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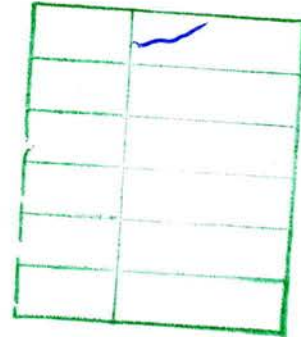
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NOV 06 1998

IOWA DEPARTMENT OF
NATURAL RESOURCES

November 5, 1998

Mr. Jerry Rattenborg
Environmental Protection Division
Field Office No. 1
917 West Fayette
Manchester, IA 52057

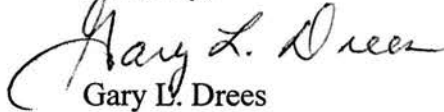


Dear Mr. Rattenborg:

Enclosed please find a copy of the Groundwater Monitoring Report for Henderson Manufacturing located at 1085 S. 3rd Street, Manchester, IA. The First Round, Fifth Year, semi-annual sampling event was conducted on October 6, 1998. Henderson Manufacturing will sample again in the spring of 1999.

If you have any questions or need additional information, feel free to contact me at this telephone number (319) 927-2828.

Sincerely,


Gary L. Drees
EHS Engineer

CC: File

**Groundwater Monitoring Report
First Round, Fifth Year Semi-Annual Sampling**

**Henderson Manufacturing
Manchester, IA
October 1998**

1.0 Introduction

The *Final Report -Removal Activities and Site Conditions* submitted to the Iowa Department of Natural Resources (IDNR) Manchester Field Office in September 1994 requires semi-annual sampling of three monitoring wells at Henderson Manufacturing. This report contains the results of first round, fifth year sampling for FY1999.

2.0 Sample Collection

Monitoring wells were sampled on 6 October 1998 by *CHEM-ECO Environmental* staff. Static water levels were measured in each well and each was purged of 3-5 gallons of water using disposable polyethylene bailers. Purging was judged to be adequate when three successive readings of pH and conductivity in the water were stable to within 10%. Wells were allowed to recover for one hour prior to sample collection.

Samples from each well were placed into three 40-ml glass purge vials preserved with hydrochloric acid and one plastic pint container preserved with nitric acid. All were labeled and placed in a cooler maintained at 4°C and transported to National Environmental Testing, Cedar Falls, Iowa. Sample collection and management was carried out in accordance with the procedures in EPA Publication SW-846.

Bailed water from all wells was placed in a 55-gallon drum in satellite storage. Disposal requirements for water collected from ground water monitoring activities will be determined by the concentrations of hazardous constituents in the water.

3.0 Sample Analysis

In accordance with the requirements of the monitoring program, the three water samples were analyzed for two metals, barium and zinc by ICP method E-200.7, and six organic compounds: 1,1-dichloroethane, *cis*-1,3-dichloropropene, ethylbenzene, toluene, 1,1,1-trichloroethane, and xylene by method S-8260-B. Analysis was carried out in accordance with U.S. EPA approved methods at detection limits consistent with IDNR action levels. Analytical reports are attached as Appendix A.

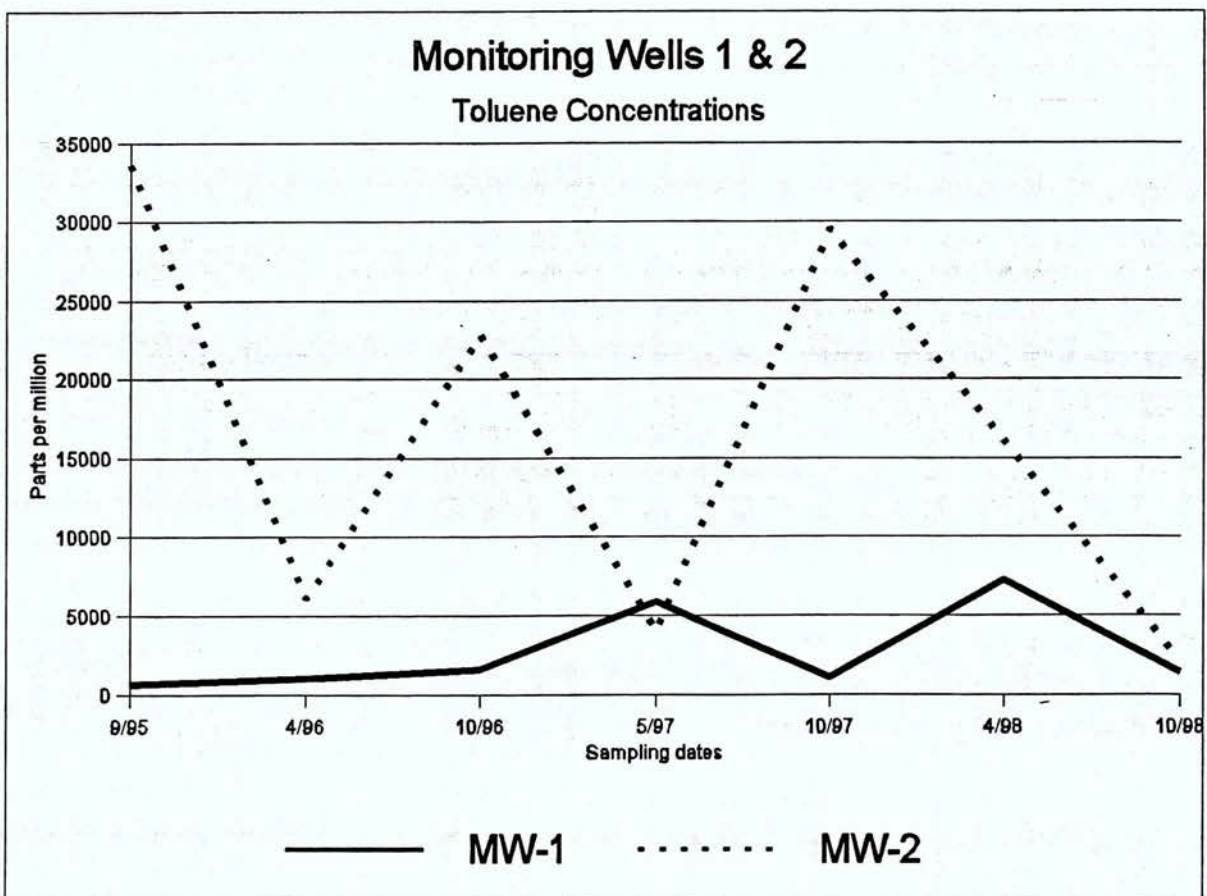
4.0 Cumulative Monitoring Results

Groundwater Analysis Summary								
Analyte		barium	zinc	1,1-dichloro ethane	ethyl benzene	toluene	1,1,1 tri chloroethane	xylenes
Units		mg/L (ppm)		µg/L (ppb)				
MW-1	9/94	0.284	<0.020	36.3	31.1	1,630	<10	71.4
	4/95	0.198	0.026	52.0	32.8	3,120	37.6	114
	9/95	0.180	<0.020	906	17.5	657	2.4	37.8
	4/96	0.123	<0.020	23.6	17.1	1,040	13.4	57.4
	10/96	0.155	<0.020	81.3	39.4	1,610	9.4	122
	5/97	0.158	<0.050	64.7	56.6	5,890	19.2	164
	10/97	0.179	<0.026	42.4	32.0	1,060	3.0	99.8
	4/98	0.182	<0.020	58.8	69.8	7,260	<50	296
	10/98	0.176	<0.020	20.3	29.2	1,400	2.9	102
MW-2	9/94	0.272	<0.021	831	594	47,700	305	2,720
	4/95	0.281	<0.020	234	1,800	62,300	1,702	9,680
	9/95	0.219	<0.020	54.7	455	33,600	17.0	1,960
	4/96	0.142	<0.020	455	1,020	6,130	1,810	3,970
	10/96	0.178	<0.020	602	266	22,800	<50	1,110
	5/97	0.209	<0.050	26.5	809	4,020	38.0	4,700
	10/97	0.176	<0.020	1,240	934	29,500	<200	3,960
	4/98	0.172	0.030	134	998	16,100	270	5,630
	10/98	0.371	0.124	64.1	994	2,100	<1.0	3,830
MW-3	9/94	0.138	<0.020	<1.0	<1.0	<1.0	<1.0	<1.0
	9/95	0.112	<0.020	<1.0	<1.0	<1.0	<1.0	<1.0
	10/96	0.111	<0.020	<1.0	<1.0	<1.0	<1.0	<1.0
	10/97	0.121	0.03	<1.0	<1.0	<1.0	<1.0	<3.0
	4/98	0.151	0.021	<1.0	<1.0	<1.0	<1.0	<3.0
	10/98	0.216	0.260	<1.0	<1.0	<1.0	<1.0	<3.0
IDNR action levels		2.0	2.0	3,500	700	1,000	200	10,000
		HAL	HAL	HEAST	HAL	HAL	HAL	HAL

As shown in the summary table, concentrations of barium and zinc in Monitoring Well #1 continue to be stable. However, the metals concentrations in Monitoring Wells #2 and #3 now show steady increases over the last three sampling rounds, although still an order of magnitude below the listed action levels.

Concentrations of organic constituents in Monitoring Well #3 have remained below detection limits throughout this monitoring program. As has been noted in previous reports, the organic compounds in water samples from Monitoring Wells #1 and #2 are highly variable and continue to exceed action levels for ethylbenzene and toluene. *cis*-1,3-dichloropropene is not detected in any well. It is suggested that this compound be removed from the monitoring program.

The chart below shows toluene concentrations in these two wells for the last seven sampling events. The typical rise in toluene levels in MW 2 in the third quarter is not seen for the most recent sample, although the predicted decrease is found in MW 1 for this round.



Water Data		MW 1	MW 2	MW 3
Static water level (feet below grade)	10/98	2.70	3.55	3.15
	4/98	3.40	3.50	3.25
pH	10/98	7.3	7.2	7.5
Conductivity (siemens)	10/98	840	800	740

Static water levels measured in the wells prior to sampling were compared to surface elevations previously established for these wells. The groundwater flow direction is north-northeast, as previously reported. It is suggested that during the next sampling round, surface elevations be measured to confirm the direction of flow.



28 October 1998

Carol E. Wilson, Project Manager
CHEM-ECO Environmental, inc.

APPENDIX A
ANALYTICAL REPORTS



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

ANALYTICAL REPORT

Carol Wilson
CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

NET Job Number: 98.12621

NET Sample Number: 475577

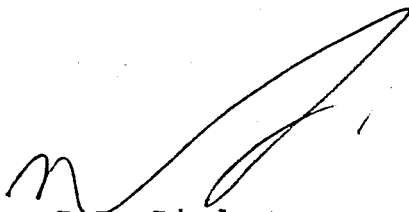
Project ID: Project #98-031

Sample ID: MW-1 Project #98-031

Date Taken: 10/06/1998

Date Received: 10/07/1998

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u>		<u>Date</u>	<u>Method</u>	<u>Quantitation</u>
			<u>Flag</u>	<u>Analyst</u>			<u>Limit</u>
ICP Metals - E 200.7	Complete	mg/L		llw	10/13/1998		
Barium, ICP	0.176	mg/L		llw	10/13/1998	EPA 200.7	0.010
Zinc, ICP	<0.020	mg/L		llw	10/13/1998	EPA 200.7	0.020
VOLATILE COMPOUNDS - 8260							
1,1-Dichloroethane	20.3	ug/L		mmk	10/09/1998	SW 8260B	1.0
cis-1,3-Dichloropropene	<1.0	ug/L		mmk	10/09/1998	SW 8260B	1.0
Ethylbenzene	29.2	ug/L		mmk	10/09/1998	SW 8260B	1.0
Toluene	1,400	ug/L		mmk	10/13/1998	SW 8260B	1.0
1,1,1-Trichloroethane	2.9	ug/L		mmk	10/09/1998	SW 8260B	1.0
Xylenes, Total	102	ug/L		mmk	10/09/1998	SW 8260B	3.0



R.L. Bindert
Operations Manager



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

ANALYTICAL REPORT

Carol Wilson
CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

NET Job Number: 98.12621

NET Sample Number: 475578

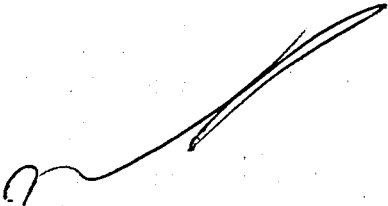
Project ID: Project #98-031

Sample ID: MW-2 Project #98-031

Date Taken: 10/06/1998

Date Received: 10/07/1998

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u>		<u>Analyst</u>	<u>Date Analyzed</u>	<u>Method</u>	<u>Quantitation</u>
			<u>Flag</u>					<u>Limit</u>
ICP Metals - E 200.7	Complete	mg/L			llw	10/13/1998		
Barium, ICP	0.371	mg/L			llw	10/13/1998	EPA 200.7	0.010
Zinc, ICP	0.124	mg/L			llw	10/13/1998	EPA 200.7	0.020
VOLATILE COMPOUNDS - 8260								
1,1-Dichloroethane	64.1	ug/L			mmk	10/09/1998	SW 8260B	1.0
cis-1,3-Dichloropropene	<1.0	ug/L			mmk	10/09/1998	SW 8260B	1.0
Ethylbenzene	994	ug/L			mmk	10/13/1998	SW 8260B	1.0
Toluene	2,100	ug/L			mmk	10/13/1998	SW 8260B	1.0
1,1,1-Trichloroethane	<1.0	ug/L			mmk	10/09/1998	SW 8260B	1.0
Xylenes, Total	3,830	ug/L			mmk	10/13/1998	SW 8260B	3.0



R.L. Bindert
Operations Manager



NATIONAL
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TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

ANALYTICAL REPORT

Carol Wilson
CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

NET Job Number: 98.12621

NET Sample Number: 475579

Project ID: Project #98-031

Sample ID: MW-3 Project #98-031

Date Taken: 10/06/1998

Date Received: 10/07/1998

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u>		<u>Date</u>	<u>Method</u>	<u>Quantitation</u>
			<u>Flag</u>	<u>Analyst</u>			<u>Limit</u>
ICP Metals - E 200.7	Complete	mg/L		llw	10/13/1998		
Barium, ICP	0.216	mg/L		llw	10/13/1998	EPA 200.7	0.010
Zinc, ICP	0.260	mg/L		llw	10/13/1998	EPA 200.7	0.020
VOLATILE COMPOUNDS - 8260							
1,1-Dichloroethane	<1.0	ug/L		mmk	10/13/1998	SW 8260B	1.0
cis-1,3-Dichloropropene	<1.0	ug/L		mmk	10/13/1998	SW 8260B	1.0
Ethylbenzene	<1.0	ug/L		mmk	10/13/1998	SW 8260B	1.0
Toluene	<1.0	ug/L		mmk	10/13/1998	SW 8260B	1.0
1,1,1-Trichloroethane	<1.0	ug/L		mmk	10/13/1998	SW 8260B	1.0
Xylenes, Total	<3.0	ug/L		mmk	10/13/1998	SW 8260B	3.0

R.L. Bindert
Operations Manager



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

QUALITY CONTROL REPORT

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

NET Job Number: 98.12621

Carol Wilson

Enclosed is the Quality Control data for the following samples submitted to NET Midwest, Inc. - Cedar Falls for analysis:

Sample Number	Sample Description	Date Taken	Date Received
475577	MW-1 Project #98-031	10/06/1998	10/07/1998
475578	MW-2 Project #98-031	10/06/1998	10/07/1998
475579	MW-3 Project #98-031	10/06/1998	10/07/1998

This Quality Control report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Iowa Laboratory Certification number - 7



NATIONAL ENVIRONMENTAL TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
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Fax: (319) 277-2425

QUALITY CONTROL REPORT

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

Carol Wilson

NET Job Number: 98.12621

Result	Units	Date Analyzed	Prep Batch Number	Run Batch Number	Analysis Method	Quantitation Limit
475577 MW-1 Project #98-031		10/06/1998				
ICP Metals - E 200.7	Complete	mg/L	10/13/1998	1818		
Barium, ICP	0.176	mg/L	10/13/1998	1486	EPA 200.7	0.010
Zinc, ICP	<0.020	mg/L	10/13/1998	1486	1971 EPA 200.7	0.020
VOLATILE COMPOUNDS - 8260						
1,1-Dichloroethane	20.3	ug/L	10/09/1998	766	SW 8260B	1.0
cis-1,3-Dichloropropene	<1.0	ug/L	10/09/1998	766	SW 8260B	1.0
Ethylbenzene	29.2	ug/L	10/09/1998	766	SW 8260B	1.0
Toluene	1,400	ug/L	10/13/1998	767	SW 8260B	1.0
1,1,1-Trichloroethane	2.9	ug/L	10/09/1998	766	SW 8260B	1.0
Xylenes, Total	102	ug/L	10/09/1998	766	SW 8260B	3.0
Dibromofluoromethane (Surr.)	95.0	‡	10/09/1998	766	SW 8260B	
Toluene-d8 (Surr.)	91.1	‡	10/09/1998	766	SW 8260B	
4-Bromofluorobenzene (Surr.)	95.6	‡	10/09/1998	766	SW 8260B	
475578 MW-2 Project #98-031		10/06/1998				
ICP Metals - E 200.7	Complete	mg/L	10/13/1998	1818		
Barium, ICP	0.371	mg/L	10/13/1998	1486	EPA 200.7	0.010
Zinc, ICP	0.124	mg/L	10/13/1998	1486	1971 EPA 200.7	0.020
VOLATILE COMPOUNDS - 8260						
1,1-Dichloroethane	64.1	ug/L	10/09/1998	766	SW 8260B	1.0
cis-1,3-Dichloropropene	<1.0	ug/L	10/09/1998	766	SW 8260B	1.0
Ethylbenzene	994	ug/L	10/13/1998	767	SW 8260B	1.0
Toluene	2,100	ug/L	10/13/1998	767	SW 8260B	1.0
1,1,1-Trichloroethane	<1.0	ug/L	10/09/1998	766	SW 8260B	1.0
Xylenes, Total	3,830	ug/L	10/13/1998	767	SW 8260B	3.0
Dibromofluoromethane (Surr.)	96.2	‡	10/09/1998	766	SW 8260B	
Toluene-d8 (Surr.)	90.6	‡	10/09/1998	766	SW 8260B	
4-Bromofluorobenzene (Surr.)	97.9	‡	10/09/1998	766	SW 8260B	



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

QUALITY CONTROL REPORT

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

Carol Wilson

NET Job Number: 98.12621

	Result	Units	Date Analyzed	Prep Batch Number	Run Batch Number	Analysis Method	Quantitation Limit
475579 MW-3 Project #98-031			10/06/1998				
ICP Metals - E 200.7	Complete	mg/L	10/13/1998		1818		
Barium, ICP	0.216	mg/L	10/13/1998	1486	1949	EPA 200.7	0.010
Zinc, ICP	0.260	mg/L	10/13/1998	1486	1971	EPA 200.7	0.020
VOLATILE COMPOUNDS - 8260							
1,1-Dichloroethane	<1.0	ug/L	10/13/1998		767	SW 8260B	1.0
cis-1,3-Dichloropropene	<1.0	ug/L	10/13/1998		767	SW 8260B	1.0
Ethylbenzene	<1.0	ug/L	10/13/1998		767	SW 8260B	1.0
Toluene	<1.0	ug/L	10/13/1998		767	SW 8260B	1.0
1,1,1-Trichloroethane	<1.0	ug/L	10/13/1998		767	SW 8260B	1.0
Xylenes, Total	<3.0	ug/L	10/13/1998		767	SW 8260B	3.0
Dibromofluoromethane (Surr.)	93.5	%	10/13/1998		767	SW 8260B	
Toluene-d8 (Surr.)	93.7	%	10/13/1998		767	SW 8260B	
4-Bromofluorobenzene (Surr.)	97.8	%	10/13/1998		767	SW 8260B	



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TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

QUALITY CONTROL REPORT
CONTINUING CALIBRATION VERIFICATION

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

Carol Wilson

NET Job Number: 98.12621

Analyte	Prep Batch Number	Run Batch Number	CCV True Concentration	Concentration Found	Percent Recovery
ICP Metals - E 200.7		1818	1.0	1.0	100.0
Barium, ICP		1949	5.00	5.26	105.2
Barium, ICP		1949	5.00	5.34	106.8
Zinc, ICP		1971	5.00	5.00	100.0
Zinc, ICP		1971	5.00	5.08	101.6
VOLATILE COMPOUNDS - 8260					
1,1-Dichloroethane		767	50.0	51.1	102.2
Ethylbenzene		767	50	51.0	102.0
Toluene		767	50	50.3	100.6
Xylenes, Total		767	150	156	104.0
Dibromofluoromethane (Surr.)		767	100	96.8	96.8
Toluene-d8 (Surr.)		767	100	101	101.0
4-Bromofluorobenzene (Surr.)		767	100	98.8	98.8

CCV - Continuing Calibration Verification



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ENVIRONMENTAL
TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

QUALITY CONTROL REPORT
BLANKS

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

Carol Wilson

NET Job Number: 98.12621

Analyte	Prep Batch Number	Run Batch Number	Blank Analysis	Units
Barium, ICP	1486	1949	<0.010	mg/L
Zinc, ICP	1486	1971	<0.020	mg/L
VOLATILE COMPOUNDS - 8260				
1,1-Dichloroethane		767	<1.0	ug/L
cis-1,3-Dichloropropene		767	<1.0	ug/L
Ethylbenzene		767	<1.0	ug/L
Toluene		767	<1.0	ug/L
1,1,1-Trichloroethane		767	<1.0	ug/L
Xylenes, Total		767	<3.0	ug/L
Dibromofluoromethane (Surr.)		767	92.5	‡
Toluene-d8 (Surr.)		767	97.6	‡
4-Bromofluorobenzene (Surr.)		767	97.0	‡

Advisory Control Limits for Blanks:

Metals/Wet Chemistry/ Conventional/GC - all compounds should be less than the Reporting Limit.

GC/MS - Semi-Volatiles - all compounds should be less than the Reporting Limit except for phthalates which should be less than 5 times the reporting limit.

Volatiles - Toluene, methylene chloride, acetone and chloroform should be less than 5 times the Reporting Limit. All other volatile compounds should be less than the Reporting Limit.



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TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
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Fax: (319) 277-2425

QUALITY CONTROL REPORT
MATRIX SPIKE/MATRIX SPIKE DUPLICATE

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

Carol Wilson

NET Job Number: 98.12621

Analyte	Prep	Run	Matrix	Sample	Spike	Percent	MSD	MSD		Percent	MS/MSD
	Batch	Batch	Spike					Spike	Units		
	Number	Number	Result	Result	Amount	Units	Result	Amount	Units	Recovery	RPD
ICP Metals - E 200.7		1818		Comple	mg/L				mg/L		
Barium, ICP	1486	1949	1.06	0.071	1.00	mg/L	98.9	1.06	1.00	mg/L	98.9 0.0
Zinc, ICP	1486	1971	1.08	0.100	1.00	mg/L	98.0	1.08	1.00	mg/L	98.0 0.0

NOTE: Matrix Spike Samples may not be samples from this job.

Advisory Control Limits for MS/MSDs
Inorganic Parameters and GC Volatiles

The spike recovery should be 75 - 125% if the spike added value was greater than or equal to one fourth of the sample result value. If not, the control limits are not established. The RPD for the MS/MSD pair should be less than 20.

RPD = Relative Percent Difference



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TESTING, INC.

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
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Fax: (319) 277-2425

QUALITY CONTROL REPORT
LABORATORY CONTROL STANDARD

CHEM-ECO ENGINEERS, INC.
P.O. Box 367
Anamosa, IA 52205

10/14/1998

Carol Wilson

NET Job Number: 98.12621

Analyte	Prep	Run	LCS	LCS % Recovery
	Batch Number	Batch Number	True Concentration	
Barium, ICP	1486	1949	1.00	99.2
Zinc, ICP	1486	1971	1.00	96.6
VOLATILE COMPOUNDS - 8260				
Ethylbenzene		767	20	105.0
Toluene		767	20	100.0
Xylenes, Total		767	60	105.5
Dibromofluoromethane (Surr.)		767	100	92.3
Toluene-d8 (Surr.)		767	100	98.4
4-Bromofluorobenzene (Surr.)		767	100	99.0
VOLATILE COMPOUNDS - 8260				
Ethylbenzene		767	20	101.5
Toluene		767	20	96.0
Xylenes, Total		767	60	103.2
Dibromofluoromethane (Surr.)		767	100	94.9
Toluene-d8 (Surr.)		767	100	100.0
4-Bromofluorobenzene (Surr.)		767	100	101.0

LCS - Laboratory Control Standard

Advisory Control Limits - Inorganics - LCS recovery should be 80 - 120%.

