s): 05/06/91 Time: 1749

Lab ID: R5596 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.917	-4.0
2,3-Dihydroindene	0.798	0.856	-7.3
1H-Indene	0.756	0.793	-4.9
Naphthalene	1.900	1.983	-4.4
Benzo(B)Thiophene	1.374	1.374	0.0
Quinoline	1.149	1.161	-1.0
1H-Indole	1.179	1.195	-1.4
2-Methylnaphthalene	1.115	1.127	-1.1
1-Methylnaphthalene	1.132	1.168	-3.2
Biphenyl	1.394	1.406	-0.9
Acenaphthylene	2.009	2.044	-1.7
Acenaphthene	1.179	1.218	-3.3
Dibenzofuran	1.716	1.677	2.3
Fluorene	1.402	1.407	-0.4
Dibenzothiophene	0.996	0.972	2.4
Phenanthrene	1.018	0.966	5.1
Anthracene	1.094	1.062	2.9
Acridine	0.786	0.757	3.7
Carbazole	0.868	0.871	-0.3
Fluoranthene	1.152	1.307	-13.5
Pyrene	1.141	1.215	-6.5
Benzo(A)Anthracene	1.310	1.172	10.5
Chrysene	1.190	1.151	3.3
Benzo(B)Fluoranthene	1.231	1.214	1.4
Benzo(K)Fluoranthene	1.040	0.944	9.2
Benzo(E)Pyrene	1.004	0.974	3.0
Benzo(A)Pyrene	1.018	0.973	4.4
Perylene	0.832	0.804	3.4
Indeno(1,2,3-CD)Pyrene	0.949	0.968	-2.0
Dibenz(A,H)Anthracene	0.780	0.844	-8.2
Benzo(G,H,I)Perylene	0.787	0.785	0.3
D8-Naphthalene	1.678	1.709	-1.8
D10-Fluorene	1.098	1.149	-4.6
D12-Chrysene	0.971	0.964	0.7

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14472

Instrument ID: 4500-R Calibration Date(s): 05/07/91 Time: 1409

Lab ID: R5606 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.888	-0.7
2,3-Dihydroindene	0.798	0.403	-5.3
1H-Indene	0.756	0.795	-5.2
Naphthalene	1.900	1.907	-0.4
Benzo(B)Thiophene	1.374	1.372	0.1
Quinoline	1.149	1.149	0.0
1H-Indole	1.179	1.192	-1.1
2-Methylnaphthalene	1.115	1.130	-1.3
1-Methylnaphthalene	1.132	1.154	-1.9
Biphenyl	1.394	1.389	0.4
Acenaphthylene	2.009	2.037	-1.4
Acenaphthene	1.179	1.235	-4.7
Dibenzofuran	1.716	1.677	2.3
Fluorene	1.402	1.400	0.1
Dibenzothiophene	0.996	0.975	2.1
Phenanthrene	1.018	0.972	4.5
Anthracene	1.094	1.070	2.2
Acridine	0.786	0.747	5.0
Carbazole	0.868	0.838	3.5
Fluoranthene	1.152	1.170	-1.6
Pyrene	1.141	1.118	2.0
Benzo(A)Anthracene	1.310	1.203	8.2
Chrysene	1.190	1.213	-1.9
Benzo(B)Fluoranthene	1.231	1.253	-1.8
Benzo(K)Fluoranthene	1.040	0.968	6.9
Benzo(E)Pyrene	1.004	0.959	4.5
Benzo(A)Pyrene	1.018	0.982	3.5
Perylene	0.832	0.811	2.5
Indeno(1,2,3-CD)Pyrene	0.949	0.934	1.6
Dibenz(A,H)Anthracene	0.780	0.829	-6.3
Benzo(G,H,I)Perylene	0.787	0.731	7.1
D8-Naphthalene	1.678	1.685	-0.4
D10-Fluorene	1.098	1.149	-4.6
D12-Chrysene	0.971	0.990	-2.0

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14472

Instrument ID: 4500-R Calibration Date(s): 05/21/91 Time: 1258

Lab ID: R5791 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	1.098	-24.5
2,3-Dihydroindene	0.798	1.015	-27.2
1H-Indene	0.756	0.963	-27.4
Naphthalene	1.900	2.212	-11.6
Benzo(B)Thiophene	1.374	1.490	-8.4
Quinoline	1.149	1.207	-5.0
1H-Indole	1.179	1.241	-5.3
2-Methylnaphthalene	1.115	1.234	-10.7
1-Methylnaphthalene	1.132	1.275	-12.6
Biphenyl	1.394	1.414	-1.4
Acenaphthylene	2.009	2.068	-2.9
Acenaphthene	1.179	1.237	-4.9
Dibenzofuran	1.716	1.609	6.2
Fluorene	1.402	1.369	2.4
Dibenzothiophene	0.996	0.953	4.3
Phenanthrene	1.018	1.001	1.7
Anthracene	1.094	1.071	2.1
Acridine	0.786	0.664	15.5
Carbazole	0.868	0.772	11.1
Fluoranthene	1.152	1.075	6.7
Pyrene	1.141	1.098	3.8
Benzo(A)Anthracene	1.310	1.387	-5.9
Chrysene	1.190	1.388	-16.6
Benzo(B)Fluoranthene	1.231	1.251	-1.6
Benzo(K)Fluoranthene	1.040	1.143	-9.9
Benzo(E)Pyrene	1.004	0.971	3.3
Benzo(A)Pyrene	1.018	1.027	-0.9
Perylene	0.832	0.820	1.4
Indeno(1,2,3-CD)Pyrene	0.949	1.057	-11.4
Dibenz(A,H)Anthracene	0.780	0.930	-19.2
Benzo(G,H,I)Perylene	0.787	0.916	-16.4
D8-Naphthalene	1.678	1.870	-11.4
D10-Fluorene	1.098	1.097	-0.1
D12-Chrysene	0.971	1.200	-23.6

FORM VII

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14472 SAS No.: SDG No:

Lab File ID (Standard): R5582 Date Analyzed: 05/05/91

Instrument ID: 4500-R Time Analyzed: 1234

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	31100	60500	39100
UPPER LIMIT	62200	121000	78200
LOWER LIMIT	15600	30200	19600
SAMPLE NO.			
14472-01	34300	66900	36800
14472-02	33900	65800	38300
14472-03	34300	66000	35100
14472-05	36600	71400	42000
14472-02MS	34300	66900	39400
14472-02MSD	32300	63000	41200
BLK01	34300	62500	34200

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14472 SAS No.: SDG No:

Lab File ID (Standard): R5596 Date Analyzed: 05/06/91

Instrument ID: 4500-R Time Analyzed: 1749

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	29000	55400	39800
UPPER LIMIT	58000	111000	79600
LOWER LIMIT	14500	27700	19900
SAMPLE NO.			
14472-06	31100	60500	38000
14472-07	31400	61800	38800
14472-09	32200	62800	41900
14472-10	32100	63100	45200
14472-11	31100	61600	45500
14472-13	31000	60200	43300

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100%
of internal standard area
LOWER LIMIT = - 50%
of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14472 SAS No.: SDG No:

Lab File ID (Standard): R5606 Date Analyzed: 05/07/91

Instrument ID: 4500-R Time Analyzed: 1409

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	29200	55900	33600
UPPER LIMIT	58400	112000	67200
LOWER LIMIT	14600	28000	16800
SAMPLE NO.			
14472-07DL	31100	60500	38000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14472 SAS No.: SDG No:

Lab File ID (Standard): R5790 Date Analyzed: 05/21/91

Instrument ID: 4500-R Time Analyzed: 1258

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	19600	34800	19400
UPPER LIMIT	39200	69600	38800
LOWER LIMIT	9800	17400	9700
SAMPLE NO.			
14472-08	20100	34700	16400
14472-12	20500	35000	17000
BLK02	18500	29400	15000
BLK03	19700	28700	14100

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

July 26, 1991

Enseco - RMAL Project Number 015605

Introduction

Eight aqueous samples (including MS and MSD) were received at Enseco-Rocky Mountain Analytical Laboratory on June 28, 1991. The samples were logged in under RMAL project number 015605. Sample DPV-W421FBD-062791 (RMAL# 015605-05) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Samples 015605-01, 02, 03, 02MS, and 02MSD were diluted due to target compounds present in excess of calibration range. Surrogates could not be measured in these samples due to the dilutions performed.

This data package is in compliance with the terms and conditions of the 1989 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 07-26-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel E. Holtz Date: 7-26-91
Joel E. Holtz
Program Administrator

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 015605

PPT-PAH

QC Summary.....0001

Sample Data.....0013

Standards Data.....0134

Raw QC Data.....0195

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
015605-0001-SA	DPV-W420-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0002-SA	DPV-W421-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0002-MS	DPV-W421MS-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0002-SD	DPV-W421MSD-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0003-SA	DPV-W421D-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0004-FB	DPV-W421FB-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0005-FB	DPV-W421FBD-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0006-SA	PCJ-W23-062791	AQUEOUS	27 JUN 91		28 JUN 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of ST Louis PARK
PROJECT	
SAMPLING COMPANY	SAME
SAMPLING SITE	SAME
TEAM LEADER	MZH

SAMPLE SAFE™ CONDITIONS

PACKED BY	MZH
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	MZH
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	°C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
6-27-91		DPV-W420-062791 01	1XL AMBER	2	PPB PAH	
6-27-91		DPV-W421-062791 02		2		
6-27-91		DPV-W421D-062791 03DU		2		
		DPV-W421MS-062791 02MS		2		
		DPV-W421MSD-062791 02MSD		2		
		DPV-W421FB-062791 04FB		2		
		DPV-W421FBD-062791 05FBD		2	PPB PAH	
6-27-91		PCU-W23-062791 06	1XL AMBER	2	PPB PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	MZH
METHOD OF SHIPMENT	Fed Exp
AIRBILL NUMBER	2865076373
RECEIVED FOR LAB	R.M.A.L.
SIGNED	Justi Chappell
DATE/TIME	6/25/91 0800
ENSECO PROJECT NUMBER	15605

ENS—1133

White – CLIENT Pink – LAB

SUMMARY

DATA

PACKAGE

FOR

City of St Louis Park
RMA1 #15605

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15605-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-01

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6392

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 07/02/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 18.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	29	J
496-11-7	2,3-Dihydroindene	94	J
95-13-6	1H-Indene	220	
91-20-3	Naphthalene	1800	
4565-32-6	Benzo(B)Thiophene	97	J
91-22-5	Quinoline	190	U
120-72-9	1H-Indole	190	U
91-57-6	2-Methylnaphthalene	71	J
90-12-0	1-Methylnaphthalene	75	J
92-52-4	Biphenyl	190	U
208-96-8	Acenaphthylene	190	U
83-32-9	Acenaphthene	53	J
132-64-9	Dibenzofuran	19	J
86-73-7	Fluorene	190	U
132-65-0	Dibenzothiophene	190	U
85-01-8	Phenanthrene	190	U
120-12-7	Anthracene	190	U
260-94-6	Acridine	190	U
86-74-8	Carbazole	36	J
206-44-0	Fluoranthene	190	U
129-00-0	Pyrene	190	U
56-55-3	Benzo(A)Anthracene	190	U
218-01-9	Chrysene	190	U
205-99-2	Benzo(B)Fluoranthene	190	U
207-08-9	Benzo(K)Fluoranthene	190	U
192-97-2	Benzo(E)Pyrene	190	U
50-32-8	Benzo(A)Pyrene	190	U
198-55-0	Perylene	190	U
193-39-5	Indeno(1,2,3-CD)Pyrene	190	U
53-70-3	Dibenz(A,H)Anthracene	190	U
191-24-2	Benzo(G,H,I)Perylene	190	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15605-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-02

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6413

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 07/02/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 9.43

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	94	U
496-11-7	2,3-Dihydroindene	150	
95-13-6	1H-Indene	130	
91-20-3	Naphthalene	950	
4565-32-6	Benzo(B)Thiophene	82	J
91-22-5	Quinoline	94	U
120-72-9	1H-Indole	94	U
91-57-6	2-Methylnaphthalene	94	U
90-12-0	1-Methylnaphthalene	41	J
92-52-4	Biphenyl	94	U
208-96-8	Acenaphthylene	94	U
83-32-9	Acenaphthene	24	J
132-64-9	Dibenzofuran	94	U
86-73-7	Fluorene	94	U
132-65-0	Dibenzothiophene	94	U
85-01-8	Phenanthrene	94	U
120-12-7	Anthracene	94	U
260-94-6	Acridine	12	J
86-74-8	Carbazole	31	J
206-44-0	Fluoranthene	94	U
129-00-0	Pyrene	94	U
56-55-3	Benzo(A)Anthracene	94	U
218-01-9	Chrysene	94	U
205-99-2	Benzo(B)Fluoranthene	94	U
207-08-9	Benzo(K)Fluoranthene	94	U
192-97-2	Benzo(E)Pyrene	94	U
50-32-8	Benzo(A)Pyrene	10	J
198-55-0	Perylene	94	U
193-39-5	Indeno(1,2,3-CD)Pyrene	94	U
53-70-3	Dibenz(A,H)Anthracene	94	U
191-24-2	Benzo(G,H,I)Perylene	94	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15605-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-03

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6414

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 06/29/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 9.43

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	94	U
496-11-7	2,3-Dihydroindene	130	
95-13-6	1H-Indene	120	
91-20-3	Naphthalene	940	
4565-32-6	Benzo(B)Thiophene	80	J
91-22-5	Quinoline	94	U
120-72-9	1H-Indole	94	U
91-57-6	2-Methylnaphthalene	94	U
90-12-0	1-Methylnaphthalene	39	J
92-52-4	Biphenyl	94	U
208-96-8	Acenaphthylene	94	U
83-32-9	Acenaphthene	25	J
132-64-9	Dibenzofuran	94	U
86-73-7	Fluorene	94	U
132-65-0	Dibenzothiophene	94	U
85-01-8	Phenanthrene	94	U
120-12-7	Anthracene	94	U
260-94-6	Acridine	94	U
86-74-8	Carbazole	24	J
206-44-0	Fluoranthene	94	U
129-00-0	Pyrene	94	U
56-55-3	Benzo(A)Anthracene	94	U
218-01-9	Chrysene	94	U
205-99-2	Benzo(B)Fluoranthene	94	U
207-08-9	Benzo(K)Fluoranthene	94	U
192-97-2	Benzo(E)Pyrene	94	U
50-32-8	Benzo(A)Pyrene	94	U
198-55-0	Perylene	94	U
193-39-5	Indeno(1,2,3-CD)Pyrene	94	U
53-70-3	Dibenz(A,H)Anthracene	94	U
191-24-2	Benzo(G,H,I)Perylene	94	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15605-04

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-04

Sample wt/vol: 990 (g/mL) ML Lab File ID: R6415

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 06/29/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/20/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.01

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15605-02MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-02MS

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6404

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 06/29/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/19/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 9.43

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
271-89-6	2,3-Benzofuran	94	U	
496-11-7	2,3-Dihydroindene	170		
95-13-6	1H-Indene	190		SC
91-20-3	Naphthalene	1000		SC
4565-32-6	Benzo(B)Thiophene	90	J	
91-22-5	Quinoline	35	J	SC
120-72-9	1H-Indole	94	U	
91-57-6	2-Methylnaphthalene	46	J	SC
90-12-0	1-Methylnaphthalene	46	J	
92-52-4	Biphenyl	94	U	
208-96-8	Acenaphthylene	94	U	
83-32-9	Acenaphthene	28	J	
132-64-9	Dibenzofuran	94	U	
86-73-7	Fluorene	43	J	SC
132-65-0	Dibenzothiophene	94	U	
85-01-8	Phenanthrene	94	U	
120-12-7	Anthracene	94	U	
260-94-6	Acridine	94	U	
86-74-8	Carbazole	23	J	
206-44-0	Fluoranthene	94	U	
129-00-0	Pyrene	94	U	
56-55-3	Benzo(A)Anthracene	94	U	
218-01-9	Chrysene	31	J	SC
205-99-2	Benzo(B)Fluoranthene	94	U	
207-08-9	Benzo(K)Fluoranthene	94	U	
192-97-2	Benzo(E)Pyrene	32	J	SC
50-32-8	Benzo(A)Pyrene	94	U	
198-55-0	Perylene	94	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	94	U	
53-70-3	Dibenz(A,H)Anthracene	94	U	
191-24-2	Benzo(G,H,I)Perylene	94	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

15605-02MSD

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-02MSD

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6405

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 06/29/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/19/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 9.43

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
271-89-6	2,3-Benzofuran	94	U	
496-11-7	2,3-Dihydroindene	170		
95-13-6	1H-Indene	190		SC
91-20-3	Naphthalene	1000		SC
4565-32-6	Benzo(B)Thiophene	90	J	
91-22-5	Quinoline	37	J	SC
120-72-9	1H-Indole	94	U	
91-57-6	2-Methylnaphthalene	45	J	SC
90-12-0	1-Methylnaphthalene	47	J	
92-52-4	Biphenyl	94	U	
208-96-8	Acenaphthylene	94	U	
83-32-9	Acenaphthene	29	J	
132-64-9	Dibenzofuran	94	U	
86-73-7	Fluorene	44	J	SC
132-65-0	Dibenzothiophene	94	U	
85-01-8	Phenanthrene	94	U	
120-12-7	Anthracene	94	U	
260-94-6	Acridine	94	U	
86-74-8	Carbazole	23	J	
206-44-0	Fluoranthene	94	U	
129-00-0	Pyrene	94	U	
56-55-3	Benzo(A)Anthracene	94	U	
218-01-9	Chrysene	31	J	SC
205-99-2	Benzo(B)Fluoranthene	94	U	
207-08-9	Benzo(K)Fluoranthene	94	U	
192-97-2	Benzo(E)Pyrene	33	J	SC
50-32-8	Benzo(A)Pyrene	94	U	
198-55-0	Perylene	94	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	94	U	
53-70-3	Dibenz(A,H)Anthracene	94	U	
191-24-2	Benzo(G,H,I)Perylene	94	U	

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	15605-01	ND	ND	ND
2	15605-02	ND	ND	ND
3	15605-03	ND	ND	ND
4	15605-04	103	83	81
5	15605-06	100	94	80
6	15605-02MS	ND	ND	ND
7	15605-02MSD	ND	ND	ND
8	BLK01	122	90	103
9	BLK02	84	68	70

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(25-175)
S2 (FLU) = D10-FLUORENE	(25-175)
S3 (CHR) = D12-CHRYSENE	(25-175)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 15605-02 LEVEL: LOW

Compound	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
1H-Indene	47.2	950	1030	169
Naphthalene	47.2	5.7	43.3	80
Quinoline	47.2	6.4	31.4	53
2-Methylnaphthalene	47.2	128	194	140
Fluorene	47.2	1.3	34.9	71
Chrysene	47.2	6.3	31.6	54
Benzo(E)Pyrene	47.2	5.0	46.3	88

Compound	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
1H-Indene	47.2	1030	169	ND
Naphthalene	47.2	43.8	81	1
Quinoline	47.2	30.9	52	2
2-Methylnaphthalene	47.2	194	140	ND
Fluorene	47.2	36.7	75	5
Chrysene	47.2	32.6	56	4
Benzo(E)Pyrene	47.2	45.1	85	3

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Lab File ID: R6390 Lab Sample ID: BLK01

Date Extracted: 06/29/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 07/18/91 Time Analyzed: 1549

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	15605-03	15605-03	R6414	07/20/91
2	15605-04	15605-04	R6415	07/20/91
3	15605-06	15605-06	R6399	07/18/91
4	15605-02MS	15605-02MS	R6404	07/19/91
5	15605-02MSD	15605-02MSD	R6405	07/19/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6390

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 06/29/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	9.4	U
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.4	U
4565-32-6	Benzo(B)Thiophene	9.4	U
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	9.4	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Lab File ID: R6391 Lab Sample ID: BLK02

Date Extracted: 07/02/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 07/18/91 Time Analyzed: 1639

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	15605-01	15605-01	R6392	07/18/91
2	15605-02	15605-02	R6413	07/20/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R6391

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 07/02/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Lab File ID: R5570 DFTPP Injection Date: 05/03/91

Instrument ID: 4500-R DFTPP Injection Time: 1050

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	35.5
68	Less than 2.0% of mass 69	0.7 (1.8)1
69	Mass 69 relative abundance	37.7
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	41.5
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	21.4
365	Greater than 1.00% of mass 198	2.14
441	Present, but less than mass 443	7.6
442	Greater than 40.0% of mass 198	59.7
443	17.0 - 23.0% of mass 442	10.2 (17.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R5571	05/03/91	1112
02	SSTD160	160_PPM_PAH_STD	R5572	05/03/91	1220
03	SSTD120	120_PPM_PAH_STD	R5573	05/03/91	1320
04	SSTD080	80_PPM_PAH_STD	R5574	05/03/91	1422
05	SSTD020	20_PPM_PAH_STD	R5575	05/03/91	1531

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Lab File ID: R6388 DFTPP Injection Date: 07/18/91

Instrument ID: 4500-R DFTPP Injection Time: 1358

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	59.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	57.5
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	56.3
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.0
275	10.0 - 30.0% of mass 198	18.8
365	Greater than 1.00% of mass 198	2.23
441	Present, but less than mass 443	5.9
442	Greater than 40.0% of mass 198	49.2
443	17.0 - 23.0% of mass 442	9.0 (18.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R6389	07/18/91	1418
02	BLK01	BLK01	R6390	07/18/91	1549
03	BLK02	BLK02	R6391	07/18/91	1639
04	15605-01	15605-01	R6392	07/18/91	1729
05	15605-06	15605-06	R6399	07/18/91	2324

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Lab File ID: R6400 DFTPP Injection Date: 07/19/91

Instrument ID: 4500-R DFTPP Injection Time: 1025

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	57.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	53.3
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	54.0
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.4
275	10.0 - 30.0% of mass 198	19.6
365	Greater than 1.00% of mass 198	2.04
441	Present, but less than mass 443	6.2
442	Greater than 40.0% of mass 198	55.1
443	17.0 - 23.0% of mass 442	10.0 (18.0)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R6401	07/19/91	1043
02	15605-02MS	15605-02MS	R6404	07/19/91	1356
03	15605-02MSD	15605-02MSD	R6405	07/19/91	1447

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Lab File ID: R6411 DFTPP Injection Date: 07/20/91

Instrument ID: 4500-R DFTPP Injection Time: 1025

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	54.0
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	49.0
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	50.0
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.2
275	10.0 - 30.0% of mass 198	20.2
365	Greater than 1.00% of mass 198	3.00
441	Present, but less than mass 443	6.8
442	Greater than 40.0% of mass 198	56.5
443	17.0 - 23.0% of mass 442	11.0 (19.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R6412	07/20/91	1115
02	15605-02	15605-02	R6413	07/20/91	1232
03	15605-03	15605-03	R6414	07/20/91	1322
04	15605-04	15605-04	R6415	07/20/91	1413

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 15605

Instrument ID: 4500-R Calibration Date(s): 05/03/91
05/03/91

Maximum % RSD =30%

Lab File ID: RRF 20 = R5575 RRF 50 = R5571
RRF 80 = R5574 RRF 120 = R5573 RRF 160 = R5572

COMPOUND	20 RRF	50 RRF	80 RRF	120 RRF	160 RRF	AVE RRF	% RSD
2,3-Benzofuran	0.795	0.861	0.899	0.928	0.929	0.882	6.4
2,3-Dihydroindene	0.754	0.808	0.766	0.840	0.823	0.798	4.6
1H-Indene	0.707	0.759	0.727	0.814	0.773	0.756	5.5
Naphthalene	1.760	2.166	2.092	1.785	1.696	1.900	11.2
Benzo(B)Thiophene	1.264	1.342	1.519	1.396	1.348	1.374	6.8
Quinoline	1.050	1.134	1.189	1.195	1.178	1.149	5.3
IH-Indole	1.073	1.157	1.205	1.269	1.193	1.179	6.1
2-Methylnaphthalene	1.045	1.099	1.121	1.187	1.125	1.115	4.6
1-Methylnaphthalene	1.068	1.141	1.069	1.217	1.164	1.132	5.7
Biphenyl	1.340	1.363	1.423	1.435	1.410	1.394	2.9
Acenaphthylene	1.929	2.191	2.210	1.874	1.842	2.009	8.8
Acenaphthene	1.168	1.212	1.216	1.148	1.149	1.179	2.8
Dibenzofuran	1.626	1.875	1.872	1.644	1.562	1.716	8.6
Fluorene	1.325	1.416	1.491	1.414	1.365	1.402	4.4
Dibenzothiophene	0.912	1.140	1.048	0.977	0.903	0.996	10.0
Phenanthrene	0.918	1.166	1.061	1.037	0.907	1.018	10.6
Anthracene	0.995	1.255	1.160	1.085	0.976	1.094	10.6
Acridine	0.688	0.766	0.848	0.766	0.862	0.786	9.0
Carbazole	0.779	0.856	1.000	0.860	0.844	0.868	9.3
Fluoranthene	1.108	1.339	1.265	1.068	0.981	1.152	12.7
Pyrene	1.080	1.310	1.247	1.048	1.019	1.141	11.3
Benzo(A)Anthracene	1.287	1.286	1.357	1.359	1.263	1.310	3.4
Chrysene	1.226	1.200	1.387	1.097	1.040	1.190	11.2
Benzo(B)Fluoranthene	1.116	1.196	1.252	1.337	1.256	1.231	6.6
Benzo(K)Fluoranthene	1.100	1.030	1.164	0.948	0.957	1.040	8.9
Benzo(E)Pyrene	0.990	0.987	0.953	1.054	1.038	1.004	4.1
Benzo(A)Pyrene	0.991	0.987	1.022	1.070	1.022	1.018	3.3
Perylene	0.799	0.827	0.797	0.865	0.872	0.832	4.3
Indeno(1,2,3-CD)Pyrene	0.924	0.984	0.935	0.955	0.948	0.949	2.4
Dibenz(A,H)Anthracene	0.791	0.844	0.801	0.746	0.716	0.780	6.4
Benzo(G,H,I)Perylene	0.761	0.823	0.808	0.778	0.765	0.787	3.5
D8-Naphthalene	1.567	1.650	1.931	1.677	1.567	1.678	8.9
D10-Fluorene	1.098	1.152	1.057	1.124	1.057	1.098	3.8
D12-Chrysene	1.072	1.009	0.979	0.913	0.881	0.971	7.8

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 15605

Instrument ID: 4500-R Calibration Date(s): 07/18/91 Time: 1418

Lab ID: R6389 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.987	-11.9
2,3-Dihydroindene	0.798	0.880	-10.3
1H-Indene	0.756	0.860	-13.8
Naphthalene	1.900	2.010	-5.8
Benzo(B)Thiophene	1.374	1.438	-4.7
Quinoline	1.149	1.160	-1.0
1H-Indole	1.179	1.277	-8.3
2-Methylnaphthalene	1.115	1.218	-9.2
1-Methylnaphthalene	1.132	1.305	-15.3
Biphenyl	1.394	1.455	-4.4
Acenaphthylene	2.009	2.149	-7.0
Acenaphthene	1.179	1.300	-10.3
Dibenzofuran	1.716	1.669	2.7
Fluorene	1.402	1.435	-2.4
Dibenzothiophene	0.996	0.996	0.0
Phenanthrene	1.018	1.134	-11.4
Anthracene	1.094	1.190	-8.8
Acridine	0.786	0.681	13.4
Carbazole	0.868	0.787	9.3
Fluoranthene	1.152	1.068	7.3
Pyrene	1.141	1.094	4.1
Benzo(A)Anthracene	1.310	1.206	7.9
Chrysene	1.190	1.068	10.3
Benzo(B)Fluoranthene	1.231	1.270	-3.2
Benzo(K)Fluoranthene	1.040	1.080	-3.8
Benzo(E)Pyrene	1.004	1.021	-1.7
Benzo(A)Pyrene	1.018	1.073	-5.4
Perylene	0.832	0.832	0.0
Indeno(1,2,3-CD)Pyrene	0.949	0.971	-2.3
Dibenz(A,H)Anthracene	0.780	0.900	-15.4
Benzo(G,H,I)Perylene	0.787	0.846	-7.5
D8-Naphthalene	1.678	1.737	-3.5
D10-Fluorene	1.098	1.125	-2.5
D12-Chrysene	0.971	0.965	0.6

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 15605

Instrument ID: 4500-R Calibration Date(s): 07/19/91 Time: 1043

Lab ID: R6401 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	0.879	0.3
2,3-Dihydroindene	0.798	0.758	5.0
1H-Indene	0.756	0.770	-1.9
Naphthalene	1.900	1.862	2.0
Benzo(B)Thiophene	1.374	1.312	4.5
Quinoline	1.149	1.066	7.2
1H-Indole	1.179	1.194	-1.3
2-Methylnaphthalene	1.115	1.181	-5.9
1-Methylnaphthalene	1.132	1.249	-10.3
Biphenyl	1.394	1.397	-0.2
Acenaphthylene	2.009	2.098	-4.4
Acenaphthene	1.179	1.258	-6.7
Dibenzofuran	1.716	1.607	6.4
Fluorene	1.402	1.415	-0.9
Dibenzothiophene	0.996	0.947	4.9
Phenanthrene	1.018	1.062	-4.3
Anthracene	1.094	1.109	-1.4
Acridine	0.786	0.694	11.7
Carbazole	0.868	0.778	10.4
Fluoranthene	1.152	1.102	4.3
Pyrene	1.141	1.121	1.8
Benzo(A)Anthracene	1.310	1.016	22.4
Chrysene	1.190	0.937	21.3
Benzo(B)Fluoranthene	1.231	1.121	8.9
Benzo(K)Fluoranthene	1.040	0.907	12.8
Benzo(E)Pyrene	1.004	0.912	9.2
Benzo(A)Pyrene	1.018	0.911	10.5
Perylene	0.832	0.751	9.7
Indeno(1,2,3-CD)Pyrene	0.949	0.790	16.8
Dibenz(A,H)Anthracene	0.780	0.725	7.1
Benzo(G,H,I)Perylene	0.787	0.713	9.4
D8-Naphthalene	1.678	1.545	7.9
D10-Fluorene	1.098	1.096	0.2
D12-Chrysene	0.971	0.861	11.3

FORM VII

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 15605

Instrument ID: 4500-R Calibration Date(s): 07/20/91 Time: 1115

Lab ID: R6415 Initial Calibration Date(s): 05/03/91 05/03/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	0.882	1.007	-14.2
2,3-Dihydroindene	0.798	0.881	-10.4
1H-Indene	0.756	0.853	-12.8
Naphthalene	1.900	1.845	2.9
Benzo(B)Thiophene	1.374	1.352	1.6
Quinoline	1.149	1.111	3.3
1H-Indole	1.179	1.155	2.0
2-Methylnaphthalene	1.115	1.202	-7.8
1-Methylnaphthalene	1.132	1.265	-11.7
Biphenyl	1.394	1.464	-5.0
Acenaphthylene	2.009	2.201	-9.6
Acenaphthene	1.179	1.309	-11.0
Dibenzofuran	1.716	1.694	1.3
Fluorene	1.402	1.445	-3.1
Dibenzothiophene	0.996	1.010	-1.4
Phenanthrene	1.018	1.131	-11.1
Anthracene	1.094	1.187	-8.5
Acridine	0.786	0.699	11.1
Carbazole	0.868	0.782	9.9
Fluoranthene	1.152	1.090	5.4
Pyrene	1.141	1.141	0.0
Benzo(A)Anthracene	1.310	1.182	9.8
Chrysene	1.190	0.992	16.6
Benzo(B)Fluoranthene	1.231	1.232	-0.1
Benzo(K)Fluoranthene	1.040	0.977	6.1
Benzo(E)Pyrene	1.004	0.980	2.4
Benzo(A)Pyrene	1.018	0.982	3.5
Perylene	0.832	0.808	2.9
Indeno(1,2,3-CD)Pyrene	0.949	0.861	9.3
Dibenz(A,H)Anthracene	0.780	0.810	-3.8
Benzo(G,H,I)Perylene	0.787	0.783	0.5
D8-Naphthalene	1.678	1.682	-0.2
D10-Fluorene	1.098	1.127	-2.6
D12-Chrysene	0.971	0.928	4.4

FORM VII

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 15605 SAS No.: SDG No:

Lab File ID (Standard): R6389 Date Analyzed: 07/18/91

Instrument ID: 4500-R Time Analyzed: 1418

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	28400	45400	33200
UPPER LIMIT	56800	90800	66400
LOWER LIMIT	14200	22700	16600
SAMPLE NO.			
15605-01	44100	64500	34700
15605-06	28500	46300	27700
BLK01	23700	31800	22000
BLK02	26600	37100	25700

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 15605 SAS No.: SDG No:

Lab File ID (Standard): R6401 Date Analyzed: 07/19/91

Instrument ID: 4500-R Time Analyzed: 1043

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	27700	47000	39300
UPPER LIMIT	55400	94000	79000
LOWER LIMIT	13900	24000	19700
SAMPLE NO.			
15605-02MS	23400	35000	19600
15605-02MSD	24900	36900	20900

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 15605 SAS No.: SDG No:

Lab File ID (Standard): R6412 Date Analyzed: 07/20/91

Instrument ID: 4500-R Time Analyzed: 1115

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	33200	55200	44000
UPPER LIMIT	66400	110400	88000
LOWER LIMIT	16600	27600	22000
SAMPLE NO.			
15605-02	25300	36000	23100
15605-03	23400	35500	23000
15605-04	26300	37000	29000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100%
of internal standard area
LOWER LIMIT = - 50%
of internal standard area

Column used to flag internal standard area values with an asterisk

PHENOLICS MONITORING

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 0000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No. _____

Sample Numbers

RMA SAMPLE NO	CLIENT SAMPLE ID
1449101	DPV-W422TP-041191
1449101D	DPV-W422MSD-041191
1449101S	DPV-W422MS-041191
1449102	DPV-W422TPD-041191
1449103	DPV-W422FB-041191
1449104	DPV-W422FBD-041191
1449105	DPVP307-041191
1449106	DPVP308TP-041191
1449107	DPVP309TP-041191
1449108	DPVP310TP-041191
1449109	DPVP311TP-041191
1449110	DPVP312TP-041191
1449111	DPVP313TP-041191
1449112	DPVW431TP-041191
1449113	DPVW432TP-041191

PARAMETERS	METHOD NO.	DETECTION LIMIT	SOURCE
Phenol	420.1	5 ug/L	1

Comments:

THIRTEEN WATER SAMPLES FOR PHENOL ANALYSIS.
RMA QC# 14491

SOURCE:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Kathy K Olsen

Date: 7-03-91

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

RMA SAMPLE NO
1449101

CLIENT ID NO
DPV-W422TP-041191

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 04/12/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	10.8			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1449102

CLIENT ID NO
DPV-W422TPD-
041191

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 04/12/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	6.5			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1449103

CLIENT ID NO
DPV-W422FB-
041191

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 04/12/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1449104

CLIENT ID NO
DPV-W422FBD-
041191

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 04/12/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

CALIBRATION AND BLANKS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No.: _____

Initial Calibration Source: BAKER #4409 = 50

Continuing Calibration Source: MALLINCKRODT #4408

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)
Phenol	50.0	49.8	99.6	50.0	51.7	103.4	52.1	104.2
Phenol	50.0	49.1	98.2					

BLANKS

Blank Matrix (soil/water): WATER

Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank 1	C	2	C	3	C	Prepa-ration Blank	C
Phenol	5	U	5	U	5	U			5	U

5A
SPIKE SAMPLE RECOVERY

0000017

Lab Name: ROCKY MOUNTAIN ANALYTICAL

RMA SAMPLE NO
1449101S

CLIENT ID NO
DPV-W422MS-
041191

Matrix (soil/water): WATER

Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Phenol	75-125	56.4		10.8		50	91.2	

COMMENTS:

FORM V (PART 1) - IN

DUPLICATES

0000018

Lab Name: ROCKY MOUNTAIN ANALYTICAL

RMA SAMPLE NO
1449101D

CLIENT ID NO
DPV-W422MSD-

Matrix (soil/water): WATER

Level (Low/Med): LOW

% Solids for Sample: 0.0

% Solids for Duplicate: 0.0

Concentration Units: ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q
Phenol		10.8		10.8		0.0	

0000019

COLORIMETRIC ANALYSIS

DCS 4409 Baker

PARAMETER ppb Phenol CONTROL 50 ppb DATE 4/18/91

ANALYST J Sullivan / Graetzer SPIKE 50 ppb UNITS ug/L

		Concentration	Absorbance	- Blk	
	Blank	0	0.062	0.000	Corr. Coef. = 0.999110178
	STD 1	5	0.076	0.014	
4408 Mallinckrodt (CCV)	STD 2	10	0.091	0.029	Slope = 332.867
	STD 3	20	0.109	0.047	
	STD 4	50	0.209	0.147	Intercept = 1.15272
	STD 5	100	0.360	0.298	

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	ABSORBANCE COLOR B	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT.	REPORTED CONC.	% REC.
BLANK					- Blk					
ICV/DCS				0.208	0.142	49.75	1x	1x	49.8	99.6%
ICV/DCS				0.206	0.144	49.08			49.1	98.2%
~~ICV/DCS~~ ICB				0.050	—	—			5u	
PB				0.056	—	—			5u	
14491 -01				0.091	0.029	10.80			10.8	
-01D				0.091	0.029	10.80			10.8	RPD 0
-01S				0.228	0.166	56.40			56.4	91.2%
-02				0.078	0.016	6.47			6.5	
-03				0.062	—	—			5u	
-04				0.049	—	—			5u	
-05				0.114	0.052	18.46			18.5	
-06				0.090	0.028	10.47			10.5	
-07				0.126	22.456 0.064 4/18/91	22.456			22.5	
CCV (50)				0.214	0.152	51.74			51.7	103%
CCB				0.063	0.001	—			5u	
-08				0.082	0.020	7.81			7.8	
-09				0.090	0.028	10.47			10.5	
-10				0.096	0.034	12.47			12.5	
-11				0.059	—	—			5u	
-12				0.077	0.015	6.145			6.1	
-13				0.056	—	—			5u	
14236-06				0.070	0.008	3.81			5u	
CCV (50)				0.215	0.153	52.08			52.1	104%
CCB				0.063	0.001	—			5u	

5/18/91

INORGANIC NONMETALS SAMPLE PREPARATION

PARAMETER ppb Phenols ANALYST ~~J.~~ Sullivan/gm DATE 4/17/91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
ICV ~~BLANK~~	<2		4/17/91	200ml	200ml	
ICV ~~LCS 1~~			1 ml of 10ppm (4408) 4409 TV= 50ppb			
ICB ~~LCS 2~~						
14491 -01	<2					
-01D						
-01S			1 ml of 10ppm (4408) TV= 50ppb			
-02						
-03						
-04						
-05						
-06						
-07						
-08						
-09						
-10						
-11						
-12						
-13						
14236 -06						

Samples Properly Preserved	Y	N	NA
Interferences Documented	Y		NA
Special Instructions Followed. Copy Attached:	Y	N	NA
Anomalies Observed and Documented:	Y		NA
Deviations From Method Documented:	Y		NA
Prep Documentation Complete and Reviewed:	Y	N	NA
Data Entered:	Y	N	NA

CLP SAMPLE DESCRIPTION SHEET

RMA # 14491 CLIENT # City of St. Louis Park MATRIX: Water

CLP SAMPLE #	COLOR	CLARITY/TEXTURE	% LIQUID
14491 -01	8	1	
-01D	8	1	
-015	8	1	
-02	8	1	
-03	8	1	
-04	8	1	
-05	3	2	
-06	3	2	
-07	3	2	
-08	3	2	
-09	8	2	
-10	8	2	
-11	3	2	
-12	8	2	
-13	3	2	

KEY:

COLOR

1	RED	7	WHITE
2	BLUE	8	COLORLESS
3	YELLOW	9	BROWN
4	GREEN	10	GREY
5	ORANGE	11	BLACK
6	VIOLET	12	OTHER (SPECIFY)

CLARITY

1 CLEAR
2 CLOUDY
3 OPAQUE
4 OTHER (SPECIFY)

TEXTURE

1 FINE (POWDERY)
2 MEDIUM (SAND)
3 COARSE (LARGE CRYSTALS OR ROCKS)
4 CLAY
5 OTHER (SPECIFY)

COMMENTS:

CLP SAMPLE LOG-IN/PREPARATION SHEET

RMA QC#: 14491 CLIENT #: City of St. Louis Park MATRIX: LOW___ WATER X MED___ SOIL___

CLP #	DATE RECEIVED	PARAMETERS
14491-01	4-12-91	PPB Phenolics
010		
015		
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
13		

SPECIAL INSTRUCTIONS OR CAUTIONS:
Sample 1:5 QC.
13 waters for PPB Phenolics
28 DAY TAT.

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	PACKED BY: MZ
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZ
SAMPLING SITE: SAME	SEAL NUMBER: / SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZ	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No / CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:
CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP.: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4-11-91		DPV-W422TP-041191	16oz CLEAR	1	PPB Phenolics	
-02		DPV-W422TPD-041191		1		
-01MS		DPV-W422MS-041191		1		
-01MSD		DPV-W422MSD-041191		1		
4-11-91		DPV-W422FB-041191	16oz CLEAR	1	PPB Phenolics	
4-11-91		DPV-W422FBD-041191	16oz CLEAR	1	PPB Phenolics	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZ
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 2865076266
RECEIVED FOR LAB: R.M.A.L.
SIGNED: Justin Chappell
DATE/TIME: 4/12/91 0800
ENSECO PROJECT NUMBER:

000023

ENS—1133 White - CLIENT Pink - LAB

ENSR LABORATORIES ©

CONSULTING AND ENGINEERING

2925 RICHMOND AVENUE HOUSTON, TX 77098 (713) 520-1495

Analysis Request and Chain of Custody Record

Project no.:

Client/Project Name: City of St. Louis Park

Project Location: St. Louis Park

	Lab ID No	Field Sample No./ Identification	Date and Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid Sludge, Etc.)	Preservative	ANALYSIS REQUESTED	LABORATORY REMARKS
05 -04 -03		DPVP307 041191	4/11/91 1755			500 ml clear	water	H_2SO_4	PTB Phenolics	
-06		DPV P308TP 041191	1735					4°C		
-07		DPV P309TP 041191	1555							
-08		DPV310TP 041191	1605							
-09		DPVP311TP 041191	1330							
-10		DPVP312TP 041191	1450							
-11		DPVP313TP 041191	1015							
-12		DPV W431TP 041191	1209							
-13		DPV W432TP 041191	1110							

Sampler(s) (Signature)	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)	Date: Time:	COC Seal No.
Affiliation	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)	Date: Time:	#2
	Relinquished by: (Signature)	Date: Time:	Received by Laboratory: (Signature)	Date: Time:	Intact:
REMARKS:			Data Results To:		Laboratory No.

000002

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

July 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (includes QC) received at Rocky Mountain Analytical Laboratory on June 28, 1991.

If you have any questions, the Program Administrator assigned to this project is Joel Holtz.

Sincerely,

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL# 15612

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax· 303/431-7171

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No. _____

Sample Numbers

RMA SAMPLE NO	CLIENT SAMPLE ID
1561201	DPV-W420TP-062791
1561202	DPV-W421TP-062791
1561202D	DPV-W421TPMSD-062791
1561202S	DPV-W421TPMS-062791
1561203	DPV-W421TPD-062791
1561204	DPV-W421TPFB-062791
1561205	DPV-W421TPFBD-062791
1561206	PCV-W23TP-062791
1561207	IGV-W10STP-062791
1561208	STP-W410TP-062791

PARAMETERS	METHOD NO.	DETECTION LIMIT	SOURCE
Phenol	420.1	5 ug/l	1

Comments:

EIGHT WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 15612.

SOURCE:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Kang

Date: 7/18/91

Project # 15612

The samples for this project were prepped for phenol on 7/05/91. On that date 100 mls of sample were prepped. For a reporting limit of 0.05 ppb we distill 200 mls of sample. Since the samples had limited volume 100 more mls were distilled on 7/12/91 and added to the distillate from the first date for a final volume of 200 mls.

Laboratory Supervisor Ann Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

RMA SAMPLE NO
1561201

CLIENT ID NO
DPV-W420TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	221			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561202

CLIENT ID NO
DPV-W421TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	29.7			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561204

CLIENT ID NO
DPV-W421TPFB-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561205

CLIENT ID NO
DPV-W421TPFBD-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561203

CLIENT ID NO
DPV-W421TPD-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	30.8			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

CALIBRATION AND BLANKS

000012

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No.: _____

Initial Calibration Source: BAKER 4487 = 100

Continuing Calibration Source: MALLINCKRODT 4409

Calibration Date: July 15, 1991

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)
Phenol	100.0	83.5	83.5	20.0	19.9	99.5	19.9	99.5
Phenol	100.0	100.0	100.0					

BLANKS

Blank Matrix (soil/water): WATER

Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank	C	Continuing Calibration Blank 1	C	2	C	3	C	Prepa-ration Blank	C
Phenol	5	U	5	U	5	U				

5A
SPIKE SAMPLE RECOVERY

000013

Lab Name: ROCKY MOUNTAIN ANALYTICAL

RMA SAMPLE NO
1561202S

CLIENT ID NO
DPV-W421TPMS-
062791

Matrix (soil/water): WATER

Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Phenol	75-125	111		29.7		100	81.3	

COMMENTS:

FORM V (PART 1) - IN

DUPLICATES

000014

Lab Name: ROCKY MOUNTAIN ANALYTICAL

RMA SAMPLE NO
1561202D

CLIENT ID NO
DPV-W420TPMSD-
062791

Matrix (soil/water): WATER

Level (Low/Med): LOW

% Solids for Sample: 0.0

% Solids for Duplicate: 0.0

Concentration Units: ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q
Phenol		29.7		27.6		7.3	

COLORIMETRIC ANALYSIS

000015

PARAMETER ppb Phenol CONTROL 4487 Baker 100 ppb DATE 7/15/99

ANALYST J Sullivan SPIKE 100 ppb UNITS ug/L

	Concentration	Absorbance		
Blank	0	0.052	0.000	Corr. Coef. = 0.999776863
STD 1	5	0.072	0.020	
STD 2	10	0.084	0.032	Slope = 363.154
STD 3	20	0.110	0.058	
STD 4	50	0.191	0.139	Intercept = -1.12427
STD 5	100	0.331	0.279	

4409 Mallinckrodt (CCV)

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	ABSORBANCE COLOR B	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT	REPORTED CONC.	% REC.
BLANK					(-Blk)					
ICV/DCS				0.170	0.118	41.72	1x	2x	83.5	83.5%
ICV/DCS				0.193	0.141	50.08		↓	100	100%
~~ICV/DCS~~ ICB				0.050	—	—		1x	5u	
Pe 7/15/99 15612 DB				0.063	0.011	—			5u	
-01				0.740	—	—			off scale	
-02				0.137	0.085	29.74			29.7	
-02D				0.131	0.079	27.56		↓	27.6	RPD 7.3
-02S				0.208	0.156	55.52		2x	111	81.3%
-03				0.140	0.088	30.83		1x	30.8	
-04				0.068	0.016	4.68			5u	
-05				0.052	—	—			5u	
-06				0.053	0.001	—			5u	
-07				0.054	0.002	—			5u	
CCV (20)				0.110	0.058	19.93			19.9	99.5%
CCB				0.050	—	—			5u	
-08				0.064	0.012	—		↓	5u	
-01				0.135	0.125	44.27	↓	5x	221	
CCV (20)				0.110	0.058	19.93			19.9	99.5%
CCB				0.050	—	—			5u	

INORGANIC NON-METALS
ANOMALY FORM

000016

Document anomalies, deviations from method, and other observations below:

Parameter	Sample No.(s)	Discussion
phenol	15612 1→8	These samples were prepped on 7/5/91 at 100 ml total volume. Due to limited volume, they were prepped again at a 100 ml & put together to be analyzed.

Approved by: Anne Lang Date: 7/16/91

INORGANIC NONMETALS SAMPLE PREPARATION

000017

PARAMETER PHENOL ANALYST MB DATE 7-5-91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
BLANK	<2		NONE	100 ~~200~~	100 ~~200~~	1x
LCS 1			0.20 mg/L			
LCS 2						
5612-01						
02						
Dup 02						
02s						
03						
04						
05						
06						
07						
08						

INORGANIC NONMETALS SAMPLE PREPARATION

000018

PARAMETER ppb Phenol ANALYST Sullivan DATE 7/12/91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
Prep BLANK	<2	#2		100ml	100ml	1X
ICV ~~LCS 1~~ 85						
ICV ~~LCS 2~~						
15612 - 01			Neg			
- 02						
- 02D						
- 02S						
- 03						
- 04						
- 05						
- 06						
- 07						
- 08						

EPA SAMPLE DESCRIPTION SHEET

000013

RMA NO. 15612 CASE/SAS NO. _____ MATRIX: water

EPA NO.	COLOR	CLARITY/TEXTURE	% LIQUID
15612-01	colorless	clear	(amber bottles)
-02			
-03			
-04			
-05			
-06			
-07			
-08			

KEY:

COLOR		CLARITY	TEXTURE
1 RED	7 WHITE	1 CLEAR	1 FINE (POWDERY)
2 BLUE	8 COLORLESS	2 CLOUDY	2 MEDIUM (SAND)
3 YELLOW	9 BROWN	3 OPAQUE	3 COARSE (LARGE CRYSTALS OR ROCKS)
4 GREEN	10 GREY	4 OTHER (SPECIFY)	4 CLAY
5 ORANGE	11 BLACK		5 OTHER (SPECIFY)
6 VIOLET	12 OTHER (SPECIFY)		

COMMENTS:

EPA SAS SAMPLE LOG-IN/PREPARATION SHEET

000020

RMA QC#: 15612 CASE #: _____ SAS #: _____ MATRIX: LOW ___ WATER ✓ MED ___ SOIL ___

EPA #	DATE RECEIVED	PARAMETERS
15612-01	6-28-91	PPB Phenolics
-02		
-02D		
-02S		
-03		
-04		
-05		
-06		
-07		
-08		

special instructions or cautions

120000

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	
PROJECT:	
SAMPLING COMPANY: SAME	
SAMPLING SITE: SAME	
TEAM LEADER: MZ	

SAMPLE SAFE™ CONDITIONS

PACKED BY: MZ	SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:	CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MZ	INITIAL CONTENTS TEMP: °C
SEAL NUMBER:	SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
6-27-91		DPV-W420TP-062791	16 oz CLEAR	1	PPB Phenolics	15612-01
		DPV-W421TP-062791		1		15612-02
		DPV-W421TPD-062791		1		15612-03
		DPV-W421TPMS-062791		1		15612-02 Spike
		DPV-W421TPMSD-062791		1		15612-02 Dup
		DPV-W421TPFB-062791		1		15612-~~05~~ 04
		DPV-W421TPFBD-062791		1		15612-05
		PCV-W23TP-062791		1		15612-06
6-27-91		IGV-W105TP-062791	16 oz CLEAR	1	PPB Phenolics	15612-07
6-27-91		SJP-W410TP-062791	16 oz CLEAR	1	PPB Phenolics	15612-08

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZ		
METHOD OF SHIPMENT: FED EXP		AIRBILL NUMBER: 2865076373
RECEIVED FOR LAB: R.M.A.C.	SIGNED: Justi Campbell	DATE/TIME: 6/28/91 0800
ENSECO PROJECT NUMBER: 15612	Phenolics	

ENS-1133

White - CL Pink - LAB

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No. _____

Sample Numbers

RMA SAMPLE NO	CLIENT SAMPLE ID
1561201	DPV-W420TP-062791
1561202	DPV-W421TP-062791
1561202D	DPV-W421TPMSD-062791
1561202S	DPV-W421TPMS-062791
1561203	DPV-W421TPD-062791
1561204	DPV-W421TPFB-062791
1561205	DPV-W421TPFBD-062791
1561206	PCV-W23TP-062791
1561207	IGV-W10STP-062791
1561208	STP-W410TP-062791

PARAMETERS	METHOD NO.	DETECTION LIMIT	SOURCE
Phenol	420.1	5 ug/l	1

Comments:

EIGHT WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 15612.

SOURCE:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Kang

Date: 7/18/91

Project # 15612

The samples for this project were prepped for phenol on 7/05/91. On that date 100 mls of sample were prepped. For a reporting limit of 0.05 ppb we distill 200 mls of sample. Since the samples had limited volume 100 more mls were distilled on 7/12/91 and added to the distillate from the first date for a final volume of 200 mls.

Laboratory Supervisor Anne Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

RMA SAMPLE NO
1561201

CLIENT ID NO
DPV-W420TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	221			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561202

CLIENT ID NO
DPV-W421TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	29.7			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561203

CLIENT ID NO
DPV-W421TPD-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	30.8			ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561204

CLIENT ID NO
DPV-W421TPFB-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561205

CLIENT ID NO
DPV-W421TPFBD-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

000009

RMA SAMPLE NO
1561206

CLIENT ID NO
PCV-W23TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

000010

RMA SAMPLE NO
1561207

CLIENT ID NO
IGV-W10STP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

RMA SAMPLE NO
1561208

CLIENT ID NO
STP-W410TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Date Received: 06/28/91

Level (low/med): LOW

% Solids: 0.0

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

CALIBRATION AND BLANKS

000012

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No.: _____

Initial Calibration Source: BAKER 4487 = 100

Continuing Calibration Source: MALLINCKRODT 4409

Calibration Date: July 15, 1991

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)
Phenol	100.0	83.5	83.5	20.0	19.9	99.5	19.9	99.5
Phenol	100.0	100.0	100.0					

BLANKS

Blank Matrix (soil/water): WATER

Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank	C	Continuing Calibration Blank 1	C	2	C	3	C	Prepa-ration Blank	C
Phenol	5	U	5	U	5	U				

5A
SPIKE SAMPLE RECOVERY

000013

Lab Name: ROCKY MOUNTAIN ANALYTICAL

RMA SAMPLE NO
1561202S

CLIENT ID NO
DPV-W421TPMS-
062791

Matrix (soil/water): WATER

Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Phenol	75-125	111		29.7		100	81.3	

COMMENTS:

FORM V (PART 1) - IN

DUPLICATES

000014

Lab Name: ROCKY MOUNTAIN ANALYTICAL

RMA SAMPLE NO
1561202D

CLIENT ID NO
DPV-W420TPMSD-
062791

Matrix (soil/water): WATER

Level (Low/Med): LOW

% Solids for Sample: 0.0

% Solids for Duplicate: 0.0

Concentration Units: ug/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q
Phenol		29.7		27.6		7.3	

COLORIMETRIC ANALYSIS

4487 Baker

PARAMETER ppb Phenol CONTROL 100 ppb DATE 7/15/99 000015

ANALYST J Sullivan SPIKE 100 ppb UNITS ug/L

	Concentration	Absorbance		
Blank	0	0.052	0.000	Corr. Coef. = 0.999776863
STD 1	5	0.072	0.020	
STD 2	10	0.084	0.032	Slope = 363.154
STD 3	20	0.110	0.058	
STD 4	50	0.191	0.139	Intercept = -1.12427
STD 5	100	0.331	0.279	

4409 mallinckrodt (CCV)

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	ABSORBANCE COLOR B	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT	REPORTED CONC.	% REC.
BLANK					(-Blk)					
ICV/DCS				0.170	0.118	41.72	1x	2x	83.5	83.5%
ICV/DCS				0.193	0.141	50.08		↓	100	100%
~~ICV/DCS~~ ICB				0.050	—	—		1x	5u	
Pe 7/15/99 15612 PB				0.063	0.011	—			5u	
-01				0.740	—	—			off scale	
-02				0.137	0.085	29.74			29.7	
-02D				0.131	0.079	27.56		↓	27.6	RPD 7.3
-02S				0.208	0.156	55.52		2x	111	81.3%
-03				0.140	0.088	30.83		1x	30.8	
-04				0.068	0.016	4.68			5u	
-05				0.052	—	—			5u	
-06				0.053	0.001	—			5u	
-07				0.054	0.002	—			5u	
CCV (20)				0.110	0.058	19.93			19.9	99.5%
CCB				0.050	—	—			5u	
-08				0.064	0.012	—		↓	5u	
-01				0.135	0.125	44.27	↓	5x	221	
CCV (20)				0.110	0.058	19.93			19.9	99.5%
CCB				0.050	—	—			5u	

INORGANIC NON-METALS
ANOMALY FORM

000016

Document anomalies, deviations from method, and other observations below:

Parameter	Sample No.(s)	Discussion
phenol	15612 1→8	These samples were prepped on 7/5/91 at 100 ml total volume. Due to limited volume, they were prepped again at a 100 ml & put together to be analyzed.

Approved by: Anne Lang Date: 7/16/91

INORGANIC NONMETALS SAMPLE PREPARATION

000017

PARAMETER PHENOL ANALYST MB DATE 7-5-91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
BLANK	<2		NONE	100 ~~200~~	100 ~~200~~	1x
LCS 1			0.20 mg/L			
LCS 2						
5612-01						
02						
Dup 02						
02s						
03						
04						
05						
06						
07						
08						

INORGANIC NONMETALS SAMPLE PREPARATION

000018

PARAMETER ppb Phenol ANALYST Sullivan DATE 7/12/91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
Prep BLANK	<2	#2		100ml	100ml	1X
ICV ~~LCS 1~~ 15						
ICV ~~LCS 2~~						
15612 - 01			Neg			
- 02						
- 02D						
- 02S						
- 03						
- 04						
- 05						
- 06						
- 07						
- 08						

EPA SAMPLE DESCRIPTION SHEET

000013

RMA NO. 15612 CASE/SAS NO. _____ MATRIX: water

EPA NO.	COLOR	CLARITY/TEXTURE	% LIQUID
15612-01	colorless	clear	(amber bottles)
-02			
-03			
-04			
-05			
-06			
-07			
-08			

KEY:

COLOR
1 RED
2 BLUE
3 YELLOW
4 GREEN
5 ORANGE
6 VIOLET
7 WHITE
8 COLORLESS
9 BROWN
10 GREY
11 BLACK
12 OTHER (SPECIFY)

CLARITY
1 CLEAR
2 CLOUDY
3 OPAQUE
4 OTHER (SPECIFY)

TEXTURE
1 FINE (POWDERY)
2 MEDIUM (SAND)
3 COARSE (LARGE CRYSTALS OR ROCKS)
4 CLAY
5 OTHER (SPECIFY)

COMMENTS:

EPA SAS SAMPLE LOG-IN/PREPARATION SHEET

000020

RMA QC#: 15612 CASE #: _____ SAS #: _____ MATRIX: LOW ___ WATER ✓ MED ___ SOIL ___

EPA #	DATE RECEIVED	PARAMETERS
15612-01	6-28-91	PPB Phenolics
-02		
-021		
-025		
-03		
-04		
-05		
-06		
-07		
-08		

special instructions or cautions

000021

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT	City of St Louis Park
PROJECT	
SAMPLING COMPANY	SAME
SAMPLING SITE	SAME
TEAM LEADER	MZH

SAMPLE SAFE™ CONDITIONS

PACKED BY	MZH
SEAL NUMBER	
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	
CONDITION OF CONTENTS	
SEALED FOR SHIPPING BY	MZH
INITIAL CONTENTS TEMP	°C
SEAL NUMBER	
SAMPLING STATUS	☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB	☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB	°C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
6-27-91		DPV-W420TP-062791	16 oz clear	1	PPB Phenolics	15612-01
		DPV-W421TP-062791		1		15612-02
		DPV-W421TPD-062791		1		15612-03
		DPV-W421TPMS-062791		1		15612-02 Spike
		DPV-W421TPMSD-062791		1		15612-02 Dup
		DPV-W421TPFB-062791		1		15612-~~03~~ 04
		DPV-W421TPFBD-062791		1		15612-05
		PCU-W23TP-062791		1		15612-06
6-27-91		IGV-W105TP-062791	16 oz clear	1	PPB Phenolics	15612-07
6-27-91		STP-W410TP-062791	16 oz clear	1	PPB Phenolics	15612-08

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY	MZH
METHOD OF SHIPMENT	Fed Exp
AIRBILL NUMBER	2865076373
RECEIVED FOR LAB	R.M.A.C.
SIGNED	Justi Campbell
DATE/TIME	6/28/91 0800
ENSECO PROJECT NUMBER	15612

Phenolics

ENS—1133

White - Cl' Pink - LAB

RAP SECTIONS 9.1.3. & 9.2.3 MONITORING

3RD QUARTER - 1991

PAH MONITORING

Enseco
A Corning Company

RECEIVED

CASE NARRATIVE

FOR

City of St. Louis Park

November 01, 1991

Enseco - RMAL Project Number 017191

Introduction

Ten aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on September 19, 1991. The samples were logged in under RMAL project number 017191. Sample DPV-W420FBD-091891 (RMAL # 17191-05) was extracted and inadvertently analyzed. This data is reported, however there will be no charge for the analysis as this sample was to be extracted and held per the 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Samples 17191-01, 02, 03, 06, 02MS and 02MSD were analyzed at dilutions due to target compounds present in excess of calibration range. With the exception of sample -01, surrogates could not be measured in the above samples due to the dilutions performed.

Matrix spike/spike duplicate recoveries could not be calculated for -02MS and 02MSD due to the level of spike compounds present in the associated sample. Several spike compounds were diluted out as well. All recoveries and RPD's are reprted as "NC" (not calculated).

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

Case Narrative - RMAL #017191
November 01, 1991
Page Two

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy
Tracy Conroy
Data Control Supervisor

Date: 11/01/91

Approved by: Debbie Fazio
Debbie Fazio
Program Administrator

Date: 11/01/91

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
017191-0001-SA	DPV-W421-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0002-SA	DPV-W420-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0002-MS	DPV-W420MS-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0002-SD	DPV-W420MSD-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0003-SA	DPV-W420D-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0004-SA	DPV-W420FB-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0005-SA	DPV-W420FBD-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0006-SA	WTF-ACLE-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0007-SA	WTF-ACLI-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0008-SA	PCJ-W23-091891	AQUEOUS	18 SEP 91		19 SEP 91

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Rocky Mountain Analytical Laboratory
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Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK WATER DEPT	SAMPLE SAFE™ CONDITIONS — PACKED BY: MZN; SEAL NUMBER:
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY: ; CONDITION OF CONTENTS:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZN; INITIAL CONTENTS TEMP: °C
SAMPLING SITE: SAME	SEAL NUMBER: ; SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZN	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No; CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
9-18-91		DPV-W421-091891 01	1XL AMBER	2	PPB PAH	
		DPV-W420-091891 02				
		DPV-W420D-091891 03				
		DPV-W420MS-091891 02MS				
		DPV-W420MSD-091891 02MSD				
		DPV-W420FB-091891 04				
9-18-91		DPV-W420FBD-091891 05	1XL AMBER	2	PPB PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZN	
METHOD OF SHIPMENT: FED Exp	AIRBILL NUMBER: 2864993456
RECEIVED FOR LAB: RMAL; SIGNED: [signature]	DATE/TIME: 09-19-91 0800
ENSECO PROJECT NUMBER: 171991	

ENS—1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK WATER DEPT	
PROJECT:	
SAMPLING COMPANY: SAME	
SAMPLING SITE: SAME	
TEAM LEADER: MZK	

SAMPLE SAFE™ CONDITIONS

PACKED BY: MZK	SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:	CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MZK	INITIAL CONTENTS TEMP: °C
SEAL NUMBER:	SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION		SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
9-18-91		WTF-ACLE-091891	01	1XL AMBER	2	PPB PAH	
		WTF-ACLI-091891	02	1XL AMBER	2	PPB PAH	
		PCU-W23-091891	03	1XL AMBER	2	PPB PAH	
		~~PCU-W23TP-091891~~	4	16 OZ CLEAR	1	PPB Phenolics	
		~~[illegible]-091891~~	9		1		
		~~[illegible]-091891~~	10		1		
		~~PCU-W422TP-091891~~	11		1		
		~~[illegible]-091891~~	12		1		
		~~[illegible]-091891~~	13		1		
9-18-91		~~[illegible]-091891~~	14	16 OZ CLEAR	1	PPB Phenolics	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZK	
METHOD OF SHIPMENT: FED EXP	AIRBILL NUMBER: 2864993456
RECEIVED FOR LAB: RMAL	SIGNED: [signature] DATE/TIME: 09-19-91 0800
ENSECO PROJECT NUMBER: 17191	

ENS—1133

White – CLIENT Pink – LAB

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Enseco
A Corning Company

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 017191

PPT-PAH

QC Summary.....0001

Sample Data.....0008

Standards Data.....0219

Raw QC Data.....0267

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park
RMAL# 17191

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-01

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7292

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 4.72

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	47	U
496-11-7	2,3-Dihydroindene	140	
95-13-6	1H-Indene	120	
91-20-3	Naphthalene	750	
4565-32-6	Benzo(B)Thiophene	76	
91-22-5	Quinoline	47	U
120-72-9	1H-Indole	47	U
91-57-6	2-Methylnaphthalene	5.5	J
90-12-0	1-Methylnaphthalene	52	
92-52-4	Biphenyl	7.3	J
208-96-8	Acenaphthylene	47	U
83-32-9	Acenaphthene	33	J
132-64-9	Dibenzofuran	8.1	J
86-73-7	Fluorene	8.9	J
132-65-0	Dibenzothiophene	47	U
85-01-8	Phenanthrene	47	U
120-12-7	Anthracene	47	U
260-94-6	Acridine	47	U
86-74-8	Carbazole	25	J
206-44-0	Fluoranthene	47	U
129-00-0	Pyrene	47	U
56-55-3	Benzo(A)Anthracene	47	U
218-01-9	Chrysene	47	U
205-99-2	Benzo(B)Fluoranthene	47	U
207-08-9	Benzo(K)Fluoranthene	47	U
192-97-2	Benzo(E)Pyrene	47	U
50-32-8	Benzo(A)Pyrene	47	U
198-55-0	Perylene	47	U
193-39-5	Indeno(1,2,3-CD)Pyrene	47	U
53-70-3	Dibenz(A,H)Anthracene	47	U
191-24-2	Benzo(G,H,I)Perylene	47	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-02

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7293

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 18.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	59	J
496-11-7	2,3-Dihydroindene	200	
95-13-6	1H-Indene	470	
91-20-3	Naphthalene	3200	
4565-32-6	Benzo(B)Thiophene	190	
91-22-5	Quinoline	49	J
120-72-9	1H-Indole	190	U
91-57-6	2-Methylnaphthalene	210	
90-12-0	1-Methylnaphthalene	180	J
92-52-4	Biphenyl	33	J
208-96-8	Acenaphthylene	190	U
83-32-9	Acenaphthene	130	J
132-64-9	Dibenzofuran	49	J
86-73-7	Fluorene	96	J
132-65-0	Dibenzothiophene	190	U
85-01-8	Phenanthrene	29	J
120-12-7	Anthracene	190	U
260-94-6	Acridine	190	U
86-74-8	Carbazole	78	J
206-44-0	Fluoranthene	190	U
129-00-0	Pyrene	190	U
56-55-3	Benzo(A)Anthracene	190	U
218-01-9	Chrysene	39	J
205-99-2	Benzo(B)Fluoranthene	190	U
207-08-9	Benzo(K)Fluoranthene	190	U
192-97-2	Benzo(E)Pyrene	43	J
50-32-8	Benzo(A)Pyrene	190	U
198-55-0	Perylene	190	U
193-39-5	Indeno(1,2,3-CD)Pyrene	190	U
53-70-3	Dibenz(A,H)Anthracene	190	U
191-24-2	Benzo(G,H,I)Perylene	190	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-03

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7296

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 18.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	56	J
496-11-7	2,3-Dihydroindene	180	J
95-13-6	1H-Indene	380	
91-20-3	Naphthalene	2800	
4565-32-6	Benzo(B)Thiophene	170	J
91-22-5	Quinoline	190	U
120-72-9	1H-Indole	190	U
91-57-6	2-Methylnaphthalene	140	J
90-12-0	1-Methylnaphthalene	160	J
92-52-4	Biphenyl	28	J
208-96-8	Acenaphthylene	190	U
83-32-9	Acenaphthene	110	J
132-64-9	Dibenzofuran	42	J
86-73-7	Fluorene	38	J
132-65-0	Dibenzothiophene	190	U
85-01-8	Phenanthrene	25	J
120-12-7	Anthracene	190	U
260-94-6	Acridine	190	U
86-74-8	Carbazole	69	J
206-44-0	Fluoranthene	190	U
129-00-0	Pyrene	190	U
56-55-3	Benzo(A)Anthracene	190	U
218-01-9	Chrysene	190	U
205-99-2	Benzo(B)Fluoranthene	190	U
207-08-9	Benzo(K)Fluoranthene	190	U
192-97-2	Benzo(E)Pyrene	190	U
50-32-8	Benzo(A)Pyrene	190	U
198-55-0	Perylene	190	U
193-39-5	Indeno(1,2,3-CD)Pyrene	190	U
53-70-3	Dibenz(A,H)Anthracene	190	U
191-24-2	Benzo(G,H,I)Perylene	190	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-04

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-04

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7297

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	9.4	U
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.4	U
4565-32-6	Benzo(B)Thiophene	9.4	U
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	9.4	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-05

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-05

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7298

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	9.4	U
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.4	U
4565-32-6	Benzo(B)Thiophene	9.4	U
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	9.4	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-02MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-02MS

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7294

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 18.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
271-89-6	2,3-Benzofuran	58	J	
496-11-7	2,3-Dihydroindene	190		
95-13-6	1H-Indene	400		SC
91-20-3	Naphthalene	3000		SC
4565-32-6	Benzo(B)Thiophene	180	J	
91-22-5	Quinoline	190	U	SC
120-72-9	1H-Indole	190	U	
91-57-6	2-Methylnaphthalene	150	J	SC
90-12-0	1-Methylnaphthalene	160	J	
92-52-4	Biphenyl	31	U	
208-96-8	Acenaphthylene	190	U	
83-32-9	Acenaphthene	120	J	
132-64-9	Dibenzofuran	47	J	
86-73-7	Fluorene	39	J	SC
132-65-0	Dibenzothiophene	190	U	
85-01-8	Phenanthrene	27	J	
120-12-7	Anthracene	190	U	
260-94-6	Acridine	190	U	
86-74-8	Carbazole	72	J	
206-44-0	Fluoranthene	190	U	
129-00-0	Pyrene	190	U	
56-55-3	Benzo(A)Anthracene	190	U	
218-01-9	Chrysene	190	U	SC
205-99-2	Benzo(B)Fluoranthene	190	U	
207-08-9	Benzo(K)Fluoranthene	190	U	
192-97-2	Benzo(E)Pyrene	190	U	SC
50-32-8	Benzo(A)Pyrene	190	U	
198-55-0	Perylene	190	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	190	U	
53-70-3	Dibenz(A,H)Anthracene	190	U	
191-24-2	Benzo(G,H,I)Perylene	190	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17191-02MSD

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-02MSD

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7295

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 18.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
271-89-6	2,3-Benzofuran	54	J	
496-11-7	2,3-Dihydroindene	170	J	
95-13-6	1H-Indene	410		SC
91-20-3	Naphthalene	2800		SC
4565-32-6	Benzo(B)Thiophene	160	J	
91-22-5	Quinoline	43	J	SC
120-72-9	1H-Indole	190	U	
91-57-6	2-Methylnaphthalene	180	J	SC
90-12-0	1-Methylnaphthalene	150	J	
92-52-4	Biphenyl	29	J	
208-96-8	Acenaphthylene	190	U	
83-32-9	Acenaphthene	110	J	
132-64-9	Dibenzofuran	42	J	
86-73-7	Fluorene	82	J	SC
132-65-0	Dibenzothiophene	190	U	
85-01-8	Phenanthrene	25	J	
120-12-7	Anthracene	190	U	
260-94-6	Acridine	190	U	
86-74-8	Carbazole	66	J	
206-44-0	Fluoranthene	190	U	
129-00-0	Pyrene	190	U	
56-55-3	Benzo(A)Anthracene	190	U	
218-01-9	Chrysene	26	J	SC
205-99-2	Benzo(B)Fluoranthene	190	U	
207-08-9	Benzo(K)Fluoranthene	190	U	
192-97-2	Benzo(E)Pyrene	25	J	SC
50-32-8	Benzo(A)Pyrene	190	U	
198-55-0	Perylene	190	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	190	U	
53-70-3	Dibenz(A,H)Anthracene	190	U	
191-24-2	Benzo(G,H,I)Perylene	190	U	

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP)	#	S2 (FLU)	#	S3 (CHR)	#
1	17191-01	77		82		74	
2	17191-02		D		D		D
3	17191-03		D		D		D
4	17191-04	77		80		80	
5	17191-05	80		83		81	
6	17191-06		D		D		D
7	17191-07	73		75		35	
8	17191-08	80		82		56	
9	17191-02MS		D		D		D
10	17191-02MSD		D		D		D
11	BLK01	84		85		80	

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(25-175)
S2 (FLU) = D10-FLUORENE	(25-175)
S3 (CHR) = D12-CHRYSENE	(25-175)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 17191-02 LEVEL: LOW

Compound	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
1H-Indene	47.2	471	404	NC
Naphthalene	47.2	3180	3010	NC
Quinoline	47.2	49.4	ND	NC
2-Methylnaphthalene	47.2	215	145	NC
Fluorene	47.2	96.4	39.1	NC
Chrysene	47.2	39.0	ND	NC
Benzo(E)Pyrene	47.2	42.6	ND	NC

Compound	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
1H-Indene	47.2	410	NC	NC
Naphthalene	47.2	2760	NC	NC
Quinoline	47.2	42.6	NC	NC
2-Methylnaphthalene	47.2	182	NC	NC
Fluorene	47.2	81.9	NC	NC
Chrysene	47.2	26.0	NC	NC
Benzo(E)Pyrene	47.2	24.9	NC	NC

NC = Not Calculated

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Lab File ID: R7291 Lab Sample ID: BLK01

Date Extracted: 09/21/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 10/14/91 Time Analyzed: 0017

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	17191-01	17191-01	R7292	10/14/91
2	17191-02	17191-02	R7293	10/14/91
3	17191-03	17191-03	R7296	10/14/91
4	17191-04	17191-04	R7297	10/14/91
5	17191-05	17191-05	R7298	10/14/91
6	17191-06	17191-06	R7299	10/14/91
7	17191-07	17191-07	R7300	10/14/91
8	17191-08	17191-08	R7301	10/14/91
9	17191-02MS	17191-02MS	R7294	10/14/91
10	17191-02MSD	17191-02MSD	R7295	10/14/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R7291

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Lab File ID: R7281 DFTPP Injection Date: 10/13/91

Instrument ID: 4500-R DFTPP Injection Time: 1414

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	50.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	49.5
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	50.5
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.73
275	10.0 - 30.0% of mass 198	22.5
365	Greater than 1.00% of mass 198	3.56
441	Present, but less than mass 443	9.29
442	Greater than 40.0% of mass 198	67.9
443	17.0 - 23.0% of mass 442	14.9 (21.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R7283	10/13/91	1543
02	SSTD160	160_PPM_PAH_STD	R7285	10/13/91	1826
03	SSTD120	120_PPM_PAH_STD	R7286	10/13/91	2016
04	SSTD080	80_PPM_PAH_STD	R7287	10/13/91	2103
05	SSTD020	20_PPM_PAH_STD	R7288	10/13/91	2151

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Lab File ID: R7289 DFTPP Injection Date: 10/13/91

Instrument ID: 4500-R DFTPP Injection Time: 2241

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	47.7
70	Less than 2.0% of mass 69	-0.0 (0.0)1
127	40.0 - 60.0% of mass 198	50.5
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	7.08
275	10.0 - 30.0% of mass 198	22.4
365	Greater than 1.00% of mass 198	3.08
441	Present, but less than mass 443	9.31
442	Greater than 40.0% of mass 198	63.7
443	17.0 - 23.0% of mass 442	13.6 (21.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R7290	10/13/91	2259
02	BLK01	BLK01	R7291	10/14/91	0017
03	17191-01	17191-01	R7292	10/14/91	0104
04	17191-02	17191-02	R7293	10/14/91	0152
05	17191-02MS	17191-02MS	R7294	10/14/91	0240
06	17191-02MSD	17191-02MSD	R7295	10/14/91	0328
07	17191-03	17191-03	R7296	10/14/91	0416
08	17191-04	17191-04	R7297	10/14/91	0503
09	17191-05	17191-05	R7298	10/14/91	0551
10	17191-06	17191-06	R7299	10/14/91	0640
11	17191-07	17191-07	R7300	10/14/91	0728
12	17191-08	17191-08	R7301	10/14/91	0817

6B
INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 17191

Instrument ID: 4500-R Calibration Date(s): 10/13/91
10/13/91

Maximum % RSD =30%

Lab File ID: RRF 20 = R7288 RRF 50 = R7283
RRF 80 = R7287 RRF 120 = R7286 RRF 160 = R7285

COMPOUND	20 RRF	50 RRF	80 RRF	120 RRF	160 RRF	AVE RRF	% RSD
2,3-Benzofuran	1.233	1.179	1.225	1.305	1.342	1.257	5.2
2,3-Dihydroindene	1.099	1.071	1.101	1.160	1.183	1.123	4.2
1H-Indene	1.023	0.992	1.019	1.076	1.114	1.045	4.7
Naphthalene	2.323	2.272	2.308	2.489	2.525	2.383	4.8
Benzo(B)Thiophene	1.632	1.619	1.610	1.754	1.765	1.676	4.6
Quinoline	1.335	1.326	1.324	1.417	1.424	1.365	3.7
IH-Indole	1.313	1.273	1.299	1.372	1.375	1.326	3.4
2-Methylnaphthalene	1.275	1.229	1.240	1.313	1.322	1.276	3.3
1-Methylnaphthalene	1.309	1.259	1.268	1.350	1.370	1.311	3.7
Biphenyl	1.543	1.486	1.510	1.604	1.635	1.556	4.0
Acenaphthylene	2.122	2.088	2.094	2.270	2.238	2.162	3.9
Acenaphthene	1.269	1.230	1.226	1.300	1.323	1.270	3.4
Dibenzofuran	1.750	1.686	1.687	1.822	1.807	1.750	3.7
Fluorene	1.413	1.394	1.374	1.472	1.484	1.427	3.4
Dibenzothiophene	0.976	0.998	0.975	1.037	1.018	1.001	2.7
Phenanthrene	1.037	1.048	1.019	1.042	1.019	1.033	1.3
Anthracene	1.056	1.090	1.052	1.076	1.074	1.070	1.5
Acridine	0.645	0.711	0.663	0.687	0.665	0.674	3.8
Carbazole	0.692	0.750	0.722	0.751	0.759	0.735	3.8
Fluoranthene	0.896	0.956	0.919	0.946	0.947	0.933	2.7
Pyrene	0.885	0.916	0.885	0.932	0.948	0.913	3.1
Benzo(A)Anthracene	1.463	1.487	1.459	1.512	1.511	1.486	1.7
Chrysene	1.363	1.280	1.260	1.268	1.236	1.281	3.8
Benzo(B)Fluoranthene	1.298	1.262	1.321	1.397	1.425	1.341	5.1
Benzo(K)Fluoranthene	1.065	1.068	1.006	1.015	0.983	1.027	3.7
Benzo(E)Pyrene	1.017	0.985	0.965	1.002	0.988	0.991	2.0
Benzo(A)Pyrene	1.020	1.001	0.967	0.997	0.977	0.992	2.1
Perylene	0.800	0.795	0.792	0.816	0.804	0.801	1.2
Indeno(1,2,3-CD)Pyrene	1.012	0.986	0.940	0.991	0.960	0.978	2.9
Dibenz(A,H)Anthracene	0.829	0.885	0.856	0.891	0.893	0.871	3.2
Benzo(G,H,I)Perylene	0.856	0.863	0.843	0.844	0.837	0.849	1.2
D8-Naphthalene	2.049	2.016	2.063	2.175	2.253	2.111	4.7
D10-Fluorene	1.137	1.117	1.110	1.177	1.177	1.144	2.8
D12-Chrysene	1.209	1.193	1.178	1.162	1.164	1.181	1.7

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 17191

Instrument ID: 4500-R Calibration Date(s): 10/13/91 Time: 2259

Lab ID: R7290 Initial Calibration Date(s): 10/13/91 10/13/91

Maximum %D = 30%

COMPOUND	RRF	50 PPM RRF	%D
2,3-Benzofuran	1.257	1.231	2.1
2,3-Dihydroindene	1.123	1.098	2.2
1H-Indene	1.045	1.018	2.6
Naphthalene	2.383	2.313	2.9
Benzo(B)Thiophene	1.676	1.640	2.1
Quinoline	1.365	1.329	2.6
1H-Indole	1.326	1.293	2.5
2-Methylnaphthalene	1.276	1.239	2.9
1-Methylnaphthalene	1.311	1.267	3.4
Biphenyl	1.556	1.523	2.1
Acenaphthylene	2.162	2.104	2.7
Acenaphthene	1.270	1.227	3.4
Dibenzofuran	1.750	1.678	4.1
Fluorene	1.427	1.371	3.9
Dibenzothiophene	1.001	0.996	0.5
Phenanthrene	1.033	1.040	-0.7
Anthracene	1.070	1.090	-1.9
Acridine	0.674	0.679	-0.7
Carbazole	0.735	0.750	-2.0
Fluoranthene	0.933	0.933	0.0
Pyrene	0.913	0.917	-0.4
Benzo(A)Anthracene	1.486	1.465	1.4
Chrysene	1.281	1.275	0.5
Benzo(B)Fluoranthene	1.341	1.349	-0.6
Benzo(K)Fluoranthene	1.027	0.973	5.3
Benzo(E)Pyrene	0.991	0.991	0.0
Benzo(A)Pyrene	0.992	0.977	1.5
Perylene	0.801	0.788	1.6
Indeno(1,2,3-CD)Pyrene	0.978	0.982	-0.4
Dibenz(A,H)Anthracene	0.871	0.891	-2.3
Benzo(G,H,I)Perylene	0.849	0.826	2.7
D8-Naphthalene	2.111	2.047	3.0
D10-Fluorene	1.144	1.111	2.9
D12-Chrysene	1.181	1.166	1.3

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 17191 SAS No.: SDG No:

Lab File ID (Standard): R7290 Date Analyzed: 10/13/91

Instrument ID: 4500-R Time Analyzed: 2259

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	22300	38200	17800
UPPER LIMIT	44600	76400	35600
LOWER LIMIT	11200	19100	8900
SAMPLE NO.			
17191-01	19000	31000	13100
17191-02	19400	31200	13800
17191-03	20500	33100	14600
17191-04	19700	31100	13400
17191-05	19600	31000	12700
17191-06	18300	31500	12700
17191-07	18500	31300	13200
17191-08	17600	30200	12000
17191-02MS	19600	32300	14000
17191-02MSD	20000	32800	13900
BLK01	18400	28800	12600

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

PHENOLICS MONITORING

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

RECEIVED

October 16, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on September 19, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Debbie Tzo (for)

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL #17193

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U.S.EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 0000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1719301	PCJ-W23TP-091891
1719302	IGV-W105TP-091891
1719303	STP-W410TP-091891
1719304	DPV-W422TP-091891
1719305	DPV-W421TP-091891
1719306	DPV-W420TP-091891
1719306MSD	DPV-W420TPMSD-091891
1719306MS	DPV-W420TPMS-091891
1719307	DPV-W420TPD-091891
1719308	DPV-W420TPFB-091891
1719309	DPV-W420TPFBD-091891

Parameters	Method No.	Detection Limits	Source
PHENOLICS	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC#17193

Sources:
1="Methods for Chemical Analysis of Water and Wastewater," USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 10/16/91

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719304

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TP-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	16.9		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719305

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W421TP-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	27.2		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719306

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W420TP-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	210		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS REPORTED AT A 2X DILUTION DUE TO HIGH CONCENTRATIONS OF PHENOL.

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719307

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W420TPD-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	204		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS REPORTED AT A 5X DILUTION DUE TO HIGH CONCENTRATIONS OF PHENOL.

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719308

INORGANIC ANALYSIS DATA SHEET

000010

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W420TPFB-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

U.S. EPA - CLP
1

EPA SAMPLE NO.

1719309

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W420TPFBD-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK DUPLICATE.

U.S. EPA - CLP

6000:12

2A
CALIBRATION AND BLANKS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Calibration Date: 10/11/91

Initial Calibration Source: BAKER 4487

Continuing Calibration Source: MALLINCKRODT 4409

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)
PHENOLICS	200	179	89.5	50	50.9	101.8	50.9	101.8
PHENOLICS	200	175	87.5					

3
BLANKS

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blanks (ug/L) 1	C	2	C	3	C	Preparation Blank	C
PHENOLICS	5	U	5	U	5	U			5	U

U.S. EPA - CLP

5A
MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLE RESULTS

EPA SAMPLE NO.

1719306 MS/MSD

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Level (low/medium): LOW

% Solids for Sample: 0.0

Concentration Units: ug/L

Analyte	Spike Added	Sample Result	C	MS Result	C	MS %R	Q	MSD Result	C	MSD %R	Q	MS/MSD % RPD	Q
PHENOLICS	200	210		402		96.0		399		94.5		3.0	

Matrix Spike % Recovery: 75-125

Matrix Spike Duplicate % Recovery: 75-125

Comments:

COLORIMETRIC ANALYSIS

4487 Baker

PARAMETER ppb Phenol CONTROL 200ppb DATE 10/11/91

ANALYST L. Sullivan SPIKE 200 ppb UNITS ug/L

	Concentration	Absorbance		
Blank	0	0.037	0.000	Corr. Coef. = 0.998601448
STD 1	5	0.050	0.013	
STD 2	10	0.072	0.035	Slope = 343.601
STD 3	20	0.110	~~0.148~~ 0.073 10/11/91 JS	
STD 4	50	0.185	0.148	Intercept = -1.35060
STD 5	100	0.330	0.293	

CCV 4409 Mallinckrodt

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	ABSORBANCE COLOR B	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT	REPORTED CONC.	% REC.
BLANK					-0.037					
ICV/~~DCS~~				0.093	0.056	17.891	1x	10x	179	89.5%
ICV/~~DCS~~				0.092	0.055	17.547	↓	↓	175	87.5%
~~ICV/DCS~~ ICB				0.039	0.002	—			5u	
* 10/11/91 7193-PB				0.044	0.007	1.054			5u	
-01				0.040	0.003	—			5u	
-02				0.035	—	—			5u	
-03				0.043	0.006	0.711			5u	
-04				0.090	0.053	16.860			16.9	
-05				0.120	0.083	27.168			27.2	
-06				off scale		—			off scale	
-06MS				0.158	0.121	40.225		10x	402	~~102%~~ 96% * 10/16/91
-06SD				0.157	0.120	39.881		↓	399	~~101%~~ 94.5%
-07				off scale		—	↓		off scale	* 10/16/91
CCV (50)				0.189	0.152	50.876			50.9	102%
CCB				0.045	0.008	1.398			5u	
-08				0.038	0.001	—	1x		5u	
-09				0.043	0.006	0.711			5u	
* -06				0.328	~~0.291~~ 0.3095	~~48.637~~ 104.99 * 10/16/91		2x	~~197~~	210 * 10/16/91
* -07				0.130	~~0.093~~ 0.1226	~~30.604~~ 40.775 * 10/16/91		5x	~~153~~	204 * 10/16/91
CCV (50)				0.189	0.152	50.876			50.9	102%
CCB				0.045	0.008	1.398			5u	

* Samples diluted in chloroform. * 10/16/91

INORGANIC NONMETALS SAMPLE PREPARATION

0000015

PARAMETER ppb Phenol ANALYST Y. Sullivan DATE 10/9/91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
ICV ~~BLANK~~	<2		200 ppb 4487 Baker	200ml	200ml	1X
ICV ~~LCS 1~~			↓			
BLK ~~LCS 2~~						
17193-01		#2				
-02						
-03						
-04						
-05						
-06						
-06MS			200 ppb 4409 Mallinckrodt			
-06SD			↓			
-07						
-08						
-09	↓	↓		↓	↓	↓

CLP SAMPLE DESCRIPTION SHEET

RMA # 17193 CLIENT # City of St. Louis Park MATRIX: Water

CLP SAMPLE #	COLOR	CLARITY/TEXTURE	% LIQUID
17193 - 01	8	1	
02			
03			
04			
05			
06			
06D			
06S			
07			
08			
09			

KEY:

COLOR

1 RED
2 BLUE
3 YELLOW
4 GREEN
5 ORANGE
6 VIOLET
7 WHITE
8 COLORLESS
9 BROWN
10 GREY
11 BLACK
12 OTHER (SPECIFY)

CLARITY

1 CLEAR
2 CLOUDY
3 OPAQUE
4 OTHER (SPECIFY)

TEXTURE

1 FINE (POWDERY)
2 MEDIUM (SAND)
3 COARSE (LARGE CRYSTALS OR ROCKS)
4 CLAY
5 OTHER (SPECIFY)

COMMENTS:

CLP SAMPLE LOG-IN/PREPARATION SHEET

RMA QC#: 17193 CLIENT #: City of St. Louis Park MATRIX: LOW ___ WATER ✓ MED ___ SOIL ___

CLP #	DATE RECEIVED	PARAMETERS
17193 - 01	9-19-91	PPB PHENOLICS
02		
03		
04		
05		
06		
06 MSD		
06S		
07		
08		
09		

SPECIAL INSTRUCTIONS OR CAUTIONS:

Sample #06 is spike/duplicate.

Sample #08 is a Field Blank and #09 is a Field Blank Duplicate.

09 (Field Blank Dup) - prep within holding times - only analyze if field blank is contaminated

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK WATER DEPT	PACKED BY: MZK
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZK
SAMPLING SITE: SAME	SEAL NUMBER: / SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZK	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No / CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:
CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C

DATE	TIME	SAMPLE ID/DESCRIPTION		SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
9-18-91		WTF-ACLE-091891	5	1XL AMBER	2	PPB PAH	
		WTF-ACLI-091891	6	1XL AMBER	2	PPB PAH	
		PCU-W23-091891	7	1XL AMBER	2	PPB PAH	
		PCU-W23TP-091891	8	16 oz CLEAR	1	PPB Phenolics	01
		IGV-W105TP-091891	9		1		02
		STP-W410TP-091891	10		1		03
		DPV-W422TP-091891	11		1		04
		DPV-W421TP-091891	12		1		05
		DPV-W420TP-091891	13		1		06
9-18-91		DPV-W420TPD-091891	14	16 oz CLEAR	1	PPB Phenolics	07

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZK
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 2864993456
RECEIVED FOR LAB: RMAL
SIGNED: [signature]
DATE/TIME: 09-19-91 08
ENSECO PROJECT NUMBER:

ENS—1133 White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK WATER DEPT	PACKED BY: MZ
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZ
SAMPLING SITE: SAME	SEAL NUMBER: / SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: MZ	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No / CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER:
CONDITION OF CONTENTS:
INITIAL CONTENTS TEMP: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
9-18-91		DPV-W420TPMS-091891		1	PPB Phenolics	06 ms
		DPV-W420TPMSD-091891		1		06msD
		DPV-W420TPFB-091891		1		08
9-18-91		DPV-W420TPFBD-091891		1	PPB Phenolics	09

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZ
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 2864993456
RECEIVED FOR LAB: RMAL
SIGNED: [signature]
DATE/TIME: 09-19-91 0800
ENSECO PROJECT NUMBER:

ENS-1133

White - CLIENT Pink - LAB

RAP SECTIONS 9.1.3. & 9.2.3. MONITORING

4TH QUARTER - 1991

PAH MONITORING

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

December 10, 1991

Enseco - RMAL Project Number 017977

Introduction

Nine aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on October 18, 1991. The samples were logged in under RMAL project number 017977. Sample DPV-W422FBD (RMA # 017977-07) was extracted and inadvertently analyzed and reported. You will not be charged for the analysis. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Due to concentrations of target compounds present in excess of calibration range, samples 017977-02 and 03 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

In the original analysis of sample 017977-03 Naphthalene was saturated. Hence, a reanalysis at an additional dilution was performed for this component. Both sets of data is included in the data package.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
017977-0001-SA	PCJ-W23-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0002-SA	DPV-W420-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0003-SA	DPV-W421-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0004-SA	DPV-W422-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0004-MS	DPV-W422MS-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0004-SD	DPV-W422MSD-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0005-SA	DPV-W422D-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0006-SA	DPV-W422FB-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0007-SA	DPV-W422FBD-101691	AQUEOUS	16 OCT 91		17 OCT 91

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 12/10/91
Tracy Conroy
Data Control Supervisor

Approved by: Julie Kramer **Date:** Dec 10, 1991
Julie Kramer
Program Administrator

Enseco
A Corning Company

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 017977

PPT-PAH

QC Summary.....0001

Sample Data.....0010

Standards Data.....0182

Raw QC Data.....0235

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK WATER DEPT	PACKED BY: MZH
PROJECT:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MZH
SAMPLING SITE: SAME	SEAL NUMBER:
TEAM LEADER: MZH	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No

SAMPLE SAFE™ CONDITIONS

SEAL NUMBER	CONDITION OF CONTENTS
INITIAL CONTENTS TEMP °C	SAMPLING STATUS: ☐ Done ☐ Continuing Until
CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C	

DATE	TIME	SAMPLE ID/DESCRIPTION		SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
10-16-91		PCU-W23-101691	1	1XL AMBER	2	PPB PAH	
		DPV-W420-101691	2		2	PPB PAH	
		DPV-W421-101691	3		2	PPB PAH	
		DPV-W422-101691	4		2	PPB PAH	
		DPV-W422D-101691	5		2	PPB PAH	
		DPV-W422FB-101691	6		2	PPB PAH	
		DPV-W422FBD-101691	7		2	PPB PAH	
		DPV-W422MS-101691	4MS		2	PPB PAH	
10-16-91		DPV-W422MSD-101691	4MSD	1XL AMBER	2	PPB PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZH		
METHOD OF SHIPMENT: FED EXP		AIRBILL NUMBER: 2864993493
RECEIVED FOR LAB: RMA2	SIGNED: Michael J Petto	DATE/TIME: 10/17/91 8:00
ENSECO PROJECT NUMBER: 17977		

ENS—1133

White – Client Pink – LAB

SUMMARY

DATA

PACKAGE

FOR

CITY OF ST. LOUIS PARK

RMAL# 17977

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-02

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7905

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 18.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	41	J
496-11-7	2,3-Dihydroindene	170	J
95-13-6	1H-Indene	340	
91-20-3	Naphthalene	3000	
4565-32-6	Benzo(B)Thiophene	150	J
91-22-5	Quinoline	190	U
120-72-9	1H-Indole	190	U
91-57-6	2-Methylnaphthalene	110	J
90-12-0	1-Methylnaphthalene	130	J
92-52-4	Biphenyl	19	J
208-96-8	Acenaphthylene	190	U
83-32-9	Acenaphthene	91	J
132-64-9	Dibenzofuran	32	J
86-73-7	Fluorene	28	J
132-65-0	Dibenzothiophene	190	U
85-01-8	Phenanthrene	190	U
120-12-7	Anthracene	190	U
260-94-6	Acridine	190	U
86-74-8	Carbazole	52	J
206-44-0	Fluoranthene	190	U
129-00-0	Pyrene	190	U
56-55-3	Benzo(A)Anthracene	190	U
218-01-9	Chrysene	190	U
205-99-2	Benzo(B)Fluoranthene	190	U
207-08-9	Benzo(K)Fluoranthene	190	U
192-97-2	Benzo(E)Pyrene	190	U
50-32-8	Benzo(A)Pyrene	190	U
198-55-0	Perylene	190	U
193-39-5	Indeno(1,2,3-CD)Pyrene	190	U
53-70-3	Dibenz(A,H)Anthracene	190	U
191-24-2	Benzo(G,H,I)Perylene	190	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-03

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7906

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 4.72

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	47	U
496-11-7	2,3-Dihydroindene	140	
95-13-6	1H-Indene	120	
91-20-3	Naphthalene	890	E
4565-32-6	Benzo(B)Thiophene	77	
91-22-5	Quinoline	47	U
120-72-9	1H-Indole	47	U
91-57-6	2-Methylnaphthalene	47	U
90-12-0	1-Methylnaphthalene	51	
92-52-4	Biphenyl	5.9	J
208-96-8	Acenaphthylene	47	U
83-32-9	Acenaphthene	33	J
132-64-9	Dibenzofuran	6.8	J
86-73-7	Fluorene	7.8	J
132-65-0	Dibenzothiophene	47	U
85-01-8	Phenanthrene	47	U
120-12-7	Anthracene	47	U
260-94-6	Acridine	47	U
86-74-8	Carbazole	26	J
206-44-0	Fluoranthene	47	U
129-00-0	Pyrene	47	U
56-55-3	Benzo(A)Anthracene	47	U
218-01-9	Chrysene	47	U
205-99-2	Benzo(B)Fluoranthene	47	U
207-08-9	Benzo(K)Fluoranthene	47	U
192-97-2	Benzo(E)Pyrene	47	U
50-32-8	Benzo(A)Pyrene	47	U
198-55-0	Perylene	47	U
193-39-5	Indeno(1,2,3-CD)Pyrene	47	U
53-70-3	Dibenz(A,H)Anthracene	47	U
191-24-2	Benzo(G,H,I)Perylene	47	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-03DL

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-03DL

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7915

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 9.43

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	94	U
496-11-7	2,3-Dihydroindene	140	D
95-13-6	1H-Indene	120	D
91-20-3	Naphthalene	850	D
4565-32-6	Benzo(B)Thiophene	75	DJ
91-22-5	Quinoline	94	U
120-72-9	1H-Indole	94	U
91-57-6	2-Methylnaphthalene	94	U
90-12-0	1-Methylnaphthalene	46	DJ
92-52-4	Biphenyl	94	U
208-96-8	Acenaphthylene	94	U
83-32-9	Acenaphthene	31	DJ
132-64-9	Dibenzofuran	94	U
86-73-7	Fluorene	94	U
132-65-0	Dibenzothiophene	94	U
85-01-8	Phenanthrene	94	U
120-12-7	Anthracene	94	U
260-94-6	Acridine	94	U
86-74-8	Carbazole	23	DJ
206-44-0	Fluoranthene	94	U
129-00-0	Pyrene	94	U
56-55-3	Benzo(A)Anthracene	94	U
218-01-9	Chrysene	94	U
205-99-2	Benzo(B)Fluoranthene	94	U
207-08-9	Benzo(K)Fluoranthene	94	U
192-97-2	Benzo(E)Pyrene	94	U
50-32-8	Benzo(A)Pyrene	94	U
198-55-0	Perylene	94	U
193-39-5	Indeno(1,2,3-CD)Pyrene	94	U
53-70-3	Dibenz(A,H)Anthracene	94	U
191-24-2	Benzo(G,H,I)Perylene	94	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-04

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-04

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7907

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	66	
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.3	J
4565-32-6	Benzo(B)Thiophene	1.9	J
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	7.9	J
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	2.1	J
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-05

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-05

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7910

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	66	
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.7	
4565-32-6	Benzo(B)Thiophene	1.9	J
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	0.94	J
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	7.9	J
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	2.1	J
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-06

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-06

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7911

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	9.4	U
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.4	U
4565-32-6	Benzo(B)Thiophene	9.4	U
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	9.4	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-07

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-07

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7912

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	9.4	U
95-13-6	1H-Indene	9.4	U
91-20-3	Naphthalene	9.4	U
4565-32-6	Benzo(B)Thiophene	9.4	U
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	9.4	U
90-12-0	1-Methylnaphthalene	9.4	U
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	9.4	U
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	9.4	U
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-04MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-04MS

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7908

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	75	
95-13-6	1H-Indene	39	SC
91-20-3	Naphthalene	46	SC
4565-32-6	Benzo(B)Thiophene	2.2	J
91-22-5	Quinoline	42	SC
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	44	SC
90-12-0	1-Methylnaphthalene	1.7	J
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	8.7	J
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	43	SC
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	2.3	J
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	37	SC
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	28	SC
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

17977-04MSD

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-04MSD

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7909

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	63	
95-13-6	1H-Indene	32	SC
91-20-3	Naphthalene	39	SC
4565-32-6	Benzo(B)Thiophene	1.9	J
91-22-5	Quinoline	37	SC
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	36	SC
90-12-0	1-Methylnaphthalene	1.4	J
92-52-4	Biphenyl	9.4	U
208-96-8	Acenaphthylene	9.4	U
83-32-9	Acenaphthene	7.5	J
132-64-9	Dibenzofuran	9.4	U
86-73-7	Fluorene	37	SC
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	9.4	U
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	2.0	J
206-44-0	Fluoranthene	9.4	U
129-00-0	Pyrene	9.4	U
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	35	SC
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	27	SC
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP)	#	S2 (FLU)	#	S3 (CHR)	#
1	17977-01	84		87		68	
2	17977-02		D		D		D
3	17977-03		D		D		D
4	17977-03DL		D		D		D
5	17977-04	72		78		27	
6	17977-05	70		74		42	
7	17977-06	80		82		79	
8	17977-07	72		72		71	
9	17977-04MS	80		86		64	
10	17977-04MSD	72		76		63	
11	BLK01	70		75		78	

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(25-175)
S2 (FLU) = D10-FLUORENE	(25-175)
S3 (CHR) = D12-CHRYSENE	(25-175)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 17977-04 LEVEL: LOW

Compound	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC
1H-Indene	47.2	0	41.1	87
Naphthalene	47.2	9.91	49.0	104
Quinoline	47.2	0	44.7	95
2-Methylnaphthalene	47.2	0	46.4	98
Fluorene	47.2	0	46.0	97
Chrysene	47.2	0	39.6	84
Benzo(E)Pyrene	47.2	0	30.2	64

Compound	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD
1H-Indene	47.2	34.1	72	19
Naphthalene	47.2	41.5	88	17
Quinoline	47.2	39.0	83	13
2-Methylnaphthalene	47.2	38.5	82	19
Fluorene	47.2	39.1	83	15
Chrysene	47.2	37.1	79	7
Benzo(E)Pyrene	47.2	28.8	61	3

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Lab File ID: R7903 Lab Sample ID: BLK01

Date Extracted: 10/20/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 11/25/91 Time Analyzed: 1403

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	17977-01	17977-01	R7904	11/25/91
2	17977-02	17977-02	R7905	11/25/91
3	17977-03	17977-03	R7906	11/25/91
4	17977-03DL	17977-03DL	R7915	11/26/91
5	17977-04	17977-04	R7907	11/25/91
6	17977-05	17977-05	R7910	11/25/91
7	17977-06	17977-06	R7911	11/25/91
8	17977-07	17977-07	R7912	11/25/91
9	17977-04MS	17977-04MS	R7908	11/25/91
10	17977-04MSD	17977-04MSD	R7909	11/25/91

COMMENTS:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R7903

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	10	U
95-13-6	1H-Indene	10	U
91-20-3	Naphthalene	10	U
4565-32-6	Benzo(B)Thiophene	10	U
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	10	U
90-12-0	1-Methylnaphthalene	10	U
92-52-4	Biphenyl	10	U
208-96-8	Acenaphthylene	10	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
86-73-7	Fluorene	10	U
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Lab File ID: R7281 DFTPP Injection Date: 10/13/91

Instrument ID: 4500-R DFTPP Injection Time: 1414

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	50.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	49.5
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	50.5
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.73
275	10.0 - 30.0% of mass 198	22.5
365	Greater than 1.00% of mass 198	3.56
441	Present, but less than mass 443	9.29
442	Greater than 40.0% of mass 198	67.9
443	17.0 - 23.0% of mass 442	14.9 (21.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R7283	10/13/91	1543
02	SSTD160	160_PPM_PAH_STD	R7285	10/13/91	1826
03	SSTD120	120_PPM_PAH_STD	R7286	10/13/91	2016
04	SSTD080	80_PPM_PAH_STD	R7287	10/13/91	2103
05	SSTD020	20_PPM_PAH_STD	R7288	10/13/91	2151

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Lab File ID: R7900 DFTPP Injection Date: 11/25/91

Instrument ID: 4500-R DFTPP Injection Time: 1152

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	54.4
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	51.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	47.1
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.49
275	10.0 - 30.0% of mass 198	21.9
365	Greater than 1.00% of mass 198	1.81
441	Present, but less than mass 443	6.87
442	Greater than 40.0% of mass 198	60.2
443	17.0 - 23.0% of mass 442	10.8 (17.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R7901	11/25/91	1210
02	BLK01	BLK01	R7903	11/25/91	1403
03	17977-01	17977-01	R7904	11/25/91	1450
04	17977-02	17977-02	R7905	11/25/91	1538
05	17977-03	17977-03	R7906	11/25/91	1625
06	17977-04	17977-04	R7907	11/25/91	1713
07	17977-04MS	17977-04MS	R7908	11/25/91	1800
08	17977-04MSD	17977-04MSD	R7909	11/25/91	1847
09	17977-05	17977-05	R7910	11/25/91	1934
10	17977-06	17977-06	R7911	11/25/91	2021
11	17977-07	17977-07	R7912	11/25/91	2108

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Lab File ID: R7913 DFTPP Injection Date: 11/26/91

Instrument ID: 4500-R DFTPP Injection Time: 0947

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	59.4
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	55.7
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	49.9
197	Less than 1.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.40
275	10.0 - 30.0% of mass 198	21.8
365	Greater than 1.00% of mass 198	1.92
441	Present, but less than mass 443	6.12
442	Greater than 40.0% of mass 198	53.4
443	17.0 - 23.0% of mass 442	9.69 (18.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	50_PPM_PAH_STD	R7914	11/26/91	1024
02	17977-03DL	17977-03DL	R7915	11/26/91	1134

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 17977 SAS No.: SDG No:

Lab File ID (Standard): R7901 Date Analyzed: 11/25/91

Instrument ID: 4500-R Time Analyzed: 1210

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	23400	36100	15800
UPPER LIMIT	46800	72200	31600
LOWER LIMIT	11700	18000	7900
SAMPLE NO.			
17977-01	15100	26400	14200
17977-02	16800	29500	16000
17977-03	18000	31500	17000
17977-04	19500	33800	19400
17977-05	17600	30800	16800
17977-06	15200	26100	14300
17977-07	16400	26800	16000
17977-04MS	18700	32900	17900
17977-04MSD	19100	33200	18500
BLK01	14200	24600	12300

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 17977 SAS No.: SDG No:

Lab File ID (Standard): R7914 Date Analyzed: 11/26/91

Instrument ID: 4500-R Time Analyzed: 1024

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	27200	44600	24900
UPPER LIMIT	54400	89200	49800
LOWER LIMIT	13600	22300	12400
SAMPLE NO.			
17977-03DL	20300	35000	19400

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

PHENOLICS MONITORING

Enseco
A Corning Company

November 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on October 17, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Debbie Fazio

Debbie Fazio
Program Administrator

DF/cm
Enclosures

RMAL #17984

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax· 303/431-7171

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No.: 7/88

EPA Sample No.	Lab Sample ID.
1798401	PCJ-W23TP-101691
1798402	DPV-W420TP-101691
1798403	DPV-W421TP-101691
1798404	IGV-W105TP-101691
1798405	STP-W410TP-101691
1798406	DPV-W422TP-101691
1798406MS	DPV-W422TPMS-101691
1798406MSD	DPV-W422TPMSD-101691
1798407	DPV-W422TPD-101691
1798408	DPV-W422TPFB-101691
1798409	DPV-W422TPFBD-101691

Parameters	Method No.	Detection Limits	Source
Phenolics	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 17984

Sources:
1="Methods for the Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 11/18/91

0000C2-A

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

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1

000003

EPA SAMPLE NO.
1798402

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W420TP-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	194		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

EPA SAMPLE NO.

1798403

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W421TP-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	30.0		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

EPA SAMPLE NO.

1798405

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: STP-W410TP-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

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1 000007

EPA SAMPLE NO.

1798406

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TP-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	18.3		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

EPA SAMPLE NO.

1798407

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TPD-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	19.6		

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

EPA SAMPLE NO.

1798408

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TPFB-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK.

U.S. EPA - CLP

1 000010

EPA SAMPLE NO.

1798409

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: DPV-W422TPFBD-101691

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Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
THIS SAMPLE IS A FIELD BLANK DUPLICATE.

CALIBRATION AND BLANKS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract:_____

Lab Code: ENSECO Case No.:_____ SAS No.: _____ SDG No.:_____

Calibration Date: 11/15/91

Initial Calibration Source: BAKER VER# 4487

Continuing Calibration Source: MALLINCKRODT VER# 4486

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration				
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)
Phenolics	50	47.5	95.0	50	53.7	107.4	53.7	107.4
Phenolics	50	52.7	105.4					

BLANKS

Blank Concentration Units: ug/L

Preparation Blank Concentration Units: ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C
Phenolics	5	U	5	U	5	U			5	U

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

000012

EPA SAMPLE NO.

1798406MS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Level (low/medium): LOW

% Solids for Sample: _____

Concentration Units: ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Phenolics	75-125	67.9		18.3		50.0	99.2	

Comments:

U.S. EPA - CLP
5A
SPIKE SAMPLE RECOVERY

000013

EPA SAMPLE NO.

1798406MSD

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Level (low/medium): LOW

% Solids for Sample: _____

Concentration Units: ug/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Phenolics	75-125	65.5		18.3		50.0	94.4	

Comments:

CCV - Mallinckrodt Lot # 4486

COLORIMETRIC ANALYSIS

000014

PARAMETER ppb Phenol CONTROL 50ppb DATE 11/15/91

ANALYST Sullivan/M Coyle SPIKE 50 ppb UNITS ug/L

	Concentration	Absorbance		
Blank	0	0.050	0.000	Corr. Coef. = 0.998470914
STD 1	5	0.053	0.003	
STD 2	10	0.068	0.018	Slope = 344.470
STD 3	20 11/13/91	0.102	0.052	
STD 4	50	0.198	0.148	Intercept = 2.07007
STD 5	100	0.330	0.280	

SAMPLE ID	BOTL. TYPE	pH	INTER CHECK	ABSORBANCE SAMPLE	ABSORBANCE COLOR B	CURVE CONC.	DILUTIONS PREP	DILUTIONS ANALYT	REPORTED CONC.	% REC.
BLANK										
ICV/~~DCS~~		<2		0.182	0.132	47.540	1x	1x	47.5	95.0%
ICV/~~DCS~~				0.197	0.147	52.707			52.7	105%
ICV/DCS ICB				0.050	0.000	—			5u	
11/14/91 17984-PB				0.038	0.000	—			5u	
-01	#2			0.050	0.000	—			5u	
-02				off scale		—			off scale	Rerun 2x
-03				0.131	0.081	29.97			11/15/91 DS 30.0	
-02				0.300	0.275	96.799		2x	194	
-04				0.052	0.002	—		1x	5u	
-05				0.058	0.008	4.82			5u	
-06				0.097	0.047	18.260			18.3	
-06MS				0.241	0.191	67.863			67.9	99.2%
-06SD				0.234	0.184	65.452			65.5	~~94%~~/94.4%
CCV (50)				0.200	0.150	53.740			53.7	11/15/91 DS 107%
CCB				0.057	0.007	—			5u	
-07				0.101	0.051	19.638			19.6	
-08				0.040	0.000	—			5u	
-09				0.034	0.000	—			5u	
CCV				0.200	0.150	53.740	1x	1x	~~53.7~~ 53.7 11/15/91 DS	107%
CCB				0.058	0.008	4.82			5u	

INORGANIC NONMETALS SAMPLE PREPARATION

PARAMETER Phenol ANALYST C. Dwyer DATE 11/14/91

SAMPLE ID	pH	BOTTLE TYPE	INTERFERENCE CHECKS SAMPLE PRETREATMENT	INITIAL WT OR VOL	FINAL WT OR VOL	PREP D.F.
~~BLANK~~ ICB	<2	~~glass~~ CD		200ml	200ml	1x
~~LCS 1~~ ICV		—	1ml of 10ppm TV= 50ppm			
~~LCS 2~~ ICV		—	↓			
17984 -01SA		glass	Interference Neg			
-02SA						
-03SA						
-04SA						
-05SA						
-06SA						
-06MS			CD 1ml of 10ppm T.V. = 50ppm			
-06MSD			↓			
-07SA			Interference Neg			
-08SA						
-09SA						

CLP SAMPLE DESCRIPTION SHEET

RMA # 17984 CLIENT # City of St Louis Park MATRIX: Water

CLP SAMPLE #	COLOR	CLARITY/TEXTURE	% LIQUID
17984-01	Colorless	clear	
-02			
-03			
-04			
-05			
-06			
-07			
-08			
-09			

KEY:

COLOR

1	RED	7	WHITE
2	BLUE	8	COLORLESS
3	YELLOW	9	BROWN
4	GREEN	10	GREY
5	ORANGE	11	BLACK
6	VIOLET	12	OTHER (SPECIFY)

CLARITY

1 CLEAR
2 CLOUDY
3 OPAQUE
4 OTHER (SPECIFY)

TEXTURE

1 FINE (POWDERY)
2 MEDIUM (SAND)
3 COARSE (LARGE CRYSTALS OR ROCKS)
4 CLAY
5 OTHER (SPECIFY)

COMMENTS:

CLP SAMPLE LOG-IN/PREPARATION SHEET

RMA QC#: ~~17978~~ 17984 Cm CLIENT #: City of St. Louis Park MATRIX: LOW___ WATER ✓ MED___ SOIL___

CLP #	DATE RECEIVED	PARAMETERS
17984 - 01	10-17-91	PPB PHENOLICS
-02	↓	↓
-03		
-04		
-05		
-06		
-06MS		
-06MD		
-07		
-08		
-09	✓	✓

SPECIAL INSTRUCTIONS OR CAUTIONS:

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK WATER DEPT	
PROJECT:	
SAMPLING COMPANY: SAME	
SAMPLING SITE: SAME	
TEAM LEADER: MIR	

SAMPLE SAFE™ CONDITIONS

PACKED BY: MIR	SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:	CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MIR	INITIAL CONTENTS TEMP: °C
SEAL NUMBER:	SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
10-16-91		PEJ-W23TP-101691	16 oz CLEAR	1	PPB Phenolics	RMAL# 17984-01
		DPV-W420TP-101691		1	PPB Phenolics	02
		DPV-W421TP-101691		1	PPB Phenolics	03
		IEV-W105TP-101691		1	PPB Phenolics	04
		STP-W410TP-101691		1	PPB Phenolics	05
		DPV-W422TP-101691		1	PPB Phenolics	06
		DPV-W422TPD-101691		1	PPB Phenolics	07
		DPV-W422TPMS-101691		1	PPB Phenolics	06S
10-16-91		DPV-W422TPMSD-101691	16oz CLEAR	1	PPB Phenolics	06D
	10-17-91 MC	DPV-W422TPFB-101691				08
	10-17-91 TDC	DPV-W422TPFBD-101691				09

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MIR		
METHOD OF SHIPMENT: FED EXP		AIRBILL NUMBER: 2864993493
RECEIVED FOR LAB: RMAL	SIGNED: Michael J Ketto	DATE/TIME: 10/17/91 8:00
ENSECO PROJECT NUMBER: ~~17978~~ 17984 GK 10-17-91		

ENS—1133

White - CLIENT Pink - LAB