MONTGOMERY WATSON

December 5, 1997

Mr. Michael E. Bellot
Remedial Project Manager
U.S. EPA - Region 5
77 West Jackson Boulevard, SR-6J
Chicago, Illinois 60604-3590

EPA Region 5 Records Ctr.
248063

Re: Water Sample Results from Manhole MH-20
Installation of the Leachate Control System
Blackwell Landfill/Response Actions
DuPage County, Illinois

Dear Mr. Bellot:

On September 23, 1997, Montgomery Watson collected and analyzed samples of water from MH-20 located on the south side of the Blackwell Landfill. The samples were collected during installation of drip leg DL01 for the purpose of determining appropriate disposal options for water, which would eventually be removed from the DL01 excavation.

We collected the water samples from Manhole MH-20 in accordance with the August 1996 Field Sampling Plan (FSP) for Predesign Investigative Activities. In all, we collected one sample, and its associated quality assurance samples (i.e., duplicate, field blank and trip blank). The samples were analyzed by First Environmental Laboratories, Inc. for Target Compound List volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), Target Analyte List metals, cyanide, and major ions. The samples were analyzed in accordance with the August 1996 Quality Assurance Project Plan (QAPP) for Predesign Investigative Activities. Subsequently, we validated the analytical results in accordance with the QAPP. A summary of detected analytical results (excluding major minerals) is provided in the attached Table 1. For comparison purposes, we have also summarized the most recent MCLs. The analytical data are provided in Appendix A, and the validation results are provided in Appendix B.

On the basis of the analytical results, Montgomery Watson containerized the water removed from the DL01 excavation (approximately 25,000 gallons), and the Forest Preserve District of DuPage County disposed of the water, under permit, at the Wheaton Sanitary District Wastewater Treatment Plant.

Tel 630 691 5000
Fax 630 691 5133

If you have any questions or comments about this letter or the attached results, please contact me at (630) 691-5074.

Sincerely,

MONTGOMERY WATSON

Walter G. Buettner, P.E.
Supervising Engineer

Enclosures: Table 1 – Manhole MH-20 Groundwater Analytical Results
Appendix A – Analytical Laboratory Data
Appendix B – Validation Results

cc: Mr. Joseph Benedict, Forest Preserve District
Mr. Rick Lanham, IEPA
Mr. Kurt Lindland, U.S. EPA Assistant Regional Counsel (without Appendices)

JMS/jms/dlp/WGB/PJV
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Table 1
Manhole MH-20 Detected Analytical Results
Blackwell Landfill
DuPage County, Illinois

Analyte	BW-GW MH20-01 (sample)	BW-GW MH20-91 (duplicate)	BW-TB MH20-01 (trip blank)	BW-FB MH20-01 (field blank)	MCLs [1]
Inorganics[2]	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Barium	0.385	0.358	-	<0.002	2
Iron	**6.76**	**6.41**	-	<0.01	0.3
Manganese	**0.549**	**0.511**	-	<0.001	0.05
VOCs	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Benzene	**6.9**	**6.7**	<5.0	<5.0	5

Notes:
(1) Bolded and shaded value indicates exceedance of MCL.
(2) Inorganic detections listed exclude major minerals.

Footnote:
(1) MCL = Maximum Contaminant Levels - U.S. Office of Water, Drinking Water Regulation and Health Advisory, October 1996.

JMS/jms/JMK/BPG
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APPENDIX A

ANALYTICAL LABORATORY DATA

First
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1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

Analytical Report

Client:	MONTGOMERY WATSON		
Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43826	Date Taken:	09/23/97
Sample Description:	BW-GWMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Date Analyzed	Method
Dissolved				
Chloride	44	mg/L	09/24/97	9252
Sulfate	<15	mg/L	09/23/97	9038
Total				
Conductivity	1,820	UMHOS	09/24/97	120.1
Cyanide, Total	0.009	mg/L	09/24/97	9010A
N. Nitrate	<0.10	mg/L	09/24/97	352.1
N. Nitrite	<0.01	mg/L	09/24/97	354.1
Total Kjeldahl Nitrogen	4.3	mg/L	09/26/97	351.2
N. Ammonia	3.86	mg/L	09/23/97	350.2
Phosphorus, Total	0.22	mg/L	09/24/97	365.2
pH @ 25°C	7.44	units	09/24/97	9045C
Total Dissolved Solids	1,200	mg/L	09/23/97	160.1
Turbidity	50	NTU	09/24/97	180.1
Dissolved Oxygen	6.15	mg/L	09/23/97	4500-O G.

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Sample Number:	43826	Date Taken:	09/23/97
Sample Description:	BW-GWMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Date Analyzed	Method
Dissolved Metals				
Aluminum	<0.05	mg/L	09/24/97	6010A
Antimony	<0.002	mg/L	09/24/97	6010A
Arsenic	<0.002	mg/L	09/24/97	6010A
Barium	0.385	mg/L	09/24/97	6010A
Beryllium	<0.001	mg/L	09/24/97	6010A
Cadmium	<0.001	mg/L	09/24/97	6010A
Calcium	194	mg/L	09/24/97	6010A
Chromium	<0.001	mg/L	09/24/97	6010A
Cobalt	<0.001	mg/L	09/24/97	6010A
Copper	<0.001	mg/L	09/24/97	6010A
Iron	6.76	mg/L	09/24/97	6010A
Lead	<0.002	mg/L	09/24/97	6010A
Magnesium	119	mg/L	09/24/97	6010A
Manganese	0.549	mg/L	09/24/97	6010A
Mercury	<0.0005	mg/L	09/24/97	7470A
Nickel	<0.001	mg/L	09/24/97	6010A
Potassium	28.2	mg/L	09/24/97	6010A
Selenium	<0.002	mg/L	09/24/97	6010A
Silver	<0.001	mg/L	09/24/97	6010A
Sodium	27.1	mg/L	09/24/97	6010A
Thallium	<0.002	mg/L	09/24/97	6010A
Vanadium	<0.01	mg/L	09/24/97	6010A
Zinc	<0.005	mg/L	09/24/97	6010A

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Sample Number:	43826	Date Taken:	09/23/97
Sample Description:	BW-GWMH20-01	Date Reported:	09/24/97

Volatile Organic Compounds Method 8260A
Analysis Date: 09/23/97

Analyte	Flags	Result	Units
Acetone		< 10.0	ug/L
Benzene		6.9	ug/L
Bromodichloromethane		< 5.0	ug/L
Bromoform	UJ	< 5.0	ug/L
Bromomethane		< 10.0	ug/L
2-Butanone		< 10.0	ug/L
Carbon disulfide		< 5.0	ug/L
Carbon tetrachloride	UJ	< 5.0	ug/L
Chlorobenzene		< 5.0	ug/L
Chlorodibromomethane	UJ	< 5.0	ug/L
Chloroethane		< 10.0	ug/L
Chloroform		< 5.0	ug/L
Chloromethane		< 10.0	ug/L
1,1-Dichloroethane		< 5.0	ug/L
1,2-Dichloroethane		< 5.0	ug/L
1,1-Dichloroethene		< 5.0	ug/L
cis-1,2-Dichloroethene		< 5.0	ug/L
trans-1,2-Dichloroethene		< 5.0	ug/L
1,2-Dichloropropane		< 5.0	ug/L
cis-1,3-Dichloropropene		< 5.0	ug/L
trans-1,3-Dichloropropene		< 5.0	ug/L
Ethyl benzene		< 5.0	ug/L
2-Hexanone		< 10.0	ug/L
4-Methyl-2-pentanone		< 10.0	ug/L
Methylene chloride		< 5.0	ug/L
Styrene		< 5.0	ug/L

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Sample Description:	BW-GWMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
1,1,2,2-Tetrachloroethane	< 5.0	ug/L	
Tetrachloroethene	< 5.0	ug/L	
Toluene	< 5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	ug/L	
Trichloroethene	< 5.0	ug/L	
Vinyl Acetate	< 10.0	ug/L	
Vinyl Chloride	< 10.0	ug/L	
Xylenes (total)	< 5.0	ug/L	

Base-Neutral/Acid Compounds Method 8270B

Preparation Date: 09/23/97
Analysis Date: 09/23/97

Acenaphthene	< 10	ug/L	
Acenaphthylene	< 10	ug/L	
Anthracene	< 10	ug/L	
Benzidine	UJ < 10	ug/L	
Benzo[a]anthracene	< 10	ug/L	
Benzo[b]fluoranthene	< 10	ug/L	
Benzo[k]fluoranthene	< 10	ug/L	
Benzo[g,h,i]perylene	< 10	ug/L	
Benzo[a]pyrene	< 10	ug/L	
Benzoic Acid	UJ < 50	ug/L	
Benzyl Alcohol	< 20	ug/L	
bis(2-chloroethoxy)methane	< 10	ug/L	
bis(2-chloroethyl)ether	< 10	ug/L	
bis(2-chloroisopropyl)ether	< 10	ug/L	
bis(2-ethylhexyl)phthalate	< 10	ug/L	

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Sample Description:	BW-GWMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
4-Bromophenyl-phenylether	< 10	ug/L	
Butylbenzylphthalate	< 10	ug/L	
4-Chloroaniline	< 10	ug/L	
4-Chloro-3-methylphenol	< 20	ug/L	
2-Chloronaphthalene	< 10	ug/L	
2-Chlorophenol	< 10	ug/L	
4-Chlorophenyl-phenylether	< 10	ug/L	
Chrysene	< 10	ug/L	
Dibenz[a,h]anthracene	< 10	ug/L	
Dibenzofuran	< 10	ug/L	
1,2-Dichlorobenzene	< 10	ug/L	
1,3-Dichlorobenzene	< 10	ug/L	
1,4-Dichlorobenzene	< 10	ug/L	
3,3-Dichorobenzidine	< 20	ug/L	
2,4-Dichlorophenol	< 10	ug/L	
Diethylphthalate	< 10	ug/L	
2,4-Dimethylphenol	< 10	ug/L	
Dimethylphthalate	< 10	ug/L	
Di-n-butylphthalate	< 10	ug/L	
4,6-Dinitro-2-methylphenol	< 50	ug/L	
2,4-Dinitrophenol	< 50	ug/L	
2,4-Dinitrotoluene	< 10	ug/L	
2,6-Dinitrotoluene	< 10	ug/L	
Di-n-octylphthalate	< 10	ug/L	
Fluoranthene	< 10	ug/L	
Fluorene	< 10	ug/L	
Hexachlorobenzene	< 10	ug/L	
Hexachlorobutadiene	< 10	ug/L	
Hexachlorocyclopentadiene	< 10	ug/L	

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Sample Description:	BW-GWMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
Hexachloroethane	< 10	ug/L	
Indeno[1,2,3-cd]pyrene	< 10	ug/L	
Isophorone	< 10	ug/L	
2-Methylnaphthalene	< 10	ug/L	
2-Methylphenol	< 10	ug/L	
3&4-Methylphenol	< 10	ug/L	
Naphthalene	< 10	ug/L	
2-Nitroaniline	< 50	ug/L	
3-Nitroaniline	< 50	ug/L	
4-Nitroaniline	< 20	ug/L	
Nitrobenzene	< 10	ug/L	
2-Nitrophenol	< 10	ug/L	
4-Nitrophenol	< 50	ug/L	
N-Nitrosodimethylamine	< 10	ug/L	
N-Nitroso-di-n-propylamine	< 10	ug/L	
n-Nitrosodiphenylamine	< 10	ug/L	
Pentachlorophenol	< 50	ug/L	
Phenanthrene	< 10	ug/L	
Phenol	< 10	ug/L	
Pyrene	< 10	ug/L	
1,2,4-Trichlorobenzene	< 10	ug/L	
2,4,5-Trichlorophenol	< 10	ug/L	
2,4,6-Trichlorophenol	< 10	ug/L	

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Analyte	Result	Units	Date Analyzed	Method
Dissolved				
Chloride	44	mg/L	09/24/97	9252
Sulfate	<15	mg/L	09/23/97	9038
Total				
Conductivity	1,820	UMHOS	09/24/97	120.1
Cyanide, Total	0.010	mg/L	09/24/97	9010A
N. Nitrate	<0.10	mg/L	09/24/97	352.1
N. Nitrite	<0.01	mg/L	09/24/97	354.1
Total Kjeldahl Nitrogen	4.2	mg/L	09/26/97	351.2
N. Ammonia	3.92	mg/L	09/23/97	350.2
Phosphorus, Total	0.24	mg/L	09/24/97	365.2
pH @ 25°C	7.11	units	09/24/97	9045C
Total Dissolved Solids	1,210	mg/L	09/23/97	160.1
Turbidity	53	NTU	09/24/97	180.1
Dissolved Oxygen	6.10	mg/L	09/23/97	4500-O G.

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Sample Description:	BW-GWMH20-91	Date Reported:	09/24/97

Analyte	Result	Units	Date Analyzed	Method
Dissolved Metals				
Aluminum	<0.05	mg/L	09/24/97	6010A
Antimony	<0.002	mg/L	09/24/97	6010A
Arsenic	<0.002	mg/L	09/24/97	6010A
Barium	0.358	mg/L	09/24/97	6010A
Beryllium	<0.001	mg/L	09/24/97	6010A
Cadmium	<0.001	mg/L	09/24/97	6010A
Calcium	181	mg/L	09/24/97	6010A
Chromium	<0.001	mg/L	09/24/97	6010A
Cobalt	<0.001	mg/L	09/24/97	6010A
Copper	<0.001	mg/L	09/24/97	6010A
Iron	6.41	mg/L	09/24/97	6010A
Lead	<0.002	mg/L	09/24/97	6010A
Magnesium	111	mg/L	09/24/97	6010A
Manganese	0.511	mg/L	09/24/97	6010A
Mercury	<0.0005	mg/L	09/24/97	7470A
Nickel	<0.001	mg/L	09/24/97	6010A
Potassium	25.8	mg/L	09/24/97	6010A
Selenium	<0.002	mg/L	09/24/97	6010A
Silver	<0.001	mg/L	09/24/97	6010A
Sodium	29.3	mg/L	09/24/97	6010A
Thallium	<0.002	mg/L	09/24/97	6010A
Vanadium	<0.01	mg/L	09/24/97	6010A
Zinc	<0.005	mg/L	09/24/97	6010A

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Sample Number:	43827	Date Taken:	09/23/97
Sample Description:	BW-GWMH20-91	Date Reported:	09/24/97

Volatile Organic Compounds Method 8260A
Analysis Date: 09/23/97

Analyte	Result	Units	Flags
Acetone	< 10.0	ug/L	
Benzene	6.7	ug/L	
Bromodichloromethane	< 5.0	ug/L	
Bromoform	UJ < 5.0	ug/L	
Bromomethane	< 10.0	ug/L	
2-Butanone	< 10.0	ug/L	
Carbon disulfide	< 5.0	ug/L	
Carbon tetrachloride	UJ < 5.0	ug/L	
Chlorobenzene	< 5.0	ug/L	
Chlorodibromomethane	UJ < 5.0	ug/L	
Chloroethane	< 10.0	ug/L	
Chloroform	< 5.0	ug/L	
Chloromethane	< 10.0	ug/L	
1,1-Dichloroethane	< 5.0	ug/L	
1,2-Dichloroethane	< 5.0	ug/L	
1,1-Dichloroethene	< 5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	ug/L	
1,2-Dichloropropane	< 5.0	ug/L	
cis-1,3-Dichloropropene	< 5.0	ug/L	
trans-1,3-Dichloropropene	< 5.0	ug/L	
Ethyl benzene	< 5.0	ug/L	
2-Hexanone	< 10.0	ug/L	
4-Methyl-2-pentanone	< 10.0	ug/L	
Methylene chloride	< 5.0	ug/L	
Styrene	< 5.0	ug/L	

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Sample Number:	43827	Date Taken:	09/23/97
Sample Description:	BW-GWMH20-91	Date Reported:	09/24/97

Analyte	Result	Units	Flags
1,1,2,2-Tetrachloroethane	< 5.0	ug/L	
Tetrachloroethene	< 5.0	ug/L	
Toluene	< 5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	ug/L	
Trichloroethene	< 5.0	ug/L	
Vinyl Acetate	< 10.0	ug/L	
Vinyl Chloride	< 10.0	ug/L	
Xylenes (total)	< 5.0	ug/L	

Base-Neutral/Acid Compounds Method 8270B

Preparation Date: 09/23/97
Analysis Date: 09/23/97

Acenaphthene	< 10	ug/L	
Acenaphthylene	< 10	ug/L	
Anthracene	< 10	ug/L	
Benzidine	UJ < 10	ug/L	
Benzo[a]anthracene	< 10	ug/L	
Benzo[b]fluoranthene	< 10	ug/L	
Benzo[k]fluoranthene	< 10	ug/L	
Benzo[g,h,i]perylene	< 10	ug/L	
Benzo[a]pyrene	< 10	ug/L	
Benzoic Acid	UJ < 50	ug/L	
Benzyl Alcohol	< 20	ug/L	
bis(2-chloroethoxy)methane	< 10	ug/L	
bis(2-chloroethyl)ether	< 10	ug/L	
bis(2-chloroisopropyl)ether	< 10	ug/L	
bis(2-ethylhexyl)phthalate	< 10	ug/L	

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Sample Description:	BW-GWMH20-91	Date Reported:	09/24/97

Analyte	Result	Units	Flags
4-Bromophenyl-phenylether	< 10	ug/L	
Butylbenzylphthalate	< 10	ug/L	
4-Chloroaniline	< 10	ug/L	
4-Chloro-3-methylphenol	< 20	ug/L	
2-Chloronaphthalene	< 10	ug/L	
2-Chlorophenol	< 10	ug/L	
4-Chlorophenyl-phenylether	< 10	ug/L	
Chrysene	< 10	ug/L	
Dibenz[a,h]anthracene	< 10	ug/L	
Dibenzofuran	< 10	ug/L	
1,2-Dichlorobenzene	< 10	ug/L	
1,3-Dichlorobenzene	< 10	ug/L	
1,4-Dichlorobenzene	< 10	ug/L	
3,3-Dichorobenzidine	< 20	ug/L	
2,4-Dichlorophenol	< 10	ug/L	
Diethylphthalate	< 10	ug/L	
2,4-Dimethylphenol	< 10	ug/L	
Dimethylphthalate	< 10	ug/L	
Di-n-butylphthalate	< 10	ug/L	
4,6-Dinitro-2-methylphenol	< 50	ug/L	
2,4-Dinitrophenol	< 50	ug/L	
2,4-Dinitrotoluene	< 10	ug/L	
2,6-Dinitrotoluene	< 10	ug/L	
Di-n-octylphthalate	< 10	ug/L	
Fluoranthene	< 10	ug/L	
Fluorene	< 10	ug/L	
Hexachlorobenzene	< 10	ug/L	
Hexachlorobutadiene	< 10	ug/L	
Hexachlorocyclopentadiene	< 10	ug/L	

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Sample Description:	BW-GWMH20-91	Date Reported:	09/24/97

Analyte	Result	Units	Flags
Hexachloroethane	< 10	ug/L	
Indeno[1,2,3-cd]pyrene	< 10	ug/L	
Isophorone	< 10	ug/L	
2-Methylnaphthalene	< 10	ug/L	
2-Methylphenol	< 10	ug/L	
3&4-Methylphenol	< 10	ug/L	
Naphthalene	< 10	ug/L	
2-Nitroaniline	< 50	ug/L	
3-Nitroaniline	< 50	ug/L	
4-Nitroaniline	< 20	ug/L	
Nitrobenzene	< 10	ug/L	
2-Nitrophenol	< 10	ug/L	
4-Nitrophenol	< 50	ug/L	
N-Nitrosodimethylamine	< 10	ug/L	
N-Nitroso-di-n-propylamine	< 10	ug/L	
n-Nitrosodiphenylamine	< 10	ug/L	
Pentachlorophenol	< 50	ug/L	
Phenanthrene	< 10	ug/L	
Phenol	< 10	ug/L	
Pyrene	< 10	ug/L	
1,2,4-Trichlorobenzene	< 10	ug/L	
2,4,5-Trichlorophenol	< 10	ug/L	
2,4,6-Trichlorophenol	< 10	ug/L	

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Analytical Report

Client:	MONTGOMERY WATSON		
Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43828	Date Taken:	09/23/97
Sample Description:	BW-TBMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
Volatile Organic Compounds Method 8260A			
Analysis Date: 09/23/97			
Acetone	< 10.0	ug/L	
Benzene	< 5.0	ug/L	
Bromodichloromethane	< 5.0	ug/L	
Bromoform	< 5.0	ug/L	
Bromomethane	< 10.0	ug/L	
2-Butanone	< 10.0	ug/L	
Carbon disulfide	< 5.0	ug/L	
Carbon tetrachloride	< 5.0	ug/L	
Chlorobenzene	< 5.0	ug/L	
Chlorodibromomethane	< 5.0	ug/L	
Chloroethane	< 10.0	ug/L	
Chloroform	< 5.0	ug/L	
Chloromethane	< 10.0	ug/L	
1,1-Dichloroethane	< 5.0	ug/L	
1,2-Dichloroethane	< 5.0	ug/L	
1,1-Dichloroethene	< 5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	ug/L	
1,2-Dichloropropane	< 5.0	ug/L	
cis-1,3-Dichloropropene	< 5.0	ug/L	
trans-1,3-Dichloropropene	< 5.0	ug/L	
Ethyl benzene	< 5.0	ug/L	
2-Hexanone	< 10.0	ug/L	
4-Methyl-2-pentanone	< 10.0	ug/L	

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Analytical Report

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Sample Number:	43828	Date Taken:	09/23/97
Sample Description:	BW-TBMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
Methylene chloride	< 5.0	ug/L	
Styrene	< 5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	ug/L	
Tetrachloroethene	< 5.0	ug/L	
Toluene	< 5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	ug/L	
Trichloroethene	< 5.0	ug/L	
Vinyl Acetate	< 10.0	ug/L	
Vinyl Chloride	< 10.0	ug/L	
Xylenes (total)	< 5.0	ug/L	

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Analytical Report

Client: MONTGOMERY WATSON
Project ID: 1252008.050702
Sample Number: 43829
Sample Description: BW-FBMH20-01

Date Received: 09/23/97
Date Taken: 09/23/97
Date Reported: 09/24/97

Analyte	Result	Units	Date Analyzed	Method
Dissolved				
Chloride	<5	mg/L	09/24/97	9252
Sulfate	<15	mg/L	09/23/97	9038
Total				
Conductivity	<1	UMHOS	09/24/97	120.1
Cyanide, Total	<0.005	mg/L	09/24/97	9010A
N. Nitrate	<0.10	mg/L	09/24/97	352.1
N. Nitrite	<0.01	mg/L	09/24/97	354.1
Total Kjeldahl Nitrogen	<0.5	mg/L	09/26/97	351.2
N. Ammonia	<0.10	mg/L	09/23/97	350.2
Phosphorus, Total	<0.01	mg/L	09/24/97	365.2
pH @ 25°C	6.78	units	09/24/97	9045C
Total Dissolved Solids	9	mg/L	09/23/97	160.1
Turbidity	<0.1	NTU	09/24/97	180.1
Dissolved Oxygen	8.85	mg/L	09/23/97	4500-O G.

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Analytical Report

Client:	MONTGOMERY WATSON		
Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43829	Date Taken:	09/23/97
Sample Description:	BW-FBMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Date Analyzed	Method
Dissolved Metals				
Aluminum	<0.05	mg/L	09/24/97	6010A
Antimony	<0.002	mg/L	09/24/97	6010A
Arsenic	<0.002	mg/L	09/24/97	6010A
Barium	<0.002	mg/L	09/24/97	6010A
Beryllium	<0.001	mg/L	09/24/97	6010A
Cadmium	<0.001	mg/L	09/24/97	6010A
Calcium	0.3	mg/L	09/24/97	6010A
Chromium	<0.001	mg/L	09/24/97	6010A
Cobalt	<0.001	mg/L	09/24/97	6010A
Copper	<0.001	mg/L	09/24/97	6010A
Iron	<0.01	mg/L	09/24/97	6010A
Lead	<0.002	mg/L	09/24/97	6010A
Magnesium	0.2	mg/L	09/24/97	6010A
Manganese	<0.001	mg/L	09/24/97	6010A
Mercury	<0.0005	mg/L	09/24/97	7470A
Nickel	<0.001	mg/L	09/24/97	6010A
Potassium	<0.1	mg/L	09/24/97	6010A
Selenium	<0.002	mg/L	09/24/97	6010A
Silver	<0.001	mg/L	09/24/97	6010A
Sodium	0.8	mg/L	09/24/97	6010A
Thallium	<0.002	mg/L	09/24/97	6010A
Vanadium	<0.01	mg/L	09/24/97	6010A
Zinc	<0.005	mg/L	09/24/97	6010A

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Analytical Report

Client:	MONTGOMERY WATSON		
Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43829	Date Taken:	09/23/97
Sample Description:	BW-FBMH20-01	Date Reported:	09/24/97

Volatile Organic Compounds Method 8260A
Analysis Date: 09/23/97

Analyte	Result	Units	Flags
Acetone	< 10.0	ug/L	
Benzene	< 5.0	ug/L	
Bromodichloromethane	< 5.0	ug/L	
Bromoform	< 5.0	ug/L	
Bromomethane	< 10.0	ug/L	
2-Butanone	< 10.0	ug/L	
Carbon disulfide	< 5.0	ug/L	
Carbon tetrachloride	< 5.0	ug/L	
Chlorobenzene	< 5.0	ug/L	
Chlorodibromomethane	< 5.0	ug/L	
Chloroethane	< 10.0	ug/L	
Chloroform	< 5.0	ug/L	
Chloromethane	< 10.0	ug/L	
1,1-Dichloroethane	< 5.0	ug/L	
1,2-Dichloroethane	< 5.0	ug/L	
1,1-Dichloroethene	< 5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	ug/L	
1,2-Dichloropropane	< 5.0	ug/L	
cis-1,3-Dichloropropene	< 5.0	ug/L	
trans-1,3-Dichloropropene	< 5.0	ug/L	
Ethyl benzene	< 5.0	ug/L	
2-Hexanone	< 10.0	ug/L	
4-Methyl-2-pentanone	< 10.0	ug/L	
Methylene chloride	< 5.0	ug/L	
Styrene	< 5.0	ug/L	

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Analytical Report

Client:	MONTGOMERY WATSON		
Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43829	Date Taken:	09/23/97
Sample Description:	BW-FBMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
1,1,2,2-Tetrachloroethane	< 5.0	ug/L	
Tetrachloroethene	< 5.0	ug/L	
Toluene	< 5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	ug/L	
Trichloroethene	< 5.0	ug/L	
Vinyl Acetate	< 10.0	ug/L	
Vinyl Chloride	< 10.0	ug/L	
Xylenes (total)	< 5.0	ug/L	

Base-Neutral/Acid Compounds Method 8270B

Preparation Date: 09/23/97
Analysis Date: 09/23/97

Acenaphthene	< 10	ug/L	
Acenaphthylene	< 10	ug/L	
Anthracene	< 10	ug/L	
Benzidine	UJ < 10	ug/L	
Benzo[a]anthracene	< 10	ug/L	
Benzo[b]fluoranthene	< 10	ug/L	
Benzo[k]fluoranthene	< 10	ug/L	
Benzo[g,h,i]perylene	< 10	ug/L	
Benzo[a]pyrene	< 10	ug/L	
Benzoic Acid	UJ < 50	ug/L	
Benzyl Alcohol	< 20	ug/L	
bis(2-chloroethoxy)methane	< 10	ug/L	
bis(2-chloroethyl)ether	< 10	ug/L	
bis(2-chloroisopropyl)ether	14	ug/L	
bis(2-ethylhexyl)phthalate	< 10	ug/L	

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Analytical Report

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Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43829	Date Taken:	09/23/97
Sample Description:	BW-FBMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
4-Bromophenyl-phenylether	< 10	ug/L	
Butylbenzylphthalate	< 10	ug/L	
4-Chloroaniline	< 10	ug/L	
4-Chloro-3-methylphenol	< 20	ug/L	
2-Chloronaphthalene	< 10	ug/L	
2-Chlorophenol	< 10	ug/L	
4-Chlorophenyl-phenylether	< 10	ug/L	
Chrysene	< 10	ug/L	
Dibenz[a,h]anthracene	< 10	ug/L	
Dibenzofuran	< 10	ug/L	
1,2-Dichlorobenzene	< 10	ug/L	
1,3-Dichlorobenzene	< 10	ug/L	
1,4-Dichlorobenzene	< 10	ug/L	
3,3-Dichorobenzidine	< 20	ug/L	
2,4-Dichlorophenol	< 10	ug/L	
Diethylphthalate	< 10	ug/L	
2,4-Dimethylphenol	< 10	ug/L	
Dimethylphthalate	< 10	ug/L	
Di-n-butylphthalate	< 10	ug/L	
4,6-Dinitro-2-methylphenol	< 50	ug/L	
2,4-Dinitrophenol	< 50	ug/L	
2,4-Dinitrotoluene	< 10	ug/L	
2,6-Dinitrotoluene	< 10	ug/L	
Di-n-octylphthalate	< 10	ug/L	
Fluoranthene	< 10	ug/L	
Fluorene	< 10	ug/L	
Hexachlorobenzene	< 10	ug/L	
Hexachlorobutadiene	< 10	ug/L	
Hexachlorocyclopentadiene	< 10	ug/L	

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Analytical Report

Client:	MONTGOMERY WATSON		
Project ID:	1252008.050702	Date Received:	09/23/97
Sample Number:	43829	Date Taken:	09/23/97
Sample Description:	BW-FBMH20-01	Date Reported:	09/24/97

Analyte	Result	Units	Flags
Hexachloroethane	< 10	ug/L	
Indeno[1,2,3-cd]pyrene	< 10	ug/L	
Isophorone	< 10	ug/L	
2-Methylnaphthalene	< 10	ug/L	
2-Methylphenol	< 10	ug/L	
3&4-Methylphenol	< 10	ug/L	
Naphthalene	< 10	ug/L	
2-Nitroaniline	< 50	ug/L	
3-Nitroaniline	< 50	ug/L	
4-Nitroaniline	< 20	ug/L	
Nitrobenzene	< 10	ug/L	
2-Nitrophenol	< 10	ug/L	
4-Nitrophenol	< 50	ug/L	
N-Nitrosodimethylamine	< 10	ug/L	
N-Nitroso-di-n-propylamine	< 10	ug/L	
n-Nitrosodiphenylamine	< 10	ug/L	
Pentachlorophenol	< 50	ug/L	
Phenanthrene	< 10	ug/L	
Phenol	< 10	ug/L	
Pyrene	< 10	ug/L	
1,2,4-Trichlorobenzene	< 10	ug/L	
2,4,5-Trichlorophenol	< 10	ug/L	
2,4,6-Trichlorophenol	< 10	ug/L	

APPENDIX B

VALIDATION RESULTS

VALIDATION NARRATIVE

Project Name **Blackwell** Inorganics and Indicators in groundwater

Project Number 1252008.050702 10/20/97

This data narrative covers the analysis of 4 groundwater samples from Blackwell for analysis of TAL inorganics, sulfate, chloride, TDS, pH, conductivity, redox, turbidity, and dissolved oxygen. The data, was validated/reviewed according to the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (2/94) with modifications for the project specific QC.

This data is acceptable for use in site evaluation with the following comments:

Holdtimes - All holding times were met.

Calibration - All criteria was met.

Blanks - Calcium, magnesium, and sodium were detected in the field blank but sample concentrations were greater than 10x's the concentrations detected in the blank, thus no action was necessary.

Spikes - All spike results were within acceptable QC limits.

Duplicates - Laboratory duplicate results were all within acceptable QC limits.

Sample Result Verification - All results were acceptable.

ICP QC Samples - ICP Serial dilution % difference criteria and Interference check standard recovery criteria were within acceptable QC limits.

Laboratory Control Sample - All recoveries were acceptable.

Overall - These sample results are acceptable for use in site evaluation.

VALIDATION NARRATIVE

Blackwell VOCs and SVOCs in groundwater
Project 1252008.050702

Validated By: SGW Date: 10/20/97

This narrative covers the validation/review of 4 groundwater samples from Blackwell; for VOC and SVOC analysis by First Environmental laboratories. Validation was performed using the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Analysis Review* (2/94) and project specific QC found in the QAPP. The data is validated/reviewed as acceptable for use in site evaluation with the following comments:

Hold Times - All hold times were met.

Calibration - All VOC and SVOC instrument tuning and calibration criteria was acceptable except for carbon tetrachloride, bromoform, chlorodibromomethane, pentachloroethane, and hexane in the VOC fraction and benzoic acid and benzidine in the SVOC fraction. For these compounds, the relative standard deviation and/or percent difference criteria was exceeded in the initial and/or continuing calibration. All associated sample results are qualified as estimated quantitation limit ("UJ") if the compounds were not detected, and estimated (J) if the compounds were detected.

Blanks -A trip blank and field blank were analyzed and nothing was detected.

Internal Standards - All internal standard results were within acceptable validation limits.

Surrogates - All surrogate recoveries were within QC limits.

Matrix Spikes - All recoveries were acceptable.

Field Duplicates - Percent difference criteria were acceptable.

SGW/sgw
M:\jobs\0-temp\sgw\bwdvorg1.doc
1252008.1050702

ORGANICS
DATA VALIDATION NARRATIVE

Site Name Blackwell Project # 1252008/050702

SMO Case # (SAS #) _____ #Samples/Matrix 4 aq

Laboratory First Environmental Hours for Review 5

SOW # _____ EPA Validation Guidelines # _____

Sample Numbers MH20, MH20 dup, field blank, trip blank

Validated By Steve Wicks Date 10/20/97

Reviewed By _____ Date _____

SUMMARY OF REVIEW:

The data is quantitative and acceptable with few limitations

Several cpd's in the VOC + SVOC fraction in initial + continuing calibration exceeded %RSD or %D criteria. If detected cpd's are qualified (J) estimated if not detected (UJ) estimated quantitation limit. See outliers form for specific cpds.

Review Date: Reviewed by:

Review of Contract Data; SMO Case No. _____
Site Name: Blackwell Contract Lab: First Environmental
Contract No.: _____ Project No.: _____
SMO Traffic No's: _____
Sample Matrix: Low Level X Med. Level ____ High Level ____ Soil/Seq ____
Water X Waste ____

I. HOLDING TIMES

Water: VOA A SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - All contract and 40 CFR 136 holding times met.
P - Provisional - Some contract and 40 CFR 136 holding times exceeded.
U - Unacceptable - All holding times exceeded.

REMARKS:

II. GC/MS TUNING AND PERFORMANCE

Water: VOA (BFB) A SV (DFTPP) A
Sed/Soil: VOA (BFB) ____ SV (DFTPP) ____

A - Acceptable - All criteria met, spectra of good quality.
P - Provisional - All criteria not met, spectra of reasonable quality; date usable.
U - Unacceptable - Criteria not met, spectra of poor quality, data unusable.

SMO Case No.: _____ Contract Lab: _____

V. SURROGATE SPIKE RESULTS

Water: VOA A SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

NOTE: Sample data flagged on individual basis.

A. Individual sample flagging criteria.

Acceptable - All surrogate recoveries within criteria.
Suspect - Any surrogate recoveries outside criteria and/or recoveries of <10% substantiated as a matrix effect.
Invalid - Any recoveries of <10% that are unsubstantiated as a matrix effect.

		No. Samples	No. Suspect	No. Invalid
Water:	VOA	7	0	
	SV	6	0	0
	PEST			
Sed/Soil:	VOA			
	SV			
	PEST			

B. Summary of Surrogates

A - Acceptable - <10% of samples reported as suspect.
P - Provisional - >10% but <50% of samples reported as suspect.
U - Unacceptable - >50% of samples reported as suspect and/or >10% samples reported as invalid.

REMARKS:

VOC - 0 of 21 recoveries out - ok.
SVC - 0 of 36 cpds recoveries outside criteria.

[V-SOP-99]

SMO Case No.: _____ Contract Lab: _____

III. INITIAL AND CONTINUING CALIBRATION CHECKS

Water: VOA P SV P PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - All criteria met.
P - Provisional - Some criteria not met, data usable, see remarks.
U - Unacceptable - Criteria not met, data unusable, see remarks.

REMARKS: VOC - initial - carbon tet - 42% RSD, Bromofarm, chlorodibromomethane, pentachloroethane >30%
Contical - carbon tet, hexane, >30 %D - samples qualified (UJ)

SVOC initial cal ok,
continuing cal - Benzoic acid + benzidine %D greater than 30% - N.D. in samples -
thus they are qualified (UJ).

IV. BLANK ANALYSIS

Water: VOA A SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - No contaminants above minimum detection limit, no interference with sample results, appropriate blank for each GC/MS system and extraction method.

P. - Provisional - Contaminants present but minimal interference with sample results.

U - Unacceptable - Gross contamination, too much interference to use data for certain components or the entire fraction, appropriate blanks not analyzed.

N.D in trip or field blanks

SMO Case No.: _____ Contract Lab: _____

VI. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A. MATRIX SPIKE RESULTS:

Water: VOA A SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

NOTE: No action taken on Matrix Spike Results alone.

A - Acceptable - <10% of compounds outside criteria.
P - Provisional - >10% but <50% of compounds outside criteria.
U - Unacceptable - >50% of compounds outside criteria and/or >10% of compounds with recoveries of <10%.

		No. Compounds	No. Outside Criteria	No. <10% Recovery
Water:	VOA	10	0	
	SV	23	0	
	PEST			
Sed/Soil:	VOA			
	SV			
	PEST			

B. DUPLICATE RESULTS

Water: VOA A SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - <10% of compounds outside criteria.
P - Provisional - >10% but <50% of compounds outside criteria.
U - Unacceptable - >50% of compounds outside criteria and/or >10% of compounds with recoveries of <10%.

		No. Compounds	No. Outside Criteria
Water:	VOA	5	0
	SV	11	0
	PEST		
Sed/Soil:	VOA		
	SV		
	PEST		

REMARKS:

- all recoveries acceptable

SMO Case No.: _____ Contract Lab: _____

VII. FIELD DUPLICATES

Water: VOA A SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - All compounds are within 25% of each other for waters or within 50% of each other for soils.

P - Provisional - Some compounds are greater than 25% RPD for waters and greater than 50% RPD for soils, see remarks.

U - Unacceptable - Professional judgement, see remarks.

REMARKS: only benzene detected in sample + dup - within 25% RPD

SMO Case No.: _____ Contract Lab: _____

VIII. INTERNAL STANDARD PERFORMANCE

Water: VOA ____ SV A PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - Is area counts between - 50% to +100% from associated calibration standard and ±30 seconds from associated calibration standards.

P - Provisional - Most all area counts between -50% to +100% and ±30 seconds, from associated calibration standard, see remarks.

U - Unacceptable - Extremely low area counts or major abrupt drop-off of sensitivity or greater than ±30 second time shift, see remarks.

REMARKS:

IX. COMPOUND IDENTIFICATION

Water: VOA ✓ SV ✓ PEST ____
Sed/Soil: VOA ____ SV ____ PEST ____

A - Acceptable - All compounds within retention time windows, spectral criteria met.
P - Provisional - Some criteria not met, data usable, see remarks.
U - Unacceptable - Criteria not met, data unusable, see remarks.

REMARKS:

SMO Case No.: _____ Contract Lab: _____

X. COMPOUND QUANTIFICATION AND REPORTED D.L.

Water: VOA ___/___ SV ___/___ PEST _____
Sed/Soil: VOA _____ SV _____ PEST _____

A - Acceptable - Compounds were quantified, as well as the adjustment of the CRQL, was calculated according for the SOW or SAS.

P - Provisional - Some criteria not met, data usable, see remarks.

U - Unacceptable - Gross problems, interferences, unacceptable RT and RRF shifts, see remarks.

REMARKS:

XI. SYSTEM PERFORMANCE

Water: VOA ___/___ SV ___/___ PEST _____
Sed/Soil: VOA _____ SV _____ PEST _____

A - Acceptable - No indication of instrument problems such as baseline shifts, I.S. absolute area changes, etc.
P - Provisional - Indication of minor problems, see remarks.
U - Unacceptable - Indication of instrument problems, see remarks.

REMARKS:

CASE _____
LAB _____

PESTICIDE/PCB DATA REVIEW
SOW OLM02.1

NA

RUN #				
INSTRUMENT #				
RUN DATE				
COLUMN				
FORM VI PEST-1 Retention time windows within limits				
FORM VI PEST-2 Percent RSD within QC limits for single component cmpds				
FORM VI PEST-3 Multicomponent cmpd calibrations within QC limits				
FORM VI PEST-4 Resolution check greater than 60 %				
FORM VII PEST-1 Continuing calibration verification, breakdown acceptable				
FORM VII PEST-2 Continuing calibration verification, RPD acceptable				
FORM VIII Analytical sequence correct, Surrogate shift within QC limits.				

Affected Samples

Volatile TCLs
Calibration Outliers

CASE/SDG _____ CONTRACTOR 1st Source

Instrument	Init Cal			Cont. Cal			Cont. Cal			Cont. Cal			Cont. Cal		
Date	9/10			3/23											
	RF	RSD	*	RF	%D		RF	%D		RF	%D		RF	%D	
Chloromethane															
Bromomethane															
Vinyl chloride															
Chloroethane															
Methylene chloride															
Acetone															
Carbon disulfide															
1,1-Dichloroethene															
1,1-Dichloroethane															
1,2-Dichloroethene (total)															
Chloroform															
1,2-Dichloroethane															
2-Butanone															
1,1,1-Trichloroethane															
Carbon tetrachloride					63	U5									
Bromodichloromethane															
1,2-Dichloropropane															
cis-1,3-Dichloropropene															
Trichloroethene															
Dibromochloromethane															
1,1,2-Trichloroethane															
Benzene															
trans-1,3-Dichloropropene															
Bromoform															
4-Methyl-2-pentanone															
2-Hexanone															
Tetrachloroethene															
Toluene															
1,1,2,2-Tetrachloroethane															
Chlorobenzene															
Ethylbenzene															
Styrene															
Xylenes (total)															
Hexane					31	J									

Init. Cal	
	MH 3C
5	MH 3 & 9
10	TR
20	FR
50	
100	
200	

Semivolatiles TCLs
Calibration Outliers

CASE/SDG _____ CONTRACTOR 1st Environmental

Instrument	Init Cal			Cont. Cal			Cont. Cal			Cont. Cal			Cont. Cal		
Date	9/26		1970	9/27											
	RF	RSD	*	RF	%D		RF	%D		RF	%D		RF	%D	
Phenol															
bis(2-chloroethyl) ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
1,2-Dichlorobenzene															
2-Methylphenol															
2,2-oxybis 1-chloropropane															
4-Methylphenol															
N-Nitroso-di-n-propylamine															
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
bis(2-chloroethoxy)methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethylphthalate															
Acenaphthene															
2,6-Dinitrotoluene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

Init. Cal.				
20				
50				
80				
100				
120				
160				

Semivolatiles TCLs
Calibration Outliers

CASE/SDG _____ CONTRACTOR _____

Instrument	Init Cal			Cont. Cal			Cont. Cal			Cont. Cal			Cont. Cal		
Date				9/7/3											
	RF	RSD	*	RF	%D		RF	%D		RF	%D		RF	%D	
2,4-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenylphenyl ether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl phenyl ether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Carbazole															
Di-n-butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
3,3'-Dichlorobenzidine															
Benzo(a)anthracene															
Chrysene															
bis(2-ethylhexyl)phthalate															
Di-n-octylphthalate															
Benzo(b)fluoranthene															
Benzo(k)fluoranthene															
Benzo(a)pyrene															
Indeno(1,2,3-cd)anthracene															
Dibenz(a,h,i)perylene															
Benzoic acid					35	J/J5									
Benzidine					30	J/J5									

Blackwell

metals and indicators

- field dup - all RPD's acceptable
- field blank -

Ca 0.3 mg/L
Mg 0.2
Na 0.8

> No action all sample conc. > than 10x's the FB conc.

Initial Cal - recoveries acceptable

Continuing Cal - recoveries acceptable

Initial blank - ok (u)
Cont. blank - ok (u)
Prep. blank - ok (u)

spike recoveries - ok ; spike dup RPD's ok
lab duplicates - RPD's acceptable
LCS - ok

ICP ICS

- all recoveries acceptable

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Conventionals Analysis QA/QC Summary

Montgomery Watson
Project ID: 1252008.050702

Date Received: 09/23/97

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Naperville, Illinois

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FORM II

INORGANICS INITIAL and CONTINUING CALIBRATION VERIFICATION

Client: Montgomery Watson	Project ID: 1252008.050702
Lab Name: First Environmental	

Concentration Units: mg/L

ANALYTE	INITIAL CALIBRATION			CONTINUING CALIBRATION					
	TRUE	FOUND	%R	TRUE	FOUND	%R	FOUND	%R	M
Chloride	80	80	100.0	NA	NA	NA			9252
Conductivity	1,413	1,360	96.2	NA	NA	NA			120.1
Cyanide	0.500	0.478	95.6	0.500	0.478	95.6			9010A
N. Ammonia	1.00	0.95	95.0	1.00	0.95	95.0			350.2
Nitrate	2.00	1.92	96.0	NA	NA	NA			353.3M
Nitrite	0.25	0.26	104.0	NA	NA	NA			354.1
pH	7.00	7.03	100.4	NA	NA	NA			9045C
Phosphorus	0.50	0.51	102.0	NA	NA	NA			365.2
Sulfate	70	65	92.9	70	64	91.4			9038
Turbidity	1° *	NA	NA	NA	NA	NA			180.1

* 1 NTU primary standard used to calibrate intrument

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FORM III

INORGANIC BLANK ANALYSIS DATA SHEET

Client: Montgomery Watson	Project ID: 1252008.050702
Lab Name: First Environmental	Batch No.: NA
Preparation Blank Matrix (soil/water): Water	Preparation Blank Concentration Units mg/L

ANALYTE	INITIAL CAL. BLANK (mg/L)		CONTINUING CALIBRATION BLANK						PREPARATION BLANK		
		C	1	C	2	C	3	C		C	M
Chloride	5	U	NA						NA		9252
Conductivity	NA		NA						NA		120.1
Cyanide	0.005	U	0.005	U					0.005	U	9010A
N. Ammonia	0.10	U	0.10	U					0.10	U	350.2
Nitrate	0.10	U	NA						NA		353.3M
Nitrite	0.05	U	NA						NA		354.1
pH	NA		NA						NA		9045C
Phosphorus	0.01	U	NA						0.01	U	365.2
Sulfate	15	U	15	U					NA		9038
Turbidity	NA		NA						NA		180.1

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FORM V

INORGANIC SPIKE SAMPLE RECOVERY

Client: Montgomery Watson	Project ID: 1252008.050702
Lab Name: First Environmental	Batch No.: NA
Matrix: Water	Concentration Units: mg/L

ANALYTE		Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Chloride	43826	75-125	122		44		80	97.5	
Conductivity	NA	75-125	NA						
Cyanide	43826	75-125	0.178		0	U	0.200	89.0	
N. Ammonia	43642	75-125	0.60		0	U	0.50	120.0	
Nitrate	43826	75-125	0.63		0	U	0.80	78.8	
Nitrite	43826	75-125	0.098		0	U	0.100	98.0	
pH	NA	75-125	NA						
Phosphorus	43827	75-125	0.46		0.24		0.25	88.0	
Sulfate	43829	75-125	18		0	U	20	90.0	
Turbidity	NA	75-125	NA						

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FORM VI

INORGANIC DUPLICATE SAMPLE RECOVERY

Client: Montgomery Watson	Project ID: 1252008.050702
Lab Name: First Environmental	Batch No.: NA
Matrix: Water	Concentration Units: mg/L

ANALYTE	Sample No.	Control Limit	Sample Result (Smp)	C	Duplicate Sample Result (Dup)	C	RPD	Q
Chloride	43826	80-120	122		120		1.7	
Conductivity	43826	80-120	1,820		1,850		1.6	
Cyanide	43826	80-120	0.178		0.183		2.8	
N. Ammonia	43642	80-120	0.60		0.56		6.9	
Nitrate	43826	80-120	0.63		0.68		7.6	
Nirite	43826	80-120	0.098		0.100		2.0	
pH	43826	80-120	7.44		7.38		0.8	
Phosphorus	43827	80-120	0.46		0.46		0.0	
Sulfate	43829	80-120	18		20		10.5	
Turbidity	43826	80-120	50		48		4.1	

Note

RPD values were calculated from MS/MSD recoveries
for the following analyses:
Chloride
Cyanide
N. Ammonia
Nitrate
Nitrite
Phosphorus
Sulfate

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FORM VII
INORGANIC LABORATORY CONTROL SAMPLE RECOVERY

Client: Montgomery Watson	Project ID: 1252008.050702
Lab Name: First Environmental	Batch No.: NA
	Concentration Units: mg/L

ANALYTE	AQUEOUS (ug/L) TRUE	FOUND	%R	LIMITS	C
Chloride	NA				
Conductivity	NA				
Cyanide	1.000	0.902	90.2	85-115	
N. Ammonia	2.00	2.05	102.5	80-120	
Nitrate	NA				
Nitrite	NA				
pH	NA				
Phosphorus	0.75	0.74	98.7	80-120	
Sulfate	NA				
Turbidity	NA				

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Metals Analysis QA/QC Summary

Montgomery Watson
Project ID: 1252008.050702

Date Received: 09/23/97

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Naperville, Illinois

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FORM II

INORGANICS INITIAL and CONTINUING CALIBRATION VERIFICATION

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Batch No.: R092497-1

Concentration Units: (ug/L)

Analyte	Initial Calibration			Continuing Calibration					
	True	Found	%R	True	Found	%R	Found	%R	M
Silver	1,000	999	99.9	500	539	107.8	538	107.6	6010A
Aluminum	20,000	20,040	100.2	10,000	9,900	99.0	9,899	99.0	6010A
Arsenic	1,000	1,000	100.0	500	524	104.8	524	104.7	6010A
Barium	1,000	994	99.4	500	521	104.1	524	104.8	6010A
Beryllium	1,000	993	99.3	500	520	104.1	521	104.3	6010A
Calcium	20,000	20,030	100.2	10,000	10,350	103.5	10,240	102.4	6010A
Cadmium	1,000	999	99.9	500	516	103.1	516	103.1	6010A
Cobalt	1,000	999	99.9	500	515	102.9	515	102.9	6010A
Chromium	1,000	998	99.8	500	516	103.1	515	103.0	6010A
Copper	1,000	1,007	100.7	500	515	103.0	475	95.0	6010A
Iron	8,000	8,007	100.1	4,000	4,190	104.7	4,180	104.5	6010A
Potassium	25,000	25,020	100.1	12,500	11,650	93.2	11,630	93.0	6010A
Magnesium	20,000	19,980	99.9	10,000	9,850	98.5	9,834	98.3	6010A
Manganese	1,000	999	99.9	500	521	104.2	520	104.0	6010A
Sodium	25,000	24,970	99.9	12,500	12,280	98.2	12,520	100.2	6010A
Nickel	1,000	1,001	100.1	500	528	105.5	520	103.9	6010A
Lead	1,000	1,004	100.4	500	504	100.8	503	100.6	6010A
Antimony	1,000	997	99.7	500	491	98.1	502	100.3	6010A
Selenium	1,000	1,009	100.9	500	505	101.1	505	101.0	6010A
Thallium	1,000	987	98.7	500	488	97.6	497	99.5	6010A
Vanadium	1,000	1,000	100.0	500	508	101.6	505	101.0	6010A
Zinc	1,000	1,000	100.0	500	524	104.8	510	102.0	6010A
Mercury	2.5	2.5	101.2	2.5	2.6	102.4			7470A

Control Limits: ICV +/- 5% of True Value
CCV +/- 10% of True Value

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FORM III

INORGANIC BLANK ANALYSIS DATA SHEET

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Batch No.: R092497-1
Preparation Blank Matrix (soil/water): Water	Preparation Blank Concentration Units (ug/L)

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		
		C	1	C	2	C	3	C		C	M
Arsenic	1	U	1	U					1	U	6010A
Aluminum	50	U	50	U					50	U	6010A
Barium	1	U	1	U					1	U	6010A
Beryllium	1	U	1	U					1	U	6010A
Cadmium	1	U	1	U					1	U	6010A
Cobalt	1	U	1	U					1	U	6010A
Chromium	1	U	1	U					1		6010A
Copper	1	U	1	U					1	U	6010A
Iron	10	U	10	U					10	U	6010A
Lead	2	U	2	U					2	U	6010A
Manganese	1	U	1	U					3		6010A
Nickel	1	U	1	U					1	U	6010A
Selenium	2	U	2	U					2	U	6010A
Antimony	10	U	10	U					10	U	6010A
Silver	1	U	1	U					1	U	6010A
Thallium	10	U	10	U					10	U	6010A
Vanadium	10	U	10	U					10	U	6010A
Zinc	5	U	5	U					5	U	6010A
Calcium	100	U	100	U					100	U	6010A
Magnesium	100	U	100	U					100	U	6010A
Sodium	100	U	100	U					200		6010A
Potassium	100	U	100	U					100	U	6010A
Mercury	0.5	U	0.5	U					0.5	U	7470A

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FORM IV

INORGANIC ICP INTERFERENCE CHECK SAMPLE

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Batch No.: R092497-1

Concentration Units: (ug/L)

Analyte	True		Initial Found			Final Found		
	SOL A	SOL. AB	SOL A	SOL AB	%R	SOL A	SOL AB	%R
Silver		1,000		1,013	101.3		1,015	101.5
Aluminum	500,000	500,000	471,000	475,200	95.0	470,700	478,000	95.6
Barium		500		473	94.6		492	98.5
Beryllium		500		437	87.4		450	90.1
Calcium	500,000	500,000	430,500	431,600	86.3	429,800	432,600	86.5
Cadmium		1,000		854	85.4		870	87.0
Cobalt		500		423	84.7		431	86.2
Chromium		500		433	86.5		442	88.5
Copper		500		488	97.5		444	88.9
Iron	200,000	200,000	169,700	170,400	85.2	172,100	173,200	86.6
Magnesium	500,000	500,000	473,300	473,300	94.7	474,100	475,600	95.1
Manganese		500		454	90.8		459	91.9
Nickel		1,000		835	83.5		850	85.0
Lead		1,000		858	85.8		877	87.7
Vanadium		500		453	90.7		456	91.3
Zinc		1,000		940	94.0		943	94.3

Control Limits: All elements +/- 20% of True Value

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FORM V

INORGANIC SPIKE SAMPLE RECOVERY

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Batch No.: P092497-1
Lab Sample ID: 43826	Concentration Units: ug/L
Matrix: Water	

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q
Silver	80-120	105		1	U	100	105	
Aluminum	80-120	10,100		50	U	10,000	101	
Arsenic	80-120	98.3		2	U	100	98.3	
Barium	80-120	502		385		100	117	
Beryllium	80-120	94.9		1	U	100	94.9	
Calcium	80-120	213,000		194,000		10,000	NA	
Cadmium	80-120	93.0		1	U	100	93.0	
Cobalt	80-120	92.9		1	U	100	92.9	
Chromium	80-120	93.9		1	U	100	93.9	
Copper	80-120	96.6		1	U	100	96.6	
Iron	80-120	10,700		6,760		4,000	98.5	
Potassium	80-120	43,400		28,200		12,500	NA	
Magnesium	80-120	135,000		118,700		12,500	NA	
Manganese	80-120	669		549		100	120	
Sodium	80-120	39,700		27,100		10,000	NA	
Nickel	80-120	93.3		1	U	100	93.3	
Lead	80-120	93.8		3		100	90.8	
Antimony	80-120	95.6		10	U	100	95.6	
Selenium	80-120	93.3		2	U	100	93.3	
Thallium	80-120	88.3		10	U	100	88.3	
Vanadium	80-120	96.1		10	U	100	96.1	
Zinc	80-120	96.3		5	U	100	96.3	
Mercury	80-120	1.6		0.5	U	2	80.0	

NA= Spiking level <25% of sample concentration. See LCS data for recovery information.

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FORM VI

INORGANIC SPIKE DUPLICATE RECOVERY

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Batch No.: P092497-1
Lab Sample ID: 43826	Concentration Units: ug/L
Matrix: Water	

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q
Silver	< ± 20	105		107		2.2	
Aluminum	< ± 20	10,100		10,200		1.0	
Arsenic	< ± 20	98.3		101		3.1	
Barium	< ± 20	502		498		0.8	
Beryllium	< ± 20	94.9		96.8		2.0	
Calcium	< ± 20	213,000		211,000		0.9	
Cadmium	< ± 20	93.0		94.7		1.8	
Cobalt	< ± 20	92.9		94.5		1.7	
Chromium	< ± 20	93.9		95.1		1.3	
Copper	< ± 20	96.6		97.6		1.0	
Iron	< ± 20	10,700		10,700		0.0	
Potassium	< ± 20	43,400		43,100		0.7	
Magnesium	< ± 20	135,000		134,000		0.7	
Manganese	< ± 20	669		664		0.8	
Sodium	< ± 20	39,700		41,600		4.7	
Nickel	< ± 20	93.3		94.5		1.3	
Lead	< ± 20	93.8		97.7		4.1	
Antimony	< ± 20	95.6		97.7		2.2	
Selenium	< ± 20	93.3		99.7		6.6	
Thallium	< ± 20	88.3		91.3		3.3	
Vanadium	< ± 20	96.1		97.0		0.9	
Zinc	< ± 20	96.3		98.4		2.2	
Mercury	< ± 20	1.6		1.6		0.0	

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FORM VII

INORGANIC LABORATORY CONTROL SAMPLE RECOVERY

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Batch No.: P092497-1
	Concentration Units: ug/L

	Aqueous (ug/L)		
Analyte	**True**	**Found**	**%R**
Silver	100	109	108.6
Aluminum	10,000	9,750	97.5
Arsenic	100	102	101.9
Barium	100	102	101.7
Beryllium	100	102	102.3
Calcium	10,000	10,100	101.0
Cadmium	100	103	103.4
Cobalt	100	101	101.4
Chromium	100	101	101.3
Copper	100	100	99.8
Iron	4,000	4,050	101.3
Potassium	12,500	11,500	92.0
Magnesium	10,000	9,700	97.0
Manganese	100	104	104.1
Sodium	12,500	10,600	84.8
Nickel	100	102	101.8
Lead	100	112	111.6
Antimony	100	98	98.2
Selenium	100	102	101.5
Thallium	100	94	93.8
Vanadium	100	101	100.9
Zinc	100	102	102.2

Control Limits Aqueous: All elements +/- 20% of True Value
Control Limits Solid: All elements +/- 30% of True Value

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FORM X

INORGANIC INSTRUMENT DETECTION LIMITS

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	ICP / CVAA

Analyte	Detection Limit (ug/L)	Method Type
Arsenic	1.5	ICP
Aluminum	13.5	ICP
Barium	1.0	ICP
Beryllium	0.3	ICP
Cadmium	0.3	ICP
Cobalt	0.5	ICP
Chromium	0.6	ICP
Copper	2.4	ICP
Iron	0.8	ICP
Lead	1.2	ICP
Manganese	2.4	ICP
Nickel	1	ICP
Selenium	1.6	ICP
Antimony	2.3	ICP
Silver	0.5	ICP
Thallium	2.2	ICP
Vanadium	0.7	ICP
Zinc	0.3	ICP
Calcium	85	ICP
Magnesium	3.3	ICP
Sodium	100	ICP
Potassium	12	ICP
Mercury	1.2	CVAA

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FORM XI

INORGANIC PREPARATION LOG

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Matrix (soil/water): Water
Prep. Method No.: 3010	

Sample Number	Preparation Date	Initial Weight/Volume	Final Volume (mL)
Preparation Blank	09/24/97	50	50
LCS	09/24/97	50	50
43826	09/24/97	50	50
43826MS	09/24/97	50	50
43826MSD	09/24/97	50	50
43827	09/24/97	50	50
43829	09/24/97	50	50

First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

FORM XI

MERCURY ANALYSIS PREPARATION LOG

Project I.D.: 1252008.050702	Client: Montgomery Watson
Lab Name: First Environmental	Matrix (soil/water): Water
Prep. Method No.: 7470	

Sample Number	Preparation Date	Initial Weight/Volume	Final Volume (mL)
Preparation Blank	09/24/97	100	100
43826	09/24/97	100	100
43826MS	09/24/97	100	100
43826MSD	09/24/97	100	100
43827	09/24/97	100	100
43829	09/24/97	100	100

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Semi-Volatiles Method 8270 Analysis QA/QC Summary

Montgomery Watson
Project ID: 1252008.050702

Date Received: 09/23/97

First Environmental Laboratories, Inc.
Naperville, Illinois

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: FIRST ENVIRONMENTAL Contract: MONT.WATSON

Project No.: 1252008 Site: _____ Location: _____ Group: _____

	SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	#	#	TOT OUT
01	SBLKW01	49	32	90	83	94	101			0
02	BW-GB MH20-0	51	36	91	85	110	102			0
03	BW-GH MH20-0	48	31	88	83	106	102			0
04	BW-GH MH20-0	47	32	85	80	105	100			0
05	BW-GH MH20-9	53	39	84	80	102	96			0
06	BW-FB MH20-0	46	32	80	71	99	102			0
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	QC LIMITS
S1 (2FP) = 2-Fluorophenol	(21-110)
S2 (PHL) = Phenol-d5	(10-110)
S3 (NBZ) = Nitrobenzene-d5	(34-114)
S4 (FBP) = 2-Fluorobiphenyl	(43-116)
S5 (TBP) = 2,4,6-Tribromophenol	(10-123)
S6 (TPH) = Terphenyl-d14	(33-141)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: FIRST ENVIRONMENTAL Contract: MONT.WATSON

Project No.: 1252008 Site: _____ Location: _____ Group: _____

Matrix Spike - Sample No.: MH20-01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Phenol	200	0	69	35	(12-110)
2-Chlorophenol	200	0	160	80	(27-123)
1,4-Dichlorobenzene	100	0	79	79	(36-97)
N-Nitroso-di-n-propylamine	100	0	78	78	(41-116)
1,2,4-Trichlorobenzene	100	0	80	80	(39-98)
4-Chloro-3-methylphenol	200	0	160	80	(23-97)
Acenaphthene	100	0	88	88	(46-118)
2,4-Dinitrotoluene	100	0	82	82	(24-96)
4-Nitrophenol	200	0	65	33	(10-80)
Pentachlorophenol	200	0	200	100	(9-103)
Pyrene	100	0	100	100	(26-127)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	71	36	3	42	(12-110)
2-Chlorophenol	200	160	80	0	40	(27-123)
1,4-Dichlorobenzene	100	78	78	1	28	(36-97)
N-Nitroso-di-n-propylamine	100	77	77	1	38	(41-116)
1,2,4-Trichlorobenzene	100	79	79	1	28	(39-98)
4-Chloro-3-methylphenol	200	170	85	6	42	(23-97)
Acenaphthene	100	87	87	1	31	(46-118)
2,4-Dinitrotoluene	100	83	83	1	38	(24-96)
4-Nitrophenol	200	75	38	14	50	(10-80)
Pentachlorophenol	200	200	100	0	50	(9-103)
Pyrene	100	100	100	0	31	(26-127)

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

Comments: _____

4B

SAMPLE NO

SEMIVOLATILE METHOD BLANK SUMMARY

SBLKW01

Lab Name: FIRST ENVIRONMENTAL Contract: MONT.WATSON

Project No.: 1252008 Site: Location: Group:

Lab File ID: B18129.D Lab Sample ID: SBLKW01

Instrument ID: "B" Date Extracted: 9/23/97

Matrix: (soil/water) WATER Date Analyzed: 9/23/97

Level: (low/med) Time Analyzed: 1619

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

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BW-GB MH20-01	43826M.W	B18130.D	09/23/97
02	BW-GH MH20-01MS	43826MS	B18131.D	09/23/97
03	BW-GH MH20-01MS	43826MSD	B18132.D	09/23/97
04	BW-GH MH20-91	43827M.W	B18133.D	09/23/97
05	BW-FB MH20-01	43829M.W	B18134.D	09/23/97
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COMMENTS:

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: FIRST ENVIRONMENTAL Contract: MONT.WATSON

Project No.: 1252008 Site: _____ Location: _____ Group: _____

Lab File ID: B18127.D DFTPP Injection Date: 9/23/97

Instrument ID: "B" DFTPP Injection Time: 1458

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	56.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	67.3
70	Less than 2.0% of mass 69	0.0 (0.1)1
127	25.0 - 75.0% of mass 198	51.4
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	7.0
275	10.0 - 30.0% of mass 198	17.3
365	Greater than 0.75% of mass 198	2.1
441	Present, but less than mass 443	6.7
442	40.0 - 110.0% of mass 198	40.2
443	15.0 - 24.0% of mass 442	7.8 (19.5)2

1-Value is % mass 69 2-Value is % mass 442

This check applies to the following SAMPLES, MS, MSD, BLANKS and STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	SSTD050	B18128.D	9/23/97	1518
02	SBLKW01	SBLKW01	B18129.D	9/23/97	1619
03	BW-GB MH20-0	43826M.W	B18130.D	9/23/97	1658
04	BW-GH MH20-0	43826MS	B18131.D	9/23/97	1740
05	BW-GH MH20-0	43826MSD	B18132.D	9/23/97	1820
06	BW-GH MH20-9	43827M.W	B18133.D	9/23/97	1901
07	BW-FB MH20-01	43829M.W	B18134.D	9/23/97	1945
08					
09					
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INITIAL CALIBRATION

Response Factor Report GCMS B

Method : D:\METHODS\8270A.M
Title : Semi-Volatile Analysis by Method 8270/625
Last Update : Fri Sep 26 11:14:20 1997
Response via : Initial Calibration

Calibration Files

20	=B17392.D	50	=B18172.D	80	=B17390.D
100	=B17389.D	120	=B17388.D	160	=B17387.D

		Compound	20	50	80	100	120	160	Avg	%R
1)	I	1,4-Dichlorobenzene-d	----------	----------	----------	ISTD	----------	----------		
2)	T	Pyridine	1.362	1.188	1.276	1.266	1.284	1.279	1.3	4.
3)	T	N-Nitrosodimethylam	0.812	0.772	0.773	0.770	0.776	0.792	0.8	2.
4)	S	2-Fluorophenol	1.388	1.381	1.409	1.412	1.428	1.391	1.4	1.
5)	T	bis(2-Chloroethyl)e	1.912	1.858	1.853	1.846	1.863	1.793	1.9	2.
6)	S	Phenol-d5	1.890	1.747	1.696	1.687	1.655	1.557	1.7	6.
7)	CM	Phenol	1.853	1.715	1.660	1.639	1.603	1.505	1.7	7.
8)	M	2-Chlorophenol	1.392	1.312	1.295	1.282	1.263	1.209	1.3	4.
9)	T	1,3-Dichlorobenzene	1.518	1.463	1.433	1.414	1.427	1.345	1.4	3.
10)	CM	1,4-Dichlorobenzene	1.570	1.489	1.481	1.436	1.441	1.384	1.5	4.
11)	T	1,2-Dichlorobenzene	1.518	1.438	1.419	1.390	1.396	1.320	1.4	4.
12)	T	Benzyl alcohol	0.957	0.923	0.920	0.914	0.908	0.862	0.9	3.
13)	T	bis(2-chloroisoprop	1.829	1.723	1.695	1.654	1.637	1.540	1.7	5.
14)	T	2-Methylphenol	1.321	1.252	1.256	1.256	1.250	1.194	1.3	3.
15)	T	Hexachloroethane	0.709	0.685	0.675	0.658	0.659	0.621	0.7	4.
16)	PM	N-Nitroso-di-n-prop	1.185	1.090	1.074	1.022	0.993	0.952	1.1	7.
17)	T	4-Methylphenol	1.401	1.254	1.189	1.165	1.140	1.089	1.2	9.
18)	I	Naphthalene-d8	----------	----------	----------	ISTD	----------	----------		
19)	S	Nitrobenzene-d5	0.511	0.477	0.461	0.445	0.449	0.429	0.5	6.
20)	T	Nitrobenzene	0.663	0.612	0.587	0.564	0.564	0.535	0.6	7.
21)	T	Isophorone	1.010	0.911	0.900	0.902	0.908	0.887	0.9	4.
22)	C	2-Nitrophenol	0.259	0.247	0.241	0.237	0.238	0.229	0.2	4.
23)	T	2,4-Dimethylphenol	0.456	0.426	0.413	0.405	0.405	0.387	0.4	5.
24)	T	bis(2-Chloroethoxy)	0.631	0.571	0.548	0.527	0.520	0.493	0.5	8.
25)	C	2,4-Dichlorophenol	0.389	0.365	0.360	0.353	0.354	0.345	0.4	4.
26)	T	Benzoic Acid		0.097	0.108	0.119	0.120	0.124	0.1	9.
27)	M	1,2,4-Trichlorobenz	0.405	0.394	0.386	0.381	0.388	0.374	0.4	2.
28)	T	Naphthalene	1.137	1.026	0.970	0.942	0.941	0.900	1.0	8.
29)	T	4-Chloroaniline	0.520	0.477	0.461	0.451	0.443	0.423	0.5	7.
30)	C	Hexachlorobutadiene	0.234	0.236	0.241	0.236	0.243	0.232	0.2	1.
31)	CM	4-Chloro-3-methylph	0.409	0.362	0.349	0.348	0.342	0.330	0.4	7.
32)	T	2-Methylnaphthalene	1.109	0.973	0.938	0.925	0.927	0.903	1.0	7.
33)	I	Acenaphthene-d10	----------	----------	----------	ISTD	----------	----------		
34)	P	Hexachlorocyclopent	0.337	0.364	0.374	0.380	0.398	0.383	0.4	5.
35)	C	2,4,6-Trichlorophen	0.445	0.438	0.447	0.446	0.451	0.431	0.4	1.
36)	T	2,4,5-Trichlorophen	0.481	0.477	0.481	0.484	0.492	0.470	0.5	1.
37)	S	2-Fluorobiphenyl	1.423	1.339	1.319	1.305	1.320	1.244	1.3	4.
38)	T	2-Chloronaphthalene	1.222	1.140	1.124	1.100	1.111	1.050	1.1	5.
39)	T	2-Nitroaniline	0.430	0.406	0.398	0.397	0.399	0.379	0.4	4.
40)	T	Acenaphthylene	1.971	1.785	1.728	1.708	1.701	1.599	1.7	7.
41)	T	Dimethylphthalate	1.589	1.452	1.443	1.430	1.420	1.364	1.4	5.

(#) = Out of Range

INITIAL CALIBRATION P6.2

Response Factor Report GCMS B

Method : D:\METHODS\8270A.M
Title : Semi-Volatile Analysis by Method 8270/625
Last Update : Fri Sep 26 11:14:20 1997
Response via : Initial Calibration

Calibration Files
20 =B17392.D 50 =B18172.D 80 =B17390.D
100 =B17389.D 120 =B17388.D 160 =B17387.D

		Compound	20	50	80	100	120	160	Avg	%R
42)	T	2,6-Dinitrotoluene	0.384	0.356	0.371	0.374	0.368	0.358	0.4	2.
43)	CM	Acenaphthene	1.161	1.053	1.040	1.032	1.033	0.987	1.1	5.
44)	T	3-Nitroaniline	0.373	0.333	0.333	0.334	0.338	0.324	0.3	5.
45)	P	2,4-Dinitrophenol	0.148	0.197	0.211	0.222	0.223	0.226	0.2	14.
46)	T	Dibenzofuran	1.753	1.616	1.588	1.578	1.581	1.501	1.6	5.
47)	M	2,4-Dinitrotoluene	0.508	0.483	0.484	0.486	0.480	0.462	0.5	3.
48)	PM	4-Nitrophenol	0.227	0.237	0.246	0.252	0.253	0.248	0.2	4.
49)	T	Fluorene	1.410	1.298	1.294	1.294	1.275	1.232	1.3	4.
50)	T	4-Chlorophenyl-phen	0.726	0.694	0.691	0.690	0.694	0.662	0.7	2.
51)	T	Diethylphthalate	1.659	1.531	1.506	1.477	1.457	1.404	1.5	5.
52)	T	4-Nitroaniline	0.386	0.359	0.361	0.355	0.356	0.336	0.4	4.
53)	I	Phenanthrene-d10	----------	----------	----------	ISTD	----------	----------		
54)	T	4,6-Dinitro-2-methy	0.166	0.186	0.197	0.194	0.198	0.195	0.2	6.
55)	C	n-Nitrosodiphenylam	0.606	0.560	0.555	0.553	0.562	0.522	0.6	4.
56)	S	2,4,6-Tribromopheno	0.129	0.137	0.142	0.143	0.146	0.136	0.1	4.
57)	T	4-Bromophenyl-pheny	0.214	0.215	0.217	0.214	0.217	0.198	0.2	3.
58)	T	Hexachlorobenzene	0.264	0.264	0.268	0.262	0.266	0.245	0.3	3.
59)	CM	Pentachlorophenol	0.123	0.153	0.172	0.169	0.177	0.173	0.2	12.
60)	T	Phenanthrene	1.183	1.114	1.099	1.078	1.095	1.035	1.1	4.
61)	T	Anthracene	1.197	1.113	1.098	1.085	1.089	1.029	1.1	4.
62)	T	Carbazole	1.100	1.020	1.015	0.994	1.003	0.957	1.0	4.
63)	T	Di-n-butylphthalate	1.688	1.558	1.528	1.442	1.444	1.345	1.5	7.
64)	C	Fluoranthene	1.345	1.285	1.293	1.231	1.237	1.145	1.3	5.
65)	I	Chrysene-d12	----------	----------	----------	ISTD	----------	----------		
66)	I	Benzidine	0.217	0.203	0.206	0.203	0.194	0.178	0.2	6.
67)	M	Pyrene	1.435	1.345	1.294	1.303	1.310	1.243	1.3	4.
68)	S	Terphenyl-d14	0.965	0.913	0.890	0.886	0.870	0.848	0.9	4.
69)	T	Butylbenzylphthalat	0.862	0.789	0.763	0.771	0.772	0.738	0.8	5.
70)	T	3,3'-Dichlorobenzid	0.525	0.481	0.472	0.457	0.455	0.433	0.5	6.
71)	T	Benzo[a]anthracene	1.321	1.238	1.168	1.194	1.125	1.069	1.2	7.
72)	T	Chrysene	1.257	1.181	1.175	1.106	1.161	1.101	1.2	4.
73)	T	bis(2-Ethylhexyl)ph	1.151	1.061	1.053	1.038	1.031	0.988	1.1	5.
74)	I	Perylene-d12	----------	----------	----------	ISTD	----------	----------		
75)	C	Di-n-octylphthalate	2.114	1.987	1.944	1.938	1.933	1.854	2.0	4.
76)	T	Benzo[b]fluoranthen	1.462	1.281	1.393	1.520	1.419	1.338	1.4	6.
77)	T	Benzo[k]fluoranthen	0.980	1.122	0.977	0.820	0.923	0.840	0.9	11.
78)	C	Benzo[a]pyrene	1.055	1.082	1.070	1.068	1.072	1.032	1.1	1.
79)	T	Indeno[1,2,3-cd]pyr	0.792	0.907	1.109	1.124	1.139	1.123	1.0	14.
80)	T	Dibenz[a,h]anthrace	0.804	0.869	0.925	0.943	0.956	0.939	0.9	6.
81)	T	Benzo[g,h,i]perylen	0.755	0.792	0.830	0.842	0.855	0.848	0.8	4.

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\DATA\970923\B18128.D Vial: 2
Acq On : 23 Sep 97 3:18 pm Operator: ADAM
Sample : BNA STD 50ppm Inst : GCMS B
Misc : #1447 Multiplr: 1.00

Method : D:\METHODS\8270A.M
Title : Semi-Volatile Analysis by Method 8270/625
Last Update : Fri Sep 26 11:14:20 1997
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	107	0.00
2	T	Pyridine	1.276	1.265	0.9	113	-0.06
3	T	N-Nitrosodimethylamine	0.782	0.783	-0.0	108	-0.05
4	S	2-Fluorophenol	1.402	1.479	-5.5	114	-0.07
5	T	bis(2-Chloroethyl)ether	1.854	1.623	12.5	93	-0.01
6	S	Phenol-d5	1.705	1.782	-4.5	109	-0.
7	CM	Phenol	1.662	1.816	-9.2	113	-0.04
8	M	2-Chlorophenol	1.292	1.465	-13.3	119	-0.01
9	T	1,3-Dichlorobenzene	1.433	1.589	-10.9	116	0.00
10	CM	1,4-Dichlorobenzene	1.467	1.651	-12.6	118	0.00
11	T	1,2-Dichlorobenzene	1.414	1.601	-13.3	119	0.00
12	T	Benzyl alcohol	0.914	0.946	-3.5	109	0.00
13	T	bis(2-chloroisopropyl)ether	1.680	1.599	4.8	99	0.00
14	T	2-Methylphenol	1.255	1.272	-1.4	108	0.00
15	T	Hexachloroethane	0.668	0.745	-11.6	116	0.00
16	PM	N-Nitroso-di-n-propylamine	1.053	1.081	-2.7	106	0.02
17	T	4-Methylphenol	1.206	1.386	-14.9	118	-0.04
18	I	Naphthalene-d8	1.000	1.000	0.0	103	0.02
19	S	Nitrobenzene-d5	0.462	0.538	-16.5	116	0.02
20	T	Nitrobenzene	0.588	0.511	13.1	86	0.02
21	T	Isophorone	0.920	0.921	-0.2	104	0.[illegible]
22	C	2-Nitrophenol	0.242	0.269	-11.4	112	0.[illegible]
23	T	2,4-Dimethylphenol	0.415	0.460	-10.8	111	0.00
24	T	bis(2-Chloroethoxy)methane	0.548	0.597	-8.9	107	0.02
25	C	2,4-Dichlorophenol	0.361	0.396	-9.6	111	0.00
26	T	Benzoic Acid	0.114	0.074	34.7#	78	0.00
27	M	1,2,4-Trichlorobenzene	0.388	0.417	-7.5	109	0.02
28	T	Naphthalene	0.986	1.141	-15.7	114	0.02
29	T	4-Chloroaniline	0.462	0.470	-1.6	101	0.00
30	C	Hexachlorobutadiene	0.237	0.250	-5.7	109	0.02
31	CM	4-Chloro-3-methylphenol	0.357	0.388	-8.8	110	0.00
32	T	2-Methylnaphthalene	0.962	0.762	20.9	80	0.03
33	I	Acenaphthene-d10	1.000	1.000	0.0	95	0.03
34	P	Hexachlorocyclopentadiene	0.373	0.368	1.2	96	0.03
35	C	2,4,6-Trichlorophenol	0.443	0.471	-6.4	102	0.02
36	T	2,4,5-Trichlorophenol	0.481	0.505	-5.0	101	0.00
37	S	2-Fluorobiphenyl	1.325	1.469	-10.9	104	0.03
38	T	2-Chloronaphthalene	1.124	1.276	-13.4	106	0.03
39	T	2-Nitroaniline	0.401	0.449	-11.9	105	0.03
40	T	Acenaphthylene	1.749	1.990	-13.8	106	0.03

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\DATA\970923\B18128.D
Acq On : 23 Sep 97 3:18 pm
Sample : BNA STD 50ppm
Misc : #1447

Vial: 2
Operator: ADAM
Inst : GCMS B
Multiplr: 1.00

Method : D:\METHODS\8270A.M
Title : Semi-Volatile Analysis by Method 8270/625
Last Update : Fri Sep 26 11:14:20 1997
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
41	T	Dimethylphthalate	1.450	1.557	-7.4	102	0.03
42	T	2,6-Dinitrotoluene	0.369	0.372	-0.8	99	0.03
43	CM	Acenaphthene	1.051	1.180	-12.3	106	0.03
44	T	3-Nitroaniline	0.339	0.347	-2.3	99	0.03
45	P	2,4-Dinitrophenol	0.204	0.153	25.0	74	0.03
46	T	Dibenzofuran	1.603	1.746	-9.0	103	0.03
47	M	2,4-Dinitrotoluene	0.484	0.494	-2.0	97	0.03
48	PM	4-Nitrophenol	0.244	0.223	8.3	90	0.00
49	T	Fluorene	1.300	1.448	-11.3	106	0.04
50	T	4-Chlorophenyl-phenylether	0.693	0.703	-1.5	96	0.04
51	T	Diethylphthalate	1.506	1.615	-7.3	100	0.03
52	T	4-Nitroaniline	0.359	0.305	15.1	81	0.03
53	I	Phenanthrene-d10	1.000	1.000	0.0	86	0.04
54	T	4,6-Dinitro-2-methylphenol	0.189	0.188	0.7	86	0.04
55	C	n-Nitrosodiphenylamine	0.559	0.648	-15.7	99	0.03
56	S	2,4,6-Tribromophenol	0.139	0.150	-7.7	93	0.03
57	T	4-Bromophenyl-phenylether	0.213	0.241	-13.4	96	0.03
58	T	Hexachlorobenzene	0.261	0.296	-13.1	96	0.03
59	CM	Pentachlorophenol	0.161	0.141	12.2	79	0.03
60	T	Phenanthrene	1.101	1.238	-12.5	95	0.04
61	T	Anthracene	1.102	1.216	-10.3	94	0.04
62	T	Carbazole	1.015	0.871	14.2	73	0.04
63	T	Di-n-butylphthalate	1.501	1.710	-14.0	94	0.04
64	C	Fluoranthene	1.256	1.311	-4.4	87	0.04
65	I	Chrysene-d12	1.000	1.000	0.0	68	0.04
66	I	Benzidine	0.200	0.140	30.0	47#	0.04
67	M	Pyrene	1.321	1.700	-28.7	87	0.04
68	S	Terphenyl-d14	0.895	1.134	-26.6	85	0.04
69	T	Butylbenzylphthalate	0.783	0.991	-26.6	86	0.04
70	T	3,3'-Dichlorobenzidine	0.470	0.440	6.4	63	0.04
71	T	Benzo[a]anthracene	1.186	1.391	-17.3	77	0.04
72	T	Chrysene	1.164	1.368	-17.6	79	0.04
73	T	bis(2-Ethylhexyl)phthalate	1.054	1.369	-29.9	88	0.05
74	I	Perylene-d12	1.000	1.000	0.0	75	0.06
75	C	Di-n-octylphthalate	1.962	2.272	-15.9	86	0.05
76	T	Benzo[b]fluoranthene	1.402	1.730	-23.4	102	0.02
77	T	Benzo[k]fluoranthene	0.944	0.836	11.4	56	0.05
78	C	Benzo[a]pyrene	1.063	1.151	-8.2	80	0.05
79	T	Indeno[1,2,3-cd]pyrene	1.032	1.101	-6.7	92	0.08

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\DATA\970923\B18128.D Vial: 2
Acq On : 23 Sep 97 3:18 pm Operator: ADAM
Sample : BNA STD 50ppm Inst : GCMS B
Misc : #1447 Multiplr: 1.00

Method : D:\METHODS\8270A.M
Title : Semi-Volatile Analysis by Method 8270/625
Last Update : Fri Sep 26 11:14:20 1997
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
80	T	Dibenz[a,h]anthracene	0.906	1.030	-13.7	89	0.08
81	T	Benzo[g,h,i]perylene	0.820	0.990	-20.7	94	0.08

(#) = Out of Range SPCC's out = 0 CCC's out = 0

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: FIRST ENVIRONMENTAL Contract: MONT.WATSON

Project No.: 1252008 Site: _____ Location: _____ Group: _____

Lab File ID (Standard): B18128.D Date Analyzed: 9/23/97

Instrument ID: "B" Time Analyzed: 1518

		IS1 (DCB) AREA #	RT #	IS2 (NPT) AREA #	RT #	IS3 (ANT) AREA #	RT #
	12 HOUR STD	399960	8.70	1303639	11.82	802493	15.95
	UPPER LIMIT	799920	9.20	2607278	12.32	1604986	16.45
	LOWER LIMIT	199980	8.20	651820	11.32	401247	15.45
	SAMPLE NO.						
01	SBLKW01	583012	8.69	1914127	11.81	1252355	15.95
02	BW-GB MH20-01	533260	8.68	1749146	11.81	1119366	15.95
03	BW-GH MH20-01MS	556909	8.71	1838481	11.82	1142258	15.95
04	BW-GH MH20-01MSD	529002	8.70	1755879	11.82	1114115	15.95
05	BW-GH MH20-91	551586	8.70	1819599	11.82	1119325	15.95
06	BW-FB MH20-01	510196	8.70	1786128	11.81	1171951	15.95
07							
08							
09							
10							
11							
12							
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15							
16							
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18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: FIRST ENVIRONMENTAL Contract: MONT.WATSON

Project No.: 1252008 Site: Location: Group:

Lab File ID (Standard): B18128.D Date Analyzed: 9/23/97

Instrument ID: "B" Time Analyzed: 1518

		IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
	12 HOUR STD	1216497	19.32	928767	24.30	953470	26.06
	UPPER LIMIT	2432994	19.82	1857534	24.80	1906940	26.56
	LOWER LIMIT	608249	18.82	464384	23.80	476735	25.56
	SAMPLE NO.						
01	SBLKW01	1967413	19.32	1546578	24.30	1577148	26.06
02	BW-GB MH20-01	1720358	19.32	1428507	24.30	1476723	26.06
03	BW-GH MH20-01MS	1697746	19.33	1308969	24.30	1381065	26.06
04	BW-GH MH20-01MSD	1701768	19.33	1369250	24.30	1409110	26.07
05	BW-GH MH20-91	1684630	19.32	1354475	24.30	1420841	26.06
06	BW-FB MH20-01	1786961	19.32	1369414	24.29	1382103	26.06
07							
08							
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21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits

First
Environmental
Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

Volatiles Method 8260 Analysis QA/QC Summary

Montgomery Watson
Project ID: 1252008.050702

Date Received: 09/23/97

First Environmental Laboratories, Inc.
Naperville, Illinois

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: First Environmental Contract: MONT WATSON

Lab Code: _____ Case No.: 1252008. SAS No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SMC1 #	SMC2 #	SMC3 #	TOT OUT
01	VBLK01	99	100	97	0
02	BW-GWMH2O-01	96	100	97	0
03	BW-GWMH2O-91	92	100	98	0
04	BW-TBMH2O-01	94	99	97	0
05	BW-FBMH2O-01	91	99	97	0
06	BW-GWMH2O-01	94	98	97	0
07	BW-GWMH2O-01	92	101	98	0

			QC LIMITS
SMC1	=	1,2-Dichloroethane-d4	(76-114)
SMC2	=	d8-Toluene	(88-110)
SMC3	=	4-Bromofluorobenzene	(86-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: First Environmental Contract: Weaver Boos

Lab Code: _____ Case No.: 9708700 SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No. BW-GWMH2O-01

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50	0.0	50	100	61 - 145
Benzene	50	6.9	58	102	76 - 127
Trichloroethene	50	0.0	45	90	71 - 120
Toluene	50	0.0	51	102	76 - 125
Chlorobenzene	50	3.6	53	98	75 - 130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50	53	106	6	14	61 - 145
Benzene	50	61	108	6	11	76 - 127
Trichloroethene	50	47	94	4	14	71 - 120
Toluene	50	53	106	4	13	76 - 125
Chlorobenzene	50	54	100	2	13	75 - 130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLK01

Lab Name: First Environmental Contract: MONT WAT

Lab Code: Case No.: 1252008. SAS No.: SDG No.:

Lab File ID: C15156.D Lab Sample ID: VBLK

Date Analyzed: 09/23/97 Time Analyzed: 14:08

GC Column: HP-624 ID: 0.2 (mm) Heated Purge: (Y/N) N

Instrument ID: "C"

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	BW-GWMH2O-01	43826	C15163.D	17:40
02	BW-GWMH2O-91	43827	C15164.D	18:10
03	BW-TBMH2O-01	43828	C15165.D	18:40
04	BW-FBMH2O-01	43829	C15166.D	19:10
05	BW-GWMH2O-01MS	43826MS	C15167.D	19:40
06	BW-GWMH2O-01MSD	43826MSD	C15168.D	20:10

COMMENTS:

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

BROMOFLUOROBENZENE (BFB)

Lab Name: First Environmental Contract: MONT WAT

Lab Code: Case No.: 1252008. SAS No.: SDG No.:

Lab File ID: C15154.D BFB Injection Date: 09/23/97

Instrument ID: "C" BFB Injection Time: 13:21

GC Column: HP-624 ID: 0.20 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.4
75	30.0 - 66.0% of mass 95	37.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	82.6
175	4.0 - 9.0% of mass 174	6.1 (7.3)1
176	93.0 - 101.0% of mass 174	80.9 (97.9)1
177	5.0 - 9.0% of mass 176	6.1 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	VSTD050	C15155.D	09/23/97	13:38
02	VBLK01	VBLK	C15156.D	09/23/97	14:08
03	BW-GWMH2O-01	43826	C15163.D	09/23/97	17:40
04	BW-GWMH2O-91	43827	C15164.D	09/23/97	18:10
05	BW-TBMH2O-01	43828	C15165.D	09/23/97	18:40
06	BW-FBMH2O-01	43829	C15166.D	09/23/97	19:10
07	BW-GWMH2O-01MS	43826MS	C15167.D	09/23/97	19:40
08	BW-GWMH2O-01MSD	43826MSD	C15168.D	09/23/97	20:10

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: First Environmental Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Instrument ID: "C" Calibration Date(s): 09/10/97 09/10/97

Heated Purge (Y/N): N Calibration Times: 12:32 15:05

GC Column: HP-624 ID: 0.20 (mm)

LAB FILE ID: RRF5 = C14904.D RRF10 = C14903.D RRF200 = C14899.D
RRF20 = C14902.D RRF50 = C14901.D RRF100 = C14900.D

COMPOUND	RRF5	RRF10	RRF20	RRF50	RRF100	RRF200	$\overline{RRF}$	% RSD
Dichlorodifluoromethane	2.046	2.263	2.925	2.899	2.958	2.459	2.592	15.1
Chloromethane *	3.770	3.842	4.713	4.486	4.481	3.344	4.106	13.0
Vinyl Chloride *	2.094	2.220	2.767	2.631	2.660	1.990	2.394	13.9
Bromomethane	0.881	0.994	0.923	0.611	0.585		0.799	23.5
Chloroethane	1.136	1.196	1.327	1.242	0.733		1.127	20.5
Trichlorofluoromethane	1.823	1.879	2.422	2.324	2.394	1.959	2.134	12.9
Acrolein	0.235	0.262	0.282	0.289	0.281		0.270	8.1
Acetone		0.694	0.625	0.590	0.541	0.402	0.570	19.2
1,1-Dichloroethene *	2.407	2.357	2.786	2.621	2.539	2.021	2.455	10.7
Acetonitrile	1.708	2.158	2.419	2.420	2.420	2.024	2.191	13.2
Iodomethane	0.742	0.960	1.185	1.237	1.189	0.888	1.033	19.3
Allyl chloride	1.753	2.158	2.419	2.420	2.420	2.024	2.199	12.5
Methylene chloride		3.017	2.794	2.362	2.335	1.798	2.461	19.1
Acrylonitrile	0.543	0.581	0.617	0.612	0.580	0.414	0.558	13.5
Carbon disulfide	4.783	4.945	5.937	5.835	5.758	4.581	5.307	11.3
Methyl-t-butyl ether (MTBE)	4.225	4.566	5.046	4.932	4.834	3.816	4.570	10.3
Hexane	1.982	1.895	2.379	2.267	2.269	1.729	2.087	12.2
trans-1,2-Dichloroethene	1.639	1.735	1.984	1.931	1.939	1.596	1.804	9.3
Vinyl Acetate	1.813	1.821	2.370	2.444	2.530		2.195	16.0
1,1-Dichloroethane *	2.620	2.684	3.040	3.029	2.968	2.458	2.800	8.8
Propionitrile		0.216	0.253	0.249	0.270	0.203	0.238	11.6
Methacrylonitrile	1.431	1.503	1.603	1.605	1.543	1.181	1.478	10.[illegible]
Chloroform *	3.330	3.375	3.897	3.855	3.799		3.651	7.5
1,1,1-Trichloroethane	1.957	1.997	2.528	2.510	2.599	2.231	2.304	12.3
2-Butanone	0.021	0.028	0.029	0.032	0.033	0.027	0.028	15.0
Carbon tetrachloride	0.049	0.064	0.098	0.117	0.149		0.095	42.1
1,2-Dichloroethane	0.260	0.271	0.289	0.283	0.299	0.290	0.282	5.0
Benzene	1.057	1.116	1.219	1.201	1.249	1.172	1.169	6.1
Heptane	0.168	0.155	0.189	0.180	0.195	0.172	0.176	8.3
Trichloroethene	0.298	0.303	0.334	0.328	0.346	0.329	0.323	5.7
Methyl methacrylate	0.212	0.215	0.205	0.207	0.214	0.184	0.206	5.6
1,2-Dichloropropane *	0.277	0.295	0.307	0.307	0.320	0.299	0.301	4.9
Bromodichloromethane	0.209	0.231	0.269	0.288	0.316		0.263	16.3
Dibromomethane	0.160	0.160	0.149	0.145	0.156	0.161	0.155	4.4
2-Chloroethyl vinyl ether	0.134	0.153	0.161	0.163	0.173	0.157	0.157	8.5
cis-1,3-Dichloropropene	0.252	0.282	0.318	0.339	0.380	0.385	0.326	16.2
Toluene *	0.700	0.682	0.742	0.732	0.766	0.722	0.724	4.1
trans-1,3-Dichloropropene	0.150	0.194	0.233	0.267	0.310	0.309	0.244	26.3
1,1,2-Trichloroethane	0.208	0.216	0.228	0.225	0.239	0.215	0.222	5.0

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: First Environmental Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Instrument ID: "C" Calibration Date(s): 09/10/97 09/10/97

Heated Purge (Y/N): N Calibration Times: 12:32 15:05

GC Column: HP-624 ID: 0.20 (mm)

LAB FILE ID: RRF5 = C14904.D RRF10 = C14903.D RRF200 = C14899.D
RRF20 = C14902.D RRF50 = C14901.D RRF100 = C14900.D

COMPOUND	RRF5	RRF10	RRF20	RRF50	RRF100	RRF200	$\overline{RRF}$	% RSD
1,2-Dibromoethane	0.225	0.242	0.263	0.258	0.275	0.256	0.253	6.9
Bromoform *	0.036	0.058	0.085	0.112	0.135	0.133	0.093	43.5
1,4-Dichloro-2-butene	0.053	0.062	0.068	0.070	0.075	0.067	0.066	11.3
4-Methyl-2-pentanone	0.336	0.357	0.360	0.371	0.370	0.311	0.351	6.6
Ethyl methacrylate	0.472	0.483	0.466	0.476	0.494	0.423	0.469	5.3
2-Hexanone	0.241	0.252	0.259	0.256	0.262	0.218	0.248	6.7
Tetrachloroethene	0.524	0.525	0.553	0.549	0.547	0.480	0.530	5.1
Chlorodibromomethane	0.117	0.144	0.188	0.224	0.263		0.187	31.4
Chlorobenzene *	0.841	0.871	0.931	0.948	0.995	0.944	0.922	6.1
Ethyl benzene *	1.426	1.418	1.598	1.572	1.682	1.563	1.543	6.6
m&p-Xylene	0.273	0.268	0.307	0.303	0.321	0.300	0.295	7.0
o-Xylene	0.522	0.532	0.602	0.599	0.625	0.583	0.577	7.1
Styrene	0.924	0.943	1.092	1.065	1.122	1.043	1.031	7.8
1,1,1,2-Tetrachloroethane	0.243	0.221	0.231	0.240	0.269	0.267	0.245	7.9
Isopropyl benzene	1.187	1.189	1.340	1.342	1.418	1.314	1.298	7.1
1,1,2,2-Tetrachloroethane *	0.316	0.321	0.367	0.364	0.376	0.316	0.343	8.2
1,2,3-Trichloropropane	0.082	0.092	0.099	0.094	0.096	0.084	0.091	7.4
Bromobenzene	0.329	0.328	0.369	0.367	0.385	0.366	0.357	6.5
Pentachloroethane			0.027	0.032	0.052	0.067	0.044	41.8
1,3-Dichlorobenzene	0.553	0.555	0.638	0.629	0.652	0.602	0.605	7.1
1,4-Dichlorobenzene	0.592	0.580	0.671	0.662	0.679	0.620	0.634	6.7
Benzyl chloride		0.452	0.532	0.574	0.620	0.554	0.546	11.4
1,2-Dichlorobenzene	0.534	0.527	0.594	0.598	0.607	0.543	0.567	6.4
1,2-Dibromo-3-chloropropane	0.039	0.041	0.044	0.043	0.044	0.035	0.041	8.5
1,2-Dichloroethane-d4	0.569	0.591	0.624	0.588	0.548	0.473	0.565	9.2
d8-Toluene	1.138	1.148	1.132	1.133	1.132	1.122	1.134	0.8
4-Bromofluorobenzene	0.432	0.445	0.451	0.437	0.446	0.444	0.442	1.5

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

Evaluate Continuing Calibration Report

Data File : D:\DATA\970923\C15155.D OK Vial: 1
Acq On : 23 Sep 97 1:38 pm Operator: Neal
Sample : VSTD050 Inst : GCMS C
Misc : 5.0mLs Purged, 1.0uL 01437 Multiplr: 1.00
MS Integration Params: rteint.p

Method : D:\METHODS\C8240W.M (RTE Integrator)
Title : Volatile Organic Analysis; Method 8240 Aqueous
Last Update : Wed Sep 10 15:57:03 1997
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 30% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Bromochloromethane	1.000	1.000	0.0	109	-0.03
2	T	Dichlorodifluoromethane	2.592	3.058	-18.0	115	0.00
3	P	Chloromethane	4.106	3.460	15.7	84	0.02
4	C	Vinyl Chloride	2.394	2.862	-19.5	119	0.00
5	T	Bromomethane	0.799	0.738	7.6	132	0.01
6	T	Chloroethane	1.127	1.366	-21.2	120	0.00
7	T	Trichlorofluoromethane	2.133	2.453	-15.0	115	-0.01
8	T	Acrolein	0.270	0.301	-11.5	114	-0.01
9	T	Acetone	0.570	0.545	4.4	101	-0.02
10	CM	1,1-Dichloroethene	2.455	2.896	-18.0	120	-0.01
11	T	Acetonitrile	2.191	2.827	-29.0	127	-0.02
12	T	Iodomethane	1.033	0.897	13.2	79	0.00
13	T	Allyl chloride	2.199	2.827	-28.6	127	-0.02
14	T	Methylene chloride	2.461	2.610	-6.1	121	-0.02
15	T	Acrylonitrile	0.558	0.564	-1.1	101	-0.02
16	T	Carbon disulfide	5.307	6.329	-19.3	118	-0.01
17	T	Methyl-t-butyl ether (MTBE)	4.570	4.549	0.5	101	-0.02
18	T	Hexane	2.087	2.725	-30.6#	131	-0.01
19	T	trans-1,2-Dichloroethene	1.804	1.901	-5.4	107	-0.02
20	T	Vinyl Acetate	2.195	2.682	-22.2	120	-0.02
21	P	1,1-Dichloroethane	2.800	3.299	-17.8	119	-0.02
22	T	Propionitrile	0.238	0.198	16.8	87	-0.03
23	T	Methacrylonitrile	1.478	1.491	-0.9	101	-0.02
24	C	Chloroform	3.651	3.646	0.1	103	-0.02
25	S	1,2-Dichloroethane-d4	0.565	0.546	3.4	101	-0.03
26	T	1,1,1-Trichloroethane	2.304	2.473	-7.3	107	-0.03
27	I	1,4-Difluorobenzene	1.000	1.000	0.0	104	-0.03
28	T	2-Butanone	0.028	0.023	17.9	77	-0.02
29	T	Carbon tetrachloride	0.095	0.155	-63.2#	138	-0.02
30	T	1,2-Dichloroethane	0.282	0.310	-9.9	114	-0.02
31	M	Benzene	1.169	1.224	-4.7	106	-0.02
32	T	Heptane	0.176	0.194	-10.2	112	-0.02
33	M	Trichloroethene	0.323	0.353	-9.3	112	-0.02
34	T	Methyl methacrylate	0.206	0.188	8.7	95	-0.02
35	C	1,2-Dichloropropane	0.301	0.314	-4.3	107	-0.02
36	T	Bromodichloromethane	0.263	0.303	-15.2	110	-0.02
37	T	Dibromomethane	0.155	0.159	-2.6	114	-0.03
38	T	2-Chloroethyl vinyl ether	0.157	0.149	5.1	95	-0.02
39	T	cis-1,3-Dichloropropene	0.326	0.360	-10.4	110	-0.03
40	CM	Toluene	0.724	0.737	-1.8	105	-0.02

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : D:\DATA\970923\C15155.D Vial: 1
Acq On : 23 Sep 97 1:38 pm Operator: Neal
Sample : VSTD050 Inst : GCMS C
Misc : 5.0mLs Purged, 1.0uL 01437 Multiplr: 1.00
MS Integration Params: rteint.p

Method : D:\METHODS\C8240W.M (RTE Integrator)
Title : Volatile Organic Analysis; Method 8240 Aqueous
Last Update : Wed Sep 10 15:57:03 1997
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 30% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	T	trans-1,3-Dichloropropene	0.244	0.264	-8.2	103	-0.02
42	T	1,1,2-Trichloroethane	0.222	0.217	2.3	100	-0.02
43	S	d8-Toluene	1.134	1.115	1.7	102	-0.02
44	T	1,2-Dibromoethane	0.253	0.242	4.3	98	-0.02
45	P	Bromoform	0.093	0.110	-18.3	102	-0.02
46	S	4-Bromofluorobenzene	0.442	0.424	4.1	101	-0.03
47	T	1,4-Dichloro-2-butene	0.066	0.070	-6.1	103	-0.02
48	I	d5-Chlorobenzene	1.000	1.000	0.0	103	-0.02
49	T	4-Methyl-2-pentanone	0.351	0.327	6.8	91	-0.02
50	T	Ethyl methacrylate	0.469	0.449	4.3	98	-0.02
51	T	2-Hexanone	0.248	0.208	16.1	84	-0.02
52	T	Tetrachloroethene	0.530	0.407	23.2	77	-0.03
53	T	Chlorodibromomethane	0.187	0.217	-16.0	100	-0.03
54	M	Chlorobenzene	0.922	0.924	-0.2	101	-0.02
55	C	Ethyl benzene	1.543	1.633	-5.8	108	-0.03
56	T	m&p-Xylene	0.295	0.307	-4.1	105	-0.02
57	T	o-Xylene	0.577	0.591	-2.4	102	-0.03
58	T	Styrene	1.031	1.062	-3.0	103	-0.02
59	T	1,1,1,2-Tetrachloroethane	0.245	0.245	0.0	106	-0.02
60	T	Isopropyl benzene	1.298	1.328	-2.3	102	-0.02
61	P	1,1,2,2-Tetrachloroethane	0.343	0.343	0.0	98	-0.02
62	T	1,2,3-Trichloropropane	0.091	0.084	7.7	93	-0.02
63	T	Bromobenzene	0.357	0.385	-7.8	109	-0.02
64	T	Pentachloroethane	0.044	0.128	-190.9#	414#	-0.01
65	T	1,3-Dichlorobenzene	0.605	0.650	-7.4	107	-0.01
66	T	1,4-Dichlorobenzene	0.634	0.676	-6.6	106	-0.01
67	T	Benzyl chloride	0.546	0.603	-10.4	109	-0.01
68	T	1,2-Dichlorobenzene	0.567	0.601	-6.0	104	-0.01
69	T	1,2-Dibromo-3-chloropropane	0.041	0.040	2.4	96	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: First Environmental Contract: MONT WATSON

Lab Code: _____ Case No.: 1252008. SAS No.: _____ SDG No.: _____

Lab File ID (Standard): C15155.D Date Analyzed: 09/23/97

Instrument ID: "C" Time Analyzed: 13:38

GC Column: HP-624 ID: 0.20 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 AREA #	RT #	IS3 AREA #	RT #
	12 HOUR STD	54163	6.37	413241	8.14	336549	13.36
	UPPER LIMIT	108326	5.87	826482	7.64	673098	12.86
	LOWER LIMIT	27082	6.87	206621	8.64	168275	13.86
	EPA SAMPLE NO.						
01	VBLK01	54297	6.38	410663	8.15	338663	13.36
02	BW-GWMH2O-01	58165	6.38	417971	8.16	347785	13.37
03	BW-GWMH2O-91	59348	6.38	415073	8.15	347822	13.36
04	BW-TBMH2O-01	58685	6.39	414682	8.16	343248	13.37
05	BW-FBMH2O-01	59146	6.38	413488	8.16	339405	13.36
06	BW-GWMH2O-01	59389	6.39	421216	8.16	348385	13.36
07	BW-GWMH2O-01	59242	6.38	411900	8.15	346274	13.36

IS1 = Bromochloromethane
IS2 = 1,4-Difluorobenzene
IS3 = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

 # Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

First
Environmental
Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

Invoice

Invoice Number: 16326

Invoice Date: Sep 26, 1997

Page: 1

Voice:
Fax:

Sold To:
MONTGOMERY WATSON
2100 Corporate Drive
Addison, IL 60101

Customer ID: M001

Customer PO	Payment Terms	Due Date	Sales Rep ID
	Net 30 Days	10/26/97	

Quantity	Item	Description	Unit Price	Extension
		Project I.D. 1252008.050702:		
3.00		VOCs	180.00	540.00
3.00		Semi-VOCs	300.00	900.00
3.00		TAL Metals	306.00	918.00
3.00		Selected Conventionals	210.00	630.00
		Sub-Total.....$2,988.00		
1.00		100% RUSH surcharge	2,988.00	2,988.00
1.00		Trip Blank	360.00	360.00
		Sample Nos. 43826-29		
		THANK YOU!		

Subtotal	6,336.00
Sales Tax	
Total Invoice Amount	6,336.00
Payment Received	0.00
TOTAL	6,336.00

Check No: