Pilot Groundwater Recovery System Report

Hercules Incorporated
Hattiesburg, Mississippi

Prepared for:

Hercules Incorporated

March 2007

Eco·Systems, Inc.
Consultants, Engineers, and Scientists

ESI

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1.0 INTRODUCTION

Hercules Incorporated (Hercules) commissioned Eco-Systems, Inc. (Eco-Systems) to install and operate a pilot scale groundwater recovery system at the Hattiesburg, Mississippi facility. The site location is shown in Figure 1. The work is being conducted in accordance with the Corrective Action Plan Revision 01 (CAP) prepared by Groundwater & Environmental Services, Inc. (GES) dated January 20, 2005, which was approved by the Mississippi Department of Environmental Quality (MDEQ) in a letter dated January 25, 2005.

The purposes of the pilot pumping system were to evaluate the effectiveness of remediation of the groundwater containing volatile organic compounds (VOCs) at the site and the potential to exert hydraulic control of the aquifer. The pilot pumping system was installed to operate in monitoring well MW-08, which, historically, has had the highest concentrations of VOCs as well as the largest number of VOCs detected in monitoring wells installed at the site.

This report discusses the installation and operation of the system, the results achieved by the system, and recommendations regarding pumping of groundwater as a remedial alternative at the site.

2.0 SITE CONDITIONS

The Site is located within the Pine Hills physiographic region of the Coastal Plain physiographic province. The topography of the region is characterized by a maturely dissected plain which slopes generally toward the southeast. The topography is dominated by the valleys of the Bowie and Leaf Rivers coupled with the nearly flat or gently rolling bordering terrace uplands.

The geologic formations beneath the Site are as follows (in descending order): Pleistocene alluvial and terrace deposits, the Miocene-aged Hattiesburg and Catahoula Sandstone formations, the Oligocene-aged Baynes Hammock Sand and Chickasawhay Limestone formations, and the Oligocene-aged Bucatunna Clay member of the Byron formation of the Vicksburg group.

Borings installed at the site have encountered up to 20 feet of alluvial material overlying a dense clay interpreted as the Hattiesburg Formation. In some places the alluvium is overlain, or replaced by fine-grained, nutrient rich "stump dirt", which is the material that was removed from the tree stumps that historically served as raw material. In developed portions of the site, structural fill or other fill materials have been encountered to varying depths. Groundwater occurs in the alluvium/fill material. The thickness of the saturated interval of alluvium/fill material varies across the site. Groundwater monitoring wells installed at the site are installed within the alluvium/fill material and extend to the top of the underlying clay.

Surface water over much of the site drains towards Green's Creek, which flows generally eastward across the northern portion of the site. The dense clay, which underlies the alluvium, has been observed as the substrate in much of Green's Creek. Potentiometric and geologic data indicate that groundwater from much of the site is discharged to Green's Creek.

Slug tests conducted on site wells has resulted in hydraulic conductivity estimates that range from a high of 2.66×10^{-2} centimeters/second (cm/s) for monitoring well MW-13 to a low of 1.03×10^{-3} cm/s for monitoring well MW-14. The mean (geometric) of the hydraulic conductivity estimates is 3.8×10^{-3} cm/s. A pumping test was conducted at monitoring well MW-08 to provide estimates of aquifer characteristics. Discussion of the pumping test was included in the Annual Monitoring Report (Eco-Systems, August 2006). Due to the relatively thin aquifer thickness at monitoring well MW-08 and the low maximum pumping rate that could be sustained by the 2-inch diameter well, sustained drawdown was not observed even in piezometer TP-10, which is located approximately 6 feet from monitoring well MW-08. The results of the pumping test were, therefore, inconclusive.

3.0 PILOT PUMPING SYSTEM

The pilot recovery system is constructed of the following components:

- Flint and Walling, "E" Series shallow well suction pump,
- Automatic pump and flow control system manufactured by Product Level Control, Inc.
- 1000-gallon holding tank
- ⅜-inch, Schedule 40 PVC piping

The pump and control system are powered by a gasoline-powered generator located at the site. The effluent is treated by using activated carbon.

The system includes high and low water level indicators attached to a 1-inch diameter suction line that has been placed in monitoring well MW-08. Monitoring well MW-08 is approximately 18 feet deep and is constructed of 2-inch, Schedule 40 PVC casing and screen. The strainer basket/check ball assembly for the suction line is approximately 6-inches long and rests on the bottom of the well screen. The high water level sensor is placed approximately 6-inches below the average high water level, which is approximately 14 feet below ground surface. The low water sensor is placed immediately above the strainer basket/check ball assembly, which is approximately 3 feet below the high water sensor. During system operation, if the high water sensor is below the surface of the water, the pump is activated. The system will pump until the both the high and low water sensor are above the level of the water in the well. When the low water sensor is above the water, the pump cycles off to allow the well to recover to the depth of the high water sensor. When the water level recovers sufficiently for the high water sensor to be submerged again, the pump cycles back on.

Water from the well is pulled through the pump, forced through the activated carbon treatment system, and discharged to the holding tank. The holding tank is equipped with a high water float switch that will shut the system down prior to overflow of the holding tank. The activated carbon treatment cell is located between the pump and the holding tank so that only treated water is contained at the surface, which minimizes potential issues that would be related to a release from the holding tank. A sample of the treated water is collected Treated water is disposed of by Hercules in their on-site wastewater treatment facility.

The system pumps and treats water for periods of approximately 8 hrs, which is the length of time the generator will operate on a single tank of gas. Eight hours of operation will typically yield approximately 300 gallons of effluent, which is approximately 0.625 gallons/minute. This rate is consistent with the results of the step draw down and pumping test conducted on monitoring well MW-08.

4.0 OPERATION

The pilot groundwater recovery system was first operated in August 2005 after completion of the pumping test, which was conducted in July 2005. The original concept for the pilot system included electrical service to the system and treatment of the effluent through the Hercules wastewater treatment system. This would have allowed the pilot system to operate on a continuous basis. Due to site operational conflicts, power had to be supplied by a generator, and effluent constituent concentrations mandated a different form of effluent treatment. Consequently, the pilot groundwater recovery system has been operated sporadically.

The 1000-gallon holding tank was first filled during system set-up, testing, and activities associated with the aquifer pumping test. Based on the laboratory analysis of the effluent in the tank, an alternate treatment method, activated carbon, was selected. Water from the holding tank was then pumped through the activated carbon canister into smaller portable holding tanks provided by Hercules. A sample of the treated effluent was submitted for laboratory analysis. VOCs were not detected in the treated effluent. The portable holding tanks were then transported to the Hercules wastewater treatment system for disposal of the treated effluent. The activated carbon canister was, subsequently, installed between the pump and the 1000-gallon holding tank so that future effluent would be treated prior to storage in the 1000-gallon holding tank.

The generator requires refueling after approximately 8 hours of operation. After three 8-hour pumping operations, the holding tank must be emptied. The water in the 1000-gallon holding tank is then pumped to the portable tanks for disposal. Samples of the treated effluent have been collected during transfer of the effluent. Copies of the analytical reports are included in Appendix A, and the analytical data are summarized in Table 1.

To date, approximately 4,000 gallons of water have been recovered from monitoring well MW-08, including the water generated during the aquifer pumping test.

5.0 RESULTS

The average of the estimated hydraulic conductivity values for site wells is 3.8×10^{-3} cm/s and the transmissivity has been estimated to be 1.02 square feet per minute (ft^2/min). Based on the aquifer pumping test data, sustainable drawdown was not produced in piezometer TP-10, which was located only 6 feet from the monitoring well MW-08. If a hydraulic conductivity similar to that at the nearby monitoring well MW-13 (2.66×10^{-2} cm/s is assumed, the theoretical maximum capture zone for monitoring well MW-08 would be approximately 6 feet across. This is consistent with the pumping test data. The relatively permeable aquifer characteristics, the relatively thin saturated interval, and the small (2-inch) diameter of the well, limit the potential of the pilot groundwater recovery system to exert hydraulic control.

Given the known aquifer thickness and the estimated hydraulic conductivity, the area of the capture zone can only be increased by increasing the pumping rate, which would require a larger diameter well. For example, an approximately 16-inch diameter well located at the MW-08 location could produce an estimated 4.5 gpm, which would result in a capture zone approximately 50 feet across. However, in the vicinity of monitoring well MW-17, which has an estimated hydraulic conductivity of approximately 6.91×10^{-3} cm/s, a capture zone 50 feet wide could, in theory, be achieved by pumping at a rate of 1.2 gpm. In the vicinity of MW-17, an approximately 10-inch diameter recovery well might be required to obtain 1.2 gpm.

Based on quarterly analytical results for samples collected from monitoring well MW-08, some key constituents, such as carbon tetrachloride and chloroform, have shown a marked decrease since groundwater recovery operations were initiated in August 2005. The concentration of carbon tetrachloride in samples from monitoring well MW-17, located nearby MW-08, have shown no decrease. Therefore, it appears that limited operation of the pilot groundwater recovery system has achieved limited success with improvement of groundwater quality.

6.0 RECOMMENDATIONS

Since quarterly groundwater monitoring results do not indicate that groundwater constituents are migrating towards the down gradient monitoring wells, a groundwater recovery system installed to control groundwater flow is considered unnecessary and is not recommended.

TABLES

TABLE 1
SUMMARY OF GROUNDWATER RECOVERY SYSTEM TREATED EFFLUENT SAMPLE ANALYTICAL RESULTS

Hercules Incorporated
Hatiiesburg, Mississippi
March 2007

Date	Volatile Organic Compounds (ug/L)	Cumulative Discharge (gallons)
10/11/2005	nd[1]	1000
4/13/2006	benzene 1.1	2000
8/28/2006[2]	nd	3000

1 - nd = VOCs were not detected at, or above, their individual analytical detection limits by U.S. EPA SW-846, Method 8260 analysis.

2 - Data included in the data package for the August 2006 quarterly groundwater monitoring event.

APPENDIX A

ANALYTICAL REPORTS

ANALYTICAL REPORT

Job Number: 680-7056-1

Job Description: Hercules - Hattiesburg MW-08

For:

Hercules Inc.
Research Center - Bldg 8139/15
500 Hercules Road
Wilmington, DE 19808-1599

Attention: Mr. Timothy Hassett

Lidya Gulizia
Project Manager I
lgulizia@stl-inc.com
08/29/2005

METHOD SUMMARY

Client: Hercules Inc.

Job Number: 680-7056-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS	STL-SAV	SW846 8260B	
Purge-and-Trap	STL-SAV		SW846 5030B

LAB REFERENCES:

STL-SAV = STL-Savannah

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates

METHOD / ANALYST SUMMARY

Client: Hercules Inc

Job Number: 680-7056-1

Method	Analyst	Analyst ID
SW846 8260B	Sokolin, Elena	ES

SAMPLE SUMMARY

Client: Hercules Inc.

Job Number: 680-7056-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-7056-1	HER-MW08-EFF01	Water	08/11/2005 1635	08/16/2005 0910
680-7056-2	HER-MW08-HT01	Water	08/11/2005 1640	08/16/2005 0910

SAMPLE RESULTS

Client: Hercules Inc.

Job Number: 680-7056-1

Client Sample ID: HER-MW08-EFF01

Lab Sample ID: 680-7056-1
Client Matrix: Water

Date Sampled: 08/11/2005 1635
Date Received: 08/16/2005 0910

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 50
Date Analyzed: 08/22/2005 2004
Date Prepared: 08/22/2005 2004

Analysis Batch: 680-19822

Instrument ID: GC/MS Volatiles - P
Lab File ID: p8853.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<1300		1300
Acetonitrile	<2000		2000
Acrolein	<1000		1000
Acrylonitrile	<1000		1000
Benzene	8400		50
Dichlorobromomethane	<50		50
Bromoform	<50		50
Bromomethane	<50		50
Methyl Ethyl Ketone	<500		500
Carbon disulfide	<50		50
Carbon tetrachloride	680		50
Chlorobenzene	59		50
Chloroethane	<50		50
Chloroform	280		50
Chloromethane	<50		50
2-Chloro-1,3-butadiene	<50		50
3-Chloro-1-propene	<50		50
Chlorodibromomethane	<50		50
1,2-Dibromo-3-Chloropropane	<50		50
Ethylene Dibromide	<50		50
Dibromomethane	<50		50
trans-1,4-Dichloro-2-butene	<100		100
Dichlorodifluoromethane	<50		50
1,1-Dichloroethane	<50		50
1,2-Dichloroethane	<50		50
1,1-Dichloroethene	<50		50
trans-1,2-Dichloroethene	<50		50
1,2-Dichloropropane	<50		50
cis-1,3-Dichloropropene	<50		50
trans-1,3-Dichloropropene	<50		50
Ethylbenzene	62		50
Ethyl methacrylate	<50		50
2-Hexanone	<500		500
Iodomethane	<250		250
Isobutanol	<2000		2000
Methacrylonitrile	<1000		1000
Methylene Chloride	<250		250
Methyl methacrylate	<50		50
methyl isobutyl ketone	<500		500
Pentachloroethane	<250		250
Propionitrile	<1000		1000
Styrene	<50		50
1,1,1,2-Tetrachloroethane	<50		50

Client: Hercules Inc.

Job Number: 680-7056-1

Client Sample ID: HER-MW08-EFF01

Lab Sample ID: 680-7056-1
Client Matrix: Water

Date Sampled: 08/11/2005 1635
Date Received: 08/16/2005 0910

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 50
Date Analyzed: 08/22/2005 2004
Date Prepared: 08/22/2005 2004

Analysis Batch: 680-19822

Instrument ID: GC/MS Volatiles - P
Lab File ID: p8853 d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,1,2,2-Tetrachloroethane	<50		50
Tetrachloroethene	<50		50
Toluene	78		50
1,1,1-Trichloroethane	<50		50
1,1,2-Trichloroethane	<50		50
Trichloroethene	<50		50
Trichlorofluoromethane	<50		50
1,2,3-Trichloropropane	<50		50
Vinyl acetate	<100		100
Vinyl chloride	<50		50
Xylenes, Total	110		100

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	94	77 - 120
Dibromofluoromethane	94	75 - 123
Toluene-d8	92	79 - 122

Client: Hercules Inc.

Job Number: 680-7056-1

Client Sample ID: HER-MW08-HT01

Lab Sample ID: 680-7056-2
Client Matrix: Water

Date Sampled: 08/11/2005 1640
Date Received: 08/16/2005 0910

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 50
Date Analyzed: 08/22/2005 2032
Date Prepared: 08/22/2005 2032

Analysis Batch: 680-19822

Instrument ID: GC/MS Volatiles - P
Lab File ID: p8855 d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<1300		1300
Acetonitrile	<2000		2000
Acrolein	<1000		1000
Acrylonitrile	<1000		1000
Benzene	3500		50
Dichlorobromomethane	<50		50
Bromoform	<50		50
Bromomethane	<50		50
Methyl Ethyl Ketone	<500		500
Carbon disulfide	<50		50
Carbon tetrachloride	270		50
Chlorobenzene	<50		50
Chloroethane	<50		50
Chloroform	130		50
Chloromethane	<50		50
2-Chloro-1,3-butadiene	<50		50
3-Chloro-1-propene	<50		50
Chlorodibromomethane	<50		50
1,2-Dibromo-3-Chloropropane	<50		50
Ethylene Dibromide	<50		50
Dibromomethane	<50		50
trans-1,4-Dichloro-2-butene	<100		100
Dichlorodifluoromethane	<50		50
1,1-Dichloroethane	<50		50
1,2-Dichloroethane	90		50
1,1-Dichloroethene	<50		50
trans-1,2-Dichloroethene	<50		50
1,2-Dichloropropane	<50		50
cis-1,3-Dichloropropene	<50		50
trans-1,3-Dichloropropene	<50		50
Ethylbenzene	<50		50
Ethyl methacrylate	<50		50
2-Hexanone	<500		500
Iodomethane	<250		250
Isobutanol	<2000		2000
Methacrylonitrile	<1000		1000
Methylene Chloride	<250		250
Methyl methacrylate	<50		50
methyl isobutyl ketone	<500		500
Pentachloroethane	<250		250
Propionitrile	<1000		1000
Styrene	<50		50
1,1,1,2-Tetrachloroethane	<50		50

Client: Hercules Inc.

Job Number: 680-7056-1

Client Sample ID: HER-MW08-HT01

Lab Sample ID: 680-7056-2
Client Matrix: Water

Date Sampled: 08/11/2005 1640
Date Received: 08/16/2005 0910

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 50
Date Analyzed: 08/22/2005 2032
Date Prepared: 08/22/2005 2032

Analysis Batch: 680-19822

Instrument ID: GC/MS Volatiles - P
Lab File ID: p8855.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,1,2,2-Tetrachloroethane	<50		50
Tetrachloroethene	<50		50
Toluene	<50		50
1,1,1-Trichloroethane	<50		50
1,1,2-Trichloroethane	<50		50
Trichloroethene	<50		50
Trichlorofluoromethane	<50		50
1,2,3-Trichloropropane	<50		50
Vinyl acetate	<100		100
Vinyl chloride	<50		50
Xylenes, Total	<100		100

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	92	77 - 120
Dibromofluoromethane	94	75 - 123
Toluene-d8	90	79 - 122

QUALITY CONTROL RESULTS

Client: Hercules Inc

Job Number: 680-7056-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS VOA				
Analysis Batch:680-19822				
LCS 680-19822/1	Lab Control Spike	Water	8260B	
MB 680-19822/2	Method Blank	Water	8260B	
680-7056-1	HER-MW08-EFF01	Water	8260B	
680-7056-2	HER-MW08-HT01	Water	8260B	

Client: Hercules Inc.

Job Number: 680-7056-1

Surrogate Recovery Report

8260B Volatile Organic Compounds by GC/MS

Client Matrix: Water

Lab Sample ID	Client Sample	(BFB) (%Rec)	(DBFM) (%Rec)	(TOL) (%Rec)
680-7056-1	HER-MW08-EFF01	94	94	92
680-7056-2	HER-MW08-HT01	92	94	90
LCS 680-19822/1	LCS	97	102	95
MB 680-19822/2	MB	94	93	90

Surrogate		Acceptance Limits
(BFB)	4-Bromofluorobenzene	77 - 120
(DBFM)	Dibromofluoromethane	75 - 123
(TOL)	Toluene-d8	79 - 122

Client: Hercules Inc.

Job Number: 680-7056-1

Method Blank - Batch: 680-19822

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-19822/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/22/2005 1703
Date Prepared: 08/22/2005 1703

Analysis Batch: 680-19822
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq557 d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Methyl Ethyl Ketone	<10		10
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Dibromomethane	<1.0		1.0
trans-1,4-Dichloro-2-butene	<2.0		2.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<5.0		5.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl methacrylate	<1.0		1.0
methyl isobutyl ketone	<10		10
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc

Job Number: 680-7056-1

Method Blank - Batch: 680-19822

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-19822/2
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/22/2005 1703
Date Prepared: 08/22/2005 1703

Analysis Batch: 680-19822
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq557.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	94	77 - 120
Dibromofluoromethane	93	75 - 123
Toluene-d8	90	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-7056-1

Laboratory Control Sample - Batch: 680-19822

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 680-19822/1
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 08/22/2005 1510
Date Prepared: 08/22/2005 1510

Analysis Batch: 680-19822
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq549.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	100	100	100	20 - 183	
Benzene	50.0	48	96	74 - 122	
Dichlorobromomethane	50.0	46	92	74 - 128	
Bromoform	50.0	46	91	64 - 132	
Bromomethane	50.0	61	121	21 - 176	
Methyl Ethyl Ketone	100	95	95	51 - 142	
Carbon disulfide	50.0	54	108	60 - 130	
Carbon tetrachloride	50.0	47	93	64 - 137	
Chlorobenzene	50.0	51	102	75 - 123	
Chloroethane	50.0	57	113	40 - 171	
Chloroform	50.0	51	101	74 - 124	
Chloromethane	50.0	52	104	51 - 133	
Chlorodibromomethane	50.0	47	94	75 - 126	
1,2-Dibromo-3-Chloropropane	50.0	47	94	14 - 147	
Ethylene Dibromide	50.0	49	98	60 - 118	
Dibromomethane	50.0	47	94	70 - 130	
Dichlorodifluoromethane	50.0	55	110	70 - 130	
1,1-Dichloroethane	50.0	52	105	70 - 127	
1,2-Dichloroethane	50.0	45	91	68 - 130	
1,1-Dichloroethene	50.0	53	106	64 - 132	
trans-1,2-Dichloroethene	50.0	49	99	67 - 130	
1,2-Dichloropropane	50.0	47	94	74 - 123	
cis-1,3-Dichloropropene	50.0	46	92	76 - 126	
trans-1,3-Dichloropropene	50.0	46	91	75 - 126	
Ethylbenzene	50.0	51	102	77 - 123	
2-Hexanone	100	93	93	58 - 139	
Methylene Chloride	50.0	54	108	67 - 128	
methyl isobutyl ketone	100	89	89	62 - 130	
Styrene	50.0	50	101	75 - 125	
1,1,1,2-Tetrachloroethane	50.0	41	82	62 - 107	
1,1,2,2-Tetrachloroethane	50.0	49	99	71 - 127	
Tetrachloroethene	50.0	51	102	70 - 133	
Toluene	50.0	48	96	75 - 122	
1,1,1-Trichloroethane	50.0	49	97	70 - 132	
1,1,2-Trichloroethane	50.0	45	91	75 - 122	
Trichloroethene	50.0	48	96	75 - 122	
Trichlorofluoromethane	50.0	53	107	74 - 165	
1,2,3-Trichloropropane	50.0	51	101	60 - 147	
Vinyl acetate	100	72	72	47 - 150	
Vinyl chloride	50.0	53	106	59 - 136	
Xylenes, Total	150	150	102	77 - 121	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 51670

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

SEVERN TRENT **STL**

✓ STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

○ Alternate Laboratory Name/Location
Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
STL (LAB) PROJECT MANAGER: Lidia Gulizia	P.O. NUMBER: 4500911597	CONTRACT NO.
CLIENT (SITE) PM: Tim Hassett	CLIENT PHONE: 302.995.3454	CLIENT FAX
CLIENT NAME: Hercules, Incoporated	CLIENT E-MAIL	
CLIENT ADDRESS		
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE 1 OF 1

STANDARD REPORT DELIVERY ✓
DATE DUE
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT,...)	REQUIRED ANALYSIS: VOCs (App IX) 8260B	NUMBER OF CONTAINERS SUBMITTED
11AUG05	1635	HER-MW08-EFF01	G	✓				✓	✓
11AUG05	1640	HER-MW08-HT01	G	✓				✓	✓

REMARKS: Please send 3 sets of Sample Containers (VOC-Water)

TEMP. 2.6

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			Charles V. Carey	15AUG05	1700			
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			FedEx Airbill 8482 1627 7718	11AUG05	1700			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL SAVANNAH LOG NO.	LABORATORY REMARKS
H Thurman	8/16/05	0910	YES ○ NO ○		680-7056	

Return Address:

STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Ship To:

ECOSYSTEMS INC
c/o: MR. CHARLES CONEY
6360 I55 NORTH
SUITE 330
JACKSON, MS 39211

Job: 680-9666-1

ANALYTICAL REPORT

Job Number: 680-9666-1

Job Description: Hercules - Hattiesburg Effluent 10/11/05

For:

Hercules Inc.
Research Center - Bldg 8139/15
500 Hercules Road
Wilmington, DE 19808-1599

Attention: Mr. Timothy Hassett

Liqya Gulizia
Project Manager I
lgulizia@stl-inc.com
11/14/2005

cc: Mr. Charles Coney

METHOD SUMMARY

Client: Hercules Inc.

Job Number: 680-9666-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS	STL-SAV	SW846 8260B	
Purge-and-Trap	STL-SAV		SW846 5030B

LAB REFERENCES:

STL-SAV = STL-Savannah

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Hercules Inc.

Job Number: 680-9666-1

Method	Analyst	Analyst ID
SW846 8260B	Jakubsen, Melanie	MJ

SAMPLE SUMMARY

Client: Hercules Inc

Job Number: 680-9666-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-9666-1	Effluent	Water	10/11/2005 1800	10/21/2005 0905

SAMPLE RESULTS

Client: Hercules Inc.

Job Number: 680-9666-1

Client Sample ID: **Effluent**

Lab Sample ID: 680-9666-1
Client Matrix: Water

Date Sampled: 10/11/2005 1800
Date Received: 10/21/2005 0905

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 10/25/2005 1902
Date Prepared: 10/25/2005 1902

Analysis Batch: 680-26480

Instrument ID: GC/MS Volatiles - P
Lab File ID: p0656.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<5.0		5.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	<10		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0

Client: Hercules Inc. Job Number: 680-9666-1

Client Sample ID: **Effluent**

Lab Sample ID: 680-9666-1
Client Matrix: Water

Date Sampled: 10/11/2005 1800
Date Received: 10/21/2005 0905

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 10/25/2005 1902
Date Prepared: 10/25/2005 1902

Analysis Batch: 680-26480

Instrument ID: GC/MS Volatiles - P
Lab File ID: p0656.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Toluene	<1.0		1.0
trans-1,4-Dichloro-2-butene	<2.0		2.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	96	77 - 120
Dibromofluoromethane	115	75 - 123
Toluene-d8	91	79 - 122

DATA REPORTING QUALIFIERS

Client: Hercules Inc.

Job Number: 680-9666-1

Lab Section	Qualifier	Description
GC/MS VOA		
	*	LCS, LCSD, MS, MSD, MD, or Surrogate exceeds the control limits

QUALITY CONTROL RESULTS

Client: Hercules Inc.

Job Number: 680-9666-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS VOA				
Analysis Batch:680-26479				
LCS 680-26479/16	Lab Control Spike	Water	8260B	
MB 680-26479/18	Method Blank	Water	8260B	
Analysis Batch:680-26480				
LCS 680-26480/20	Lab Control Spike	Water	8260B	
MB 680-26480/19	Method Blank	Water	8260B	
680-9666-1	Effluent	Water	8260B	

Client: Hercules Inc.

Job Number: 680-9666-1

Surrogate Recovery Report

8260B Volatile Organic Compounds by GC/MS

Client Matrix: Water

Lab Sample ID	Client Sample	(BFB) (%Rec)	(DBFM) (%Rec)	(TOL) (%Rec)
680-9666-1	Effluent	96	115	91
LCS 680-26479/16	LCS	100	92	93
LCS 680-26480/20	LCS	97	111	89
MB 680-26479/18	MB	103	96	98
MB 680-26480/19	MB	93	112	92

Surrogate		Acceptance Limits
(BFB)	4-Bromofluorobenzene	77 - 120
(DBFM)	Dibromofluoromethane	75 - 123
(TOL)	Toluene-d8	79 - 122

Client: Hercules Inc.

Job Number: 680-9666-1

Method Blank - Batch: 680-26479

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-26479/18
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/25/2005 1550
Date Prepared: 10/25/2005 1550

Analysis Batch: 680-26479
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq423.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Acetone	<25		25
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
2-Hexanone	<10		10
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	<10		10
methyl isobutyl ketone	<10		10
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	103	77 - 120
Dibromofluoromethane	96	75 - 123
Toluene-d8	98	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Laboratory Control Sample - Batch: 680-26479

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 680-26479/16
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/25/2005 1454
Date Prepared: 10/25/2005 1454

Analysis Batch: 680-26479
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq419.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	100	91	91	20 - 183	
Benzene	50.0	46	91	74 - 122	
Bromoform	50.0	51	101	64 - 132	
Bromomethane	50.0	49	98	21 - 176	
Carbon disulfide	50.0	47	93	60 - 130	
Carbon tetrachloride	50.0	48	97	64 - 137	
Chlorobenzene	50.0	47	95	75 - 123	
Chlorodibromomethane	50.0	49	98	75 - 126	
Chloroethane	50.0	44	89	40 - 171	
Chloroform	50.0	45	89	74 - 124	
Chloromethane	50.0	46	93	51 - 133	
cis-1,3-Dichloropropene	50.0	47	95	76 - 126	
1,2-Dibromo-3-Chloropropane	50.0	45	90	14 - 147	
Dibromomethane	50.0	45	90	70 - 130	
Dichlorobromomethane	50.0	48	96	74 - 128	
Dichlorodifluoromethane	50.0	44	88	70 - 130	
1,1-Dichloroethane	50.0	46	92	70 - 127	
1,2-Dichloroethane	50.0	46	91	68 - 130	
1,1-Dichloroethene	50.0	46	93	64 - 132	
1,2-Dichloropropane	50.0	46	92	74 - 123	
Ethylbenzene	50.0	49	99	77 - 123	
Ethylene Dibromide	50.0	46	93	60 - 118	
2-Hexanone	100	100	101	58 - 139	
Methylene Chloride	50.0	46	92	67 - 128	
Methyl Ethyl Ketone	100	88	88	51 - 142	
methyl isobutyl ketone	100	94	94	62 - 130	
Styrene	50.0	50	101	75 - 125	
1,1,1,2-Tetrachloroethane	50.0	51	101	62 - 107	
1,1,2,2-Tetrachloroethane	50.0	50	99	71 - 127	
Tetrachloroethene	50.0	49	99	70 - 133	
Toluene	50.0	47	93	75 - 122	
trans-1,2-Dichloroethene	50.0	45	89	67 - 130	
trans-1,3-Dichloropropene	50.0	49	97	75 - 126	
1,1,1-Trichloroethane	50.0	48	96	70 - 132	
1,1,2-Trichloroethane	50.0	47	94	75 - 122	
Trichloroethene	50.0	46	93	75 - 122	
Trichlorofluoromethane	50.0	47	94	74 - 165	
1,2,3-Trichloropropane	50.0	48	95	60 - 147	
Vinyl acetate	100	94	94	47 - 150	
Vinyl chloride	50.0	47	95	59 - 136	
Xylenes, Total	150	150	100	77 - 121	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	100	77 - 120
Dibromofluoromethane	92	75 - 123
Toluene-d8	93	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Method Blank - Batch: 680-26480

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-26480/19
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/25/2005 1737
Date Prepared: 10/25/2005 1737

Analysis Batch: 680-26480
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq428.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Carbon disulfide	<1.0		1.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Dibromomethane	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<5.0		5.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl Ethyl Ketone	<10		10
methyl isobutyl ketone	<10		10
Methyl methacrylate	<1.0		1.0
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Method Blank - Batch: 680-26480

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-26480/19
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/25/2005 1737
Date Prepared: 10/25/2005 1737

Analysis Batch: 680-26480
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq428.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
trans-1,4-Dichloro-2-butene	<2.0		2.0
trans-1,2-Dichloroethene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0	*	2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	93	77 - 120
Dibromofluoromethane	112	75 - 123
Toluene-d8	92	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Laboratory Control Sample - Batch: 680-26480

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 680-26480/20
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 10/25/2005 1834
Date Prepared: 10/25/2005 1834

Analysis Batch: 680-26480
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq430.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	100	110	113	20 - 183	
Benzene	50.0	40	81	74 - 122	
Bromoform	50.0	56	112	64 - 132	
Bromomethane	50.0	65	129	21 - 176	
Carbon disulfide	50.0	46	92	60 - 130	
Carbon tetrachloride	50.0	43	86	64 - 137	
Chlorobenzene	50.0	51	102	75 - 123	
Chlorodibromomethane	50.0	52	105	75 - 126	
Chloroethane	50.0	54	109	40 - 171	
Chloroform	50.0	50	100	74 - 124	
Chloromethane	50.0	41	82	51 - 133	
cis-1,3-Dichloropropene	50.0	41	82	76 - 126	
1,2-Dibromo-3-Chloropropane	50.0	49	99	14 - 147	
Dibromomethane	50.0	44	88	70 - 130	
Dichlorobromomethane	50.0	41	83	74 - 128	
Dichlorodifluoromethane	50.0	43	86	70 - 130	
1,1-Dichloroethane	50.0	45	91	70 - 127	
1,2-Dichloroethane	50.0	39	79	68 - 130	
1,1-Dichloroethene	50.0	52	103	64 - 132	
1,2-Dichloropropane	50.0	39	77	74 - 123	
Ethylbenzene	50.0	47	94	77 - 123	
Ethylene Dibromide	50.0	44	87	60 - 118	
2-Hexanone	100	75	75	58 - 139	
Methylene Chloride	50.0	52	105	67 - 128	
Methyl Ethyl Ketone	100	89	89	51 - 142	
methyl isobutyl ketone	100	62	62	62 - 130	
Styrene	50.0	50	99	75 - 125	
1,1,1,2-Tetrachloroethane	50.0	52	103	62 - 107	
1,1,2,2-Tetrachloroethane	50.0	44	89	71 - 127	
Tetrachloroethene	50.0	59	118	70 - 133	
Toluene	50.0	43	87	75 - 122	
trans-1,2-Dichloroethene	50.0	51	102	67 - 130	
trans-1,3-Dichloropropene	50.0	41	82	75 - 126	
1,1,1-Trichloroethane	50.0	43	85	70 - 132	
1,1,2-Trichloroethane	50.0	42	84	75 - 122	
Trichloroethene	50.0	49	98	75 - 122	
Trichlorofluoromethane	50.0	57	115	74 - 165	
1,2,3-Trichloropropane	50.0	47	95	60 - 147	
Vinyl acetate	100	22	22	47 - 150	
Vinyl chloride	50.0	44	89	59 - 136	
Xylenes, Total	150	150	99	77 - 121	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-9666-1

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	97	77 - 120
Dibromofluoromethane	111	75 - 123
Toluene-d8	89	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 65338

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

SEVERN TRENT **STL**

STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
STL (LAB) PROJECT MANAGER: Lidia Gulizia	P.O. NUMBER: 4500911597	CONTRACT NO.
CLIENT (SITE) PM: Tim Hassett	CLIENT PHONE: 302-995-3456	CLIENT FAX
CLIENT NAME: Hercules, Incorporated	CLIENT E-MAIL	
CLIENT ADDRESS		
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE ____ OF ____

STANDARD REPORT DELIVERY ○
DATE DUE ____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE ____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT,...)	REQUIRED ANALYSIS: VOCs (App IX) 8260	PRESERVATIVE: HCl	NUMBER OF CONTAINERS SUBMITTED	REMARKS
11 Oct 05	18:00	Effluent	G	✓						3	

TEMP. 0.6

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
EMPTY CONTAINERS			Chris Terrell	20 Oct 05	18:00			
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
EMPTY CONTAINERS			Fed Ex Airbill 848216255713	20 Oct 05	18:00			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL SAVANNAH LOG NO.	LABORATORY REMARKS
	10/21/05	0925			680-9606	

STL8240-680 (12/02)

SEVERN TRENT STL

ANALYTICAL REPORT

Job Number: 680-15648-1

Job Description: Hercules - Hattiesburg - MW-8 EFF APR 06

For:
Hercules Inc.
Research Center - Bldg 8139/15
500 Hercules Road
Wilmington, DE 19808-1599

Attention: Mr. Timothy Hassett

Lidya Gulizia
Project Manager I
lgulizia@stl-inc.com
04/27/2006

cc: Mr. Charles Coney

Project Manager: Lidya Gulizia

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the STL Project Manager who signed this report.

METHOD SUMMARY

Client: Hercules Inc. Job Number: 680-15648-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Volatile Organic Compounds by GC/MS	STL-SAV	SW846 8260B	
Purge-and-Trap	STL-SAV		SW846 5030B

LAB REFERENCES:

STL-SAV = STL-Savannah

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Hercules Inc.

Job Number: 680-15648-1

Method	Analyst	Analyst ID
SW846 8260B	Vandergriff, Jerry	JV

SAMPLE SUMMARY

Client: Hercules Inc. Job Number: 680-15648-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
680-15648-1	HER-MW08-EFF-041306	Water	04/13/2006 1045	04/14/2006 0908

Client: Hercules Inc.

Job Number: 680-15648-1

Client Sample ID: **HER-MW08-EFF-041306**

Lab Sample ID: 680-15648-1
Client Matrix: Water

Date Sampled: 04/13/2006 1045
Date Received: 04/14/2006 0908

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 04/25/2006 1454
Date Prepared: 04/25/2006 1454

Analysis Batch: 680-42809

Instrument ID: GC/MS Volatiles - P
Lab File ID: p0063.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	1.1		1.0
Dichlorobromomethane	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Methyl Ethyl Ketone	<10		10
Carbon disulfide	<2.0		2.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Dibromomethane	<1.0		1.0
trans-1,4-Dichloro-2-butene	<2.0		2.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<5.0		5.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl methacrylate	<1.0		1.0
methyl isobutyl ketone	<10		10
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0

Client: Hercules Inc.

Job Number: 680-15648-1

Client Sample ID: **HER-MW08-EFF-041306**

Lab Sample ID: 680-15648-1
Client Matrix: Water

Date Sampled: 04/13/2006 1045
Date Received: 04/14/2006 0908

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 04/25/2006 1454
Date Prepared: 04/25/2006 1454

Analysis Batch: 680-42809

Instrument ID: GC/MS Volatiles - P
Lab File ID: p0063.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	93	77 - 120
Dibromofluoromethane	116	75 - 123
Toluene-d8	100	79 - 122

Client: Hercules Inc.

Job Number: 680-15648-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
GC/MS VOA				
Analysis Batch:680-42809				
LCS 680-42809/3	Lab Control Spike	Water	8260B	
MB 680-42809/5	Method Blank	Water	8260B	
680-15648-1	HER-MW08-EFF-041306	Water	8260B	

Client: Hercules Inc.

Job Number: 680-15648-1

Surrogate Recovery Report

8260B Volatile Organic Compounds by GC/MS

Client Matrix: Water

Lab Sample ID	Client Sample	(BFB) (%Rec)	(DBFM) (%Rec)	(TOL) (%Rec)
LCS 680-42809/3		93	107	97
MB 680-42809/5		93	115	104
680-15648-1	HER-MW08-EFF-041306	93	116	100

Surrogate		Acceptance Limits
(BFB)	4-Bromofluorobenzene	77 - 120
(DBFM)	Dibromofluoromethane	75 - 123
(TOL)	Toluene-d8	79 - 122

Client: Hercules Inc.

Job Number: 680-15648-1

Method Blank - Batch: 680-42809

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-42809/5
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/25/2006 1131
Date Prepared: 04/25/2006 1131

Analysis Batch: 680-42809
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq061.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Methyl Ethyl Ketone	<10		10
Carbon disulfide	<2.0		2.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Dibromomethane	<1.0		1.0
trans-1,4-Dichloro-2-butene	<2.0		2.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<5.0		5.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl methacrylate	<1.0		1.0
methyl isobutyl ketone	<10		10
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-15648-1

Method Blank - Batch: 680-42809

Method: 8260B
Preparation: 5030B

Lab Sample ID: MB 680-42809/5
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/25/2006 1131
Date Prepared: 04/25/2006 1131

Analysis Batch: 680-42809
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq061.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result	Qual	RL
Styrene	<1.0		1.0
1,1,1,2-Tetrachloroethane	<1.0		1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	93	77 - 120
Dibromofluoromethane	115	75 - 123
Toluene-d8	104	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-15648-1

Laboratory Control Sample - Batch: 680-42809

Method: 8260B
Preparation: 5030B

Lab Sample ID: LCS 680-42809/3
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 04/25/2006 1041
Date Prepared: 04/25/2006 1041

Analysis Batch: 680-42809
Prep Batch: N/A
Units: ug/L

Instrument ID: GC/MS Volatiles - P
Lab File ID: pq059.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acetone	100	112	112	20 - 183	
Benzene	50.0	44.1	88	74 - 122	
Dichlorobromomethane	50.0	45.6	91	74 - 128	
Bromoform	50.0	52.2	104	64 - 132	
Bromomethane	50.0	44.9	90	21 - 176	
Methyl Ethyl Ketone	100	115	115	51 - 142	
Carbon disulfide	50.0	49.0	98	60 - 130	
Carbon tetrachloride	50.0	42.9	86	64 - 137	
Chlorobenzene	50.0	50.1	100	75 - 123	
Chloroethane	50.0	45.3	91	40 - 171	
Chloroform	50.0	50.4	101	74 - 124	
Chloromethane	50.0	39.9	80	51 - 133	
Chlorodibromomethane	50.0	48.1	96	75 - 126	
1,2-Dibromo-3-Chloropropane	50.0	43.7	87	14 - 147	
Ethylene Dibromide	50.0	47.7	95	60 - 118	
Dibromomethane	50.0	46.1	92	70 - 130	
Dichlorodifluoromethane	50.0	36.7	73	70 - 130	
1,1-Dichloroethane	50.0	50.3	101	70 - 127	
1,2-Dichloroethane	50.0	41.3	83	68 - 130	
1,1-Dichloroethene	50.0	47.5	95	64 - 132	
trans-1,2-Dichloroethene	50.0	50.7	101	67 - 130	
1,2-Dichloropropane	50.0	47.9	96	74 - 123	
cis-1,3-Dichloropropene	50.0	52.3	105	76 - 126	
trans-1,3-Dichloropropene	50.0	51.2	102	75 - 126	
Ethylbenzene	50.0	48.5	97	77 - 123	
2-Hexanone	100	116	116	58 - 139	
Methylene Chloride	50.0	50.4	101	67 - 128	
methyl isobutyl ketone	100	110	110	62 - 130	
Styrene	50.0	49.5	99	75 - 125	
1,1,1,2-Tetrachloroethane	50.0	50.1	100	62 - 107	
1,1,2,2-Tetrachloroethane	50.0	50.9	102	71 - 127	
Tetrachloroethene	50.0	50.2	100	70 - 133	
Toluene	50.0	48.4	97	75 - 122	
1,1,1-Trichloroethane	50.0	41.7	83	70 - 132	
1,1,2-Trichloroethane	50.0	47.3	95	75 - 122	
Trichloroethene	50.0	47.5	95	75 - 122	
Trichlorofluoromethane	50.0	49.6	99	74 - 165	
1,2,3-Trichloropropane	50.0	48.7	97	60 - 147	
Vinyl acetate	100	117	117	47 - 150	
Vinyl chloride	50.0	46.6	93	59 - 136	
Xylenes, Total	150	144	96	77 - 121	

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: Hercules Inc.

Job Number: 680-15648-1

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	93	77 - 120
Dibromofluoromethane	107	75 - 123
Toluene-d8	97	79 - 122

Calculations are performed before rounding to avoid round-off errors in calculated results.

Serial Number 85629

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

SEVERN TRENT **STL**

✓ STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

○ Alternate Laboratory Name/Location
Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
	HER25080	
STL (LAB) PROJECT MANAGER	P.O. NUMBER	CONTRACT NO.
Lidia Gmiziz	4500911597	
CLIENT (SITE) PM	CLIENT PHONE	CLIENT FAX
Tim Hassett	302-995-3456	
CLIENT NAME	CLIENT E-MAIL	
Hercules Inc		
CLIENT ADDRESS	Hercules Research center 500 Hercules Rd Willmington, DE 19808	
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE 1 OF 1

STANDARD REPORT DELIVERY ○
DATE DUE _____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE _____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT,...)	REQUIRED ANALYSIS: App IX VOCs	PRESERVATIVE: Ac	REMARKS
								NUMBER OF CONTAINERS SUBMITTED		
4-13-06	1045	HER - MW6B - EFF - 041306	G	✓				3		

TEMP.: 5.0

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				4-13-06	16 45			
RECEIVED BY: (SIGNATURE) EMPTY CONTAINERS	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL SAVANNAH LOG NO.	LABORATORY REMARKS
	4/4/06	9:08			680-15648	

FedEx Hand 8482 1625 6363

STL8240-680 (12/02)

LOGIN SAMPLE RECEIPT CHECK LIST

Client: Hercules Inc. Job Number: 680-15648-1

Login Number: 15648

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Serial Number 65025

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

SEVERN TRENT **STL**

STL Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.stl-inc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location
Phone:
Fax:

PROJECT REFERENCE	PROJECT NO. HER25080	PROJECT LOCATION (STATE)
STL (LAB) PROJECT MANAGER Lidia Gmitro	P.O. NUMBER 4500911597	CONTRACT NO.
CLIENT (SITE) PM Tim Hassett	CLIENT PHONE 302-995-3456	CLIENT FAX
CLIENT NAME Hercules Inc	CLIENT E-MAIL	
CLIENT ADDRESS Hercules Research center 500 Hercules Rd Wilmington, DE 19808		
COMPANY CONTRACTING THIS WORK (if applicable)		

PAGE 1 OF 1

STANDARD REPORT DELIVERY ○
DATE DUE _____
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE _____
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE	MATRIX: AQUEOUS (WATER)	MATRIX: SOLID OR SEMISOLID	MATRIX: AIR	MATRIX: NONAQUEOUS LIQUID (OIL, SOLVENT,...)	REQUIRED ANALYSIS: App IX VOCs	REQUIRED ANALYSIS: Acl PRESERVATIVE	NUMBER OF CONTAINERS SUBMITTED	REMARKS
4-13-06	10 45	HER - MW08 - EFF - 041306	G	✓						3	

TEMP.: 5.0

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
EMPTY CONTAINERS				4-13-06	16 45			
RECEIVED BY: (SIGNATURE) EMPTY CONTAINERS	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL SAVANNAH LOG NO.	LABORATORY REMARKS
	4/14/06	9:08			680-15648	

STL8240-680 (12/02)

FedEx Hirbll 8482 1625 6363

Client: Eco-Systems Inc

Job Number: 680-19887-1

Client Sample ID: HER-MW8-EFF-082806

Lab Sample ID: 680-19887-30
Client Matrix: Water

Date Sampled: 08/28/2006 1530
Date Received: 09/02/2006 0846

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 09/07/2006 0817
Date Prepared: 09/07/2006 0817

Analysis Batch: 680-54287

Instrument ID: GC/MS Volatiles - P
Lab File ID: p1165.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
Acetone	<25		25
Acetonitrile	<40		40
Acrolein	<20		20
Acrylonitrile	<20		20
Benzene	<1.0		1.0
Dichlorobromomethane	<1.0		1.0
Bromoform	<1.0		1.0
Bromomethane	<1.0		1.0
Methyl Ethyl Ketone	<10		10
Carbon disulfide	<2.0		2.0
Carbon tetrachloride	<1.0		1.0
Chlorobenzene	<1.0		1.0
Chloroethane	<1.0		1.0
Chloroform	<1.0		1.0
Chloromethane	<1.0		1.0
2-Chloro-1,3-butadiene	<1.0		1.0
3-Chloro-1-propene	<1.0		1.0
Chlorodibromomethane	<1.0		1.0
1,2-Dibromo-3-Chloropropane	<1.0		1.0
Ethylene Dibromide	<1.0		1.0
Dibromomethane	<1.0		1.0
trans-1,4-Dichloro-2-butene	<2.0		2.0
Dichlorodifluoromethane	<1.0		1.0
1,1-Dichloroethane	<1.0		1.0
1,2-Dichloroethane	<1.0		1.0
1,1-Dichloroethene	<1.0		1.0
cis-1,2-Dichloroethene	<1.0		1.0
trans-1,2-Dichloroethene	<1.0		1.0
1,2-Dichloropropane	<1.0		1.0
cis-1,3-Dichloropropene	<1.0		1.0
trans-1,3-Dichloropropene	<1.0		1.0
Ethylbenzene	<1.0		1.0
Ethyl methacrylate	<1.0		1.0
2-Hexanone	<10		10
Iodomethane	<5.0		5.0
Isobutanol	<40		40
Methacrylonitrile	<20		20
Methylene Chloride	<5.0		5.0
Methyl methacrylate	<1.0		1.0
methyl isobutyl ketone	<10		10
Pentachloroethane	<5.0		5.0
Propionitrile	<20		20
Styrene	<1.0		1.0

Client: Eco-Systems Inc

Job Number: 680-19887-1

Client Sample ID: HER-MW8-EFF-082806

Lab Sample ID: 680-19887-30
Client Matrix: Water

Date Sampled: 08/28/2006 1530
Date Received: 09/02/2006 0846

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 09/07/2006 0817
Date Prepared: 09/07/2006 0817

Analysis Batch: 680-54287

Instrument ID: GC/MS Volatiles - P
Lab File ID: p1165.d
Initial Weight/Volume: 5 mL
Final Weight/Volume: 5 mL

Analyte	Result (ug/L)	Qualifier	RL
1,1,1,2-Tetrachloroethane	<1.0	*	1.0
1,1,2,2-Tetrachloroethane	<1.0		1.0
Tetrachloroethene	<1.0		1.0
Toluene	<1.0		1.0
1,1,1-Trichloroethane	<1.0		1.0
1,1,2-Trichloroethane	<1.0		1.0
Trichloroethene	<1.0		1.0
Trichlorofluoromethane	<1.0		1.0
1,2,3-Trichloropropane	<1.0		1.0
Vinyl acetate	<2.0		2.0
Vinyl chloride	<1.0		1.0
Xylenes, Total	<2.0		2.0

Surrogate	%Rec	Acceptance Limits
4-Bromofluorobenzene	115	77 - 120
Dibromofluoromethane	112	75 - 123
Toluene-d8 (Surr)	108	79 - 122