MARCH 2001

AGASSIZ
Environmental/Geotechnical

March 27, 2001

Ms. Denise Oakes
Minnesota Pollution Control Agency
714 Lake Avenue
Lake Avenue Plaza, Suite 220
Detroit Lakes, MN 56501

RE: United Grain and Energy, Hector, Minnesota; Leak # 0068; Annual Monitoring Report, Facts Sheet #3.26

Ms. Oakes,

Enclosed is the Annual Monitoring Report for Framers Union Coop Oil in Hector, MN. Please note that the Farmers Union Coop Oil Co. has merged with, and is now called United Grain and Energy.

Please review the annual report. Feel free to call me with any questions or comments at 320-759-6535.

Thank you.

Respectfully,

Jason C. Coyle

Jason C. Coyle
Environmental Geologist
Project Manager

AGASSIZ ENVIRONMENTAL/GEOTECHNICAL

Encl.

cc: United Grain and Energy

PO Box 412 • Chisago City, MN 55013-041 • 651.257.5545 • Fax: 651.257.1661 • Outstate: 800.362.7087
E-mail: agassiz@isd.net • www.agassizenvironmental.com

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Leaking Petroleum Storage Tanks
Minnesota Pollution Control Agency
http://www.pca.state.mn.us/programs/lust_p.html

Annual Monitoring Report

Fact Sheet 3.26

After the Corrective Action Design (CAD) has been approved, update and submit this worksheet annualy. If a remedial system has been installed, submit fact sheet 3.31 *CAD System Monitoring Worksheet* along with this worksheet.

Under certain circumstances Minnesota Pollution Control Agency (MPCA) staff may request submittal of the monitoring information on a quarterly schedule. This should be conducted according to fact sheet 3.25, *Quarterly Monitoring Report*.

MPCA Site ID: Leak00068 Date: 03-27-01

Responsible Party: United Grain and Energy R.P. phone #: 1-800-547-5576

Consultant: Agassiz Environmental Consultant phone #: 320-759-6535

Facility Name: Union Coop Oil Company

Facility Address: 260 Main Street City: Hector

County: Renville Zip Code: 55342

Site location (**UTM required**; refer to http://www.ot.state.mn.us/ot_files/handbook/standard/std17-1.html for spatial data standards):

Other location information
LAT: N44° 44.6 LONG: W94° 43.0
State Plane coordinates:

Reporting Period: 07-01-99

Section 1. GROUND WATER MONITORING

Discuss the groundwater monitoring results, including water level measurements and analytical results, performed since the remedial investigation (RI) report or the last progress report submitted.
Two groundwater sampling events have been performed since the last report. Benzene concentrations have showed a downward trend. Groundwater flow has continued to flow in a northeasterly direction. Monitoring well #2 (MW-2) was not sampled during these events due to extensive damage to the well and well casing.

Section 2. VAPOR IMPACT MONITORING

If vapor impacts were detected during previous assessments, discuss the results of follow-up vapor monitoring. Include in your discussion the sampling instrument and sampling method.

Vapor monitoring was not performed during the last two monitoring events.

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the Minnesota Duty Officer (24 hours) at 651/649-5451 (metro and outside Minnesota) or 1-800/422-0798 (Greater Minnesota). TTY users call 651/297-5353 (V/TTY) or 1-800/627-3529 (V/TTY). **Vapor mitigation is required.**

Section 3. RECOMMENDATIONS

Discuss your recommendations. Your recommendation should be based on fact sheet #3.1, *Leaking Underground Storage Tank Program.*

If additional corrective action is recommended, please provide your justification.
Agassiz suggests that an investigation be performed around the location of the former Diesel UST located on the west end of the former Union Coop Oil Co. building. The location of this tank was not known in the past and was not investigated. The condition of this tank at the time of removal was poor and holes were present in the tank. An investigation should be performed around the former tank basin to determine the extent and magnetude of the contamination.
If significant reduction of risk has been achieved at the site, recommendations and rationale for the reduction or termination of corrective actions may be presented.

If additional monitoring is recommended, indicate the proposed monitoring schedule and frequency.

If closure is recommended, summarize significant site investigative events and describe how site specific risk issues have been adequately addressed or minimized to acceptable low risk levels.

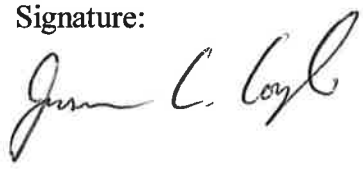
Section 4: CONSULTANT (OR OTHER) INFORMATION

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leaksite. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in reduction of reimbursement awards. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leaksite that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (1994) or Minn. Rules 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

Name and Title:

Jason C. Coyle
Project Manager

Signature:



Date signed:

3/27/01

Company and mailing address:

Agassiz Environmental/Geotechnical

P. O. Box 847

Alexandria, MN 56308

Phone: 320-759-6535

Fax: 320-759-6544

Attach Tables:

- Table 1 - Monitoring Well Completion Information
- Table 2 - Summary of Water Levels Measurements
- Table 3 - Analytical Results of Water Samples
- Table 4 - Other Contaminants Detected in Water Samples (Petroleum or Non-petroleum Derived)
- Table 5 - Results of Natural Attenuation
- Table 6 - Results of Vapor Monitoring

Table 1
Monitoring Well Completion Information

Well Number	Unique Well Number	Date Installed	Surface Elevation	Top of Riser Elevation	Bottom of Well (Elevation)	Screen Interval (Elev. - Elev.)
MW-1	548206	8/16/94		101.74	80.79	80.79-95.79
MW-2	548207	8/16/94		102.11	80.08	80.08-95.08
MW-3	548208	8/16/94		103.02	81.67	81.67-96.67
MW-4	548205	8/16/94		100.50	82.06	82.06-97.06

Notes: (location and elevation of benchmark) Benchmark is a hydrant on Main Street, given elevation: 100'.

Table 2
Water Level Measurements

Well Number	Date	Depth of Water from Top of Riser	Product Thicknes s	Depth of Water Below Grade	Relative Groundwater Elevation	Water Level Above Screen (Y/N)
MW-1	3/23/94	9.16	N			N
	8/23/94	9.24	N		92.50	N
	11/11/94	8.85	N		92.89	N
	2/8/95	10.36	N		91.38	N
	5/8/95	7.67	N		94.07	N
	8/24/95	7.66	N		94.08	N
	12/4/95	8.22	N		93.52	N
	3/13/96	10.43	N		91.29	N
	6/21/96	7.97	N		93.77	N
	12/10/96	8.28	N		93.46	N
	3/9/97	9.57	N		92.17	N
	6/3/97	7.67	N		94.07	N

	9/4/97	7.43	N		94.31	N
	12/15/97	8.86	N		92.88	N
	3/16/98	8.40	N		93.34	N
	6/11/98	7.33	N		94.41	N
	9/10/98	7.69	N		94.05	N
	12/23/98	8.41	N		93.33	N
	3/30/99	8.72	N		93.02	N
	6/30/99	6.14	N		95.60	N
	3/2/00	9.84	N		91.90	N
	9/14/00	8.35	N		93.39	N
MW-2	3/23/94	9.52	N			N
	8/23/94	9.47	N		92.69	N
	11/11/94	9.55	N		92.56	N
	2/8/95	10.35	N		91.76	N
	5/8/95	8.58	N		93.53	N
	8/24/95	8.78	N		93.33	N
	12/4/95	9.50	N		92.61	N
	3/13/96	10.74	N		91.37	N
	6/21/96	8.79	N		93.32	N
	12/10/96	10.38	N		91.73	N
	3/9/97	10.55	N		91.56	N
	6/3/97	9.68	N		92.43	N
	9/4/97	9.40	N		92.71	N
	12/15/97	10.41	N		91.70	N
	3/16/98	10.35	N		91.76	N
	6/11/98	9.66	N		92.45	N
	9/10/98	9.84	N		92.27	N
	12/23/98	10.15	N		91.96	N
	3/30/99	9.47	N		92.64	N
	6/30/99	10.48	N		91.63	N
MW-3	3/23/94	Dry	N		NA	N
	8/23/94	8.51	N		94.51	N
	11/11/94	8.87	N		94.15	N
	2/8/95	10.36	N		92.66	N
	5/8/95	7.88	N		95.14	N
	8/24/95	8.32	N		94.70	N
	12/4/95	9.58	N		93.44	N
	3/13/96	10.57	N		92.45	N
	6/21/96	7.85	N		95.17	N
	12/10/96	8.53	N		94.49	N
	3/9/97	10.06	N		92.96	N
	6/3/97	8.57	N		94.45	N
	9/4/97	8.71	N		94.31	N
	12/15/97	10.24	N		92.78	N

	3/16/98	8.89	N		94.13	N
	6/11/98	8.04	N		94.98	N
	9/10/98	8.83	N		94.19	N
	12/23/98	9.57	N		93.45	N
	3/30/99	9.62	N		93.40	N
	6/30/99	7.64	N		95.38	N
	3/2/00	10.75	N		92.27	N
	9/14/00	9.08	N		93.94	N
MW-4	8/23/94	16.68	N		83.82	N
	9/22/94	7.98	N		92.52	N
	11/11/94	8.08	N		92.42	N
	2/8/95	8.78	N		91.72	N
	5/8/95	7.72	N		92.78	N
	8/24/95	7.91	N		92.59	N
	12/4/95	8.22	N		92.28	N
	3/13/96	8.56	N		91.94	N
	6/21/96	7.82	N		92.68	N
	12/10/96	8.22	N		92.28	N
	3/9/97	8.63	N		91.87	N
	6/3/97	8.03	N		92.47	N
	9/4/97	7.81	N		92.69	N
	12/15/97	8.58	N		91.92	N
	3/16/98	8.01	N		92.49	N
	6/11/98	7.96	N		92.54	N
	9/10/98	8.05	N		92.45	N
	12/23/98	8.28	N		92.22	N
	3/30/99	8.43	N		92.07	N
	6/30/99	7.78	N		92.72	N
	3/2/00	8.62	N		91.88	N
	9/14/00	8.17	N		92.33	N

Describe the methods and procedures used to measure water levels and product thickness.
Notes: Please see appendix for procedures.

Table 3
Analytical Results of Water Samples

Well #	Date	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	GRO	DRO	Lab Type
MW-1	3/23/94	1596	1077	214	681		8.8	0.5	F
	8/23/94	222	10.6	BDL	604		3.9	0.6	F
	11/11/94	7520	913	451	1340		17.5	1.0	F
	2/8/95	8170	2010	582	2460		27.0	NA	F
	5/8/95	18900	17000	1650	9050		81.4	NA	F
	8/24/95	1000	9360	1540	7330		57.1	2.23	F
	12/4/95	8850	9140	1210	6110		46.1	2.6	F
	3/13/96	5080	5520	1020	4920		28.0	14.8	F
	6/21/96	12600	8180	1290	6070		50.1	3.7	F
	12/10/96	13600	12600	1580	7890		47.9	9.5	F
	3/9/97	11600	11700	1330	7570		44.6	20.9	F
	6/3/97	15800	11600	1610	7810		55.2	7.8	F
	9/4/97	5390	3880	480	2850		19.2	1.7	F
	12/15/97	11500	7140	1490	6750		45.5	4.0	F
	3/16/98	9430	8640	1150	5690		41.3	7.8	F
	6/11/98	12200	7850	1150	4210		57.4	3.61	F
	9/10/98	6100	2110	1300	6550	445	23.0	3.1	F
	12/23/98	10300	4840	1240	6430	250	38.5	3.0	F
	3/30/99	10900	4880	1410	7930	350	43.1	19.2	F
	6/30/99	8560	3730	1390	8170	227	41.4	27.0	F
	3/2/00	7180	2110	1050	6030	203	33.5	13.6	F
	9/14/00	4170	618	725	3730	94.2	24.8	NA	F
MW-2	3/23/94	3.7	2.9	1.3	4.1		BDL	BDL	F
	8/23/94	BDL	BDL	BDL	BDL		BDL	BDL	F
	11/11/94	6.5	16.8	2.6	13.6		BDL	0.1	F
	2/8/95	4.9	1.6	1.2	5.2		BDL	NA	F
	5/8/95	2.0	BDL	BDL	BDL		BDL	NA	F
	8/24/95	BDL	BDL	BDL	BDL		BDL	BDL	F
	12/4/95	BDL	BDL	BDL	BDL		BDL	BDL	F
	3/13/96	2.5	BDL	BDL	BDL		BDL	BDL	F
	6/21/96	BDL	BDL	BDL	BDL		BDL	BDL	F
	12/10/96	1.9	BDL	BDL	BDL		BDL	BDL	F
	3/9/97	BDL	BDL	BDL	BDL		BDL	BDL	F
	6/3/97	1.3	331	10.8	51.7		1.29	BDL	F
	9/4/97	2.2	BDL	BDL	BDL		BDL	BDL	F
	12/15/97	11.3	BDL	BDL	BDL		BDL	BDL	F
	3/16/98	39.7	BDL	BDL	BDL		BDL	BDL	F
	6/11/98	BDL	BDL	BDL	BDL		BDL	BDL	F
	9/10/98	11.1	4.8	4.2	25.2	BDL	0.17	BDL	F

	12/23/98	BDL	BDL	BDL	BDL	11.0	BDL	BDL	F
	3/30/99	BDL	BDL	BDL	BDL	11.2	BDL	BDL	F
	6/30/99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	F
	3/2/00								
	9/14/00								
MW-3	3/23/94	DRY	DRY	DRY	DRY		DRY	DRY	F
	8/23/94	BDL	BDL	BDL	BDL		BDL	0.2	F
	11/11/94	4.9	19.1	3.2	3.2		0.11	BDL	F
	2/8/95	1.9	4.1	2.2	2.2		BDL	NA	F
	5/8/95	BDL	1.1	BDL	BDL		BDL	NA	F
	8/24/95	BDL	BDL	BDL	BDL		BDL	BDL	F
	12/4/95	BDL	1.4	BDL	BDL		BDL	BDL	F
	3/13/96	BDL	BDL	BDL	BDL		0.83	2.8	F
	6/21/96	BDL	BDL	BDL	BDL		BDL	0.2	F
	12/10/96	BDL	BDL	BDL	BDL		0.22	0.7	F
	3/9/97	BDL	BDL	BDL	BDL		BDL	1.2	F
	6/3/97	BDL	1.2	BDL	BDL		0.24	0.3	F
	9/4/97	BDL	BDL	BDL	BDL		0.17	0.5	F
	12/15/97	BDL	BDL	BDL	BDL		BDL	0.16	F
	3/16/98	BDL	BDL	BDL	BDL		0.16	0.3	F
	6/11/98	BDL	BDL	1.1	BDL		0.16	0.43	F
	9/10/98	2.1	1.7	2.7	5.6	BDL	0.25	0.5	F
	12/23/98	BDL	BDL	BDL	BDL	BDL	BDL	0.2	F
	3/30/99	BDL	BDL	BDL	BDL	BDL	BDL	0.267	F
	6/30/99	BDL	BDL	BDL	BDL	BDL	0.163	0.692	F
	3/2/00	BDL	BDL	BDL	BDL	BDL	BDL	0.340	F
	9/14/00	BDL	BDL	BDL	BDL	BDL	0.192	0.858	F
MW-4	3/23/94	22.4	31.1	2.75	25.3		BDL	BDL	F
	8/23/94	BDL	BDL	BDL	BDL		BDL	BDL	F
	11/11/94	6.9	21.9	2.8	14.8		BDL	BDL	F
	2/8/95	BDL	0.9	2.0	5.1		BDL	NA	F
	5/8/95	BDL	2.1	BDL	BDL		BDL	NA	F
	8/24/95	1.1	4.2	BDL	BDL		BDL	BDL	F
	12/4/95	1.8	BDL	BDL	BDL		BDL	BDL	F
	3/13/96	BDL	BDL	BDL	BDL		BDL	BDL	F
	6/21/96	BDL	BDL	BDL	BDL		BDL	0.1	F
	12/10/96	BDL	BDL	BDL	BDL		BDL	0.2	F
	3/9/97	BDL	BDL	BDL	BDL		BDL	BDL	F
	6/3/97	7.1	BDL	BDL	BDL		BDL	BDL	F
	9/4/97	BDL	1.2	1.2	3.2		BDL	BDL	F
	12/15/97	BDL	BDL	BDL	BDL		BDL	BDL	F
	3/16/98	BDL	BDL	BDL	BDL		BDL	BDL	F
	6/11/98	BDL	BDL	BDL	BDL		BDL	BDL	F
	9/10/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	F

	12/23/98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	F
	3/30/99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	F
	6/30/99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	F
	3/2/00	BDL	BDL	BDL	BDL	BDL	BDL	0.125*	F
	9/14/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	F
Trip Blank	11/11/94	BDL	BDL	BDL	BDL		BDL	NA	F
	2/8/95	BDL	BDL	BDL	BDL		BDL	NA	F
	5/8/95	BDL	BDL	BDL	BDL		BDL	NA	F
	8/24/95	BDL	BDL	BDL	BDL		BDL	BDL	F
	12/4/95	BDL	BDL	BDL	BDL		BDL	BDL	F
	3/13/96	BDL	BDL	BDL	BDL		BDL	BDL	F
	6/21/96	BDL	BDL	BDL	BDL		BDL	BDL	F
	12/10/96	BDL	BDL	BDL	BDL		BDL	BDL	F
	3/9/97	BDL	BDL	BDL	BDL		BDL	BDL	F
	6/3/97	BDL	BDL	BDL	BDL		BDL	BDL	F
	9/4/97	BDL	BDL	BDL	BDL		BDL	NA	F
	12/15/97	BDL	BDL	BDL	BDL		BDL	NA	F
	3/16/98	9.0	34.7	6.4	30.1		0.11	NA	F
	6/11/98	BDL	BDL	BDL	BDL		BDL	NA	F
	9/10/98	BDL	BDL	BDL	BDL	BDL	BDL	NA	F
	12/23/98	BDL	BDL	BDL	BDL	NA	BDL	NA	F
	3/30/99	BDL	BDL	BDL	BDL	BDL	BDL	NA	F
	6/30/99	BDL	BDL	BDL	BDL	NA	BDL	NA	F
	3/2/00	BDL	BDL	BDL	BDL	NA	BDL	NA	F
	9/14/00	BDL	BDL	BDL	BDL	BDL	BDL	NA	F
Field Blank									
Lab Blank HRL(ug /L)		10	1000	700	10000				

Report results in ug/L. Use less than symbols to show detection limit. Indicate mobile or fixed based in the lab type column.
Notes

Table 4
Other Contaminants Detected in Water Samples
(Petroleum or Non-petroleum Derived)

Well Number	Date Sampled	1,2 DCA	EDB				
MW-1							
MW-2							

MW-3							
Field Blank							
Trip Blank							
Lab Blank							
HRL (ug/L)		4	0.004				

Report results in ug/L. Indicate other contaminants (either petroleum or non-petroleum derived) detected in water samples collected from the borings, temporary wells or push probes.
Notes:

Table 5
Natural Attenuation Parameters

Monitoring Well	Sample Date	Temp. °C	PH	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	(Fe II) (mg/L)	(H_2S, HS^-) (mg/L)
MW-1	03/02/00	11.1	5.64	3.6		4.26	
	09/14/00	14.3	6.46	1.8		1.78	
MW-2	03/02/00						
	09/14/00						
MW-3	03/02/00	10.1	6.82	2.2		1.16	
	09/14/00	14.3	6.42	0.6		>3.30	
MW-4	03/02/00	11.1	7.63	5.0			
	09/14/00	14.9	7.42	1.5		0.03	

Describe the methods and procedures used. Please See appendix for procedures.
Notes:

Table 6
Results of Vapor Monitoring

Location #	Date	PID reading (ppm)	Percent of the LEL

Notes:

Attach Figures:

Figures - (all maps are to include a north arrow, scale and legend) *Approximate scales are not acceptable*.

- Site location map. Adapt this map from a U.S. Geological Survey 7.5 minute quadrangle and identify the name of the 7.5 minute quadrangle.
- Site map showing the locations of all ground water and vapor monitoring points.
- Updated ground water contour maps, using water level elevations from all rounds of water level measurements since the last report. Show all wells at the site, and differentiate wells constructed in different aquifers. Label ground water contours and elevations at each data point used for contouring.
- Hydrograph for all monitoring and recovery wells.
- Graph(s) showing contaminant concentrations over time for all monitoring and recovery wells.

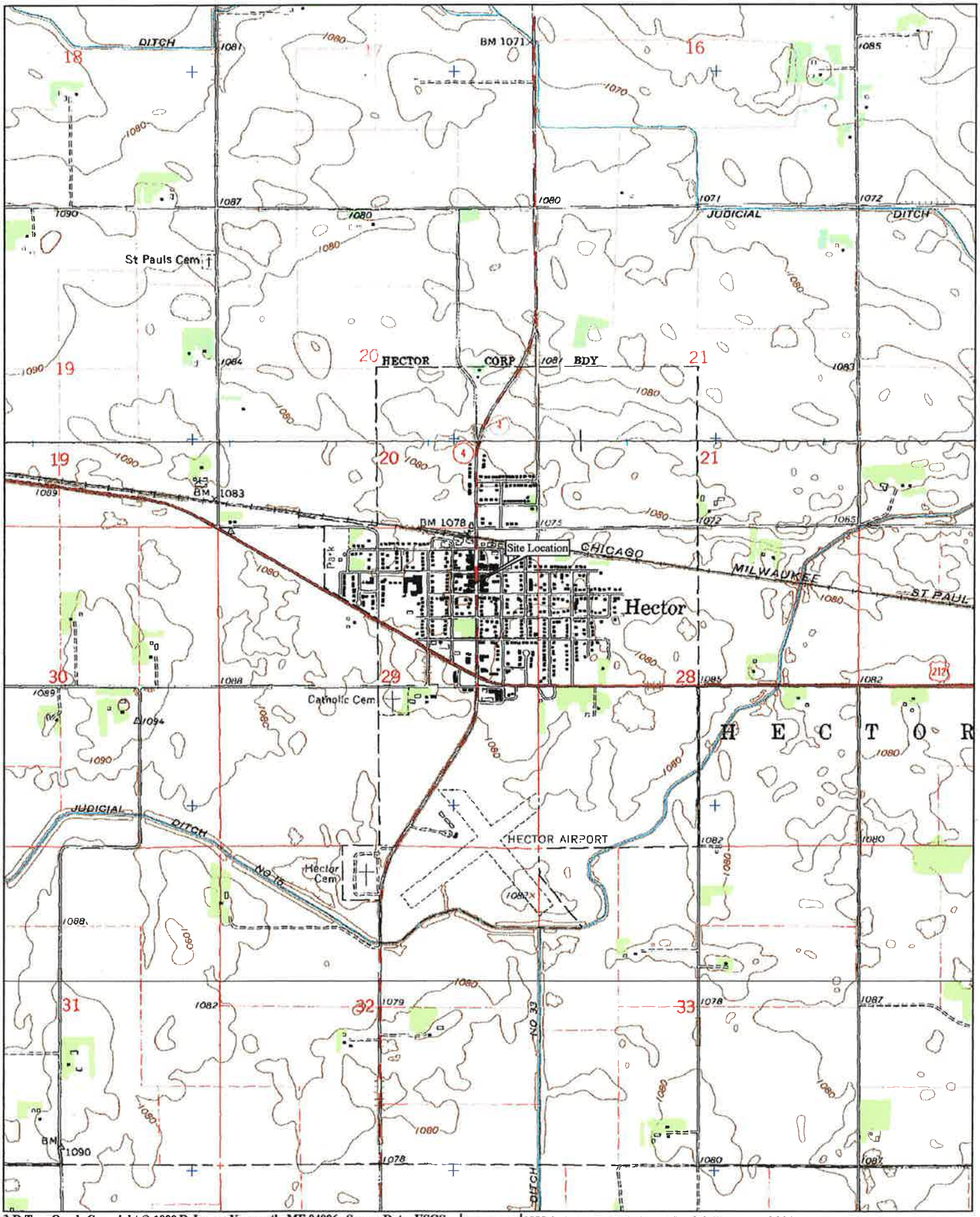
Attach Appendices:

The appendix section of the report contains sufficient information to document all activities completed since the last report. All reproduced data must be legible.

- Copies of most recent laboratory reports for ground water analyses, including a copy of the Chain of Custody and the MDH laboratory certification number.
- Sample collection information, including procedure, equipment, and decontamination.
- Field or sampling data sheets.

Web pages and phone numbers

MPCA staff	http://data.pca.state.mn.us/pca/emplsearch.html
MPCA toll free	**1-800-657-3864**
LUST web page	**http://www.pca.state.mn.us/programs/lust_p.html**
MPCA Infor. Request	**http://www.pca.state.mn.us/about/inforequest.html**
PetroFund Web Page	http://www.commerce.state.mn.us/mainpf.htm
PetroFund Phone	**651-297-1119, or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**



 1000 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84

AGASSIZ ENVIRONMENTAL SYSTEMS, INC.

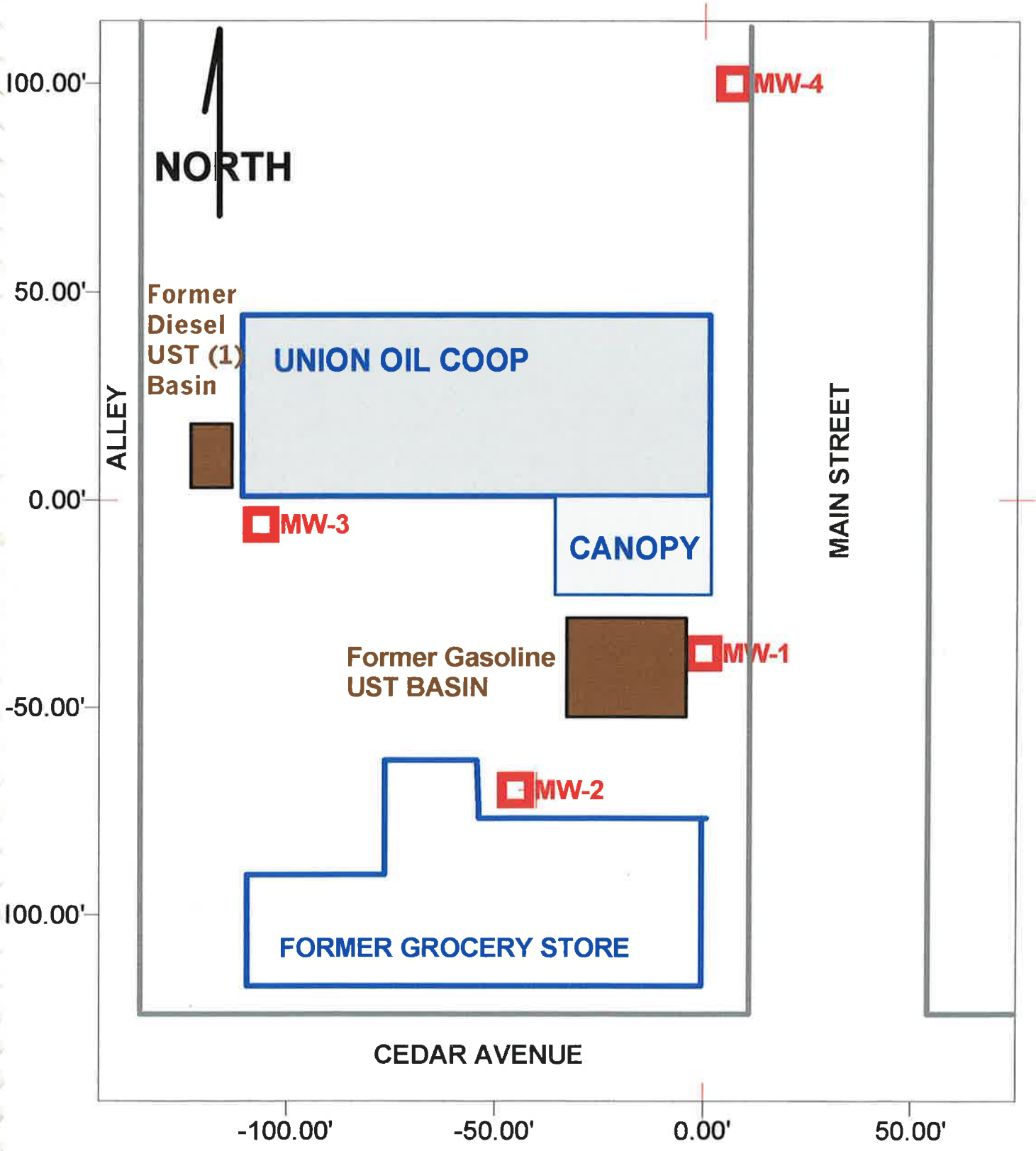


FIGURE 2 - SITE MAP

AGASSIZ ENVIRONMENTAL SYSTEMS, INC.

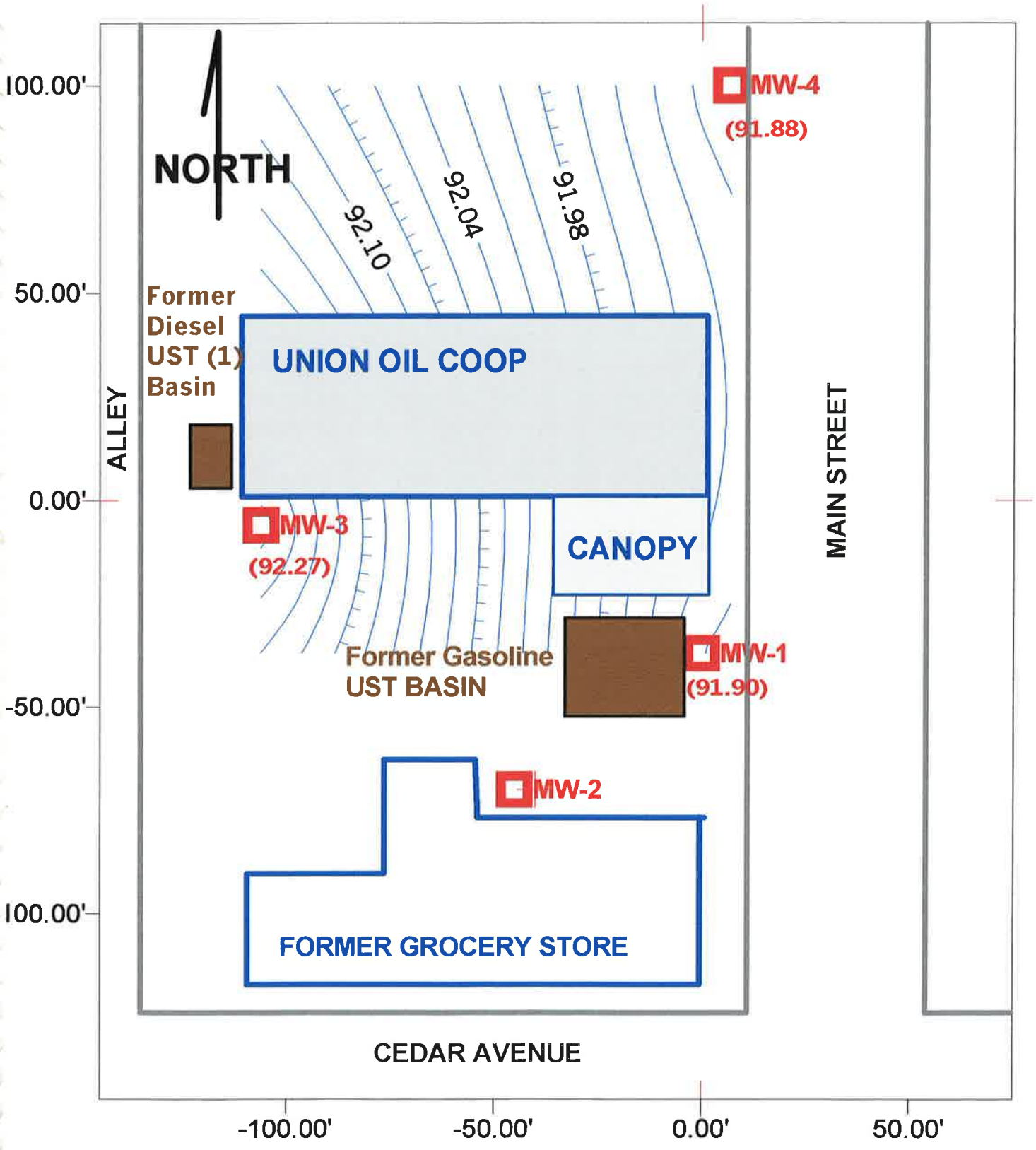


FIGURE 3 - GROUNDWATER CONTOUR MAP - 03/02/01

AGASSIZ ENVIRONMENTAL SYSTEMS, INC.

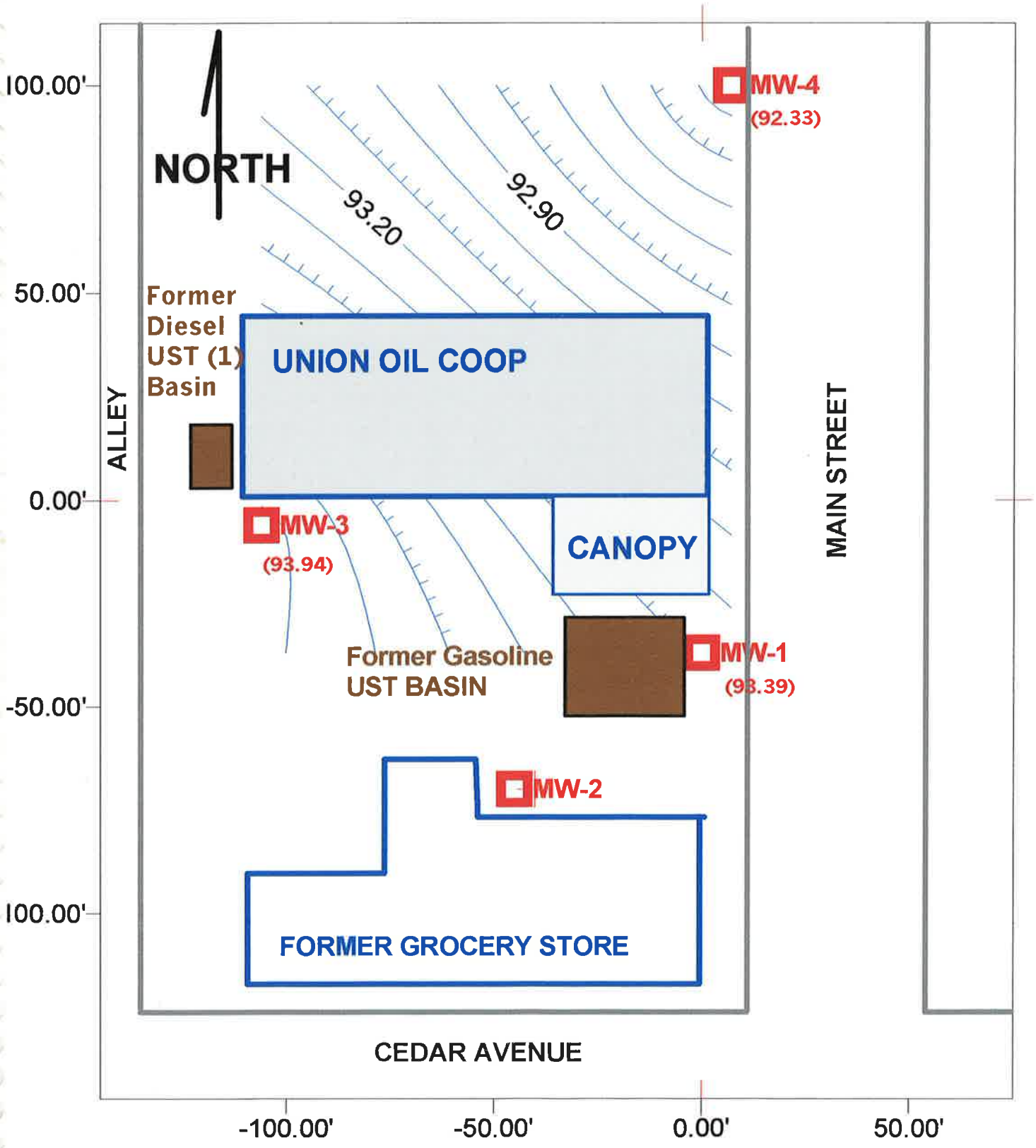
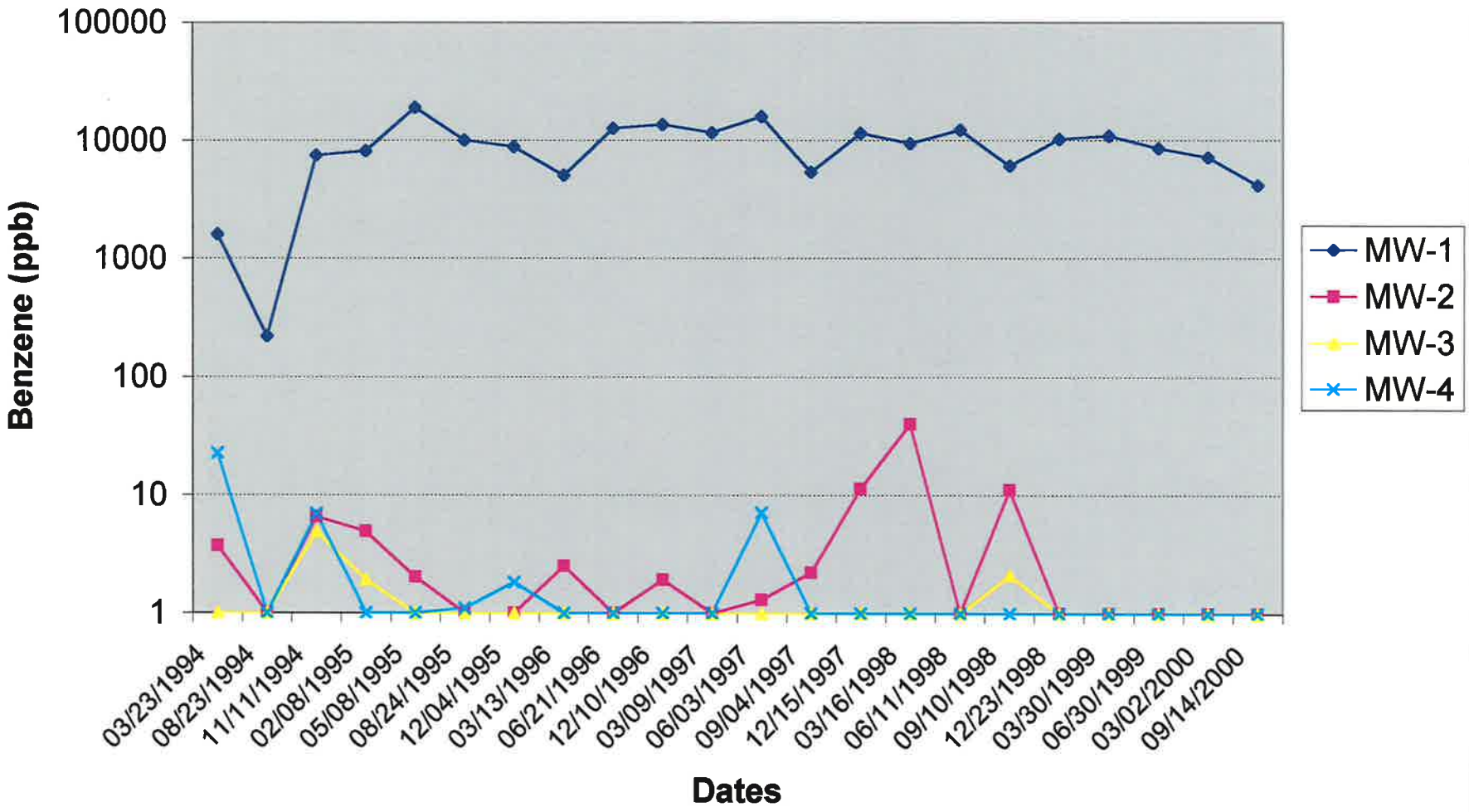
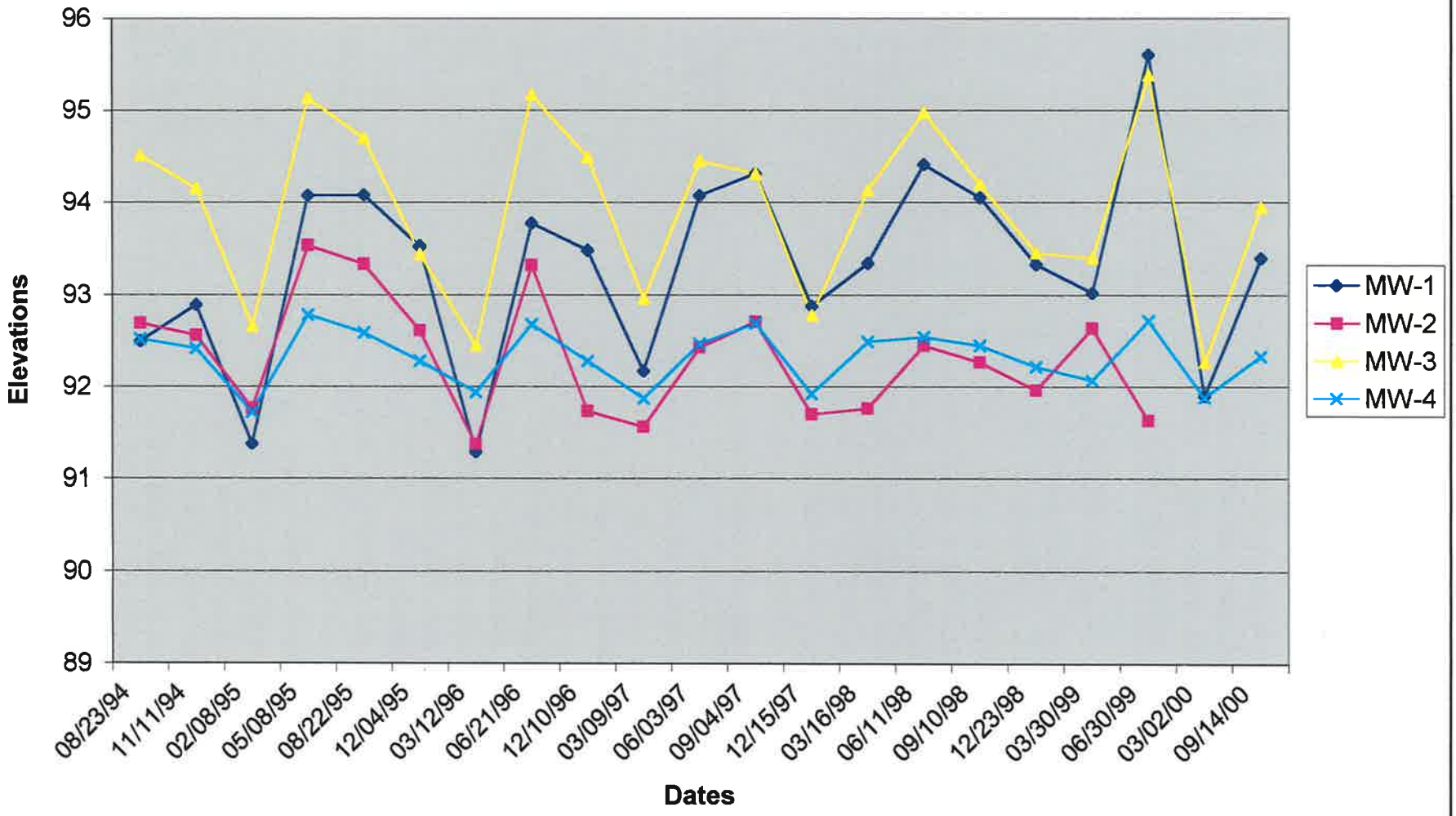


FIGURE 4 - GROUNDWATER CONTOUR MAP - 09/14/00

Monitoring Well Benzene Concentrations
Figure 5



Relative Groundwater Elevations
Figure 6



APPENDIX A
LAB RESULTS

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008
LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

MIDWEST ANALYTICAL SERVICES

LAKE SUPERIOR LABORATORIES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

205 WEST 2ND STREET
SUITE 105
DULUTH, MN 55802
LAB (218) 722-9884
FAX (218) 722-9964

Analytical Report

March 16, 2000

Agassiz Environmental Systems, Inc.
29385 Isabel Street
Chisago City, MN 55013

Chain of Custody

Project ID: 4002 Hector Union Oil
Chain of Custody: 34902
Date Received: 03/03/2000 4:43:09 PM by Joni Fields

Sample Information

SampleID	Description	Date	Matrix
52985	MW-1	03/02/2000	Water
52986	MW-3	03/02/2000	Water
52987	MW-4	03/02/2000	Water
52988	Trip Blank	03/02/2000	Water
52989	Field Blank	03/02/2000	Water
52990	Duplicate	03/02/2000	Water

Analytical results are listed on the following page(s).

Reviewed By

Carrie James 3-16-00

Carrie James
Organic Chemist

RECEIVED MAR 20 2000

MIDWEST ANALYTICAL SERVICES

March 16, 2000
Page 2
COC 34902

Date Analyzed: 3/15/00

Parameter:	MTBE	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Hydrocarbons as GRO	Total Hydrocarbons as DRO
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)
MDL:	2.0	1.0	1.0	1.0	3.0	0.1	0.1
52985 MW-1	203	7180	2110	1050	6030	33.5	13.6
52986 MW-3	BDL	BDL	BDL	BDL	BDL	BDL	0.340
52987 MW-4	BDL	BDL	BDL	BDL	BDL	BDL	0.125*
52988 Trip Blank		BDL	BDL	BDL	BDL	BDL	
52989 Field Blank		BDL	BDL	BDL	BDL	BDL	
52990 Duplicate	245	7180	2910	1080	6010	36.1	10.3

BDL = Below Detection Limit, MDL = Method Detection Limit
* = DRO may be due to possible lab contamination.

330 SO. CLEVELAND ST.
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MIDWEST ANALYTICAL SERVICES

LAKE SUPERIOR LABORATORIES

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

205 WEST 2ND STREET
SUITE 105
DULUTH, MN 55802
LAB (218) 722-9884
FAX (218) 722-9964

Analytical Report

September 26, 2000

Jason Coyle
Agassiz Environmental Systems, Inc.
29385 Isabel Street
Chisago City, MN 55013

Chain of Custody

Project ID: 4002-Hector Coop.
Chain of Custody: 35531
Date Received: 09/18/2000 2:55:59 PM by Kevin Hines

Sample Information

SampleID	Description	Date	Matrix
59707	MW 1	09/14/2000	Water
59708	MW 3	09/14/2000	Water
59709	MW 4	09/14/2000	Water
59710	Duplicate	09/14/2000	Water
59711	Field Blank	09/14/2000	Water
59712	Trip Blank	09/12/2000	Water

Analytical results are listed on the following page(s).

Reviewed By

Anne Hoppenrath 9/26/00

Anne Hoppenrath
Organic Chemist

Date Analyzed: 9/25/00

Parameter:	MTBE	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Hydrocarbons as GRO	Total Hydrocarbons as DRO
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)
MDL:	2.0	1.0	1.0	1.0	3.0	0.1	0.1
59707 MW 1	94.2	4170	618	725	3730	24.8	
59708 MW 3	BDL	BDL	BDL	BDL	BDL	0.192	0.858
59709 MW 4	BDL	BDL	BDL	BDL	BDL	BDL	BDL
59710 Duplicate	BDL	BDL	BDL	BDL	BDL	0.194	0.943
59711 Field Blank	BDL	BDL	BDL	BDL	BDL	BDL	

NOTE: Sample #59712/Trip Blank was not received.

BDL = Below Detection Limit, MDL = Method Detection Limit

APPENDIX B
FIELD NOTES

SAMPLING DATA

5.64 PROJECT #: 4002 Hetoz Union 0.1 CREW: Anthony Pretz
~~5.04~~ DATE: 3/2 WEATHER SERVICE: 45°F Sunny

pH ~~5.04~~	MW-18205			Fe 4.26
cond. 1575		TOC to Total 20.85	- TOC to Water: 9.84	= Total Water: 9.05
temp 51.9		Total Water:	X .163 X 5=	(Water to be removed)
pH ~~6.82~~	MW-2 8206	Well damaged unable to sample -		Fe
cond		TOC to Total 22.03	- TOC to Water:	= Total Water:
temp ~~50.2~~		Total Water:	X .163 X 5=	(Water to be removed)
pH 6.82	MW-3 8207			Fe 1.16
cond 1450		TOC to Total 21.35	- TOC to Water: 10.75	= Total Water: 8.64
temp 50.2		Total Water:	X .163 X 5=	(Water to be removed)
	MW-4			Fe lower DL
pH 7.63		TOC to Total 18.44	- TOC to Water: 8.62	= Total Water: 8.00
cond 1412		Total Water:	X .163 X 5=	(Water to be removed)
temp 51.9	MW-5			
		TOC to Total	- TOC to Water:	= Total Water:
		Total Water:	X .163 X 5=	(Water to be removed)
	MW-6			
		TOC to Total	- TOC to Water:	= Total Water:
		Total Water:	X .163 X 5=	(Water to be removed)
	MW-7			
		TOC to Total	- TOC to Water:	= Total Water:
		Total Water:	X .163 X 5=	(Water to be removed)
	MW-8			
		TOC to Total	- TOC to Water:	= Total Water:
		Total Water:	X .163 X 5=	(Water to be rem

1

MIDW[illegible]LYTICAL SERVICES
330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008
LAB (612) 689-2175
FAX (612) 689-3660

CHAIN OF [illegible]ODY RECORD AND REQUEST FOR ANALYSIS

(Instructions on Back of Form)

NO 34902

DULUTH OFFICE:
205 WEST 2ND STREET
DULUTH, MN 55802
PHONE (218) 722-9884
FAX (218) 722-9964

ENT: Agassiz

SAMPLER NAME: Anthony Riele

OJECT I.D.: 4002 Hecla Union 2,1

SAMPLER SIGNATURE:

PORTS BE NT TO:

REMARKS: MW-2 damaged - Unable to sample

SHADED AREAS FOR LABORATORY USE ONLY

CONTAINERS	COMP.	GRAB	DATE	TIME	MATRIX: WATER	SOIL	OTHER	SAMPLE IDENTIFICATION: SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (MN465)	pH	Pb (Diss. or Total)	RCRA 8 METALS	BOD or CBOD	TSS	FCOL or TCOL	BTEX	MTBE					PRESERVATIVE: HCl	HNO3	H2SO4	ICE	OTHER
1		X	3/2	12:00	X			MW1		52985	X	X									X	X					X			X	
1		X			X			MW2			X	X									X	X					X			X	
1		X		13:50	X			MW3		52986	X	X									X	X					X			X	
1		X		14:35	X			MW4		52987	X	X									X	X					X			X	
		X		-	X			Trip Blank		52988	X	X									X	X					X			X	
		X		-	X			Field Blank		52989	X	X									X	X					X			X	
		X		-	X			Dup		52990	X	X									X	X					X			X	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Contents Temperature:	Comments:
		MW 3/3/10	4:35	7°C	

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED:
☐ NORMAL ☐ RUSH

DATE REQUIRED:

AGASSIZ Environmental Systems

Well Sampling Data

Project: 4002 - Hector Coop
Date: 9-14-00
Sampled By: Bob Klenzman
Weather: 75°F; sunny; wind 15-20 mph

MW 1	Clear; strong gasoline odor.				
Well ID	Total Depth	DTW	Water	Water Removed	Sample Time
548205	20.95'	8.35'	12.60'	10.27 gal	1700

MW 2	Well has been altered; TOC only 1' above grade.				
Well ID	Total Depth	DTW	Water	Water Removed	Time Sampled
548206	22.03'	dry	———	———	———

MW 3	Clear; slight benzene odor				
Well ID	Total Depth	DTW	Water	Water Removed	Time Sampled
548207	21.35'	9.08'	12.27'	10.00 gal	1600

MW 4	Clear; no odors.				
Well ID	Total Depth	DTW	Water	Water Removed	Time Sampled
548208	18.44'	8.17'	10.27'	8.37 gal	1445

COC 35531
-LRO/MTBE
-DRO

Duplicate assigned to MW3.

Bio's	pH	Temp	Cond	Diss O2	Fe++			
MW1	6.46	57.7	790	1.8	1.78			
MW3	6.42	57.7	784	0.6	>3.30			
MW4	7.42	58.8	811	1.5	0.03			

MIDWEST ANALYTICAL SERVICES
330 SO. CLEVELAND ST.
CAMBRIDGE, MN 55008
LAB (763) 689-2175
FAX (763) 689-3660

CHAIN OF CUSTODY RECORD AND REQUEST FOR ANALYSIS

(Instructions on Back of Form)

№ 35531

DULUTH OFFICE:
205 WEST 2ND STREET
DULUTH, MN 55802
PHONE (218) 722-9884
FAX (218) 722-9964

ENT: Agassiz Environmental
PROJECT I.D.: 002 - Hector Coop
REPORTS TO: Jason Coyle
SAMPLER NAME: Robert Klenzman
SAMPLER SIGNATURE: Robert Klenzman
REMARKS:

SHADED AREAS FOR LABORATORY USE ONLY

CONTAINERS	COMP.	GRAB	'00 DATE	TIME	MATRIX: WATER	SOIL	OTHER	SAMPLE	SAMPLE NO.	LABORATORY I.D. NO.	GRO (Includes BTEX)	DRO	BTEX	VOC (MN465)	pH	Pb (Diss. or Total)	RCRA 8 Metals	BOD or CBOD	TSS	FCol or TCol	DTRC					PRESERVATIVE: HCl	HNO_3	H_2SO_4	ICE	OTHER
1		X	9-14	1700	X			MW1		59707	X	X									X					X			X	
1		X	"	1600	X			MW3		59708	X	X									X					X			X	
		X		1445	X			MW4		59709	X	X									X					X			X	
		X		"	X			Duplicate		59710	X	X									X					X			X	
		X	9-14	1500	X			Field Blank		59711	X										X					X			X	
		X	9-15	—	X			Trip Blank		59712	X										X					X			X	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Robert Klenzman 9-15-00	18:40				
	9/15				

Received for Laboratory by: (Signature) | Date / Time | Cooler Temperature | Comments:

CHECK HERE FOR DRINKING WATER DETECTION LIMITS ☐

TURNAROUND TIME REQUIRED: ☐ NORMAL ☐ RUSH

DATE REQUIRED: _____

APPENDIX C
PROCEDURES

AGASSIZ ENVIRONMENTAL SYSTEMS, INC. METHODS

SOIL BORING

INSTALLATION

In a subsurface investigation the soil borings are initially begun in the area of greatest impact and proceed outward in an attempt to define the horizontal extent of contamination.

The augers are steam cleaned between bore holes to avoid cross-contamination.

Soil borings not completed as monitoring wells are abandoned in accordance with Minnesota Department of Health (MDH) regulations (i.e., all borings that encounter ground water are sealed with grout; borings not intersecting ground water are sealed with a mixture of cuttings and bentonite.

Care is always taken not to penetrate confining layers between aquifers; if this occurs the borehole is sealed with grout introduced through a "tremie" pipe. If it is required to explore confined aquifers, all necessary precautions to prevent cross-contamination are taken (i.e., double-cased wells, etc.)

The soil borings are advanced with a 3-1/4 " inside diameter (ID) hollow-stem auger and 5-foot by 3-inch split spoon tubes or 2-foot by 2-inch split spoon tube.

SOIL SAMPLING

Borings are advanced using a Ingersoll Rand A-200 drill rig equipped with a hollow stem auger (HSA). Soil samples are obtained from the split spoon tubes, samples are continuously screened for the presence of organic vapors utilizing a hydrogen flame ionization detector (FID) or a photo ionization detector (PID) equipped meter. To avoid cross-contamination the split spoon sampler is streamed cleaned between samples.

The FID readings represent a qualitative indicator of contamination by compounds which are ionized or "burned" in a flame. The photo ionization detector (PID) is equipped with a 10.2 electron volt (eV) lamp and calibrated to 250 parts per million (ppm) isobutylene. The PID readings represent a qualitative indicator of contamination by compounds which are ionized by the 10.2 eV energy source.

The soil samples were screened for volatile organic compounds (VOCs) in accordance with the MPCA Fact Sheet #3.22.

Soil samples collected for analytical analysis are collected immediately after opening the sampler to minimize volatilization of hydrocarbons.

Soil samples collected for analytical laboratory analysis are packed in clean, laboratory-supplied jars, appropriate for their respective analysis, equipped with nylon septa. For TPH/GRO and TPH/DRO approximately 25 grams of soil are placed in each jar (preservatives, if necessary, are included with laboratory-supplied jars, and soils weighed with a digital scale). For VOC and/or BTEX analysis, approximately 25 grams of soil (as for TPH/GRO) are placed in the appropriate laboratory-supplied jar.

Samples are stored in a cooler on ice until arrival at the laboratory (samples held at Agassiz's offices are placed in a dedicated refrigerator). Proper sample chain of custody procedure is maintained at all times. All sample containers are labeled with type of analysis, site name, sample data point ID, name of sampler, time & date collected, preservative and sample prep instructions.

GEOPROBE BORINGS

INSTALLATION

As an alternative to HSA borings, Agassiz may advance hydraulic push probe borings using a truck mounted GeoProbe Model 5400. Probe rods and sampling tubes are decontaminated between holes using an Alconox wash and clean water rinse. Samples can be collected continuously utilizing a "Macro-Core" tube sampler. The "Macro-Core" sampler is used in conjunction with a clear plastic tube liner to provide core samples that are 45-inches long by 1.5-inches in diameter.

Discrete soil samples can be collected from a given interval using the Large Bore/ Closed Piston sampling tubes. A drive point is fitted to the Large Bore Sampler and upon reaching the desired interval, a piston-stop pin is removed. This allows the drive point to be retracted into the sampling tube as the sample is collected. Equipped with a clear plastic liner, the Large Bore Sampler provides soil cores with are 22-inches long by 1.025-inches in diameter. Samples collected from the "Macro-Core" or Large Bore samplers are handled in the same manner as described above.

DRILLING LOGS

A drilling log is compiled for every soil boring advanced; the information recorded contains soil classification, soil description, depth of significant changes in material, depth of sample collection, approximate location of the water table, organic vapor measurements with respective depths, significant comments, date, name of driller and logger, sample data/location point ID, penetration data and elevation data (relative to surface). Soil classification and description is based the Unified Soil Classification System (USCS) and standard geotechnical field gauge information (See fig.).

MONITORING WELL

INSTALLATION

The wells are advanced using a Ingersoll Rand A-200 drill rig equipped with a HSA. The wells are logged and completed under water well license #M-0159, which is held by Agassiz Environmental Systems, Inc.

Monitoring wells, unless otherwise required, are installed so the screen portion intersects the water table when ever possible.

Where the depth below grade of the water table is difficult to approximate the bore hole should remain open for at least 24 hours to allow water level to stabilize; the use of a slightly larger screen to compensate for water table fluctuations; or a phased well installation approach may be appropriate. Seasonable weather patterns are taken into account during screen placement.

MW CONSTRUCTION/DEVELOPMENT

Wells are constructed in accordance with the MDH regulations/code and under permit. Wells are constructed of stainless steel or PVC, flush threaded couplings; all materials are cleaned prior to installation. All wells are developed following installation to ensure adequate hydraulic connection with the aquifer.

Well construction diagrams and forms are complied for each well and include diagram of the well, depth of major features, slot size, gravel pack size, inner diameter of materials, materials, unique well number, data/location point ID, date, driller name and height of riser.

GROUNDWATER MEASUREMENTS

Ground water is gauged by measuring, prior to sampling, the distance from a surveyed notch in the inner casing of the monitoring wells to the water table by lowering a ground water probe which sounds a tone when it comes in contact with water. The probe is thoroughly decontaminated between monitoring wells with an Alconox/water wash and an alcohol/de-ionized water rinse. In addition, the total depth to the bottom of the well is collected to assist with the determination of the volume of water present in the well and inspect the condition of the well.

Ground water level measurements are collected prior to sample collection as to not disturb the ground water level by sample collection.

GROUNDWATER SAMPLING

Ground water samples are collected in a manner to minimize the possibility of cross-contamination. Samples are collected by determining the volume of water present within the monitoring wells and removing five well volumes or more to obtain a sample representative of the aquifer. Once the volume of water is removed, a sample is immediately collected by clean, dedicated bailer.

Ground water samples collected for analytical laboratory analysis are placed in clean, laboratory-supplied jars, appropriate for their respective analysis, equipped with nylon septa. For TPH/GRO samples are collected in accordance with the Wisconsin Department of Natural Resources (WI DNR) Modified GRO method; three samples are collected without headspace, in glass VOC vials with Teflon-lined septa caps. Samples are preserved with 500ul of a 50% HCL solution (preservative is supplied pre-added with the laboratory provided glass ware). For TPH/DRO samples are collected in accordance with the WI DNR Modified DRO method; one sample is collected without headspace, in glass VOC vials with Teflon-lined septa caps. Samples are preserved with 5ul of a 50% HCL solution (preservative is supplied pre-added with the laboratory provided glass ware). For VOC or BTEX each sample jar is filled completely so that no headspace exists and in a manner in which aeration is minimized.

Samples are stored in a cooler on ice until arrival at the laboratory (samples held at Agassiz's offices are placed in a dedicated refrigerator). Proper sample chain of custody procedure is maintained at all times. All sample containers are labeled with type of analysis, site name, sample data point ID, name of sampler, time & date collected, preservative and sample prep instructions.