File

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott McCallum, Governor
Darrell Bazzell, Secretary

Appleton Field Station
Agricultural Services Center
3369 W. Brewster Street
Appleton, Wisconsin 54914-1602
Telephone 920-832-1803
FAX 920-832-1800

March 19, 2001

Mr. Dion Novak, RPM
U.S. EPA, HSRM-6J
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Subject: Quarterly Progress Report #8, July through September 2000, N.W. Mauthe Superfund Site, 725 S. Outagamie Street, Appleton, Wisconsin, WDNR BRRTS ID# 02-45-000127

Dear Dion:

Please find enclosed a copy of the quarterly progress report for the N.W. Mauthe Superfund Site. This report contains results for the July through September 2000 operating period and was prepared by WDNR's contractor for operation and maintenance of the groundwater treatment plant. Please call me at (920) 832-1803 if you have any questions.

Sincerely,

Jennifer Huffman

Jennifer Huffman, P.G.
Hydrogeologist
Remediation and Redevelopment Program

Enclosure

Cc: Gary Edelstein/Marie Stewart – RR/3 (w/Enclosure)

QUARTERLY PROGRESS REPORT #8

July, August, September 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

MCO

Midwest Contract Operations, Inc.

December 14, 2000
MCO. No. M050-90728.14
JMS:smdt

MCO

Midwest Contract Operations, Inc.

P.O. BOX 418 MENASHA, WI 54952-0418 PH (920) 751-4299 FAX (920) 751-4284
e-mail: mcm@athenet.net • home page: http//www.athenet.net/~mcm

December 14, 2000

Ms. Jennifer Huffman
Wisconsin Department Of Natural Resources
3369 West Brewster Street
Appleton, WI 54912-1602

Re: N.W. Mauthe Groundwater Treatment System
Appleton, Wisconsin
Quarterly Progress Report #8
MCO. No. M050-90728.14

Dear Ms. Huffman:

Enclosed, please find Midwest Contract Operations, Inc.'s "Quarterly Progress Report #8" for the N.W. Mauthe Groundwater Treatment System, 725 South Outagamie Street, Appleton, Wisconsin.

The Progress Report includes a brief background of the site history, a summary of any sampling results at the site or in the adjacent groundwater monitoring wells, operation and maintenance activities. This quarterly report includes the months of July, August and September 2000.

If you have any questions or require additional information, feel free to contact me.

Very truly yours,

MIDWEST CONTRACT OPERATIONS, INC.

John M. Stoeger
Project Manager

JMS:smdt

Enclosure: Quarter Progress Report #8

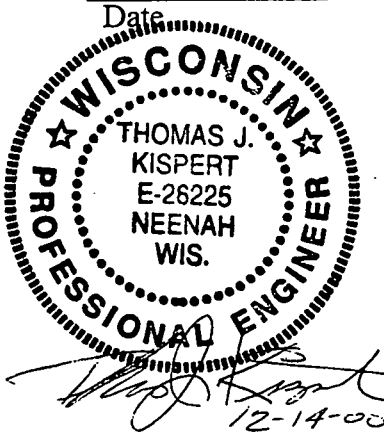
cc: Jessica Garratt – City of Appleton

Professional Qualifications Statement

"I, Thomas J. Kispert, hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. 700 to 726, Wis. Adm. Code."

Thomas J. Kispert, P.E., C.C.S. / P.E. No. E-26225
Senior Project Engineer

12-14-00
Date



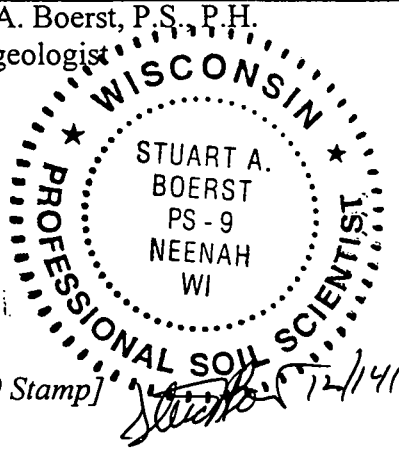
12-14-00

[P.E. Stamp]

"I, Stuart A. Boerst, hereby certify that I am a Hydrogeologist, as the term is defined in s. NR 712.03(1), Wisconsin Administrative Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wisconsin Administrative Code."

Stuart A. Boerst, P.S., P.H.
Hydrogeologist

12/14/00
Date



12/14/00

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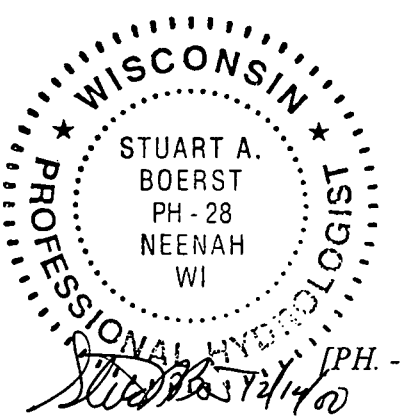

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QUARTERLY PROGRESS REPORT #8

July, August, September 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Prepared By
Midwest Contract Operations, Inc.
December 14, 2000
MCO. No. M050-90728.14

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QUARTERLY PROGRESS REPORT #8
July, August, September 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM
Appleton, Wisconsin

Prepared For The
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

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I. SITE BACKGROUND

The N.W. Mauthe site is a former electroplating facility, located at 725 South Outagamie Street, Appleton, Wisconsin (refer to Figure #1, Site Location Map). The property was used for a chrome plating company, from 1960 until 1976. Electroplating of zinc, cadmium and, possibly, copper and silver was conducted from 1978 to 1987 in an adjacent building on the same property. After 1987, all plating operations ceased on the property.

Concerns over sub-surface discharges to the surrounding environment led the Wisconsin Department of Natural Resources (DNR) and United States Environmental Protection Agency (USEPA) to conduct a remedial investigation and clean up of the N.W. Mauthe site and surrounding properties.

The investigation determined the N.W. Mauthe site was contaminated with zinc, cadmium, chromium and cyanide. Additionally, several volatile organic compounds (VOC's) were also present.

Based upon the findings of the remedial investigation, the following actions were taken to remediate the N.W. Mauthe site and adjacent properties of the sub-surface contamination.

A. Demolition and removal of the buildings on the N.W. Mauthe property.

B. Excavation and off-site treatment of soils with a total chromium concentration of greater than 500 mg/kg.

C. Backfilling of the excavation with clean soils, capping the site with 2-feet of clay and topsoil, and the establishment of vegetative cover.

D. Installation of groundwater collection trenches and construction and operation of a groundwater treatment facility to contain and/or control groundwater contamination with ultimate compliance with groundwater Applicable or Relevant and Appropriate Requirements (ARAR's).

E. Improvement or installation of foundation drain systems and cleaning, painting or sealing of basement walls and floors, as needed, for homes or businesses in the area of the site, to prevent seepage of contaminated water into the buildings.

The groundwater collection trench system, the location of sump pump and drain connections, and the groundwater monitoring wells and piezometers associated with the site are shown in Figure #2.

Midwest Contract Operations, Inc. (MCO) began operating the groundwater treatment system in February 1997. CH_2M Hill, the site engineer and project manager for the U.S. EPA, retained responsibility for the overall site operations and the groundwater monitoring wells associated with the treatment system.

The objectives of the collection and treatment system are to reduce the contaminant concentrations in the groundwater to achieve federal drinking water standards and/or state groundwater quality standards, whichever are more stringent.

In October 1998, after the first year of operation and maintenance of the remediation system, the Wisconsin DNR assumed the responsibility from the U.S. EPA for all operation and maintenance of the site. MCO was retained by the Wisconsin DNR for the operation and maintenance of the entire groundwater treatment system, including the groundwater monitoring wells. To date, MCO has completed eight rounds of groundwater sampling and is operating the batch treatment process, which is designed to remove chromium from the groundwater. A description of the batch process will be discussed in the following section of this report.

II. BATCH TREATMENT PROCESS

As part of the remediation phase at the N.W. Mauthe site, a groundwater collection system was installed on and adjacent to the N.W. Mauthe property. Approximately 1,000 lineal feet of coarse sand filled trenching was installed to draw groundwater from the contaminated areas to two collection sumps. From the collection sumps, groundwater is pumped to a 9,000 gallon holding tank, located within the treatment building.

Each batch of groundwater to be treated is pumped from the storage tank to the reaction tank. The batch process treatment system utilizes ferrous sulfate and caustic additions to treat the contaminated groundwater. Through chemical addition, mixing, aeration and settling, the chromium is removed from the groundwater. The fully automated process treats approximately 2,600 gallons per batch (based on physical tank measurements) and is capable of treating four batches per day.

Treated groundwater decants from the reaction tank to the City of Appleton sanitary sewer system. The chromium containing sludge settles to the bottom of the reaction tank. Excess sludge is pumped to a sludge storage tank, also located within the treatment building.

During each discharge, the effluent is tested for hexavalent chromium using a Hach Test kit. The pH is recorded off two meters, located in the reaction tank. The pH values from the two meters are recorded during discharge as the high and low pH values on a daily log sheet. The average of the two pH values is calculated. The effluent wastewater is tested quarterly for total chromium at a DNR approved environmental laboratory. The total chromium concentration for the sample collected at Outfall #001 on September 27, 2000 was 510 ug/l. Additionally, the City of Appleton conducts semi-annual compliance testing of the treatment system effluent. The most recent compliance sample was collected on September 28, 2000.

For the months of July, August and September 2000, a total of 252,505 gallons of contaminated groundwater was treated and discharged. Using an average groundwater concentration of 1.3 mg/l hexavalent chromium, the calculated reduction in hexavalent chromium would be 2.74 pounds over the three month period. The effluent flows are recorded based upon the effluent meter reading. These readings generally overstate the effluent flows as compared to volumetric tank measurements, due to design constraints regarding the flow meter installation. The flow meter totals have been the accepted method for recording effluent flows. Therefore, all references to flow and calculations are based upon the flow meter readings.

A summary of batches of groundwater treated, for the period of July through September 2000, is included in Table #1.

III. GROUNDWATER SAMPLING

A. Groundwater Sampling Procedures

A total of 11 groundwater monitoring wells are associated with the groundwater treatment system. Additionally, four piezometers were installed to measure the effectiveness of the groundwater collection trench system.

Groundwater levels are measured in the monitoring wells and the piezometers, relative to the north side of the top of the well casing. A summary of the current groundwater levels for the site is included in Table #2. The groundwater contours for groundwater monitoring wells, relative to site, are shown on Figure #3. The groundwater potentiometric contours for the piezometers, relative to the site, are shown on Figure #4.

The 11 groundwater monitoring wells were sampled on September 27, 2000. A dedicated submersible pump is installed in each well. Water level measurements were collected from each monitoring well, prior to sampling. Each well was slowly pumped dry and allowed to recharge for approximately 3-hours. The wells were then pumped dry again, allowed to recharge and then sampled. Two duplicate samples were also collected as a quality control measure. Purge water from the wells was collected and dumped into the collection sumps. The pump water volumes collected from the groundwater wells and the field testing data are included in Table #5. The groundwater sampling field documentation sheets are contained in Appendix A.

The sampling process utilized a flow through cell to read the pH, temperature, conductivity, redox potential and dissolved oxygen in each well. The flow through cell consisted of a 1-liter laboratory beaker placed over a 5-gallon bucket. Flow through the cell was maintained at approximately 250 ml/min. utilizing a resister to control pump flow. The same approximate flow rate was maintained for purging and sampling. Groundwater samples were collected upon stabilization of the conductivity in each monitoring well or after a well had been purged dry twice. The pH, conductivity, redox potential and dissolved oxygen readings for each monitoring well were recorded upon stabilization of the conductivity or just prior to sampling. The groundwater samples were collected in the order of VOC vials first (if applicable) and metal samples second. The metal samples were not filtered. The laboratory containers supplied for metals analysis included NA0H and HN03 as preservatives. The collected samples were submitted to Northern Lake Service, Inc., Crandon, Wisconsin. The collected samples were analyzed for selected metals and Volatile Organic Compounds (VOC's), as specified by the Wisconsin DNR. Alkalinity and ferrous iron testing was conducted using field

Hach test kits. As of the December 15, 1999 sampling event, the sampling parameters were modified by the Wisconsin DNR. Copper, Cyanide, Mercury and Zinc analysis was discontinued on all wells. VOC analysis was reduced to annually for all wells except MW-107. MW-107 will continue to be sampled for VOC's quarterly.

B. Groundwater Sampling Results

The collected groundwater samples were analyzed for Cadmium, Chromium and Manganese. Additionally, the sample collected at Well MW-107 was analyzed for VOC's. Field analysis was conducted at each well for pH, temperature, conductivity, dissolved oxygen, Redox potential, alkalinity and ferrous iron. The field analysis sampling results will track the ability of the soil and groundwater to naturally bio-remediate the residual volatile organic compounds at the site.

The laboratory analytical results indicate that levels of total chromium exceed the DNR NR 140.10 Groundwater Enforcement Standard in monitoring wells MW-103 (280 ug/l), MW-104 (510 ug/l) and MW-107 (11,000 ug/L). MW-107 is the closest down-gradient well to the remediation building. Additionally, three VOC compounds in MW-107 (1,1-Dichloroethene, 1,1,1-Trichloroethane and Trichloroethene) were detected in excess of either the NR 149.21(9) maximum contaminant levels (MCL's) or the NR 140.10 Groundwater Enforcement Standards (ES). Exceedances of the MCL and ES for manganese have been found in all of the groundwater wells since sampling began in February 1997. These exceedances also appear in the background wells (W-2 and MW-108), which would indicate that the high levels of manganese in the groundwater occurs naturally. The laboratory analytical results are contained in Tables #3 and #4. The field testing results are contained in Table #5. An isoconcentration map for total chromium concentrations is shown in Figure #5. The chain of custody forms and laboratory analytical data are included in Appendix B.

The City of Appleton's compliance sample, collected on February 15, 2000 at Outfall #001, had a Total Chromium concentration of .09 milligrams per liter. The sample results from the City's September 28, 2000 effluent sampling were not received by the time the report was prepared.

A summary of the sample results from Outfall #001 are shown in Table #6. The sampling results are contained in Appendix C. A summary of the influent Hexavelent Chromium concentrations is contained in Table #7. The listed concentrations are based upon the weekly Hatch kit analysis of the treatment system influent.

The effectiveness of the existing groundwater treatment system will require analysis of data over an extended period of time to evaluate trends in metals and VOC reductions.

IV. PUBLIC CONTACTS

There were no public contacts during the reporting period.

V. CONCLUSIONS & RECOMMENDATIONS

Groundwater level data collected from the 11 monitoring wells and four piezometers associated with the N.W. Mauthe groundwater treatment system indicate the groundwater collection trenches, installed as part of the site remediation system, have created a capture zone that directs the groundwater flows in the remediation area to the collection trenches and, ultimately, to the groundwater treatment system.

The purpose of creating the capture zone is to contain the migration of the contamination down-gradient of the contamination source and to direct impacted groundwater to the collection system and, ultimately, treatment in the batch process.

The latest round (September 27, 2000) of groundwater samples collected from the 11 monitoring wells, indicates residual chromium contamination above the DNR NR 140.10 ES exists in monitoring wells MW-103, MW-104 and MW-107. Additionally, three VOC compounds in excess of the NR 140.10 ES or the NR 149.21(9) maximum contaminant levels (MCL's) were detected in MW-107. High levels of manganese, noted historically in all wells, appears to occur naturally and may not be related to the past site uses.

A total of 252,505 gallons of impacted groundwater has been treated during the months of July, August and September 2000, and discharged to the City of Appleton municipal sanitary sewer system. Analysis by MCO and the City of Appleton of the treatment system effluent did not indicate any exceedances of the local discharge permit limits for the site.

Based upon the September 27, 2000 groundwater sampling results and the batch treatment process analytical results, MCO recommends continued operation of the groundwater treatment system at the N.W. Mauthe groundwater remediation site.

MCO has recommended elimination of the natural attenuation testing for all wells, except MW-107. The Wisconsin DNR has determined that they will not allow the reduction in natural attenuation monitoring.

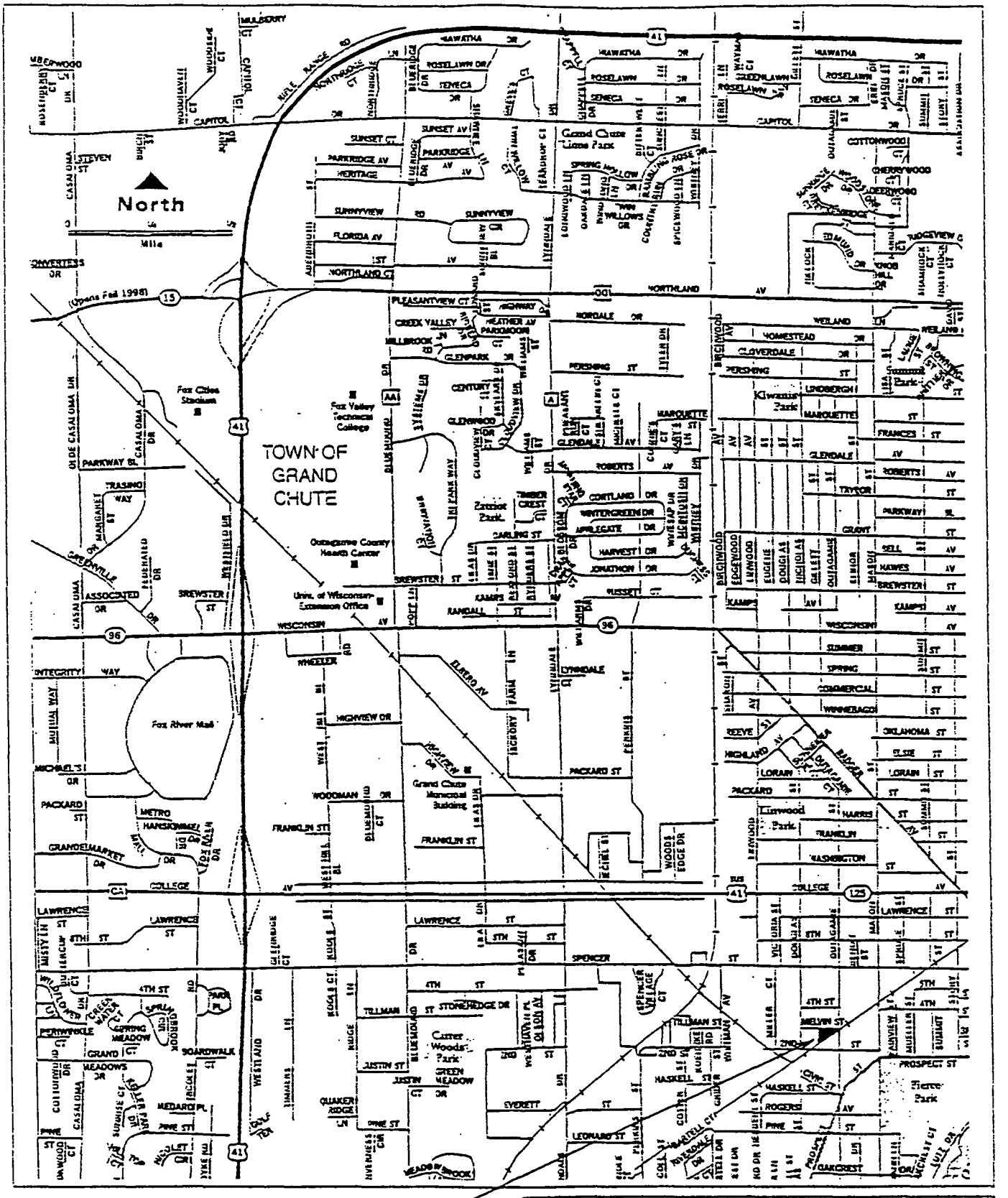

FIGURE 1

SITE LOCATION MAP

N.W. MAUTHE SUPERFUND SITE
APPLETON, WI

McM #M050-98808 July, 99

McMAHON
ASSOCIATES, INC.
ENGINEERS ▪ ARCHITECTS
SCIENTISTS ▪ SURVEYORS

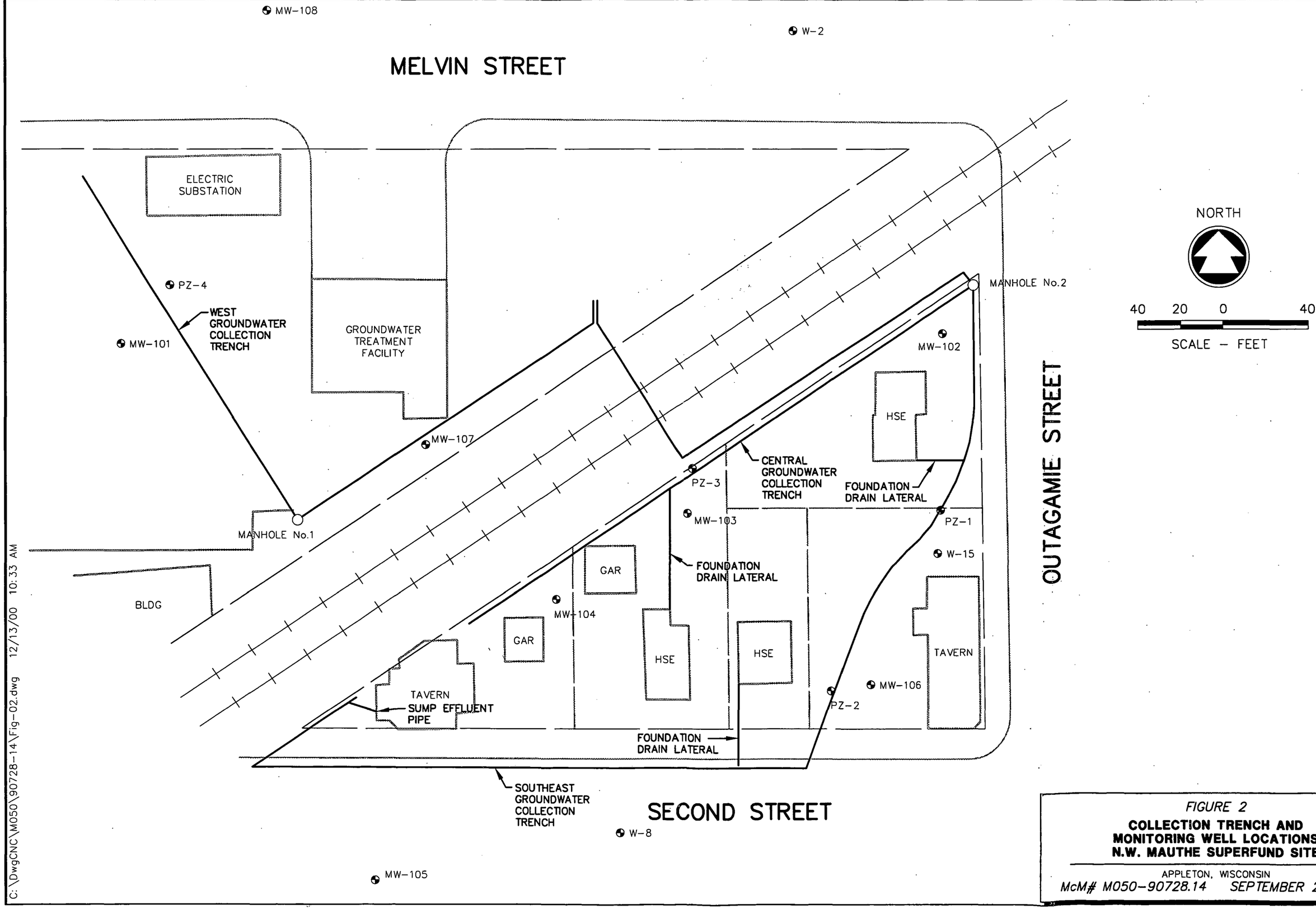

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FIGURE 2

COLLECTION TRENCH AND MONITORING WELL LOCATIONS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-90728.14 SEPTEMBER 27, 2000

MW-108
800.33

W-2
801.38

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4

MW-101
797.18

GROUNDWATER TREATMENT FACILITY

MW-107
796.65

MANHOLE No.1

BLDG

GAR

MW-104
798.67

GAR

TAVERN

SUMP EFFLUENT PIPE

HSE

HSE

PZ-3

CENTRAL GROUNDWATER COLLECTION TRENCH

FOUNDATION DRAIN LATERAL

MW-103
795.98

FOUNDATION DRAIN LATERAL

FOUNDATION DRAIN LATERAL

PZ-2

MW-106
796.67

MANHOLE No.2

MW-102
780.80

HSE

PZ-1

W-15
797.56

TAVERN

OUTAGAMIE STREET

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8
797.70

MW-105
800.58

801
799
797
795
793
791
789
787
785
783
781
797
799

NORTH

40 20 0 40

SCALE – FEET

LEGEND

W-2 803.06 — MONITORING WELL & GROUNDWATER ELEVATION

GROUNDWATER FLOW DIRECTION

797 — GROUNDWATER CONTOUR

FIGURE 3

GROUNDWATER MONITORING WELLS LOCATIONS & GROUNDWATER CONTOURS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-90728.14 SEPTEMBER 27, 2000

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MW-108

W-2

MELVIN STREET

ELECTRIC SUBSTATION

787

WEST GROUNDWATER COLLECTION TRENCH

PZ-4
787.70

MW-101

GROUNDWATER TREATMENT FACILITY

785

MANHOLE No.2

CENTRAL GROUNDWATER COLLECTION TRENCH

MW-102

HSE

FOUNDATION DRAIN LATERAL

MW-107

PZ-3
783.41

785

MANHOLE No.1

MW-103

PZ-1
785.96

W-15

BLDG

GAR

MW-104

FOUNDATION DRAIN LATERAL

GAR

HSE

787

HSE

TAVERN

789

MW-106

TAVERN

SUMP EFFLUENT PIPE

PZ-2
789.21

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8

MW-105

OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE – FEET

LEGEND

PZ-1
785.96
PIEZOMETER & POTENTIOMETRIC SURFACE ELEVATION

POTENTIOMETRIC GRADIENT

FIGURE 4

PIEZOMETER LOCATIONS AND POTENTIOMETRIC CONTOURS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-90728.14 SEPTEMBER 27, 2000

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MW-108
2.9 ug/L

W-2
1.1 ug/L*

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4

MW-101
19 ug/L

GROUNDWATER TREATMENT FACILITY

MANHOLE No.2

MW-102
2.1 ug/L

HSE

MW-107
11000 ug/L

PZ-3

CENTRAL GROUNDWATER COLLECTION TRENCH

FOUNDATION DRAIN LATERAL

MANHOLE No.1

MW-103
280 ug/L

PZ-1

W-15
4.2 ug/L

BLDG

GAR

MW-104
510 ug/L

GAR

FOUNDATION DRAIN LATERAL

HSE

HSE

TAVERN

MW-106
0.88 ug/L*

PZ-2

TAVERN

SUMP EFFLUENT PIPE

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8
0.75 ug/L*

MW-105
1.2 ug/L*

10
100
1000

OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE – FEET

LEGEND

10	ISOCONCENTRATION OF CHROMIUM (ESTIMATED)
<	LESS THAN THE DETECTION LIMIT
ug/L	MICROGRAM.LITER
MW-102	MONITORING WELL
*	ANOLYTE DETECTED IN THE AREA OF LESS CERTAIN QUANTITATION

FIGURE 5

ISOCONCENTRATION MAP
TOTAL CHROMIUM ug/L in Groundwater
N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN
McM# M050-90728.14 SEPTEMBER 27, 2000

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Table #1

GROUNDWATER BATCH DISCHARGES / July, August, September 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chromium Concentration (mg/l)
07/02/00	070200A	2,384,297	3,206	8.04	7.91	7.97	0
07/04/00	070400A	2,387,438	3,141	8.04	7.92	7.98	0
07/06/00	070600A	2,390,579	3,141	8.00	7.99	8.00	0
07/08/00	070800A	2,393,645	3,066	8.06	7.94	8.00	0
07/08/00	070800B	2,396,849	3,204	8.11	8.03	8.07	0
07/09/00	070900A	2,400,077	3,033	8.03	7.99	8.01	0
07/09/00	070900B	2,403,110	3,228	8.04	7.95	8.00	0
07/10/00	071000A	2,406,231	3,121	7.99	7.95	7.97	0
07/10/00	071000B	2,409,402	3,171	8.01	7.94	7.97	0
07/11/00	071100A	2,412,531	3,129	7.98	7.90	7.94	0
07/11/00	071100B	2,415,657	3,126	8.02	7.91	7.96	0
07/12/00	071200A	2,418,747	3,090	8.00	7.91	7.96	0
07/13/00	071300A	2,421,930	3,183	8.02	7.92	7.97	0
07/14/00	071400A	2,425,129	3,199	8.00	7.90	7.95	0
07/15/00	071500A	2,428,243	3,114	7.92	7.92	7.92	0
07/16/00	071600A	2,431,376	3,133	7.92	7.91	7.91	0
07/18/00	071800A	2,434,533	3,157	8.06	7.96	8.01	0
07/20/00	072000A	2,437,688	3,155	8.00	7.95	7.98	0
07/21/00	072100A	2,440,856	3,168	8.01	7.91	7.96	0
07/24/00	072400A	2,444,026	3,170	8.00	8.01	8.05	0
07/27/00	072700A	2,447,143	3,117	8.06	7.93	8.00	0
07/28/00	072800A	2,450,280	3,137	8.04	7.94	7.99	0
07/31/00	073100A	2,453,430	3,150	8.01	7.93	7.97	0

* As tested with a Hach Hexavalent Chromium Field Test Kit.

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Table #1

GROUNDWATER BATCH DISCHARGES / July, August, September 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chromium Concentration (mg/l)
08/03/00	080300A	2,456,647	3,217	8.03	7.89	7.96	0
08/07/00	080700A	2,459,780	3,133	8.03	7.94	7.99	0
08/08/00	080800A	2,462,899	3,119	8.10	8.00	8.05	0
08/09/00	080900A	2,466,076	3,177	8.04	7.97	8.01	0
08/14/00	081400A	2,469,181	3,105	8.00	7.90	7.95	0
08/14/00	081400B	2,472,325	3,144	8.06	7.91	7.99	0
08/15/00	081500A	2,475,498	3,173	8.04	7.98	8.01	0
08/15/00	081500B	2,478,680	3,182	8.02	7.92	7.97	0
08/16/00	081600A	2,481,899	3,219	8.06	7.95	8.00	0
08/16/00	081600B	2,485,011	3,112	8.02	7.92	7.97	0
08/17/00	081700A	2,488,239	3,228	8.07	8.00	8.03	0
08/18/00	081800A	2,491,367	3,128	8.03	7.91	7.97	0
08/18/00	081800B	2,494,510	3,143	8.04	7.99	8.03	0
08/19/00	081900A	2,497,693	3,183	8.06	8.01	8.04	0
08/20/00	082000A	2,500,815	3,122	8.09	8.01	8.05	0
08/21/00	082100A	2,503,899	3,084	8.10	7.99	8.05	0
08/22/00	082200A	2,507,037	3,138	8.07	7.97	8.02	0
08/24/00	082400A	2,510,203	3,166	8.14	8.03	8.08	0
08/25/00	082500A	2,513,262	3,059	8.08	7.99	8.04	0
08/28/00	082800A	2,516,384	3,122	8.11	8.03	8.07	0
08/30/00	083000A	2,519,499	3,115	8.07	8.00	8.04	0
08/31/00	083100A	2,522,753	3,254	8.09	8.00	8.05	0

* As tested with a Hach Hexavalent Chromium Field Test Kit.

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Table #1

GROUNDWATER BATCH DISCHARGES / July, August, September 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chromium Concentration (mg/l)
09/01/00	090100A	2,525,802	3,211	8.04	7.91	7.97	0
09/03/00	090300A	2,529,001	3,199	8.00	7.90	7.95	0
09/04/00	090400A	2,532,208	3,207	7.98	7.91	7.95	0
09/04/00	090400B	2,535,399	3,191	8.03	7.90	7.96	0
09/04/00	090400C	2,538,565	3,166	8.00	7.90	7.95	0
09/05/00	090500A	2,541,696	3,131	7.99	7.92	7.99	0
09/05/00	090500B	2,544,890	3,194	8.03	8.00	8.01	0
09/05/00	090500C	2,548,051	3,161	8.07	7.99	8.03	0
09/06/00	090600A	2,551,242	3,191	8.06	7.95	8.00	0
09/08/00	090800A	2,554,455	3,213	8.03	7.90	7.96	0
09/09/00	090900A	2,557,660	3,205	8.11	8.02	8.06	0
09/10/00	091000A	2,560,787	3,127	8.04	7.53	7.97	0
09/12/00	091200A	2,563,900	3,113	8.03	7.96	7.99	0
09/12/00	091200B	2,567,107	3,207	8.06	7.99	8.02	0
09/13/00	091300A	2,570,189	3,082	8.01	7.90	7.95	0
09/13/00	091300B	2,573,345	3,156	8.03	7.90	7.96	0
09/14/00	091400A	2,576,500	3,155	8.05	8.00	8.02	0
09/14/00	091400B	2,579,699	3,199	8.08	8.01	8.04	0
09/15/00	091500A	2,582,844	3,145	8.03	7.93	7.98	0
09/15/00	091500B	2,585,990	3,146	8.06	7.98	8.02	0
09/16/00	091600A	2,589,210	3,220	8.06	8.00	8.03	0
09/16/00	091600B	2,592,457	3,247	8.10	8.01	8.05	0
09/17/00	091700A	2,555,589	3,132	8.03	8.00	8.01	0
09/18/00	091800A	2,598,762	3,173	8.07	7.97	8.02	0
09/19/00	091900A	2,601,908	3,146	8.04	7.93	7.98	0
09/20/00	092000A	2,604,944	3,036	8.08	8.01	8.04	0
09/21/00	092100A	2,608,008	3,064	8.09	8.00	8.04	0
09/22/00	092200A	2,611,203	3,195	8.04	7.95	8.00	0
09/24/00	092400A	2,616,360	3,157	8.09	7.99	8.04	0
09/25/00	092500A	2,617,520	3,160	8.03	7.97	8.00	0
09/25/00	092500B	2,670,678	3,158	8.08	8.01	8.04	0
09/27/00	092700A	2,623,888	3,210	8.04	7.90	7.97	0
09/28/00	092800A	2,627,078	3,190	7.90	7.84	7.87	0
09/29/00	092900A	2,630,267	3,189	7.99	7.90	7.94	0
09/30/00	093000A	2,633,434	3,167	8.03	7.95	7.99	0
TOTAL			**252,505**				

* As tested with a Hach Hexavalent Chromium Field Test Kit.

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Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
W-2	02/01/97	-		798.66
	05/01/97	-		801.01
	09/01/97	-		800.28
	12/01/97	-	804.66	797.69
	03/01/98	-		802.08
	06/01/98	-		799.38
	10/27/98	5.85		798.81
	02/08/99	4.50		800.16
	06/08/99	3.31		801.35
	09/13/99	5.78		798.88
	12/15/99	6.63		798.03
	03/13/00	1.60		803.06
	06/22/00	2.63		802.03
	09/27/00	3.28		801.38
W-8	02/01/97	-		797.22
	05/01/97	-		797.66
	09/01/97	-		798.01
	12/01/97	-	803.36	796.52
	03/01/98	-		798.16
	06/01/98	-		797.31
	10/27/98	6.41		796.95
	02/08/99	5.49		797.87
	06/08/99	4.38		798.98
	09/13/99	6.71		796.65
	12/15/99	6.91		796.45
	03/13/00	6.25		797.11
	06/22/00	6.42		797.34
	09/27/00	5.66		797.70
W-15	02/01/97	-		793.97
	05/01/97	-		796.92
	09/01/97	-		797.23
	12/01/97	-	803.76	795.52
	03/01/98	-		796.78
	06/01/98	-		796.32
	10/27/98	7.95		795.81
	02/08/99	9.19		794.57
	06/08/99	6.89		796.87
	09/13/99	7.85		795.91
	12/15/99	8.97		794.79
	03/13/00	7.80		795.96
	06/22/00	6.42		797.34
	09/27/00	6.30		797.46

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-101	02/01/97	-		797.16
	05/01/97	-		799.99
	09/01/97	-		798.67
	12/01/97	-	807.59	798.21
	03/01/98	-		803.43
	06/01/98	-		800.48
	10/27/98	10.26		797.33
	02/08/99	11.91		795.68
	06/08/99	9.79		797.80
	09/13/99	10.35		797.24
	12/15/99	9.01		798.58
	03/13/00	12.67		794.92
	06/22/00	6.28		801.31
	09/27/00	10.41		797.18
MW-102	02/01/97	-		780.72
	05/01/97	-		780.89
	09/01/97	-		780.79
	12/01/97	-	804.45	780.95
	03/01/98	-		780.47
	06/01/98	-		780.72
	10/27/98	24.11		780.34
	02/08/99	23.84		780.61
	06/08/99	23.59		780.86
	09/13/99	23.70		780.75
	12/15/99	24.27		780.18
	03/13/00	24.00		780.45
	06/22/00	23.69		780.76
	09/27/00	23.65		780.80
MW-103	02/01/97	-		795.29
	05/01/97	-		791.83
	09/01/97	-		789.60
	12/01/97	-	803.74	787.78
	03/01/98	-		791.03
	06/01/98	-		789.13
	10/27/98	11.96		791.78
	02/08/99	10.24		793.50
	06/08/99	8.69		795.05
	09/13/99	9.79		793.95
	12/15/99	12.68		791.06
	03/13/00	9.63		794.07
	06/22/00	8.22		795.52
	09/27/00	7.76		795.98

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-104	02/01/97	-		792.94
	05/01/97	-		789.91
	09/01/97	-		798.59
	12/01/97	-	807.28	795.70
	03/01/98	-		799.46
	06/01/98	-		796.60
	10/27/98	10.51		796.77
	02/08/99	9.04		798.24
	06/08/99	7.49		799.79
	09/13/99	10.28		797.00
	12/15/99	10.78		796.50
	03/13/00	9.51		797.77
	06/22/00	8.41		798.88
	09/27/00	8.61		798.67
MW-105	02/01/97	-		793.74
	05/01/97	-		800.60
	09/01/97	-		800.37
	12/01/97	-	803.96	799.03
	03/01/98	-		800.08
	06/01/98	-		800.50
	10/27/98	5.41		798.55
	02/08/99	6.46		797.50
	06/08/99	3.04		800.92
	09/13/99	4.60		799.36
	12/15/99	5.28		798.68
	03/13/00	4.97		798.99
	06/22/00	3.06		800.90
	09/27/00	3.38		800.58
MW-106	02/01/97	-		794.75
	05/01/97	-		797.23
	09/01/97	-		796.91
	12/01/97	-	804.08	795.48
	03/01/98	-		797.37
	06/01/98	-		796.76
	10/27/98	8.12		795.96
	02/08/99	9.75		794.33
	06/08/99	6.72		797.36
	09/13/99	7.88		796.20
	12/15/99	8.71		795.37
	03/13/00	8.72		795.36
	06/22/00	6.87		797.21
	09/27/00	7.41		796.67

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-107	02/01/97	-		788.23
	05/01/97	-		796.60
	09/01/97	-		797.64
	12/01/97	-	809.01	796.49
	03/01/98	-		796.68
	06/01/98	-		796.31
	10/27/98	10.71		798.30
	02/08/99	11.11		797.90
	06/08/99	11.04		797.97
	09/13/99	11.55		797.46
	12/15/99	11.66		797.35
	03/13/00	11.13		797.88
	06/22/00	10.69		798.32
	09/27/00	12.36		796.65
MW-108	02/01/97	-		798.36
	05/01/97	-		793.32
	09/01/97	-		790.53
	12/01/97	-	806.61	788.65
	03/01/98	-		795.59
	06/01/98	-		789.30
	10/27/98	6.98		799.63
	02/08/99	6.72		799.89
	06/08/99	5.80		800.81
	09/13/99	6.68		799.93
	12/15/99	6.87		799.74
	03/13/00	6.84		799.77
	06/22/00	6.28		800.33
	09/27/00	6.31		800.30
PZ-01	10/27/98	17.43	804.17	786.74
	02/08/99	18.24		785.93
	06/08/99	18.22		785.95
	09/13/99	18.25		785.92
	12/15/99	18.25		785.92
	03/13/00	18.25		785.92
	06/22/00	18.21		785.96
	09/27/00	18.21		785.96
PZ-02	10/27/98	14.66	803.64	788.98
	02/08/99	14.70		788.94
	06/08/99	14.70		788.94
	09/13/99	14.74		788.90
	12/15/99	14.72		788.92
	03/13/00	14.76		788.88
	06/22/00	14.41		789.23
	09/27/00	14.43		789.21

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
PZ-03	10/27/98	22.71	803.62	780.91
	02/08/99	23.74		779.88
	06/08/99	23.74		779.88
	09/13/99	23.55		780.07
	12/15/99	23.52		780.10
	03/13/00	23.30		780.24
	06/22/00	23.40		780.22
	09/27/00	20.21		783.41
PZ-04	10/27/98	15.18	807.30	792.12
	02/08/99	23.61		783.69
	06/08/99	21.69		785.61
	9/13/99	23.87		783.43
	12/15/99	23.80		783.50
	03/13/00	25.77		781.53
	06/22/00	22.51		784.79
	09/27/00	19.60		787.70

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
W-2	02/20/97	NA	15	26	NA	460.0	NA	49
	05/27/97	0.43	8.5	<10	NA	170.0	<.2	30
	09/18/97	0.27	4.5**	9.5**	3**	116.0	<.03	16.9
	12/12/97	.13*	6.2	<9.7	<.8	133.0	.06*	20.4
	03/25/98	0.08	<3.9	<9.5	<1.7	83.8	.007*	18.6
	06/10/98	.31*	16.4	18.6**	<1.7	466.0	.027*	40.8
	10/27/98	.51*	3.60	4.7*	<.0032	69.0	<.05	170
	02/09/99	.46*	<.62	4.0	<.0032	240.0	<0.05	23
	06/08/99	<.31	<.62	1.8*	<.0032	290.0	<0.05	<12
	09/13/99	<.31	2.00	3.2	<.0032	240.0	<.05	<12
	12/15/99	<.31	.72 *	NA	NA	2.8	NA	NA
	03/13/00	<.31	.79 *	NA	NA	7.8	NA	NA
	06/22/00	<.31	<.62	NA	NA	<.42	NA	NA
	09/27/00	2.70	1.1*	NA	NA	17.0	NA	NA
W-8	02/20/97	NA	17	22	NA	320.0	NA	34
	05/27/97	1.6	37	27	NA	670.0	<.2	54
	09/18/97	0.45	14.4	14.6**	1**	338.0	.11**	31.8
	12/12/97	0.5*	5.7	<9.7	<.8	147.0	.07*	17.1
	03/25/98	0.43	10.1	15**	<1.7	205.0	.007*	21
	06/10/98	0.54	9.9	12.6**	<1.7	264.0	.016*	21.6
	10/27/98	0.80	3.90	4.8*	<.0032	64.0	<.05	85
	02/09/99	<.31	<.62	<60	<.0032	850.0	<.05	12
	06/08/99	<.31	<.62	2.6	<.0032	50.0	<.05	<12
	09/13/99	<.31	1.90	2.7	<.0032	98.0	<.05	29
	12/15/99	<.31	2.80	NA	NA	180.0	NA	NA
	03/13/00	<.31	1.4 *	NA	NA	65.0	NA	NA
	06/22/00	<.31	3.10	NA	NA	74.0	NA	NA
	09/27/00	.27*	.75*	NA	NA	26.0	NA	NA
W-15	02/20/97	NA	32	52	NA	430.0	NA	88
	05/27/97	0.27	5.9	15	NA	97.0	<.2	39
	09/18/97	0.31	13.9	18.8**	<.78	325.0	<.03	35.5
	12/12/97	.12*	5.7	9.7**	<.8	80.9	.03*	18.5
	03/25/98	.04*	<3.9	<9.5	<1.7	85.7	.038*	13.7
	06/10/98	.11*	10	13.2**	<1.7	147.0	.016*	18.8
	10/27/98	.41*	6.80	7.40	<.0032	110.0	<.05	100
	02/09/99	<.31	<.62	<.60	<.0032	320.0	<.05	<12
	06/08/99	<.31	2.40	14.00	<.0032	130.0	<.05	66
	09/13/99	<.31	5.30	6.40	<.0032	130.0	<.05	16
	12/15/99	<.31	5.00	NA	NA	90.0	NA	NA
	03/13/00	<.31	7.00	NA	NA	130.0	NA	NA
	06/22/00	<.31	1.80	NA	NA	11.0	NA	NA
	09/27/00	<.23	4.20	NA	NA	24.0	NA	NA

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Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-101	02/20/97	NA	36	41	NA	820.0	NA	49
	05/27/97	<.2	10	11	NA	170.0	<.03	18
	09/18/97	.06**	11.9	10.7**	1**	145.0	<.05	18.2
	12/12/97	.06*	12.8	<9.7	<.8	176.0	.05*	20.7
	03/25/98	.04*	20.9	21.6**	<1.7	239.0	.007*	32.7
	06/10/98	.27*	48.2	46.8	<1.7	604.0	.044*	75.9
	10/27/98	<.16	3.20	4.2*	<.0032	24.0	<.05	54
	02/09/99	<.31	<.62	<.60	<.0032	1900.0	<.05	14
	06/08/99	<.31	1.80	8.2	<.0032	380.0	<.05	39
	09/13/99	<.31	2.90	5.1	<.0032	31.0	<.05	<12
	12/15/99	<.31	2.50	NA	NA	9.1	NA	NA
	03/13/00	<.31	2.30	NA	NA	100.0	NA	NA
	06/22/00	<.31	1.4 *	NA	NA	<4.2	NA	NA
	09/27/00	<.23	19.00	NA	NA	37.0	NA	NA
MW-102	02/20/97	NA	26	38	NA	570.0	NA	34
	05/27/97	0.21	48	77	NA	920.0	<.2	73
	09/18/97	.08**	<3.92	6.9**	2**	302.0	<.03	8.7
	12/12/97	.04*	<3.9	<9.7	<.8	387.0	.04*	10.9
	03/25/98	.11*	<3.9	9.5**	<1.7	302.0	.007*	7.4*
	06/10/98	.04*	<3.9	<9.8	<1.7	318.0	.018*	9.5
	10/27/98	.27*	.98*	3.2*	<.0032	340.0	<.05	24
	02/09/99	<.31	.73*	<.60	<.0032	670.0	<.05	20
	06/08/99	<.31	1.2*	5.8	<.0032	140.0	<.05	36
	09/13/99	<.31	4.00	15.0	<.0032	160.0	<.05	73
	12/15/99	<.31	1.2 *	NA	NA	550.0	NA	NA
	03/13/00	<.31	1.70	NA	NA	580.0	NA	NA
	06/22/00	<.31	<.62	NA	NA	310.0	NA	NA
	09/27/00	<.23	2.10	NA	NA	130.0	NA	NA
MW-103	02/20/97	NA	1,300	47	NA	800.0	NA	27
	05/27/97	<.2	160.0	31	NA	900.0	<.2	29
	09/18/97	.06**	35.2	13.5**	3**	287.0	<.03	13.7
	12/12/97	.04*	16.3	<9.7	<.8	84.3	.09*	21.4
	03/25/98	.04*	15.5	<9.5	<1.7	83.0	.007*	7.5*
	06/10/98	.15*	57.6	27.5	<1.7	417.0	.02*	33.7
	10/27/98	<.16	6.30	2.3*	<.0032	27.0	<.05	30.0
	06/08/99	<.31	87.00	3.5	<.0032	810.0	<.05	30
	09/13/99	<.31	720.0	5.9	<.0032	83.0	<.05	15
	12/15/99	<.31	260.0	NA	NA	160.0	NA	NA
	03/13/00	<.31	600.0	NA	NA	79.0	NA	NA
	06/22/00	<.31	130.0	NA	NA	180.0	NA	NA
	09/27/00	<.23	280.0	NA	NA	230.0	NA	NA

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Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-104	02/20/97	NA	5.9	15	NA	550.0	NA	6.9
	05/27/97	<.02	6.9	11	NA	470.0	<.2	5.2
	09/18/97	<.04	35.6	5**	3**	235.0	<.03	4.74
	12/12/97	.04*	61.8	9.8**	<.8	279.0	.05*	14
	03/25/98	.04*	66.8	<9.5	<1.7	73.6	.008*	7.4*
	06/10/98	.04*	219.0	<9.8	<1.7	107.0	.016*	12.8
	10/27/98	.29*	150.0	2.3*	<.0032	25.0	<.05	30
	02/09/99	<.31	94.0	1.4*	<.0032	1000.0	<.05	<12
	06/08/99	1*	62.0	12.0	<.0032	620.0	<.05	17
	09/13/99	<.31	80.0	3.2	<.0032	9.2	<.05	<12
	12/15/99	<.31	170.0	NA	NA	1.6	NA	NA
	03/13/00	<.31	300.0	NA	NA	13.0	NA	NA
	06/22/00	<.31	210.0	NA	NA	41.0	NA	NA
	09/27/00	<.23	510.0	NA	NA	3.9	NA	NA
MW-105	02/20/97	NA	21	22	NA	1100.0	NA	23
	05/27/97	<.2	5	<10	NA	120.0	<.2	12
	09/18/97	.14**	29.5	28.3	1**	532.0	<.03	46
	12/12/97	.36*	15.8	12.5**	<.8	297.0	.03*	27.1
	03/25/98	.04*	30.8	27.6	<1.7	518.0	.064*	44
	06/10/98	.048*	13.7	15.3**	<1.7	217.0	.016*	22.1
	10/27/98	.29*	8.80	8.20	<.0032	150.0	<.05	70
	02/09/99	<.31	1.3*	4.30	<.0032	2000.0	<.05	19
	06/08/99	<.31	1*	18.00	<.0032	1300.0	<.05	66
	09/13/99	<.31	.64*	24.00	<.0032	1700.0	<.05	30
	12/15/99	<.31	<.62	NA	NA	860.0	NA	NA
	03/13/00	<.31	4.80	NA	NA	660.0	NA	NA
	06/22/00	<.31	1.0 *	NA	NA	600.0	NA	NA
	09/27/00	<.23	1.2*	NA	NA	700.0	NA	NA
MW-106	02/20/97	NA	21	24	NA	320.0	NA	26
	05/27/97	<.02	40	35	NA	590.0	<.2	68
	09/18/97	.05**	5.5	6.2**	1**	56.9	<.03	35.6
	12/12/97	.04*	9.2	9.7**	<.08	155.0	.03*	18.4
	03/25/98	NA	13.40	14.4**	<1.7	150.0	.007*	18.5
	06/10/98	.04*	<3.9	10.2**	<1.7	10.0	.016*	10.9
	10/27/98	.27*	3.20	4.3*	<.0032	38.0	<.05	88
	02/09/99	<.31	<.62	1.1*	<.0032	760.0	<.05	22
	06/08/99	<.31	.79*	2.3	<.0032	900.0	<.05	<12
	09/13/99	<.31	1.80	4.7	<.0032	1100.0	<.05	30
	12/15/99	<.31	1.3 *	NA	NA	130.0	NA	NA
	03/31/00	<.31	2.30	NA	NA	270.0	NA	NA
	06/22/00	<.31	.73 *	NA	NA	<4.2	NA	NA
	09/27/00	<.23	.88*	NA	NA	50.0	NA	NA

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-107	02/20/97	NA	2,000	13	NA	190.0	NA	6.9
	05/27/97	<.2	3,600	<10	NA	91.0	<.2	10
	09/18/97	<.04	2,670	<8.1	1**	59.3	<.03	33.5
	12/12/97	.04*	2,310	<9.7	<.8	48.4	.1*	6.7
	03/25/98	.04*	11,200*	12.1**	<1.7	68.2	.041*	9.3*
	06/10/98	.11*	6,240	13.8**	<1.7	161.0	.027*	17.3*
	10/27/98	<.16	7,100	1.2*	<.0032	28.0	<.05	94
	02/09/99	<.31	3,200	1.9*	<.0032	49.0	<.05	<12
	06/08/99	<.31	5,800	3.0	<.0032	25.0	<.05	<12
	09/13/99	<.31	4,000	1.9*	<.0032	18.0	<.05	<12
	12/15/99	<.31	14,000	NA	NA	.83 *	NA	NA
	03/13/00	<.31	8,100	NA	NA	22.0	NA	NA
	06/22/00	<.31	14,000	NA	NA	<42	NA	NA
	09/27/00	<.23	11,000	NA	NA	4.9	NA	NA
MW-108	02/20/97	NA	25	23	NA	490.0	NA	31
	05/27/97	<.2	11	13	NA	210.0	<.2	15
	09/18/97	.14**	27.4	22.4**	1**	462.0	<.03	36.6
	12/12/97	.04*	5.6	<9.7	<.8	74.8	.03*	27.9
	03/25/98	.04*	9.4	10.4**	<1.7	142.0	.007*	13.8
	06/10/98	.14*	28.4	25.5	<1.7	478.0	.021*	40.5
	10/27/98	.26*	8.90	7.40	<.0032	88.0	<0.5	44
	02/09/99	<.31	1.70	3.90	<.0032	560.0	<.05	30
	06/08/99	<.31	3.10	1.4*	<.0032	450.0	<.05	54
	09/13/99	<.31	4.50	5.30	<.0032	100.0	<.05	<12
	12/15/99	<.31	6.10	NA	NA	79.0	NA	NA
	03/13/00	<.31	3.6	NA	NA	41.0	NA	NA
	06/22/00	<.31	6.5	NA	NA	<4.2	NA	NA
	09/27/00	<.23	2.9	NA	NA	29.0	NA	NA
Maximum Contaminant Level (MCL)		5	100	100	200	50.0	2	5,000
Enforcement Standard Chapter NR 140.10		5	100	1,300	200	50.0	2	5,000
Preventive Action Limit Chapter NR 140.10		0.5	10	130	40	25.0	0.2	2,500

EXPLANATION:

Samples collected prior to 10/27/98 were collected by CH2M Hill.
* = Detection of compound in area of less certain quantification.
** = Compound was found in sample and blank.
ND = Not detected above the analytical laboratories method detection limit
NA = Not Analyzed
MW-104 = Was tested for Aluminum, Nickel, Arsenic & Lead. No quantifiable detections were noted for any of the analytes.
ug/L = Microgram/Liter
mg/L = Milligram / Liter
Indicates an exceedance of the NR 140 Groundwater Quality Enforcement Standard

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Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
W-2	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.15*	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.18	<.17	***	.13*	<.14	<.15	<.14	***	<37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
W-8	02/20/97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<40	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<40	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	03/25/98	<.5	<.6	<85	<40	<7	<7	<.3	<68	<40	<.5	<.5	.3**	-
	06/10/98	<.5	<.6	<85	<40	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.19*	<.15	<.15	<.15	<.18	<.17	***	.15*	<.14	<.15	<.15	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.18	<.17	***	0.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
W-15	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	0.22	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	06/08/99	.16*	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-101	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	.491*	.353*	<7	<7	<124	<68	3.03	<.5	3.31	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.91	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-102	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<.85	<85	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<85	<7	<7	<.4	<68	<40	<.5	<.5	.4*	-
	06/10/98	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.65	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.21*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-103	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.15*	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-104	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	.324*	<.5	<.5	<124	-
	12/12/97	<.5	<.6	0.4	<.7	<7	<7	<120	<68	1*	<.5	0.9	<120	-
	03/25/98	<.5	<.8	<85	<.7	<7	<7	<120	<68	.8*	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	2*	<.5	<.5	<120	-
	10/27/98	<.24	<.23	.35*	<.28	<.27	<.26	<.17	<.21	1.8	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	.38*	<.15	<.16	<.17	***	.17*	1.5	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	.34*	<.15	<.16	<.17	***	.14*	1.4	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	.38*	<.15	<.16	<.17	***	.27*	1.6	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	.38 *	<.35	<.15	<.39	***	<.37	1.6	<.11	<.34	***	<.71
MW-105	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<38	<40	<.5	<.5	.4*	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.16*	<.15	<.14	<.15	<.16	<.17	***	.3*	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-106	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	2.73*	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.18*	<.15	<.14	<.15	<.18	<.17	***	<.17	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	0.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-107	02/20/97	<.5	0.3	11	8.4	0.7	<.7	<.5	<.5	81	0.6	50	<.5	-
	05/27/97	0.09	1.10	36	40	3.1	<3.1	<.5	0.34	390	3.5	420	<.5	-
	09/18/97	<10	<12	47.6*	22.1	2.61*	<2.61	<2480	<68	265*	2.83	295	<2480	-
	12/12/97	<10	<12	56*	23	3*	<3	<2500	<68	280	3	290	<2500	-
	03/25/98	<25	<30	61*	69	5*	<5	<17	<68	720	5	620	17*	-
	06/10/98	<12	<15	59*	58	<3	<3	<3100	63*	340*	4*	390	<3100	-
	10/27/98	<.24	1.4	62	46*	3.6	.51*	<.17	<.21	550	4.9	640	<.36	-
	02/09/99	<3.2	<3.8	48	24	<4.0	<4.2	***	<3.2	220	<.38	250	***	<9.2
	06/08/99	<2.6	<3.0	42	20	<3.2	<3.4	***	<2.6	200	<3.0	310	***	<7.4
	09/13/99	<.26	<3.0	34	19	<.32	<3.4	***	<2.6	180	<.3.0	320	***	<.7.4
	12/15/99	<3.2	<3.8	37	56	4.6 *	<4.2	***	<3.2	570	4.5 *	880	***	<9.2
	03/13/00	<26	<23	50 *	32 *	<12	<31	***	<30	340	<.90	630	***	<57
	06/22/00	<26	<23	<29	50 *	<12	<31	***	<30	540	<9	850	***	<57
	09/27/00	<26	<23	35*	54*	<12	<31	***	<30	560	<9	870	***	<57
MW-108	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<44	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.22	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.83	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.15*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.84	<.14	<.15	<.14	***	<.32
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.36	***	<.71
MCL NR 149.21 (9)		5.0	-	-	7.0	70	100	-	1,000	200	5.0	5.0	---	-
Enforcement Standards (ES) 140.10		5	6	850	7	70	100	620**	343	200	5	5	620**	620
Preventive Action Plan (PAL) 140.10		0.5	0.6	85	0.7	7	20	124**	686	40	0.5	0.5	124**	124

EXPLANATION:

Results prior to 10/27/98 for cis-1,2,-Dichloroethene and Trans-1,2 Dichloroethene were listed as Total Dichloroethene and were placed in this table under the heading cis-1,2,-Dichloroethene.
Results prior to 10/27/98 for Ortho Xylene and Meta, para Xylene were listed as Total Xylenes and were placed in this table under the heading Meta, para Xylene.
* = Detection of compound in area of less certain quantification
** = Standard includes Ortho-, Meta, para-Xylenes
*** = As of 02/09/99 Xylene results are listed as "Total Xylenes".
ND = Not Detected
NA = Not Analyzed
MCL = Maximum Contaminant Levels
ug/l = Microgram/Liter
= Indicates an exceedance of the MCL 149.21(9) or ES 140.10

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Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
W-2	02/20/97	NR	8.00	6.00	750 us	NA	NA	NA	NA
	05/27/97	NR	7.74	10.10	NA	NA	NA	NA	NA
	09/18/97	NR	7.01	14.50	910 us	NA	NA	NA	NA
	12/12/97	NR	7.33	9.50	820 us	NA	NA	NA	NA
	03/25/98	NR	7.96	7.90	1235 us	NA	NA	NA	NA
	06/10/98	NR	6.59	10.20	1057 us	NA	NA	NA	NA
	10/27/98	4.00	7.93	14.80	1278 us	1.40	119.00	12.00	0.00
	02/09/99	4.00	8.47	9.50	1278 us	2.10	146.00	16.00	0.20
	06/08/99	4.00	7.20	14.60	1234 us	1.00	85.00	11.20	1.00
	09/13/99	5.10	7.34	15.00	1254 us	1.90	(136.00)	9.60	0.00
	12/15/99	4.80	7.77	11.80	1199 us	1.50	(231.00)	4.80	0.00
	03/13/00	7.00	6.17	8.90	1278 us	1.30	59.00	7.60	0.00
	06/22/00	4.40	7.86	12.10	1240 us	1.50	59.00	7.60	0.00
	09/27/00	6.60	6.39	16.40	1140 us	1.90	(187.00)	9.60	0.00
W-8	02/20/97	NR	8.20	7.50	1000 us	NA	NA	NA	NA
	05/27/97	NR	7.30	10.40	NA	NA	NA	NA	NA
	09/18/97	NR	7.07	17.00	1250 us	NA	NA	NA	NA
	12/12/97	NR	7.32	11.20	1090 us	NA	NA	NA	NA
	03/25/98	NR	7.34	7.90	1590 us	NA	NA	NA	NA
	06/10/98	NR	6.95	11.50	1407 us	NA	NA	NA	NA
	10/27/98	5.00	7.42	16.70	1459 us	1.30	97.00	14.40	0.20
	02/09/99	3.90	8.08	11.20	1386 us	1.30	21.00	8.00	2.40
	06/08/99	5.50	7.23	14.80	1283 us	1.80	85.00	14.00	5.60
	09/13/99	5.20	7.12	16.30	1363 us	1.70	(143.00)	14.40	1.60
	12/15/99	5.10	7.25	10.30	1375 us	0.90	(288.00)	14.40	1.20
	03/13/00	5.00	7.06	8.80	1277 us	1.10	(33.00)	8.40	1.00
	06/22/00	4.80	8.58	14.60	1177 us	1.97	(120.00)	6.80	0.00
	09/27/00	6.00	7.60	18.10	1098 us	1.50	(178.00)	10.00	0.00
W-15	02/20/97	NR	8.15	9.00	920 us	NA	NA	NA	NA
	05/27/97	NR	7.66	10.00	NA	NA	NA	NA	NA
	09/18/97	NR	7.22	16.00	1300 us	NA	NA	NA	NA
	12/12/97	NR	7.18	10.40	1180 us	NA	NA	NA	NA
	03/25/98	NR	7.70	8.40	1450 us	NA	NA	NA	NA
	06/10/98	NR	6.46	11.60	1496 us	NA	NA	NA	NA
	10/27/98	4.00	7.27	16.00	1551 us	0.80	137.00	14.40	0.00
	02/09/99	2.60	8.07	10.00	1418 us	1.30	7.00	12.00	0.60
	06/08/99	4.50	7.54	16.70	1465 us	1.50	75.00	12.00	1.40
	09/13/99	3.60	7.18	17.60	1647 us	1.90	(137.00)	10.40	0.80
	12/15/99	3.30	7.52	11.70	1544 us	1.50	(281.00)	12.40	1.00
	03/13/00	4.00	7.14	8.90	1266 us	1.40	(19.00)	7.60	0.40
	06/22/00	3.00	8.22	14.90	1546 us	1.63	36.00	7.30	0.00
	09/27/00	5.00	5.43	17.40	1711 us	1.30	(41.00)	12.40	0.00
MW-101	02/20/97	NR	7.12	8.00	1400 us	NA	NA	NA	NA
	05/27/97	NR	7.56	12.90	NA	NA	NA	NA	NA
	09/18/97	NR	6.54	14.00	1380 us	NA	NA	NA	NA
	12/12/97	NR	6.64	11.40	1390 us	NA	NA	NA	NA
	03/25/98	NR	7.58	10.50	2142 us	NA	NA	NA	NA
	06/10/98	NR	6.29	11.50	2116 us	NA	NA	NA	NA
	10/27/98	9.00	7.13	14.10	2.27 ms	0.50	116.00	12.00	0.00
	02/09/99	7.00	8.11	12.70	2.11 ms	1.10	165.00	8.80	0.20
	06/08/99	6.00	7.05	15.00	2.17 ms	0.70	161.00	8.00	0.20
	09/13/99	5.90	7.25	14.90	2.12 ms	0.90	(125.00)	13.60	0.00
	12/15/99	6.00	8.71	12.70	2.06 ms	1.00	(262.00)	8.80	0.00
	03/13/00	7.00	6.34	11.60	1939 us	1.10	44.00	8.00	0.00
	06/22/00	5.00	7.73	15.20	2.25 ms	0.96	50.00	8.00	0.00
	09/27/00	8.50	6.80	15.50	2.18 ms	0.70	3.00	12.80	0.00

Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-102	02/20/97	NR	8.00	10.50	700 us	NA	NA	NA	NA
	05/27/97	NR	7.47	10.50	NA	NA	NA	NA	NA
	09/18/97	NR	6.99	13.00	810 us	NA	NA	NA	NA
	12/12/97	NR	7.23	8.50	690 us	NA	NA	NA	NA
	03/25/98	NR	7.68	10.20	1145 us	NA	NA	NA	NA
	06/10/98	NR	6.97	10.30	1046 us	NA	NA	NA	NA
	10/27/98	2.00	8.07	13.00	1197 us	1.50	103.00	17.60	0.40
	02/09/99	0.50	7.48	11.00	1164 us	1.00	0.33	14.40	0.00
	06/08/99	0.50	7.89	18.60	1226 us	1.00	151.00	4.80	0.80
	09/13/99	0.50	7.84	13.30	1208 us	1.20	(246.00)	10.00	1.20
	12/15/99	0.50	7.78	9.00	1152 us	1.60	(288.00)	10.80	1.00
	03/13/00	0.50	6.74	9.70	1096 us	1.20	(260.00)	6.80	0.00
	06/22/00	0.50	8.01	12.30	1233 us	0.53	(13.00)	6.00	0.00
	09/27/00	0.50	8.25	12.50	1182 us	1.90	(241.00)	9.20	0.00
MW-103	02/20/97	NR	6.30	6.00	700 us	NA	NA	NA	NA
	05/27/97	NR	7.67	11.60	NA	NA	NA	NA	NA
	09/18/97	NR	7.21	10.50	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.43	9.00	970 us	NA	NA	NA	NA
	03/25/98	NR	7.82	9.40	1441 us	NA	NA	NA	NA
	06/10/98	NR	6.24	9.90	1356 us	NA	NA	NA	NA
	10/27/98	8.00	7.66	12.70	1566 us	0.70	147.00	12.00	0.20
	02/09/99	7.80	7.48	9.90	1443 us	1.40	53.00	11.20	0.80
	06/08/99	9.50	7.42	13.90	1350 us	0.70	109.00	7.20	0.00
	09/13/99	4.10	7.41	12.90	985 us	1.60	(165.00)	12.00	0.00
	12/15/99	4.60	7.82	10.60	2.58 ms	1.40	(294.00)	10.80	0.00
	03/13/00	4.00	6.57	9.40	1292 us	1.00	76.00	8.40	0.40
	06/22/00	4.00	8.43	11.50	1354 us	0.99	(90.00)	6.00	0.00
	09/27/00	11.00	7.48	13.70	1131 us	1.40	(302.00)	7.60	0.00
MW-104	02/20/97	NR	7.43	8.00	1000 us	NA	NA	NA	NA
	05/27/97	NR	8.00	12.00	NA	NA	NA	NA	NA
	09/18/97	NR	7.13	10.50	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.10	9.60	1000 us	NA	NA	NA	NA
	03/25/98	NR	7.94	8.30	1378 us	NA	NA	NA	NA
	06/10/98	NR	6.53	9.70	1101 us	NA	NA	NA	NA
	10/27/98	8.00	7.84	13.20	1272 us	0.90	103.00	16.40	0.40
	02/09/99	9.50	7.66	10.10	1126 us	1.50	193.00	11.20	0.00
	06/08/99	13.00	6.80	15.60	1259 us	1.60	103.00	6.40	0.00
	09/13/99	13.80	7.08	13.90	1334 us	1.80	(146.00)	10.80	0.00
	12/15/99	11.20	7.68	10.80	1172 us	2.00	(232.00)	11.20	0.00
	03/13/00	16.50	6.91	10.20	1121 us	0.40	69.00	11.20	0.60
	06/22/00	11.00	8.65	11.60	1137 us	0.71	(211.00)	6.80	0.00
	09/27/00	8.00	7.24	12.90	1130 us	1.70	(123.00)	13.20	0.00
MW-105	02/20/97	NR	7.70	7.00	1600 us	NA	NA	NA	NA
	05/27/97	NR	7.44	10.50	NA	NA	NA	NA	NA
	09/18/98	NR	6.89	16.00	2150 us	NA	NA	NA	NA
	12/12/97	NR	7.04	12.00	2050 us	NA	NA	NA	NA
	03/25/98	NR	7.35	6.70	2878 us	NA	NA	NA	NA
	06/10/98	NR	6.25	11.10	2695 us	NA	NA	NA	NA
	10/27/98	5.00	7.57	16.80	2.87 ms	0.10	121.00	13.60	0.00
	02/09/99	5.90	7.34	10.60	2.76 ms	0.90	281.00	16.80	1.80
	06/08/99	5.00	7.32	17.80	2.87 ms	0.70	90.00	9.60	0.20
	09/13/99	3.50	7.00	17.20	2.74 ms	1.70	(182.00)	13.20	1.40
	1215/99	3.60	7.36	13.00	2.62 ms	1.60	(255.00)	8.80	1.20
	03/13/00	4.50	6.58	8.40	2430 us	1.30	23.00	9.60	0.80
	06/22/00	3.20	8.44	14.30	2.71 ms	0.88	(304.00)	6.40	0.00
	09/27/00	6.00	6.62	17.90	2.53 ms	1.10	(198.00)	12.80	0.00

Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS

N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-90728.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-106	02/20/97	NR	7.75	10.00	1000 us	NA	NA	NA	NA
	05/27/97	NR	7.47	10.10	NA	NA	NA	NA	NA
	09/18/97	NR	7.19	15.00	1310 us	NA	NA	NA	NA
	12/12/97	NR	7.06	11.50	1260 us	NA	NA	NA	NA
	03/25/98	NR	7.61	8.70	1716 us	NA	NA	NA	NA
	06/10/98	NR	7.11	11.60	1604 us	NA	NA	NA	NA
	10/27/98	4.00	7.31	16.80	1824 us	1.20	138.00	12.80	0.00
	02/09/99	2.50	7.33	10.20	1605 us	1.10	197.00	20.80	0.00
	06/08/99	3.50	7.15	15.40	1332 us	0.70	17.00	6.40	0.20
	09/13/99	2.30	7.02	17.40	1357 us	1.00	(168.00)	11.60	0.00
	12/15/99	2.00	8.41	12.10	1445 us	0.80	(266.00)	10.00	0.00
	03/13/00	2.50	6.92	9.10	1513 us	1.60	18.00	10.40	0.00
	06/22/00	1.50	8.18	14.50	1736 us	2.02	38.00	7.20	0.00
	09/27/00	6.00	6.84	19.10	1715 us	1.60	(8.00)	12.00	0.00
MW-107	02/20/97	NR	7.46	9.00	650 us	NA	NA	NA	NA
	05/27/97	NR	7.12	10.80	NA	NA	NA	NA	NA
	09/18/97	NR	7.07	12.50	700 us	NA	NA	NA	NA
	12/12/97	NR	7.08	10.50	730 us	NA	NA	NA	NA
	03/25/98	NR	7.87	10.20	1081 us	NA	NA	NA	NA
	06/10/98	NR	7.17	10.60	1042 us	NA	NA	NA	NA
	10/27/98	10.00	7.41	12.10	1179 us	1.10	62.00	20.00	10.00
	02/09/99	9.00	8.10	12.00	1189 us	1.30	263.00	7.20	0.40
	06/08/99	9.00	7.48	15.60	1406 us	2.20	163.00	4.80	0.40
	09/13/99	8.00	7.30	12.90	1301 us	2.60	(114.00)	14.00	0.60
	12/15/99	10.00	7.63	11.30	1419 us	2.80	(42.00)	12.40	1.00
	03/13/00	14.50	5.76	10.90	1389 us	1.20	58.00	8.40	0.60
	06/22/00	10.00	8.75	12.40	1574 us	0.62	(120.00)	6.40	0.00
	09/27/00	10.00	7.42	14.20	1505 us	1.60	(114.00)	9.20	0.00
MW-108	02/20/97	NR	8.10	10.00	100 us	NA	NA	NA	NA
	05/27/97	NR	6.02	11.40	NA	NA	NA	NA	NA
	09/18/97	NR	6.51	12.00	1160 us	NA	NA	NA	NA
	12/12/97	NR	6.98	10.40	1130 us	NA	NA	NA	NA
	03/25/98	NR	7.64	10.20	1568 us	NA	NA	NA	NA
	06/10/98	NR	6.54	10.70	1525 us	NA	NA	NA	NA
	10/27/98	10.00	7.95	14.30	1696 us	1.40	116.00	12.80	0.20
	02/09/99	8.10	7.51	11.00	1810 us	1.10	(65.00)	10.40	0.40
	06/08/99	12.50	7.60	15.00	1706 us	0.90	173.00	7.20	0.60
	09/13/99	13.50	7.29	13.60	1849 us	1.20	(180.00)	8.00	0.00
	12/15/99	12.80	7.68	11.80	1885 us	1.00	(286.00)	8.40	0.00
	03/13/00	14.00	6.25	10.20	1642 us	1.70	(4.00)	9.20	0.20
	6/22/00	11.50	7.62	14.10	1989 us	1.01	69.00	6.40	0.00
	9/27/00	12.00	7.43	13.10	1983 us	0.40	(73.00)	10.40	0.00

ppm = parts per million
us = microsiemens / centimeter
mV = millivolts
gpg = grains per gallon
ms = millisiemens / centimeter
NA = not analyzed
NR = not recorded
* = Each monitoring well was purged dry twice prior to sampling
The second purging was conducted approximately 3-hrs after initial purging. The volume of purge water collected represents the total of the two well purges. Purge volumes prior to 10/27/98 were not available.
( ) = Indicates a negative value.

JMS:smd
I.D.\Report\M050\90728\Qtrly-PR#8-JMS.xls

Table #6

LABORATORY ANALYTICAL RESULTS

Effluent Point 001

N.W. Mauthe Superfund Site - Appleton, Wisconsin

MCO No. M050-90728.14

Sample Name	Sample Date	Aluminum (mg/l)	Arsenic (mg/l)	Cadmium (mg/l)	Chromium Total (mg/l)	Copper (mg/l)	Cyanide (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Zinc (mg/l)	Hexavalent Chromium (mg/L)
Outfall 001*	02/20/97	<.02	<.003	<.00050	0.0400	<.01	<.00001	<.005	<.0002	<.005	0.0051	<.01
Outfall 001*	05/27/97	NA	NA	NA	0.2600	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	09/11/97	NA	NA	NA	0.5570	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	12/12/97	NA	NA	NA	0.2790	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	03/24/98	0.0152	<.002	<.00004	0.0637	<.0095	<.0017	<.0006	<.000015	<.0095	0.0046	0.1000
Outfall 001**	04/29/98	<.011	<.002	<.005	0.2200	<.05	0.0020	<.1	<.0002	<.04	<.005	NA
Outfall 001*	06/10/98	NA	NA	NA	0.0784	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	10/07/98	<.011	<.002	0.0050	0.1700	<.05	<.001	<.1	<.0002	<.04	0.0250	NA
Outfall 001***	10/27/98	NA	NA	NA	0.0940	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	02/09/99	NA	NA	NA	0.1600	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	03/18/99	<.009	<.003	<.0031	NA	.00068****	<.000032	<.0024	<.00005	.00351****	<.012	<.0036
Outfall 001**	03/18/99	<.011	<.002	<.005	<0.05	<.05	0.0010	0.1000	<.00005	0.0400	0.0180	NA
Outfall 001***	06/08/99	NA	NA	NA	0.1900	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	09/13/99	NA	NA	NA	0.1700	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	09/21/99	<.011	<.002	<.005	<.05	<.05	0.0030	<.1	<.00015	<.04	0.0080	NA
Outfall 001***	12/15/99	NA	NA	NA	0.0870	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	02/15/00	<.015	<.0020	<.005	0.0900	<.05	<.001	<.1	<.00013	<.04	0.0280	NA
Outfall 001***	03/13/00	<.009	<.003	<.00031	0.1400	<.0006	<.0044	<.0024	<.00005	.0012***	<.012	NA
Outfall 001 ***	06/22/00	NA	NA	NA	0.2400	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	09/27/00	NA	NA	NA	0.5000	NA	NA	NA	NA	NA	NA	NA
Effluent Limits Permit #97-21		70.0000	1.0000	0.3000	7.0000	3.5000	1.0000	2.0000	0.0020	2.0000	10.0000	4.5000

mg/l = milligram / liter
ug/l = microgram / liter
NA = not analyzed
* = Sampled by CH2M Hill
** = Sampled by the City of Appleton
*** = Sampled by MCO
**** = Detected of compound in area of less certain quantitation.

JMS:smd
I.D.\Report\M050\90728\Qtrly-PR#8-JMS.xls

Table #7

WEEKLY INFLUENT HEXAVALENT CHROMIUM RESULTS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO. No. M050-90728.14

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
02/26/97	1.0
03/03/97	.8
03/06/97	1.0
03/10/97	1.5
03/23/97	.9
03/29/97	1.2
04/06/97	1.1
04/09/97	1.2
04/16/97	1.0
04/25/97	1.0
04/27/97	1.1
05/02/97	1.1
05/08/97	1.1
05/13/97	1.2
05/21/97	1.1
05/29/97	1.1
06/06/97	1.2
06/13/97	1.2
06/17/97	1.3
06/23/97	1.2
07/02/97	1.2
07/08/97	1.2
07/14/97	1.2
07/21/97	1.2
07/28/97	1.4
08/04/97	1.4
08/13/97	1.3
08/18/97	1.3
08/25/97	1.3
09/04/97	1.3
09/08/97	1.5
09/15/97	1.4
09/24/97	1.3
10/01/97	1.3
10/08/97	1.4
10/15/97	1.3
10/22/97	1.4
10/29/97	1.4
11/05/97	1.3
11/11/97	1.2
11/22/97	1.0
11/24/97	1.0
12/03/97	1.0
12/10/97	1.0
12/17/97	1.1
01/07/98	1.0
01/14/98	1.0
01/21/98	1.0

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
01/28/98	1.0
02/04/98	1.4
02/11/98	1.4
02/18/98	1.4
02/25/98	0.8
03/04/98	1.3
03/11/98	1.3
03/18/98	1.3
03/26/98	1.3
04/01/98	0.8
04/08/98	1.0
04/15/98	1.3
04/23/98	1.3
04/29/98	1.3
05/06/98	1.3
05/13/98	1.3
05/20/98	1.3
05/27/98	1.4
06/03/98	1.3
06/10/98	1.4
06/17/98	1.2
06/24/98	1.2
07/01/98	1.1
07/08/98	1.1
07/15/98	1.1
07/23/98	1.3
07/29/98	1.3
08/06/98	1.2
08/12/98	1.2
08/19/98	1.2
08/26/98	1.2
09/02/98	1.2
09/09/98	1.2
09/16/98	1.2
09/23/98	1.2
09/30/98	1.2
10/07/98	1.0
10/15/98	1.1
10/21/98	1.3
10/28/98	1.3
11/04/98	1.1
11/11/98	1.1
11/18/98	1.2
11/25/98	1.2
12/02/98	1.2
12/09/98	1.5
12/16/98	1.3
12/23/98	1.3

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
12/30/98	1.3
01/06/99	1.3
01/12/99	1.1
01/20/99	1.2
01/28/99	1.3
02/03/99	1.3
02/10/99	1.4
02/17/99	1.4
02/24/99	1.4
03/03/99	1.3
03/10/99	1.3
03/17/99	1.3
03/24/99	1.3
03/31/99	1.3
04/07/99	1.2
04/14/99	1.2
04/21/99	1.1
04/28/99	1.2
05/05/99	1.2
05/12/99	1.2
05/19/99	1.1
05/26/99	1.2
06/02/99	1.1
06/10/99	1.4
06/16/99	1.5
06/23/99	2.2
06/30/99	2.2
07/07/99	2.4
07/14/99	2.0
07/21/99	1.8
07/28/99	1.2
08/04/99	1.5
08/11/99	1.4
08/18/99	1.3
08/25/99	1.3
09/01/99	1.3
09/08/99	1.4
09/15/99	1.5
09/21/99	1.3
09/29/99	1.2
10/06/99	1.4
10/13/99	1.5
10/20/99	1.4
10/27/99	1.4
11/04/99	1.3
11/10/99	1.2
11/18/99	1.3
11/24/99	1.2

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
11/30/99	1.3
12/08/99	1.3
12/15/99	1.2
12/22/99	1.3
12/29/99	1.2
01/06/00	1.3
01/12/00	1.3
01/19/00	1.2
01/26/00	1.2
02/02/00	1.1
02/09/00	1.1
02/16/00	1.2
02/23/00	1.3
03/01/00	1.2
03/08/00	1.3
03/14/00	1.2
03/22/00	1.2
03/29/00	1.1
04/05/00	1.4
04/11/00	1.1
04/19/00	1.1
04/26/00	1.1
05/03/00	1.3
05/10/00	1.1
05/17/00	1.2
05/24/00	1.1
05/31/00	1.1
06/07/00	1.4
06/14/00	0.5
06/21/00	1.0
06/28/00	1.1
07/05/00	1.3
07/12/00	1.2
07/19/00	1.3
07/26/00	1.3
08/02/00	1.3
08/09/00	1.4
08/16/00	1.2
08/23/00	1.4
08/30/00	1.3
09/06/00	1.4
09/13/00	1.2
09/20/00	1.2
09/27/00	1.4

*Hexavalent Chromium is Measured Utilizing a Hach Test Kit.

APPENDIX A

Groundwater Sampling
Data Sheets

GROUNDWATER SAMPLING FIELD PROCEDURES DOCUMENTATION

Facility/Project Name: NW Mantle Superfund S.t Date: 9/27/00
Section/Grid Location or Address: 725 S. Outagamie Street, Appleton, WI
Facility Type: Groundwater Treatment System License/Permit #:
DNR Regulatory Program: BRRTS
Weather (temp., cloudiness, bar. pres., wind): 65° Cloudy

Persons Sampling and Title: Mike Kienetz - MCO

Water Level Equipment (type, model): Solinst Water Level Indicator
Purging Equipment (type, model, material): Whale GP9160 Purge Pump

Purging Method (4 well vol. or stabilization): Stabilization
How Purge Volume Measured? (eg., calibrated bucket): Calibrated Bucket
Sample Collection Equipment (type, model, material): Whale Purge Pump

Method of Sample Withdrawal (bottom emptying device, low flow): Low Flow Pump
Type of Transfer Containers: NA
Filtering Equipment (type, material): NA
Filter Membrane (type, pore size): NA
When Were Samples Sent to Lab? 9/27/00
What Lab Were the Samples Sent to? Northern Lake Service, Crandon, WI
Were Enforcement Samples Sent? NO
How Were Samples Kept Cool (ice, other)? Ice
Equipment Decontamination Procedures? Latex Gloves, Pumps are dedicated to each well.
Decontamination Water Disposal? Placed into building collection sump for treatment
pH Meter (type, model): Orion Model 1230 plt, Conductivity, Redox, DO
Person calibrating: Mike Kienetz
Frequency calibrated: Prior To Sampling
Calibration procedures (buffers used): Per factory Specifications
Problems with meter: None
Conductivity Meter (type, model): As Above
Person calibrating:
Frequency calibrated:
Calibration procedures:
Problems with meter:

Groundwater Monitoring Field Form

McM

Project Number _____

Project Name Mauth Superfund S.t

Location _____

Date 9-27-00

Personnel MHK

Temp./Weather Cloudy 65°

Well	Date	Time	Depth to Water (Top of PVC) (ft)	Total Well Depth (Top of PVC) (ft)	Water Column Length (ft)	Req'd Gals to Purge 4 Casing Volumes	Amount Purged (gal)	Water Appear. (see below)	Sampling Method (see below)	Free Product (ft)	Sampl. (Y/N)	pH	Temp °C	Conductivity uS	D.O. mg/l	Redox mV	Alkalinity gpg	Ferrous Iron mg/l	Comments
W-2	9/27/00	1:00pm	3.78	13.0	9.22	6.6	5.5	1	EP	N	Y	6.39	16.4	1140	1.9	-187	9.6	0	3.5, 2
W-8			5.06	14.5	8.84	6.0	6.0	1	EP	N	Y	7.00	18.1	1098	1.5	-178	10.0	0	3.5, 2.5
W-15			6.30	15.0	8.70	5.9	5.0	1	EP	N	Y	5.43	17.4	1711	1.3	-41	12.4	0	3, 2
MW-101			10.41	27.5	17.09	11.6	8.5	1	EP	N	Y	6.80	15.5	2.18ms	.7	3	12.8	0	5, 3.5
MW-102			23.65	28.0	4.35	2.9	.5	1	EP	N	Y	8.25	12.5	1182	1.9	-141	9.2	0	.5
MW-103			7.76	27.0	19.24	13.1	11.0	1	EP	N	Y	7.49	13.7	1131	1.4	-302	7.6	0	6.5, 4.5
MW-104			8.61	26.0	17.39	11.8	8.0	1	EP	N	Y	7.24	12.9	1130	1.7	-123	13.2	0	6, 2
MW-105			3.38	15.5	12.12	8.2	6.0	1	EP	N	Y	6.62	17.9	2.53ms	1.1	-198	12.8	0	4, 2
MW-106			7.41	16.0	8.59	5.8	6.0	1	EP	N	Y	6.84	19.1	1715	1.6	-8	12.0	0	3.5, 2.5
MW-107			12.36	30.5	18.14	12.3	10.0	3	EP	Y	Y	7.42	14.2	1505	1.6	-114	9.2	0	6 4
MW-108			6.31	27.0	20.69	14.1	12.0	1	EP	N	Y	7.43	13.1	1583	.4	-73	10.4	0	8, 4
P2-01			18.21																
P2-02			14.43																
P2-03			20.21																
P2-04			19.60																

EQUIPMENT USED:

- ☑ Solinst Water Level Indicator
- ☑ Keck Interface Probe
- ☑ Alkalinity Hach Kit
- ☑ Ferrous Iron Hach Kit
- ☑ EC20 Portable Meter
- ☐ ICM Water Analyzer
- ☐ Other: _____

Comments: Numbers in "Comments" Column are totals for water pumped from each well.
MW-107, yellowish green

SAMPLING METHOD

- DB - Disposable Bailer
- PP - Peristaltic Pump
- EP - Electric Pump (whale)

WATER APPEARANCE

1 - Clear
2 - Slightly Cloudy
3 - Cloudy
4 - Very Cloudy
5 - Slightly Muddy
6 - Muddy

GALLONS PER FOOT TO GET 1 CASING VOLUME

- 1" PVC - 0.05 gallons/ft.
- 2" PVC - 0.17 gallons/ft.
- 4" PVC - 0.66 gallons/ft.
- 6" PVC - 1.47 gallons/ft.

\DATA\FILE\PPT\FORMS\FORMENVL.PPT 2/98 SAB:jmk

APPENDIX B

Laboratory Analytical Results
Groundwater Monitoring Wells

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

PAGE: 1 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: W-2 NLS#: 241187
Ref. Line 1 of COC 45866 Description: W-2
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	2.7	ug/L	0.23	0.82	SW846 6010	10/11/00	721026460
Chromium, tot. as Cr by ICP	< 1.1 >	ug/L	0.40	1.4	SW846 6010	10/11/00	721026460
Manganese, tot. as Mn by ICP	17	ug/L	2.0	2.0	SW846 6010	10/11/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: W-8 NLS#: 241188
Ref. Line 2 of COC 45866 Description: W-8
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.27 >	ug/L	0.23	0.82	SW846 6010	10/11/00	721026460
Chromium, tot. as Cr by ICP	< 0.75 >	ug/L	0.40	1.4	SW846 6010	10/11/00	721026460
Manganese, tot. as Mn by ICP	26	ug/L	2.0	2.0	SW846 6010	10/11/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: W-15 **NLS#: 241189**
Ref. Line 3 of COC 45866 Description: W-15
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	4.2	ug/L	0.40	1.4	SW846 6010	10/17/00	721026460
Manganese, tot. as Mn by ICP	24	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: MW-101 **NLS#: 241190**
Ref. Line 4 of COC 45866 Description: MW-101
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	19	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	37	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: MW-102 NLS#: 241191
Ref. Line 5 of COC 45866 Description: MW-102
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	2.1	ug/L	0.40	1.4	SW846 6010	10/17/00	721026460
Manganese, tot. as Mn by ICP	130	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: MW-103 NLS#: 241192
Ref. Line 6 of COC 45866 Description: MW-103
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	280	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	230	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: MW-104 **NLS#: 241193**
Ref. Line 7 of COC 45866 Description: W-104
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	510	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	3.9	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: MW-104A **NLS#: 241194**
Ref. Line 8 of COC 45866 Description: MW-104A
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	730	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	3.3	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: MW-105 **NLS#: 241195**
Ref. Line 9 of COC 45866 Description: MW-105
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	< 1.2 >	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	700	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: MW-106 **NLS#: 241196**
Ref. Line 10 of COC 45866 Description: MW-106
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	< 0.88 >	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	50	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: MW-107 **NLS#: 241197**
Ref. Line 11 of COC 45866 Description: MW-107
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	11000	ug/L	4.0	14	SW846 6010	10/17/00	721026460
Manganese, tot. as Mn by ICP	4.9	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	10/02/00	721026460

Sample ID: MW-107A **NLS#: 241198**
Ref. Line 12 of COC 45866 Description: MW-107A
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	11000	ug/L	4.0	14	SW846 6010	10/17/00	721026460
Manganese, tot. as Mn by ICP	5.0	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: MW-108 **NLS#: 241199**
Ref. Line 13 of COC 45866 Description: MW-108
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	2.9	ug/L	0.40	1.4	SW846 6010	10/17/00	721026460
Manganese, tot. as Mn by ICP	29	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: Process Water **NLS#: 241200**
Ref. Line 14 of COC 45866 Description: Process Water
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	510	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	7.6	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: Trip Blank **NLS#: 241201**
COC 45866 Description: Trip Blank
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
VOCs by EPA 524.2	see attached				EPA 524.2	10/02/00	721026460

Values in brackets represent results greater than the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than the LOQ are considered to be in the region of "Certain Quantitation".

LOD = Limit of Detection
LOQ = Limit of Quantitation
ND = Not Detected
DWB = Dry Weight Basis
NA = Not Applicable
%DWB = (mg/kg DWB)/10000

Jerry R Bock
Reviewed by:

Authorized by:
R. T. Krueger
Laboratory Manager

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe
Northern Lake Service Project Number: 56676

Sample: 241197 W-107 Collected: 27-SEP-00 Analyzed: 03-OCT-00

ANALYTE NAME	241197 W-107 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L
Benzene	ND	80	26	81
Chloroform	ND	80	23	72
1,1-Dichloroethane	< 35 >	80	29	92
1,1-Dichloroethene	< 54 >	80	28	90
cis-1,2-Dichloroethene	ND	80	12	38
trans-1,2-Dichloroethene	ND	80	31	100
Toluene	ND	80	30	95
1,1,1-Trichloroethane	560	80	27	85
1,1,2-Trichloroethane	ND	80	9.0	29
Trichloroethene	870	80	27	86
Xylene Total	ND	80	57	180

Surrogate Recovery on 4-Bromofluorobenzene = 101 %
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 103 %

Sample: 241198 W-107A Collected: 27-SEP-00 Analyzed: 03-OCT-00

ANALYTE NAME	241198 W-107A ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L
Benzene	ND	100	32	100
Chloroform	ND	100	28	90
1,1-Dichloroethane	ND	100	36	120
1,1-Dichloroethene	< 53 >	100	35	110
cis-1,2-Dichloroethene	ND	100	15	48
trans-1,2-Dichloroethene	ND	100	39	120
Toluene	ND	100	37	120
1,1,1-Trichloroethane	540	100	33	110
1,1,2-Trichloroethane	ND	100	11	36
Trichloroethene	850	100	34	110
Xylene Total	ND	100	71	230

Surrogate Recovery on 4-Bromofluorobenzene = 113 %
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 109 %

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe
Northern Lake Service Project Number: 56676

Sample: 241201 Trip Blank Collected: 27-SEP-00 Analyzed: 03-OCT-00

ANALYTE NAME	241201 Trip Blank ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L
Benzene	ND	1	0.32	1.0
Chloroform	ND	1	0.28	0.90
1,1-Dichloroethane	ND	1	0.36	1.2
1,1-Dichloroethene	ND	1	0.35	1.1
cis-1,2-Dichloroethene	ND	1	0.15	0.48
trans-1,2-Dichloroethene	ND	1	0.39	1.2
Toluene	ND	1	0.37	1.2
1,1,1-Trichloroethane	ND	1	0.33	1.1
1,1,2-Trichloroethane	ND	1	0.11	0.36
Trichloroethene	ND	1	0.34	1.1
Xylene Total	ND	1	0.71	2.3

Surrogate Recovery on 4-Bromofluorobenzene = 91.0 %
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 88.0 %

NO. 45866

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

DNR LICENSE	FID
CLIENT: McMahon	PROJECT TITLE: D.W. Marble
ADDRESS: P.O. Box 1025	PROJECT NO. / P.O. NO.
CITY: Ocanto STATE: 54957-1025 ZIP	CONTACT: John Stoeger PHONE: 920-751-4

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE				COLLECTION REMARKS
1.		W-2		9/27/00	2:40pm	GW	Grab	HNO3	HCl			
2.		W-8										
3.		W-15										
4.		MW-101										
5.		MW-102										
6.		MW-103										
7.		MW-104										
8.		MW-104A										
9.		MW-105										
10.		MW-106										
11.		MW-107							X			VOC's Also
12.		MW-107A							X			VOC's Also

SAMPLE TYPE: SW=surface water; WW=wastewater; GW=groundwater; DW=drinking water; TIS=tissue; AIR=air; PROD=product; SOIL=soil; SED=sediment; describe others

CONTAINER: P = plastic; G = glass; V = glass vial; B = plastic bag; describe others

PRESERVATIVES & PREPARATION: NP = nothing added; S = sulfuric acid; N = nitric acid; Z = zinc acetate; OH = sodium hydroxide; HA = hydrochloric & ascorbic acid; H = hydrochloric acid; F = field filtered

COLLECTED BY (signatures): Michael Kienert — CUSTODY SEAL NO. (IF ANY) — DATE/TIME: 9/27/00 3:30 PM

RELINQUISHED BY (signature): Michael Kienert — RECEIVED BY (signature): TO UPS — DATE/TIME: 9/27/00 3:30P

RELINQUISHED BY (signature) — RECEIVED BY (signature) — DATE/TIME

DISPATCHED BY (signature) — METHOD OF TRANSPORT — DATE/TIME

RECEIVED AT NLS BY (signature)	DATE/TIME	CONDITION	TEMP
Nicole Strong	9/28/00 10:00	OK	

SEAL INTACT: ☐ YES ☐ NO — SEAL # — REMARKS & OTHER INFORMATION

JTB 10/2/00

IMPORTANT:
1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

13. 241199 MW-108 — 9/27/00 2:40pm GW Grab HNO3 — JTB 10/20/00
14. 241200 Rinse Water
241201

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John Staeger	45866
McMahon Associates, Inc	QUOTATION NUMBER:
P.O. Box 1025	
Necedah, WI 54552-1025	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS? Total
COPIES TO:	SEND INVOICE TO: John Staeger

Note "T" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: 1 – 14 to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☐ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ Cyanide, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☐ Lead
- ☐ Lithium
- ☐ Magnesium
- ☐ Manganese
- ☐ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic. Sludge WI List
- ☐ VOCs by 8021
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☒ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Special Instructions: MW-107 & MW-1074 Only

APPENDIX C

Laboratory Analytical Results
Outfall #001

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 45866

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

CLIENT: McMahon	DNR LICENSE:	FID:	
ADDRESS: P.O. Box 1025	PROJECT TITLE: P.W. Mattz		
CITY: Neenah STATE: 54957-1025 ZIP:	PROJECT NO.:	P.O. NO.:	
	CONTACT: John Stoeger	PHONE: 920-751-4200	

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE				COLLECTION REMARKS
1		W-2		9/27/00	2:40pm	GW	Grab	HNO3	HCl			
2		W-8										
3		W-15										
4		MW-101										
5		MW-102										
6		MW-103										
7		MW-104										
8		MW-104A										
9		MW-105										
10		MW-106										
11		MW-107							X			VOC's Also
12		MW-107A							X			VOC's Also

SAMPLE TYPE:
SW=surface water; WW=wastewater; GW=groundwater; DW=drinking water; TIS=tissue; AIR=air; PROD=product; SOIL=soil; SED=sediment; describe others

CONTAINER: P = plastic; G = glass; V = glass vial; B = plastic bag; describe others

PRESERVATIVES & PREPARATION: NP = nothing added; S = sulfuric acid; N = nitric acid; Z = zinc acetate; OH = sodium hydroxide; HA = hydrochloric & ascorbic acid; H = hydrochloric acid; F = field filtered

COLLECTED BY (signature): Michael Kienetz	CUSTODY SEAL NO. (IF ANY)	DATE/TIME: 9/27/00 3:30PM
RELINQUISHED BY (signature): Michael Kienetz	RECEIVED BY (signature): TO UPS	DATE/TIME: 9/27/00 3:30P
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT	DATE/TIME

RECEIVED AT NLS BY (signature)	DATE/TIME	CONDITION	TEMP
Mac Mac	9/28/00 10:00	GOOD	

SEAL INTACT? ☒ YES ☐ NO | SEAL # | REMARKS & OTHER INFORMATION: -TH 9.29 JTB 10/2/00

IMPORTANT: 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

13. 241199 MW-108 9/27/00 2:40pm GW Grab HNO3
14. 241200 Rinse Water
241201

JTB 10/20/00

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: MW-108 **NLS#: 241199**
Ref. Line 13 of COC 45866 Description: MW-108
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	2.9	ug/L	0.40	1.4	SW846 6010	10/17/00	721026460
Manganese, tot. as Mn by ICP	29	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

Sample ID: Process Water **NLS#: 241200**
Ref. Line 14 of COC 45866 Description: Process Water
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.23	0.82	SW846 6010	10/16/00	721026460
Chromium, tot. as Cr by ICP	510	ug/L	0.40	1.4	SW846 6010	10/16/00	721026460
Manganese, tot. as Mn by ICP	7.6	ug/L	2.0	2.0	SW846 6010	10/16/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/02/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 56676
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe

Sample ID: Trip Blank **NLS#: 241201**
COC 45866 Description: Trip Blank
Collected: 09/27/00 Received: 09/28/00 Reported: 10/19/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
VOCs by EPA 524.2	see attached				EPA 524.2	10/02/00	721026460

Values in brackets represent results greater than the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than the LOQ are considered to be in the region of "Certain Quantitation".

LOD = Limit of Detection
LOQ = Limit of Quantitation
ND = Not Detected
DWB = Dry Weight Basis
NA = Not Applicable
%DWB = (mg/kg DWB)/10000

Jerry R Bock
Reviewed by:

Authorized by:
R. T. Krueger
Laboratory Manager

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John Staeger	45964
McMahon Associates Inc	QUOTATION NUMBER:
P.O. Box 1025	
Necedah, WI 54957-1025	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS? Total
COPIES TO:	SEND INVOICE TO: John Staeger

Note "T" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: 1 – 14 to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☒ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ Cyanide, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☐ Lead
- ☐ Lithium
- ☐ Magnesium
- ☒ Manganese
- ☐ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic. Sludge WI List
- ☐ VOCs by 8021
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☒ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Special Instructions: MW-107 & MW-107A Only

QUARTERLY PROGRESS REPORT #7

April, May, June 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

MCO

Midwest Contract Operations, Inc.

September 14, 2000
MCO. No. M050-99746.14
JMS:smd

MCO
Midwest Contract Operations, Inc.
P.O. BOX 418 MENASHA, WI 54952-0418
TEL: (920) 751-4299 FAX: (920) 751-4284
e-mail: mcm@mcmgrp.com

September 14, 2000

Ms. Jennifer Huffman
Wisconsin Department Of Natural Resources
3369 West Brewster Street
Appleton, WI 54912-1602

Re: N.W. Mauthe Groundwater Treatment System
Appleton, Wisconsin
Quarterly Progress Report #7
MCO. No. M050-99746.14

Dear Ms. Huffman:

Enclosed, please find Midwest Contract Operations, Inc.'s "Quarterly Progress Report #7" for the N.W. Mauthe Groundwater Treatment System, 725 South Outagamie Street, Appleton, Wisconsin.

The Progress Report includes a brief background of the site history, a summary of any sampling results at the site or in the adjacent groundwater monitoring wells, operation and maintenance activities. This quarterly report includes the months of April, May and June 2000.

If you have any questions or require additional information, feel free to contact me.

Very truly yours,

MIDWEST CONTRACT OPERATIONS, INC.

John M. Stoeger
Project Manager

JMS:smdt

Enclosure: Quarter Progress Report #7

cc: Jessica Garratt – City of Appleton

Professional Qualifications Statement

"I, Thomas J. Kispert, hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. 700 to 726, Wis. Adm. Code."

Thomas J. Kispert, P.E., C.C.S. / P.E. No. E-26225
Senior Project Engineer

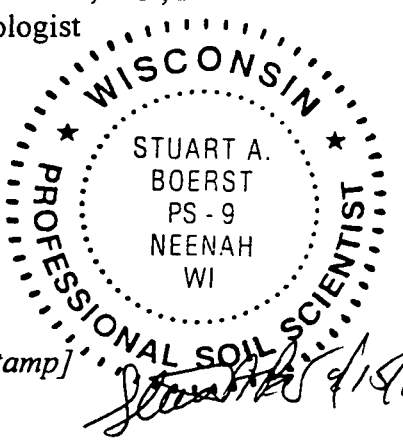
9-12-00
Date

[P.E. Stamp] 9-18-00

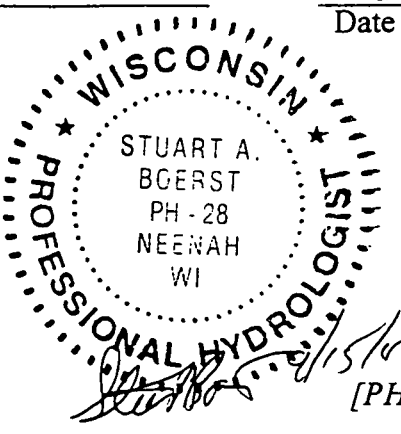
"I, Stuart A. Boerst, hereby certify that I am a Hydrogeologist, as the term is defined in s. NR 712.03(1), Wisconsin Administrative Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wisconsin Administrative Code."

Stuart A. Boerst, P.S., P.H.
Hydrogeologist

8/15/00
Date



[P.S. - 9 Stamp] 8/15/00



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QUARTERLY PROGRESS REPORT #7

April, May, June 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Prepared By
Midwest Contract Operations, Inc.
September 14, 2000
MCO. No. M050-99746.14

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QUARTERLY PROGRESS REPORT #7

April, May, June 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Prepared By
Midwest Contract Operations, Inc.
September 14, 2000
MCO. No. M050-99746.14

I. SITE BACKGROUND

The N.W. Mauthe site is a former electroplating facility, located at 725 South Outagamie Street, Appleton, Wisconsin (refer to Figure #1, Site Location Map). The property was used for a chrome plating company, from 1960 until 1976. Electroplating of zinc, cadmium and, possibly, copper and silver was conducted from 1978 to 1987 in an adjacent building on the same property. After 1987, all plating operations ceased on the property.

Concerns over sub-surface discharges to the surrounding environment led the Wisconsin Department of Natural Resources (DNR) and United States Environmental Protection Agency (USEPA) to conduct a remedial investigation and clean up of the N.W. Mauthe site and surrounding properties.

The investigation determined the N.W. Mauthe site was contaminated with zinc, cadmium, chromium and cyanide. Additionally, several volatile organic compounds (VOC's) were also present.

Based upon the findings of the remedial investigation, the following actions were taken to remediate the N.W. Mauthe site and adjacent properties of the sub-surface contamination.

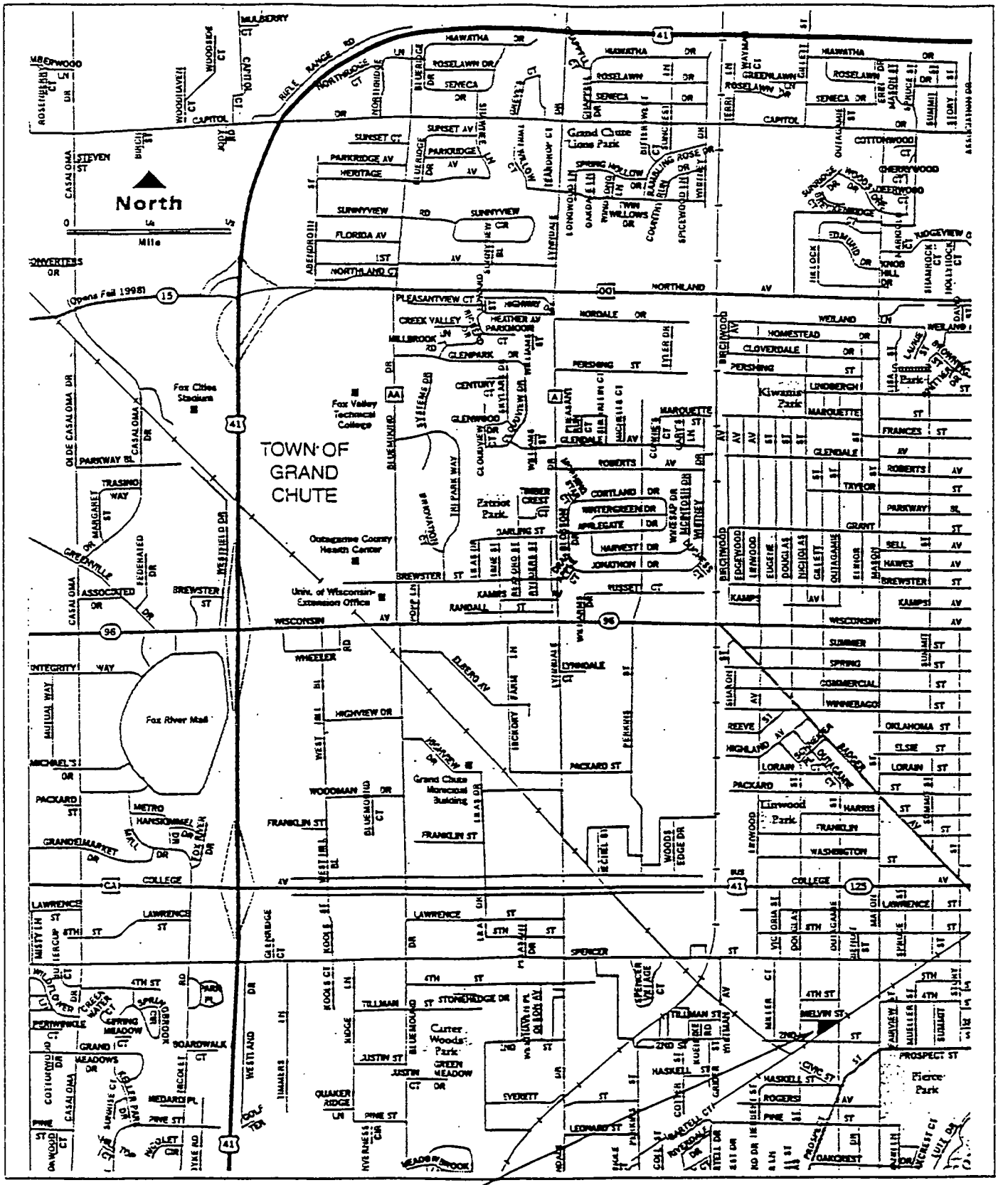

FIGURE 1

SITE LOCATION MAP

N.W. MAUTHE SUPERFUND SITE
APPLETON, WI

McM #M050-98808 July, 99

McMAHON ASSOCIATES, INC.

ENGINEERS ▪ ARCHITECTS
SCIENTISTS ▪ SURVEYORS

A. Demolition and removal of the buildings on the N.W. Mauthe property.

B. Excavation and off-site treatment of soils with a total chromium concentration of greater than 500 mg/kg.

C. Backfilling of the excavation with clean soils, capping the site with 2-feet of clay and topsoil, and the establishment of vegetative cover.

D. Installation of groundwater collection trenches and construction and operation of a groundwater treatment facility to contain and/or control groundwater contamination with ultimate compliance with groundwater Applicable or Relevant and Appropriate Requirements (ARAR's).

E. Improvement or installation of foundation drain systems and cleaning, painting or sealing of basement walls and floors, as needed, for homes or businesses in the area of the site, to prevent seepage of contaminated water into the buildings.

The groundwater collection trench system, the location of sump pump and drain connections, and the groundwater monitoring wells and piezometers associated with the site are shown in Figure #2.

Midwest Contract Operations, Inc. (MCO) began operating the groundwater treatment system in February 1997. CH_2M Hill, the site engineer and project manager for the U.S. EPA, retained responsibility for the overall site operations and the groundwater monitoring wells associated with the treatment system.

The objectives of the collection and treatment system are to reduce the contaminant concentrations in the groundwater to achieve federal drinking water standards and/or state groundwater quality standards, whichever are more stringent.

In October 1998, after the first year of operation and maintenance of the remediation system, the Wisconsin DNR assumed the responsibility from the U.S. EPA for all operation and maintenance of the site. MCO was retained by the Wisconsin DNR for the operation and maintenance of the entire groundwater treatment system, including the groundwater monitoring wells. To date, MCO has completed seven rounds of groundwater sampling and is operating the batch treatment process, which is designed to remove chromium from the groundwater. A description of the batch process will be discussed in the following section of this report.

MW-108

W-2

MELVIN STREET

ELECTRIC SUBSTATION

PZ-4

WEST GROUNDWATER COLLECTION TRENCH

MW-101

GROUNDWATER TREATMENT FACILITY

MW-107

MANHOLE No.2

MW-102

HSE

CENTRAL GROUNDWATER COLLECTION TRENCH

PZ-3

FOUNDATION DRAIN LATERAL

MW-103

PZ-1

W-15

MANHOLE No.1

BLDG

GAR

FOUNDATION DRAIN LATERAL

MW-104

GAR

HSE

HSE

TAVERN

TAVERN SUMP EFFLUENT PIPE

MW-106

PZ-2

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8

MW-105

OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE - FEET

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FIGURE 2

COLLECTION TRENCH AND MONITORING WELL LOCATIONS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-99746.14 JUNE 22, 2000

II. BATCH TREATMENT PROCESS

As part of the remediation phase at the N.W. Mauthe site, a groundwater collection system was installed on and adjacent to the N.W. Mauthe property. Approximately 1,000 lineal feet of coarse sand filled trenching was installed to draw groundwater from the contaminated areas to two collection sumps. From the collection sumps, groundwater is pumped to a 9,000 gallon holding tank, located within the treatment building.

Each batch of groundwater to be treated is pumped from the storage tank to the reaction tank. The batch process treatment system utilizes ferrous sulfate and caustic additions to treat the contaminated groundwater. Through chemical addition, mixing, aeration and settling, the chromium is removed from the groundwater. The fully automated process treats approximately 2,600 gallons per batch (based on physical tank measurements) and is capable of treating four batches per day.

Treated groundwater decants from the reaction tank to the City of Appleton sanitary sewer system. The chromium containing sludge settles to the bottom of the reaction tank. Excess sludge is pumped to a sludge storage tank, also located within the treatment building.

During each discharge, the effluent is tested for hexavalent chromium using a Hach Test kit. The pH is recorded off two meters, located in the reaction tank. The pH values from the two meters are recorded during discharge as the high and low pH values on a daily log sheet. The average of the two pH values is calculated. The effluent wastewater is tested quarterly for total chromium at a DNR approved environmental laboratory. The total chromium concentration for the sample collected at Outfall #001 on June 22, 2000 was 240 ug/l. Additionally, the City of Appleton conducts semi-annual compliance testing of the treatment system effluent. The most recent compliance sample was collected on February 15, 2000.

For the months of April, May and June 2000, a total of 311,176 gallons of contaminated groundwater was treated and discharged. Using an average groundwater concentration of 1.2 mg/l hexavalent chromium, the calculated reduction in hexavalent chromium would be 3.11 pounds over the three month period. The effluent flows are recorded based upon the effluent meter reading. These readings generally overstate the effluent flows as compared to volumetric tank measurements, due to design constraints regarding the flow meter installation. The flow meter totals have been the accepted method for recording effluent flows. Therefore, all references to flow and calculations are based upon the flow meter readings.

A summary of batches of groundwater treated, for the period of April through June 2000, is included in Table #1.

III. GROUNDWATER SAMPLING

A. Groundwater Sampling Procedures

A total of 11 groundwater monitoring wells are associated with the groundwater treatment system. Additionally, four piezometers were installed to measure the effectiveness of the groundwater collection trench system.

Groundwater levels are measured in the monitoring wells and the piezometers, relative to the north side of the top of the well casing. A summary of the current groundwater levels for the site is included in Table #2. The groundwater contours for groundwater monitoring wells, relative to site, are shown on Figure #3. The groundwater potentiometric contours for the piezometers, relative to the site, are shown on Figure #4.

The 11 groundwater monitoring wells were sampled on June 22, 2000. A dedicated submersible pump is installed in each well. Water level measurements were collected from each monitoring well, prior to sampling. Each well was slowly pumped dry and allowed to recharge for approximately 3-hours. The wells were then pumped dry again, allowed to recharge and then sampled. Two duplicate samples were also collected as a quality control measure. Purge water from the wells was collected and dumped into the collection sumps. The pump water volumes collected from the groundwater wells and the field testing data are included in Table #5. The groundwater sampling field documentation sheets are contained in Appendix A.

The sampling process utilized a flow through cell to read the pH, temperature, conductivity, redox potential and dissolved oxygen in each well. The flow through cell consisted of a 1-liter laboratory beaker placed over a 5-gallon bucket. Flow through the cell was maintained at approximately 250 ml/min. utilizing a resister to control pump flow. The same approximate flow rate was maintained for purging and sampling. Groundwater samples were collected upon stabilization of the conductivity in each monitoring well or after a well had been purged dry twice. The pH, conductivity, redox potential and dissolved oxygen readings for each monitoring well were recorded upon stabilization of the conductivity or just prior to sampling. The groundwater samples were collected in the order of VOC vials first (if applicable) and metal samples second. The metal samples were not filtered. The laboratory containers supplied for metals analysis included NA0H and HN03 as preservatives. The collected samples were submitted to Northern Lake Service, Inc., Crandon, Wisconsin. The collected samples were analyzed for selected metals and Volatile Organic Compounds (VOC's), as specified by the Wisconsin DNR. Alkalinity and ferrous iron testing was conducted using field

MW-108
800.33

W-2
802.03

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4

MW-101
801.31

GROUNDWATER TREATMENT FACILITY

MW-107
798.32

MANHOLE No.1

BLDG

MW-104
798.88

GAR

GAR

TAVERN

SUMP EFFLUENT PIPE

SOUTHEAST GROUNDWATER COLLECTION TRENCH

MW-105
800.90

SECOND STREET

W-8
797.89

PZ-3

CENTRAL GROUNDWATER COLLECTION TRENCH

MW-103
795.52

FOUNDATION DRAIN LATERAL

HSE

HSE

FOUNDATION DRAIN LATERAL

PZ-2

MW-106
797.21

FOUNDATION DRAIN LATERAL

PZ-1

W-15
797.34

TAVERN

MANHOLE No.2

MW-102
780.76

HSE

OUTAGAMIE STREET

800
798
796
794
792
790
788
786
784
782
780

NORTH

40 20 0 40

SCALE - FEET

LEGEND

W-2 803.06 — MONITORING WELL & GROUNDWATER ELEVATION

GROUNDWATER FLOW DIRECTION

798 — GROUNDWATER CONTOUR

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FIGURE 3

GROUNDWATER MONITORING WELLS LOCATIONS & GROUNDWATER CONTOURS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-99746.14 JUNE22, 2000

MW-108

W-2

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

784

PZ-4
784.79

MW-101

GROUNDWATER TREATMENT FACILITY

782

MANHOLE No.2

CENTRAL GROUNDWATER COLLECTION TRENCH

MW-102

HSE

FOUNDATION DRAIN LATERAL

OUTAGAMIE STREET

MW-107

MANHOLE No.1

PZ-3
780.22

782

786

MW-103

PZ-1
785.96

W-15

GAR

BLDG

784

788

MW-104

FOUNDATION DRAIN LATERAL

GAR

HSE

HSE

TAVERN

TAVERN

SUMP EFFLUENT PIPE

MW-106

PZ-2
789.23

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8

MW-105

NORTH

40 20 0 40

SCALE – FEET

LEGEND

PZ-1
785.92

PIEZOMETER & POTENTIOMETRIC SURFACE ELEVATION

POTENTIOMETRIC GRADIENT

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FIGURE 4

PIEZOMETER LOCATIONS AND POTENTIOMETRIC CONTOURS
N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050–99746.14 JUNE 22, 2000

Hach test kits. As of the December 15, 1999 sampling event, the sampling parameters were modified by the Wisconsin DNR. Copper, Cyanide, Mercury and Zinc analysis was discontinued on all wells. VOC analysis was reduced to annually for all wells except MW-107. MW-107 will continue to be sampled for VOC's quarterly.

B. Groundwater Sampling Results

The collected groundwater samples were analyzed for Cadmium, Chromium and Manganese. Additionally, the samples collected at Well MW-107 was analyzed for VOC's. Field analysis was conducted at each well for pH, temperature, conductivity, dissolved oxygen, Redox potential, alkalinity and ferrous iron. The field analysis sampling results will track the ability of the soil and groundwater to naturally bio-remediate the residual volatile organic compounds at the site.

The laboratory analytical results indicate that levels of total chromium exceed the DNR NR 140.10 Groundwater Enforcement Standard in monitoring wells MW-103 (130 ug/l), MW-104 (210 ug/l) and MW-107 (14,000 ug/L). MW-107 is the closest down-gradient well to the remediation building. Additionally, three VOC compounds in MW-107 (1,1-Dichloroethene, 1,1,1-Trichloroethane and Trichloroethene) were detected in excess of either the NR 149.21(9) maximum contaminant levels (MCL's) or the NR 140.10 Groundwater Enforcement Standards (ES). Exceedances of the MCL and ES for manganese have been found in all of the groundwater wells since sampling began in February 1997. These exceedances also appear in the background wells (W-2 and MW-108), which would indicate that the high levels of manganese in the groundwater occurs naturally. The laboratory analytical results are contained in Tables #3 and #4. The field testing results are contained in Table #5. An isoconcentration map for total chromium concentrations is shown in Figure #5. The chain of custody forms and laboratory analytical data are included in Appendix B.

The City of Appleton's compliance sample, collected on February 15, 2000 at Outfall #001, had a Total Chromium concentration of .09 milligrams per liter.

A summary of the sample results from Outfall #001 are shown in Table #6. The sampling results are contained in Appendix C. A summary of the influent Hexavelent Chromium concentrations is contained in Table #7. The listed concentrations are based upon the weekly Hatch kit analysis of the treatment system influent.

MW-108
6.5 ug/L

W-2
<0.62 ug/L

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4

MW-101
1.4 ug/L*

GROUNDWATER TREATMENT FACILITY

10

100

1000

MW-107
14000 ug/L

MANHOLE No.1

MANHOLE No.2

MW-102
<0.62 ug/L

HSE

CENTRAL GROUNDWATER COLLECTION TRENCH

FOUNDATION DRAIN LATERAL

PZ-3

MW-103
130 ug/L

PZ-1

W-15
1.8 ug/L

GAR

BLDG

MW-104
210 ug/L

GAR

FOUNDATION DRAIN LATERAL

HSE

HSE

TAVERN

MW-106
0.73 ug/L

PZ-2

TAVERN

SUMP EFFLUENT PIPE

10

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8
3.1 ug/L

MW-105
1.0 ug/L*

OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE – FEET

LEGEND

10	ISOCONCENTRATION OF CHROMIUM (ESTIMATED)
<	LESS THAN THE DETECTION LIMIT
ug/L	MICROGRAM.LITER
MW-102	MONITORING WELL
*	ANOLYTE DETECTED IN THE AREA OF LESS CERTAIN QUANTITATION

FIGURE 5

ISOCONCENTRATION MAP
TOTAL CHROMIUM ug/L In Groundwater
N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN
McM# M050-99746.14 JUNE 22, 2000

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The effectiveness of the existing groundwater treatment system will require analysis of data over an extended period of time to evaluate trends in metals and VOC reductions.

IV. PUBLIC CONTACTS

There were no public contacts during the reporting period.

V. CONCLUSIONS & RECOMMENDATIONS

Groundwater level data collected from the 11 monitoring wells and four piezometers associated with the N.W. Mauthe groundwater treatment system indicate the groundwater collection trenches, installed as part of the site remediation system, have created a capture zone that directs the groundwater flows in the remediation area to the collection trenches and, ultimately, to the groundwater treatment system.

The purpose of creating the capture zone is to contain the migration of the contamination down-gradient of the contamination source and to direct impacted groundwater to the collection system and, ultimately, treatment in the batch process.

The latest round (June 22, 2000) of groundwater samples collected from the 11 monitoring wells, indicates residual chromium contamination above the DNR NR 140.10 ES exists in monitoring wells MW-103, MW-104 and MW-107. Additionally, three VOC compounds in excess of the NR 140.10 ES or the NR 149.21(9) maximum contaminant levels (MCL's) were detected in MW-107. High levels of manganese, noted historically in all wells, appears to occur naturally and may not be related to the past site uses.

A total of 311,266 gallons of impacted groundwater has been treated during the months of April, May, June 2000, and discharged to the City of Appleton municipal sanitary sewer system. Analysis by MCO and the City of Appleton of the treatment system effluent did not indicate any exceedances of the local discharge permit limits for the site.

Based upon the results of the June 22, 2000 groundwater sampling results and the batch treatment process analytical results, MCO recommends continued operation of the groundwater treatment system at the N.W. Mauthe groundwater remediation site.

MCO also recommends elimination of the natural attenuation testing for all wells, except MW-107. MW-107 is the only monitoring well with detected VOC's. Therefore, MW-107 would be the only monitoring well where the natural attenuation data would be of any value.

Table #1

GROUNDWATER BATCH DISCHARGES / April, May, June 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chrome Concentration (mg/l)
04/01/00	040100A	2,072,989	3,167	8.14	7.99	8.06	0
04/02/00	040200A	2,076,175	3,186	8.22	8.14	8.18	0
04/04/00	040400A	2,079,357	3,182	8.14	8.11	8.13	0
04/06/00	040600A	2,082,502	3,145	8.18	8.03	8.11	0
04/09/00	040900A	2,085,651	3,149	8.10	7.94	8.02	0
04/11/00	041100A	2,089,015	3,364	8.21	8.04	8.12	0
04/13/00	041300A	2,092,171	3,156	8.19	8.00	8.10	0
04/17/00	041700A	2,095,351	3,180	8.14	7.99	8.06	0
04/18/00	041800A	2,098,539	3,188	8.08	7.91	7.99	0
04/20/00	042000A	2,101,745	3,206	8.17	8.10	8.14	0
04/21/00	042100A	2,104,800	3,055	8.14	8.10	8.12	0
04/21/00	042100B	2,107,978	3,178	8.22	8.16	8.19	0
04/22/00	042200A	2,111,002	3,024	8.18	8.08	8.13	0
04/22/00	042200B	2,114,193	3,191	8.14	8.00	8.07	0
04/23/00	042300A	2,117,353	3,160	8.19	8.10	8.14	0
04/23/00	042300B	2,120,477	3,124	8.20	8.08	8.14	0
04/23/00	042300C	2,123,579	3,100	8.06	7.94	8.00	0
04/24/00	042400A	2,126,732	3,153	8.02	7.82	7.92	0
04/26/00	042600A	2,129,850	3,118	7.94	7.79	7.86	0
04/26/00	042600B	2,132,990	3,140	8.12	8.01	8.06	0
04/27/00	042700A	2,136,192	3,202	8.04	7.96	8.00	0
04/29/00	042900A	2,139,308	3,116	8.11	8.00	8.09	0
04/29/00	042900B	2,142,420	3,112	8.16	8.04	7.99	0
04/30/00	043000A	2,145,540	3,120	8.09	7.99	8.04	0

* As tested with a Hach Hexavalent Chromium Field Test Kit.

JMS:smd
I.D./Report\M050\99746\Qtrly-PR#7-JMS.xls

Table #1

GROUNDWATER BATCH DISCHARGES / April, May, June 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chrome Concentration (mg/l)
05/03/00	050300A	2,148,920	3,380	8.16	8.03	8.09	0
05/03/00	050300B	2,151,983	3,063	8.07	7.93	8.00	0
05/05/00	050500A	2,155,300	3,317	8.04	7.90	7.97	0
05/06/00	050600A	2,158,489	3,189	8.10	8.00	8.05	0
05/08/00	050800A	2,161,642	3,153	8.22	8.10	8.16	0
05/10/00	051000A	2,164,787	3,145	8.07	7.93	8.00	0
05/12/00	051200A	2,167,892	3,105	8.04	7.91	7.97	0
05/14/00	051400A	2,171,236	3,344	8.10	8.01	8.05	0
05/14/00	051400B	2,174,401	3,165	8.16	8.04	8.10	0
05/16/00	051600A	2,177,589	3,188	8.04	7.89	7.97	0
05/17/00	051700A	2,180,757	3,168	8.06	7.91	7.98	0
05/18/00	051800A	2,183,865	3,108	8.03	7.90	7.96	0
05/18/00	051800B	2,187,088	3,223	8.11	8.01	8.06	0
05/19/00	051900A	2,190,145	3,057	8.13	8.01	8.07	0
05/19/00	051900B	2,193,290	3,145	8.09	7.97	8.03	0
05/19/00	051900C	2,196,420	3,130	8.08	7.99	8.04	0
05/20/00	052000A	2,199,589	3,169	8.08	7.97	8.02	0
05/20/00	052000B	2,202,738	3,128	8.09	7.98	8.03	0
05/20/00	052000C	2,205,876	3,138	8.11	8.06	8.08	0
05/20/00	052000D	2,208,927	3,051	8.16	8.04	8.10	0
05/21/00	052100A	2,212,015	3,088	8.06	7.88	7.97	0
05/21/00	052100B	2,215,138	3,123	8.10	7.99	8.04	0
05/21/00	052100C	2,218,245	3,107	8.14	7.90	8.02	0
05/21/00	052100D	2,221,366	3,121	8.11	8.00	8.05	0
0522/00	052200A	2,224,508	3,142	8.04	7.89	7.96	0
05/22/00	052200B	2,227,665	3,157	8.09	7.94	8.01	0
0523/00	052300A	2,230,839	3,174	8.06	7.94	8.00	0
0524/00	052400A	2,233,972	3,153	8.04	7.91	7.97	0
0525/00	052500A	2,237,129	3,157	8.11	8.02	8.06	0
05/26/00	052600A	2,240,199	3,070	8.14	8.12	8.08	0
05/27/00	052700A	2,243,220	3,021	8.09	7.91	8.00	0
05/27/00	052700B	2,246,354	3,134	8.13	7.98	8.05	0
0530/00	053000A	2,249,507	3,153	8.14	8.03	8.08	0
05/31/00	053100A	2,252,616	3,019	8.10	7.99	8.05	0
05/31/00	053100B	2,255,734	3,118	8.13	8.03	8.08	0

* As tested with a Hach Hexavalent Chromium Field Test Kit.

JMS:smd
I.D./Report\M050\99746\Qtrly-PR#7-JMS.xls

Table #1

GROUNDWATER BATCH DISCHARGES / April, May, June 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chrome Concentration (mg/l)
06/01/00	060100A	2,258,811	3,077	8.04	7.90	7.97	0
06/01/00	060100B	2,261,999	3,188	8.26	8.10	8.17	0
06/02/00	060200A	2,265,158	3,159	8.33	8.16	8.24	0
06/02/00	060200B	2,268,288	3,130	8.07	7.88	7.98	0
06/02/00	060200C	2,271,377	3,089	8.11	7.91	8.01	0
06/02/00	060200D	2,274,661	3,284	8.14	8.01	8.07	0
06/03/00	060300A	2,277,750	3,089	8.11	7.90	8.00	0
06/03/00	060300B	2,280,821	3,071	8.09	7.93	8.01	0
06/03/00	060300C	2,283,896	3,075	8.01	7.90	7.96	0
06/03/00	060300D	2,286,998	3,102	8.05	7.92	7.99	0
06/04/00	060400A	2,290,112	3,114	8.05	7.89	7.97	0
06/04/00	060400B	2,253,232	3,120	8.04	7.88	7.96	0
06/04/00	060400C	2,296,327	3,095	8.08	7.91	7.98	0
06/06/00	060600A	2,299,480	3,153	8.00	7.87	7.94	0
06/06/00	060600B	2,302,638	3,158	8.03	7.90	7.97	0
06/06/00	060600C	2,305,707	3,069	8.04	7.88	7.96	0
06/07/00	060700A	2,308,826	3,119	7.99	7.88	7.94	0
06/07/00	060700B	2,311,936	3,110	7.97	7.87	7.92	0
06/08/00	060800A	2,315,058	3,122	7.98	7.86	7.92	0
06/08/00	060800B	2,318,179	3,121	7.95	7.86	7.91	0
06/09/00	060900A	2,321,310	3,131	7.98	7.85	7.92	0
06/10/00	061000A	2,324,426	3,116	7.97	7.86	7.92	0
06/10/00	061000B	2,327,571	3,145	7.96	7.86	7.91	0
06/11/00	061100A	2,330,735	3,164	8.04	7.89	7.96	0
06/12/00	061200A	2,333,875	3,144	8.04	7.93	7.98	0
06/13/00	061300A	2,337,051	3,172	8.06	7.94	8.00	0
06/15/00	061500A	2,340,199	3,148	8.14	8.03	8.08	0
06/16/00	061600A	2,343,365	3,166	8.13	8.00	8.06	0
06/17/00	061700A	2,346,472	3,107	8.00	7.90	7.95	0
06/17/00	061700B	2,349,629	3,157	8.11	8.01	8.06	0
06/18/00	061800A	2,352,789	3,160	8.06	7.94	8.00	0
06/20/00	062000A	2,355,873	3,084	8.10	7.96	8.03	0
06/21/00	062100A	2,359,027	3,154	8.13	7.99	8.06	0
06/22/00	062200A	2,362,196	3,169	7.95	7.91	7.93	0
06/23/00	062300A	2,365,328	3,132	8.03	7.93	7.98	0
06/26/00	062600A	2,368,502	3,174	8.03	7.91	7.97	0
06/27/00	062700A	2,371,628	3,126	8.06	7.94	8.00	0
06/27/00	062700B	2,374,813	3,185	8.00	7.90	7.95	0
06/29/00	062900A	2,377,950	3,137	8.04	8.00	8.02	0
06/30/00	063000A	2,381,091	3,141	8.10	7.99	8.05	0
TOTAL			**311,176**				

* As tested with a Hach Hexavalent Chromium Field Test Kit.

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Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
W-2	02/01/97	-		798.66
	05/01/97	-		801.01
	09/01/97	-		800.28
	12/01/97	-	804.66	797.69
	03/01/98	-		802.08
	06/01/98	-		799.38
	10/27/98	5.85		798.81
	02/08/99	4.50		800.16
	06/08/99	3.31		801.35
	09/13/99	5.78		798.88
	12/15/99	6.63		798.03
	03/13/00	1.60		803.06
	06/22/00	2.63		802.03
W-8	02/01/97	-		797.22
	05/01/97	-		797.66
	09/01/97	-		798.01
	12/01/97	-	803.36	796.52
	03/01/98	-		798.16
	06/01/98	-		797.31
	10/27/98	6.41		796.95
	02/08/99	5.49		797.87
	06/08/99	4.38		798.98
	09/13/99	6.71		796.65
	12/15/99	6.91		796.45
	03/13/00	6.25		797.11
	06/22/00	6.42		797.34
W-15	02/01/97	-		793.97
	05/01/97	-		796.92
	09/01/97	-		797.23
	12/01/97	-	803.76	795.52
	03/01/98	-		796.78
	06/01/98	-		796.32
	10/27/98	7.95		795.81
	02/08/99	9.19		794.57
	06/08/99	6.89		796.87
	09/13/99	7.85		795.91
	12/15/99	8.97		794.79
	03/13/00	7.80		795.96
	06/22/00	6.42		797.34
MW-101	02/01/97	-		797.16
	05/01/97	-		799.99
	09/01/97	-		798.67
	12/01/97	-	807.59	798.21
	03/01/98	-		803.43
	06/01/98	-		800.48
	10/27/98	10.26		797.33
	02/08/99	11.91		795.68
	06/08/99	9.79		797.80
	09/13/99	10.35		797.24
	12/15/99	9.01		798.58
	03/13/00	12.67		794.92
	06/22/00	6.28		801.31

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-102	02/01/97	-		780.72
	05/01/97	-		780.89
	09/01/97	-		780.79
	12/01/97	-	804.45	780.95
	03/01/98	-		780.47
	06/01/98	-		780.72
	10/27/98	24.11		780.34
	02/08/99	23.84		780.61
	06/08/99	23.59		780.86
	09/13/99	23.70		780.75
	12/15/99	24.27		780.18
	03/13/00	24.00		780.45
	06/22/00	23.69		780.76
MW-103	02/01/97	-		795.29
	05/01/97	-		791.83
	09/01/97	-		789.60
	12/01/97	-	803.74	787.78
	03/01/98	-		791.03
	06/01/98	-		789.13
	10/27/98	11.96		791.78
	02/08/99	10.24		793.50
	06/08/99	8.69		795.05
	09/13/99	9.79		793.95
	12/15/99	12.68		791.06
	03/13/00	9.63		794.07
	06/22/00	8.22		795.52
MW-104	02/01/97	-		792.94
	05/01/97	-		789.91
	09/01/97	-		798.59
	12/01/97	-	807.28	795.70
	03/01/98	-		799.46
	06/01/98	-		796.60
	10/27/98	10.51		796.77
	02/08/99	9.04		798.24
	06/08/99	7.49		799.79
	09/13/99	10.28		797.00
	12/15/99	10.78		796.50
	03/13/00	9.51		797.77
	06/22/00	8.41		798.88
MW-105	02/01/97	-		793.74
	05/01/97	-		800.60
	09/01/97	-		800.37
	12/01/97	-	803.96	799.03
	03/01/98	-		800.08
	06/01/98	-		800.50
	10/27/98	5.41		798.55
	02/08/99	6.46		797.50
	06/08/99	3.04		800.92
	09/13/99	4.60		799.36
	12/15/99	5.28		798.68
	03/13/00	4.97		798.99
	06/22/00	3.06		800.90

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-106	02/01/97	-		794.75
	05/01/97	-		797.23
	09/01/97	-		796.91
	12/01/97	-	804.08	795.48
	03/01/98	-		797.37
	06/01/98	-		796.76
	10/27/98	8.12		795.96
	02/08/99	9.75		794.33
	06/08/99	6.72		797.36
	09/13/99	7.88		796.20
	12/15/99	8.71		795.37
	03/13/00	8.72		795.36
	06/22/00	6.87		797.21
MW-107	02/01/97	-		788.23
	05/01/97	-		796.60
	09/01/97	-		797.64
	12/01/97	-	809.01	796.49
	03/01/98	-		796.68
	06/01/98	-		796.31
	10/27/98	10.71		798.30
	02/08/99	11.11		797.90
	06/08/99	11.04		797.97
	09/13/99	11.55		797.46
	12/15/99	11.66		797.35
	03/13/00	11.13		797.88
	06/22/00	10.69		798.32
MW-108	02/01/97	-		798.36
	05/01/97	-		793.32
	09/01/97	-		790.53
	12/01/97	-	806.61	788.65
	03/01/98	-		795.59
	06/01/98	-		789.30
	10/27/98	6.98		799.63
	02/08/99	6.72		799.89
	06/08/99	5.80		800.81
	09/13/99	6.68		799.93
	12/15/99	6.87		799.74
	03/13/00	6.84		799.77
	06/22/00	6.28		800.33

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
PZ-01	10/27/98	17.43	804.17	786.74
	02/08/99	18.24		785.93
	06/08/99	18.22		785.95
	09/13/99	18.25		785.92
	12/15/99	18.25		785.92
	03/13/00	18.25		785.92
	06/22/00	18.21		785.96
PZ-02	10/27/98	14.66	803.64	788.98
	02/08/99	14.70		788.94
	06/08/99	14.70		788.94
	09/13/99	14.74		788.90
	12/15/99	14.72		788.92
	03/13/00	14.76		788.88
	06/22/00	14.41		789.23
PZ-03	10/27/98	22.71	803.62	780.91
	02/08/99	23.74		779.88
	06/08/99	23.74		779.88
	09/13/99	23.55		780.07
	12/15/99	23.52		780.10
	03/13/00	23.30		780.24
	06/22/00	23.40		780.22
PZ-04	10/27/98	15.18	807.30	792.12
	02/08/99	23.61		783.69
	06/08/99	21.69		785.61
	9/13/99	23.87		783.43
	12/15/99	23.80		783.50
	03/13/00	25.77		781.53
	06/22/00	22.51		784.79

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
W-2	02/20/97	NA	15	26	NA	460.0	NA	49
	05/27/97	0.43	8.5	<10	NA	170.0	<.2	30
	09/18/97	0.27	4.5**	9.5**	3**	116.0	<.03	16.9
	12/12/97	.13*	6.2	<9.7	<.8	133.0	.06*	20.4
	03/25/98	0.08	<3.9	<9.5	<1.7	83.8	.007*	18.6
	06/10/98	.31*	16.4	18.6**	<1.7	466.0	.027*	40.8
	10/27/98	.51*	3.60	4.7*	<.0032	69.0	<.05	170
	02/09/99	.46*	<.62	4.0	<.0032	240.0	<0.05	23
	06/08/99	<.31	<.62	1.8*	<.0032	290.0	<0.05	<12
	09/13/99	<.31	2.00	3.2	<.0032	240.0	<.05	<12
	12/15/99	<.31	.72 *	NA	NA	2.8	NA	NA
	03/13/00	<.31	.79 *	NA	NA	7.8	NA	NA
	06/22/00	<.31	<.62	NA	NA	<.42	NA	NA
W-8	02/20/97	NA	17	22	NA	320.0	NA	34
	05/27/97	1.6	37	27	NA	670.0	<.2	54
	09/18/97	0.45	14.4	14.6**	1**	338.0	.11**	31.8
	12/12/97	0.5*	5.7	<9.7	<.8	147.0	.07*	17.1
	03/25/98	0.43	10.1	15**	<1.7	205.0	.007*	21
	06/10/98	0.54	9.9	12.6**	<1.7	264.0	.016*	21.6
	10/27/98	0.80	3.90	4.8*	<.0032	64.0	<.05	85
	02/09/99	<.31	<.62	<60	<.0032	850.0	<.05	12
	06/08/99	<.31	<.62	2.6	<.0032	50.0	<.05	<12
	09/13/99	<.31	1.90	2.7	<.0032	98.0	<.05	29
	12/15/99	<.31	2.80	NA	NA	180.0	NA	NA
	03/13/00	<.31	1.4 *	NA	NA	65.0	NA	NA
	06/22/00	<.31	3.10	NA	NA	74.0	NA	NA
W-15	02/20/97	NA	32	52	NA	430.0	NA	88
	05/27/97	0.27	5.9	15	NA	97.0	<.2	39
	09/18/97	0.31	13.9	18.8**	<.78	325.0	<.03	35.5
	12/12/97	.12*	5.7	9.7**	<.8	80.9	.03*	18.5
	03/25/98	.04*	<3.9	<9.5	<1.7	85.7	.038*	13.7
	06/10/98	.11*	10	13.2**	<1.7	147.0	.016*	18.8
	10/27/98	.41*	6.80	7.40	<.0032	110.0	<.05	100
	02/09/99	<.31	<.62	<.60	<.0032	320.0	<.05	<12
	06/08/99	<.31	2.40	14.00	<.0032	130.0	<.05	66
	09/13/99	<.31	5.30	6.40	<.0032	130.0	<.05	16
	12/15/99	<.31	5.00	NA	NA	90.0	NA	NA
	03/13/00	<.31	7.00	NA	NA	130.0	NA	NA
	06/22/00	<.31	1.80	NA	NA	11.0	NA	NA
MW-101	02/20/97	NA	36	41	NA	820.0	NA	49
	05/27/97	<.2	10	11	NA	170.0	<.03	18
	09/18/97	.06**	11.9	10.7**	1**	145.0	<.05	18.2
	12/12/97	.06*	12.8	<9.7	<.8	176.0	.05*	20.7
	03/25/98	.04*	20.9	21.6**	<1.7	239.0	.007*	32.7
	06/10/98	.27*	48.2	46.8	<1.7	604.0	.044*	75.9
	10/27/98	<.16	3.20	4.2*	<.0032	24.0	<.05	54
	02/09/99	<.31	<.62	<.60	<.0032	1900.0	<.05	14
	06/08/99	<.31	1.80	8.2	<.0032	380.0	<.05	39
	09/13/99	<.31	2.90	5.1	<.0032	31.0	<.05	<12
	12/15/99	<.31	2.50	NA	NA	9.1	NA	NA
	03/13/00	<.31	2.30	NA	NA	100.0	NA	NA
	06/22/00	<.31	1.4 *	NA	NA	<4.2	NA	NA

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-102	02/20/97	NA	26	38	NA	570.0	NA	34
	05/27/97	0.21	48	77	NA	920.0	<.2	73
	09/18/97	.08**	<3.92	6.9**	2**	302.0	<.03	8.7
	12/12/97	.04*	<3.9	<9.7	<.8	387.0	.04*	10.9
	03/25/98	.11*	<3.9	9.5**	<1.7	302.0	.007*	7.4*
	06/10/98	.04*	<3.9	<9.8	<1.7	318.0	.018*	9.5
	10/27/98	.27*	.98*	3.2*	<.0032	340.0	<.05	24
	02/09/99	<.31	.73*	<.60	<.0032	670.0	<.05	20
	06/08/99	<.31	1.2*	5.8	<.0032	140.0	<.05	36
	09/13/99	<.31	4.00	15.0	<.0032	160.0	<.05	73
	12/15/99	<.31	1.2 *	NA	NA	550.0	NA	NA
	03/13/00	<.31	1.70	NA	NA	580.0	NA	NA
	06/22/00	<.31	<.62	NA	NA	310.0	NA	NA
MW-103	02/20/97	NA	1,300	47	NA	800.0	NA	27
	05/27/97	<.2	160.0	31	NA	900.0	<.2	29
	09/18/97	.06**	35.2	13.5**	3**	287.0	<.03	13.7
	12/12/97	.04*	16.3	<9.7	<.8	84.3	.09*	21.4
	03/25/98	.04*	15.5	<9.5	<1.7	83.0	.007*	7.5*
	06/10/98	.15*	57.6	27.5	<1.7	417.0	.02*	33.7
	10/27/98	<.16	6.30	2.3*	<.0032	27.0	<.05	30.0
	06/08/99	<.31	87.00	3.5	<.0032	810.0	<.05	30
	09/13/99	<.31	720.00	5.9	<.0032	83.0	<.05	15
	12/15/99	<.31	260.00	NA	NA	160.0	NA	NA
	03/13/00	<.31	600.00	NA	NA	79.0	NA	NA
	06/22/00	<.31	130.00	NA	NA	180.0	NA	NA
MW-104	02/20/97	NA	5.9	15	NA	550.0	NA	6.9
	05/27/97	<.02	6.9	11	NA	470.0	<.2	5.2
	09/18/97	<.04	35.6	5**	3**	235.0	<.03	4.74
	12/12/97	.04*	61.8	9.8**	<.8	279.0	.05*	14
	03/25/98	.04*	66.8	<9.5	<1.7	73.6	.008*	7.4*
	06/10/98	.04*	219	<9.8	<1.7	107.0	.016*	12.8
	10/27/98	.29*	150.0	2.3*	<.0032	25.0	<.05	30
	02/09/99	<.31	94.00	1.4*	<.0032	1000.0	<.05	<12
	06/08/99	1*	62.00	12.0	<.0032	620.0	<.05	17
	09/13/99	<.31	80.00	3.2	<.0032	9.2	<.05	<12
	12/15/99	<.31	170.00	NA	NA	1.6	NA	NA
	03/13/00	<.31	300.00	NA	NA	13.0	NA	NA
	06/22/00	<.31	210.00	NA	NA	41.0	NA	NA
MW-105	02/20/97	NA	21	22	NA	1100.0	NA	23
	05/27/97	<.2	5	<10	NA	120.0	<.2	12
	09/18/97	.14**	29.5	28.3	1**	532.0	<.03	46
	12/12/97	.36*	15.8	12.5**	<.8	297.0	.03*	27.1
	03/25/98	.04*	30.8	27.6	<1.7	518.0	.064*	44
	06/10/98	.048*	13.7	15.3**	<1.7	217.0	.016*	22.1
	10/27/98	.29*	8.80	8.20	<.0032	150.0	<.05	70
	02/09/99	<.31	1.3*	4.30	<.0032	2000.0	<.05	19
	06/08/99	<.31	1*	18.00	<.0032	1300.0	<.05	66
	09/13/99	<.31	.64*	24.00	<.0032	1700.0	<.05	30
	12/15/99	<.31	<.62	NA	NA	860.0	NA	NA
	03/13/00	<.31	4.80	NA	NA	660.0	NA	NA
	06/22/00	<.31	1.0 *	NA	NA	600.0	NA	NA

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-106	02/20/97	NA	21	24	NA	320.0	NA	26
	05/27/97	<.02	40	35	NA	590.0	<.2	68
	09/18/97	.05**	5.5	6.2**	1**	56.9	<.03	35.6
	12/12/97	.04*	9.2	9.7**	<.08	155.0	.03*	18.4
	03/25/98	NA	13.40	14.4**	<1.7	150.0	.007*	18.5
	06/10/98	.04*	<3.9	10.2**	<1.7	10.0	.016*	10.9
	10/27/98	.27*	3.20	4.3*	<.0032	38.0	<.05	88
	02/09/99	<.31	<.62	1.1*	<.0032	760.0	<.05	22
	06/08/99	<.31	.79*	2.3	<.0032	900.0	<.05	<12
	09/13/99	<.31	1.80	4.7	<.0032	1100.0	<.05	30
	12/15/99	<.31	1.3 *	NA	NA	130.0	NA	NA
	03/31/00	<.31	2.30	NA	NA	270.0	NA	NA
	06/22/00	<.31	.73 *	NA	NA	<4.2	NA	NA
MW-107	02/20/97	NA	2,000	13	NA	190.0	NA	6.9
	05/27/97	<.2	3,600	<10	NA	91.0	<.2	10
	09/18/97	<.04	2,670	<8.1	1**	59.3	<.03	33.5
	12/12/97	.04*	2,310	<9.7	<.8	48.4	.1*	6.7
	03/25/98	.04*	11200*	12.1**	<1.7	68.2	.041*	9.3*
	06/10/98	.11*	6,240	13.8**	<1.7	161.0	.027*	17.3*
	10/27/98	<.16	7,100	1.2*	<.0032	28.0	<.05	94
	02/09/99	<.31	3,200	1.9*	<.0032	49.0	<.05	<12
	06/08/99	<.31	5,800	3.0	<.0032	25.0	<.05	<12
	09/13/99	<.31	4,000	1.9*	<.0032	18.0	<.05	<12
	12/15/99	<.31	14,000	NA	NA	.83 *	NA	NA
	03/13/00	<.31	8,100	NA	NA	22.0	NA	NA
	06/22/00	<.31	14,000	NA	NA	<42	NA	NA
MW-108	02/20/97	NA	25	23	NA	490.0	NA	31
	05/27/97	<.2	11	13	NA	210.0	<.2	15
	09/18/97	.14**	27.4	22.4**	1**	462.0	<.03	36.6
	12/12/97	.04*	5.6	<9.7	<.8	74.8	.03*	27.9
	03/25/98	.04*	9.4	10.4**	<1.7	142.0	.007*	13.8
	06/10/98	.14*	28.4	25.5	<1.7	478.0	.021*	40.5
	10/27/98	.26*	8.90	7.40	<.0032	88.0	<0.5	44
	02/09/99	<.31	1.70	3.90	<.0032	560.0	<.05	30
	06/08/99	<.31	3.10	1.4*	<.0032	450.0	<.05	54
	09/13/99	<.31	4.50	5.30	<.0032	100.0	<.05	<12
	12/15/99	<.31	6.10	NA	NA	79.0	NA	NA
	03/13/00	<.31	3.6	NA	NA	41.0	NA	NA
	6/22/00	<.31	6.5	NA	NA	<4.2	NA	NA
Maximum Contaminant Level (MCL)		5	100	100	200	50.0	2	5,000
Enforcement Standard Chapter NR 140.10		5	100	1,300	200	50.0	2	5,000
Preventive Action Limit Chapter NR 140.1(		0.5	10	130	40	25.0	0.2	2,500

EXPLANATION:

Samples collected prior to 10/27/98 were collected by CH2M Hill.
* = Detection of compound in area of less certain quantification.
** = Compound was found in sample and blank.
ND = Not detected above the analytical laboratories method detection limit
NA = Not Analyzed
MW-104 = Was tested for Aluminum, Nickel, Arsenic & Lead. No quantifiable detections were noted for any of the analytes.
ug/L = Microgram/Liter
mg/L = Milligram / Liter
Indicates an exceedance of the NR 140 Groundwater Quality Enforcement Standard

JMS:smd
I.D.\Report\M050\99746\Qtrly-PR#6-JMS.xls

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
W-2	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.38	-
	02/09/99	.15*	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.13*	<.14	<.15	<.14	***	<37
	03/13/00	<.32	<.28	<.38	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
W-8	02/20/97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<40	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<40	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	03/25/98	<.5	<.6	<85	<40	<7	<7	<.3	<68	<40	<.5	<.5	.3**	-
	06/10/98	<.5	<.6	<85	<40	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.28	<.23	<.29	<.36	-
	02/09/99	.19*	<.15	<.15	<.15	<.16	<.17	***	.15*	<.14	<.15	<.15	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.38	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
W-15	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	0.22	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.38	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	06/08/99	.16*	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.38	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-101	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	.491*	.353*	<7	<7	<124	<68	3.03	<.5	3.31	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.91	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.18	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-102	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<.85	<85	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<85	<7	<7	<.4	<68	<40	<.5	<.5	.4*	-
	06/10/98	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.65	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.21*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-103	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.15*	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-104	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<88	.324*	<.5	<.5	<124	-
	12/12/97	<.5	<.6	0.4	<.7	<7	<7	<120	<88	1*	<.5	0.9	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	.8*	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	2*	<.5	<.5	<120	-
	10/27/98	<.24	<.23	.35*	<.28	<.27	<.26	<.17	<.21	1.8	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	.38*	<.15	<.16	<.17	***	.17*	1.5	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	.34*	<.15	<.16	<.17	***	.14*	1.4	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	.38*	<.15	<.16	<.17	***	.27*	1.6	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	.38 *	<.35	<.15	<.39	***	<.37	1.6	<.11	<.34	***	<.71
MW-105	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<88	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<88	<40	<.5	<.5	.4*	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.16*	<.15	<.14	<.15	<.16	<.17	***	.3*	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-106	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<88	2.73*	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.18*	<.15	<.14	<.15	<.16	<.17	***	<.17	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	0.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-107	02/20/97	<.5	0.3	11	8.4	0.7	<.7	<.5	<.5	81	0.6	50	<.5	-
	05/27/97	0.09	1.10	36	40	3.1	<3.1	<.5	0.34	390	3.5	420	<.5	-
	09/18/97	<10	<12	47.6*	22.1	2.61*	<2.61	<2480	<68	265*	2.83	295	<2480	-
	12/12/97	<10	<12	56*	23	3*	<3	<2500	<68	280	3	290	<2500	-
	03/25/98	<25	<30	61*	69	5*	<5	<17	<68	720	5	620	17*	-
	06/10/98	<12	<15	59*	58	<3	<3	<3100	63*	340*	4*	390	<3100	-
	10/27/98	<.24	1.4	62	46*	3.6	.51*	<.17	<.21	550	4.9	640	<.36	-
	02/09/99	<3.2	<3.8	48	24	<4.0	<4.2	***	<3.2	220	<.38	250	***	<9.2
	06/08/99	<2.6	<3.0	42	20	<3.2	<3.4	***	<2.6	200	<3.0	310	***	<7.4
	09/13/99	<.26	<3.0	34	19	<.32	<3.4	***	<2.6	180	<.3.0	320	***	<.7.4
	12/15/99	<3.2	<3.8	37	56	4.6 *	<4.2	***	<3.2	570	4.5 *	880	***	<9.2
	03/13/00	<26	<23	50 *	32 *	<12	<31	***	<30	340	<.90	630	***	<57
	06/22/00	<26	<23	<29	50 *	<12	<31	***	<30	540	<9	850	***	<57
MW-108	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<44	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.22	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.83	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.15*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.84	<.14	<.15	<.14	***	<.32
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.36	***	<.71
MCL NR 149.21 (9)		5.0	-	-	7.0	70	100	-	1,000	200	5.0	5.0	---	-
Enforcement Standards (ES) 140.10		5	6	850	7	70	100	620**	343	200	5	5	620**	620
Preventive Action Plan (PAL) 140.10		0.5	0.6	85	0.7	7	20	124**	686	40	0.5	0.5	124**	124

EXPLANATION:

Results prior to 10/27/98 for cis-1,2,-Dichloroethene and Trans-1,2 Dichloroethene were listed as Total Dichloroethene and were placed in this table under the heading cis-1,2,-Dichloroethene.
Results prior to 10/27/98 for Ortho Xylene and Meta, para Xylene were listed as Total Xylenes and were placed in this table under the heading Meta, para Xylene.
* = Detection of compound in area of less certain quantification
** = Standard includes Ortho-, Meta, para-Xylenes
*** = As of 02/09/99 Xylene results are listed as "Total Xylenes".
ND = Not Detected
NA = Not Analyzed
MCL = Maximum Contaminant Levels
ug/l = Microgram/Liter
= Indicates an exceedance of the MCL 149.21(9) or ES 140.10

Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
W-2	02/20/97	NR	8.00	6.00	750 us	NA	NA	NA	NA
	05/27/97	NR	7.74	10.10	NA	NA	NA	NA	NA
	09/18/97	NR	7.01	14.50	910 us	NA	NA	NA	NA
	12/12/97	NR	7.33	9.50	820 us	NA	NA	NA	NA
	03/25/98	NR	7.96	7.90	1235 us	NA	NA	NA	NA
	06/10/98	NR	6.59	10.20	1057 us	NA	NA	NA	NA
	10/27/98	4.00	7.93	14.80	1278 us	1.40	119.00	12.00	0.00
	02/09/99	4.00	8.47	9.50	1278 us	2.10	146.00	16.00	0.20
	06/08/99	4.00	7.20	14.60	1234 us	1.00	85.00	11.20	1.00
	09/13/99	5.10	7.34	15.00	1254 us	1.90	(136.00)	9.60	0.00
	12/15/99	4.80	7.77	11.80	1199 us	1.50	(231.00)	4.80	0.00
	03/13/00	7.00	6.17	8.90	1278 us	1.30	59.00	7.60	0.00
	06/22/00	4.40	7.86	12.10	1240 us	1.50	59.00	7.60	0.00
W-8	02/20/97	NR	8.20	7.50	1000 us	NA	NA	NA	NA
	05/27/97	NR	7.30	10.40	NA	NA	NA	NA	NA
	09/18/97	NR	7.07	17.00	1250 us	NA	NA	NA	NA
	12/12/97	NR	7.32	11.20	1090 us	NA	NA	NA	NA
	03/25/98	NR	7.34	7.90	1590 us	NA	NA	NA	NA
	06/10/98	NR	6.95	11.50	1407 us	NA	NA	NA	NA
	10/27/98	5.00	7.42	16.70	1459 us	1.30	97.00	14.40	0.20
	02/09/99	3.90	8.08	11.20	1386 us	1.30	21.00	8.00	2.40
	06/08/99	5.50	7.23	14.80	1283 us	1.80	85.00	14.00	5.60
	09/13/99	5.20	7.12	16.30	1363 us	1.70	(143.00)	14.40	1.60
	12/15/99	5.10	7.25	10.30	1375 us	0.90	(288.00)	14.40	1.20
	03/13/00	5.00	7.06	8.80	1277 us	1.10	(33.00)	8.40	1.00
	06/22/00	4.80	8.58	14.60	1177 us	1.97	(120.00)	6.80	0.00
W-15	02/20/97	NR	8.15	9.00	920 us	NA	NA	NA	NA
	05/27/97	NR	7.66	10.00	NA	NA	NA	NA	NA
	09/18/97	NR	7.22	16.00	1300 us	NA	NA	NA	NA
	12/12/97	NR	7.18	10.40	1180 us	NA	NA	NA	NA
	03/25/98	NR	7.70	8.40	1450 us	NA	NA	NA	NA
	06/10/98	NR	6.46	11.60	1496 us	NA	NA	NA	NA
	10/27/98	4.00	7.27	16.00	1551 us	0.80	137.00	14.40	0.00
	02/09/99	2.60	8.07	10.00	1418 us	1.30	7.00	12.00	0.60
	06/08/99	4.50	7.54	16.70	1465 us	1.50	75.00	12.00	1.40
	09/13/99	3.60	7.18	17.60	1647 us	1.90	(137.00)	10.40	0.80
	12/15/99	3.30	7.52	11.70	1544 us	1.50	(281.00)	12.40	1.00
	03/13/00	4.00	7.14	8.90	1266 us	1.40	(19.00)	7.60	0.40
	06/22/00	3.00	8.22	14.90	1546 us	1.63	36.00	7.30	0.00
MW-101	02/20/97	NR	7.12	8.00	1400 us	NA	NA	NA	NA
	05/27/97	NR	7.56	12.90	NA	NA	NA	NA	NA
	09/18/97	NR	6.54	14.00	1380 us	NA	NA	NA	NA
	12/12/97	NR	6.64	11.40	1390 us	NA	NA	NA	NA
	03/25/98	NR	7.58	10.50	2142 us	NA	NA	NA	NA
	06/10/98	NR	6.29	11.50	2116 us	NA	NA	NA	NA
	10/27/98	9.00	7.13	14.10	2.27 ms	0.50	116.00	12.00	0.00
	02/09/99	7.00	8.11	12.70	2.11 ms	1.10	165.00	8.80	0.20
	06/08/99	6.00	7.05	15.00	2.17 ms	0.70	161.00	8.00	0.20
	09/13/99	5.90	7.25	14.90	2.12 ms	0.90	(125.00)	13.60	0.00
	12/15/99	6.00	8.71	12.70	2.06 ms	1.00	(262.00)	8.80	0.00
	03/13/00	7.00	6.34	11.60	1939 us	1.10	44.00	8.00	0.00
	06/22/00	5.00	7.73	15.20	2.25 ms	0.96	50.00	8.00	0.00

Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-102	02/20/97	NR	8.00	10.50	700 us	NA	NA	NA	NA
	05/27/97	NR	7.47	10.50	NA	NA	NA	NA	NA
	09/18/97	NR	6.99	13.00	810 us	NA	NA	NA	NA
	12/12/97	NR	7.23	8.50	690 us	NA	NA	NA	NA
	03/25/98	NR	7.68	10.20	1145 us	NA	NA	NA	NA
	06/10/98	NR	6.97	10.30	1046 us	NA	NA	NA	NA
	10/27/98	2.00	8.07	13.00	1197 us	1.50	103.00	17.60	0.40
	02/09/99	0.50	7.48	11.00	1164 us	1.00	0.33	14.40	0.00
	06/08/99	0.50	7.89	18.60	1226 us	1.00	151.00	4.80	0.80
	09/13/99	0.50	7.84	13.30	1208 us	1.20	(246.00)	10.00	1.20
	12/15/99	0.50	7.78	9.00	1152 us	1.60	(288.00)	10.80	1.00
	03/13/00	0.50	6.74	9.70	1096 us	1.20	(260.00)	6.80	0.00
	06/22/00	0.50	8.01	12.30	1233 us	0.53	(13.00)	6.00	0.00
MW-103	02/20/97	NR	6.30	6.00	700 us	NA	NA	NA	NA
	05/27/97	NR	7.67	11.60	NA	NA	NA	NA	NA
	09/18/97	NR	7.21	10.50	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.43	9.00	970 us	NA	NA	NA	NA
	03/25/98	NR	7.82	9.40	1441 us	NA	NA	NA	NA
	06/10/98	NR	6.24	9.90	1356 us	NA	NA	NA	NA
	10/27/98	8.00	7.66	12.70	1566 us	0.70	147.00	12.00	0.20
	02/09/99	7.80	7.48	9.90	1443 us	1.40	53.00	11.20	0.80
	06/08/99	9.50	7.42	13.90	1350 us	0.70	109.00	7.20	0.00
	09/13/99	4.10	7.41	12.90	985 us	1.60	(165.00)	12.00	0.00
	12/15/99	4.60	7.82	10.60	2.58 ms	1.40	(294.00)	10.80	0.00
	03/13/00	4.00	6.57	9.40	1292 us	1.00	76.00	8.40	0.40
	06/22/00	4.00	8.43	11.50	1354 us	0.99	(90.00)	6.00	0.00
MW-104	02/20/97	NR	7.43	8.00	1000 us	NA	NA	NA	NA
	05/27/97	NR	8.00	12.00	NA	NA	NA	NA	NA
	09/18/97	NR	7.13	10.50	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.10	9.60	1000 us	NA	NA	NA	NA
	03/25/98	NR	7.94	8.30	1378 us	NA	NA	NA	NA
	06/10/98	NR	6.53	9.70	1101 us	NA	NA	NA	NA
	10/27/98	8.00	7.84	13.20	1272 us	0.90	103.00	16.40	0.40
	02/09/99	9.50	7.66	10.10	1126 us	1.50	193.00	11.20	0.00
	06/08/99	13.00	6.80	15.60	1259 us	1.60	103.00	6.40	0.00
	09/13/99	13.80	7.08	13.90	1334 us	1.80	(146.00)	10.80	0.00
	12/15/99	11.20	7.68	10.80	1172 us	2.00	(232.00)	11.20	0.00
	03/13/00	16.50	6.91	10.20	1121 us	0.40	69.00	11.20	0.60
	06/22/00	11.00	8.65	11.60	1137 us	0.71	(211.00)	6.80	0.00
MW-105	02/20/97	NR	7.70	7.00	1600 us	NA	NA	NA	NA
	05/27/97	NR	7.44	10.50	NA	NA	NA	NA	NA
	09/18/98	NR	6.89	16.00	2150 us	NA	NA	NA	NA
	12/12/97	NR	7.04	12.00	2050 us	NA	NA	NA	NA
	03/25/98	NR	7.35	6.70	2878 us	NA	NA	NA	NA
	06/10/98	NR	6.25	11.10	2695 us	NA	NA	NA	NA
	10/27/98	5.00	7.57	16.80	2.87 ms	0.10	121.00	13.60	0.00
	02/09/99	5.90	7.34	10.60	2.76 ms	0.90	281.00	16.80	1.80
	06/08/99	5.00	7.32	17.80	2.87 ms	0.70	90.00	9.60	0.20
	09/13/99	3.50	7.00	17.20	2.74 ms	1.70	(182.00)	13.20	1.40
	1215/99	3.60	7.36	13.00	2.62 ms	1.60	(255.00)	8.80	1.20
	03/13/00	4.50	6.58	8.40	2430 us	1.30	23.00	9.60	0.80
	06/22/00	3.20	8.44	14.30	2.71 ms	0.88	(304.00)	6.40	0.00

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Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS

N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-106	02/20/97	NR	7.75	10.00	1000 us	NA	NA	NA	NA
	05/27/97	NR	7.47	10.10	NA	NA	NA	NA	NA
	09/18/97	NR	7.19	15.00	1310 us	NA	NA	NA	NA
	12/12/97	NR	7.06	11.50	1260 us	NA	NA	NA	NA
	03/25/98	NR	7.61	8.70	1716 us	NA	NA	NA	NA
	06/10/98	NR	7.11	11.60	1604 us	NA	NA	NA	NA
	10/27/98	4.00	7.31	16.80	1824 us	1.20	138.00	12.80	0.00
	02/09/99	2.50	7.33	10.20	1605 us	1.10	197.00	20.80	0.00
	06/08/99	3.50	7.15	15.40	1332 us	0.70	17.00	6.40	0.20
	09/13/99	2.30	7.02	17.40	1357 us	1.00	(168.00)	11.60	0.00
	12/15/99	2.00	8.41	12.10	1445 us	0.80	(266.00)	10.00	0.00
	03/13/00	2.50	6.92	9.10	1513 us	1.60	18.00	10.40	0.00
	06/22/00	1.50	8.18	14.50	1736 us	2.02	38.00	7.20	0.00
MW-107	02/20/97	NR	7.46	9.00	650 us	NA	NA	NA	NA
	05/27/97	NR	7.12	10.80	NA	NA	NA	NA	NA
	09/18/97	NR	7.07	12.50	700 us	NA	NA	NA	NA
	12/12/97	NR	7.08	10.50	730 us	NA	NA	NA	NA
	03/25/98	NR	7.87	10.20	1081 us	NA	NA	NA	NA
	06/10/98	NR	7.17	10.60	1042 us	NA	NA	NA	NA
	10/27/98	10.00	7.41	12.10	1179 us	1.10	62.00	20.00	10.00
	02/09/99	9.00	8.10	12.00	1189 us	1.30	263.00	7.20	0.40
	06/08/99	9.00	7.48	15.60	1406 us	2.20	163.00	4.80	0.40
	09/13/99	8.00	7.30	12.90	1301 us	2.60	(114.00)	14.00	0.60
	12/15/99	10.00	7.63	11.30	1419 us	2.80	(42.00)	12.40	1.00
	03/13/00	14.50	5.76	10.90	1389 us	1.20	58.00	8.40	0.60
	06/22/00	10.00	8.75	12.40	1574 us	0.62	(120.00)	6.40	0.00
MW-108	02/20/97	NR	8.10	10.00	100 us	NA	NA	NA	NA
	05/27/97	NR	6.02	11.40	NA	NA	NA	NA	NA
	09/18/97	NR	6.51	12.00	1160 us	NA	NA	NA	NA
	12/12/97	NR	6.98	10.40	1130 us	NA	NA	NA	NA
	03/25/98	NR	7.64	10.20	1568 us	NA	NA	NA	NA
	06/10/98	NR	6.54	10.70	1525 us	NA	NA	NA	NA
	10/27/98	10.00	7.95	14.30	1696 us	1.40	116.00	12.80	0.20
	02/09/99	8.10	7.51	11.00	1810 us	1.10	(65.00)	10.40	0.40
	06/08/99	12.50	7.60	15.00	1706 us	0.90	173.00	7.20	0.60
	09/13/99	13.50	7.29	13.60	1849 us	1.20	(180.00)	8.00	0.00
	12/15/99	12.80	7.68	11.80	1885 us	1.00	(286.00)	8.40	0.00
	03/13/00	14.00	6.25	10.20	1642 us	1.70	(4.00)	9.20	0.20
	6/22/00	11.50	7.62	14.1	1989 us	1.01	69	6.4	0

ppm = parts per million
us = microsiemens / centimeter
mV = millivolts
gpg = grains per gallon
ms = millisiemens / centimeter
NA = not analyzed
NR = not recorded
* = Each monitoring well was purged dry twice prior to sampling
The second purging was conducted approximately 3-hrs after initial purging. The volume of purge water collected represents the total of the two well purges. Purge volumes prior to 10/27/98 were not available.
( ) = Indicates a negative value.

JMS:smd
I.D.\Report\M050\99746\Qtrly-PR#6-JMS.xls

Table #6

LABORATORY ANALYTICAL RESULTS
Effluent Point 001
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Sample Name	Sample Date	Aluminum (mg/l)	Arsenic (mg/l)	Cadmium (mg/l)	Chromium Total (mg/l)	Copper (mg/l)	Cyanide (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Zinc (mg/l)	Hexavalent Chromium (mg/L)
Outfall 001*	02/20/97	<.02	<.003	<.00050	0.0400	<.01	<.00001	<.005	<.0002	<.005	0.0051	<.01
Outfall 001*	05/27/97	NA	NA	NA	0.2600	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	09/11/97	NA	NA	NA	0.5570	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	12/12/97	NA	NA	NA	0.2790	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	03/24/98	0.0152	<.002	<.00004	0.0637	<.0095	<.0017	<.0006	<.000015	<.0095	0.0046	0.1000
Outfall 001**	04/29/98	<.011	<.002	<.005	0.2200	<.05	0.0020	<.1	<.0002	<.04	<.005	NA
Outfall 001*	06/10/98	NA	NA	NA	0.0784	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	10/07/98	<.011	<.002	0.0050	0.1700	<.05	<.001	<.1	<.0002	<.04	0.0250	NA
Outfall 001***	10/27/98	NA	NA	NA	0.0940	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	02/09/99	NA	NA	NA	0.1600	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	03/18/99	<.009	<.003	<.0031	NA	.00068****	<.000032	<.0024	<.00005	.00351****	<.012	<.0036
Outfall 001**	03/18/99	<.011	<.002	<.005	<0.05	<.05	0.0010	0.1000	<.00005	0.0400	0.0180	NA
Outfall 001***	06/08/99	NA	NA	NA	0.1900	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	09/13/99	NA	NA	NA	0.1700	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	09/21/99	<.011	<.002	<.005	<.05	<.05	0.0030	<.1	<.00015	<.04	0.0080	NA
Outfall 001***	12/15/99	NA	NA	NA	0.0870	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	02/15/00	<.015	<.0020	<.005	0.0900	<.05	<.001	<.1	<.00013	<.04	0.0280	NA
Outfall 001***	03/13/00	<.009	<.003	<.00031	0.1400	<.0006	<.0044	<.0024	<.00005	.0012***	<.012	NA
Outfall 001 ***	06/22/00	NA	NA	NA	0.24	NA	NA	NA	NA	NA	NA	NA
Effluent Limits Permit #97-21		70.0000	1.0000	0.3000	7.0000	3.5000	1.0000	2.0000	0.0020	2.0000	10.0000	4.5000

mg/l = milligram / liter
ug/l = microgram / liter
NA = not analyzed
* = Sampled by CH2M Hill
** = Sampled by the City of Appleton
*** = Sampled by MCO
**** = Detected of compound in area of less certain quantitation.

JMS:smd
I.D.\Report\M050\99746\Qtrly-PR#7-JMS.xls

Table #7

WEEKLY INFLUENT HEXAVALENT CHROMIUM RESULTS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO. No. M050-99746.14

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
02/26/97	1.0
03/03/97	.8
03/06/97	1.0
03/10/97	1.5
03/23/97	.9
03/29/97	1.2
04/06/97	1.1
04/09/97	1.2
04/16/97	1.0
04/25/97	1.0
04/27/97	1.1
05/02/97	1.1
05/08/97	1.1
05/13/97	1.2
05/21/97	1.1
05/29/97	1.1
06/06/97	1.2
06/13/97	1.2
06/17/97	1.3
06/23/97	1.2
07/02/97	1.2
07/08/97	1.2
07/14/97	1.2
07/21/97	1.2
07/28/97	1.4
08/04/97	1.4
08/13/97	1.3
08/18/97	1.3
08/25/97	1.3
09/04/97	1.3
09/08/97	1.5
09/15/97	1.4
09/24/97	1.3
10/01/97	1.3
10/08/97	1.4
10/15/97	1.3
10/22/97	1.4
10/29/97	1.4
11/05/97	1.3
11/11/97	1.2
11/22/97	1.0
11/24/97	1.0
12/03/97	1.0
12/10/97	1.0
12/17/97	1.1
01/07/98	1.0
01/14/98	1.0
01/21/98	1.0

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
01/28/98	1.0
02/04/98	1.4
02/11/98	1.4
02/18/98	1.4
02/25/98	0.8
03/04/98	1.3
03/11/98	1.3
03/18/98	1.3
03/26/98	1.3
04/01/98	0.8
04/08/98	1.0
04/15/98	1.3
04/23/98	1.3
04/29/98	1.3
05/06/98	1.3
05/13/98	1.3
05/20/98	1.3
05/27/98	1.4
06/03/98	1.3
06/10/98	1.4
06/17/98	1.2
06/24/98	1.2
07/01/98	1.1
07/08/98	1.1
07/15/98	1.1
07/23/98	1.3
07/29/98	1.3
08/06/98	1.2
08/12/98	1.2
08/19/98	1.2
08/26/98	1.2
09/02/98	1.2
09/09/98	1.2
09/16/98	1.2
09/23/98	1.2
09/30/98	1.2
10/07/98	1.0
10/15/98	1.1
10/21/98	1.3
10/28/98	1.3
11/04/98	1.1
11/11/98	1.1
11/18/98	1.2
11/25/98	1.2
12/02/98	1.2
12/09/98	1.5
12/16/98	1.3
12/23/98	1.3

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
12/30/98	1.3
01/06/99	1.3
01/12/99	1.1
01/20/99	1.2
01/28/99	1.3
02/03/99	1.3
02/10/99	1.4
02/17/99	1.4
02/24/99	1.4
03/03/99	1.3
03/10/99	1.3
03/17/99	1.3
03/24/99	1.3
03/31/99	1.3
04/07/99	1.2
04/14/99	1.2
04/21/99	1.1
04/28/99	1.2
05/05/99	1.2
05/12/99	1.2
05/19/99	1.1
05/26/99	1.2
06/02/99	1.1
06/10/99	1.4
06/16/99	1.5
06/23/99	2.2
06/30/99	2.2
07/07/99	2.4
07/14/99	2.0
07/21/99	1.8
07/28/99	1.2
08/04/99	1.5
08/11/99	1.4
08/18/99	1.3
08/25/99	1.3
09/01/99	1.3
09/08/99	1.4
09/15/99	1.5
09/21/99	1.3
09/29/99	1.2
10/06/99	1.4
10/13/99	1.5
10/20/99	1.4
10/27/99	1.4
11/04/99	1.3
11/10/99	1.2
11/18/99	1.3
11/24/99	1.2

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
11/30/99	1.3
12/08/99	1.3
12/15/99	1.2
12/22/99	1.3
12/29/99	1.2
01/06/00	1.3
01/12/00	1.3
01/19/00	1.2
01/26/00	1.2
02/02/00	1.1
02/09/00	1.1
02/16/00	1.2
02/23/00	1.3
03/01/00	1.2
03/08/00	1.3
03/14/00	1.2
03/22/00	1.2
03/29/00	1.1
04/05/00	1.4
04/11/00	1.1
04/19/00	1.1
04/26/00	1.1
05/03/00	1.3
05/10/00	1.1
05/17/00	1.2
05/24/00	1.1
05/31/00	1.1
06/07/00	1.4
06/14/00	0.5
06/21/00	1.0
06/28/00	1.1

is Measured Utilizing a Hach Test Kit.

JMS:smdt
I.D. \REPORTM050\99746\QTRLY-PR#7-JMS.XLS

APPENDIX A

Groundwater Sampling
Data Sheets

Groundwater Monitoring Field Form

McM

Project Number _____

Project Name MW Mauthe

Location 725 S. Outagamie St
Appleton, WI

Date 6-22-00

Personnel MHK

Temp./Weather 67.3°F / Mostly Cloudy

Well	Date	Time	Depth to Water (Top of PVC) (ft)	Total Well Depth (Top of PVC) (ft)	Water Column Length (ft)	Req'd. Gals to Purge 4 Casing Volumes	Amount Purged (gal)	Water Appear. (see below)	Sampling Method (see below)	Free Product (ft)	Sampl. (Y/N)	pH	Temp °C	Conductivity uS	D.O. mg/l	Redox mV	Alkalinity gpg	Ferrous Iron mg/l	Comments
MW-101	6-22	8:00AM	6.28	27.5	21.22	14.4	5	1	EP	N	Y	7.73	15.2	2.25mS	0.96	50	20/8	0	Replaced Pump 3.2
MW-102			23.69	28.0	4.32	2.9	.5	1	EP	N	Y	8.01	12.3	1223µS	0.53	-13	15/4	0	.5
MW-103			8.22	27.0	18.78	12.7	4	1	EP	N	Y	8.43	11.5	1354µS	0.99	-90	15/4	0	2.2, 1.8
MW-104			8.41	26.0	17.59	11.9	11	1	EP	N	Y	8.65	11.6	1137µS	0.71	-211	17/6.8		7.4, 3.6
MW-105			3.06	15.5	12.44	8.5	3.2	1	EP	N	Y	8.44	14.3	2.71mS	0.88	-304	16/6.4	0	2, 1.2
MW-106			6.87	16.0	9.13	6.2	15	1	EP	N	Y	8.18	14.5	1736µS	2.02	38	18/7.2	0	1, .5
MW-107			10.69	30.5	19.81	13.5	10	3	EP	N	Y	8.75	12.4	1574µS	0.62	-120	16/6.4	0	Very Yellow 6.4
MW-108			6.28	27.0	20.72	14.1	11.1	1	EP	N	Y	7.62	14.1	1989µS	1.01	69	16/6.4	0	6.1, 5.0
W-2			2.63	13.0	10.37	7.1	4.2	1	EP	N	Y	7.86	12.1	1240µS	1.50	59	19/7.6	0	2.4, 2
W-8			5.47	14.5	9.03	6.1	4.8	1	EP	N	Y	8.58	14.6	1177µS	1.97	-120	17/6.8	0	2.8, 2
W-15			6.42	15.0	8.58	5.8	3.0	1	EP	N	Y	8.22	14.9	1546µS	1.63	36	18/7.2	0	2.0, 1
PZ-1			18.21	—							N								
PZ-2			14.41	—							N								
PZ-3			23.40	—							N								
PZ-4	↓	→	22.51	—							N								
MW-104A	Dup	104																	
MW-107A	Dup	107																	

EQUIPMENT USED:
- ☑ Solinst Water Level Indicator
- ☑ Keck Interface Probe
- ☐ Alkalinity Hach Kit
- ☐ Ferrous Iron Hach Kit
- ☐ EC20 Portable Meter
- ☐ ICM Water Analyzer
- ☐ Other: _____

Comments: Numbers in "Comment" column represent gallons purged

SAMPLING METHOD
- DB - Disposable Bailer
- PP - Peristaltic Pump
- EP - Electric Pump (whale)

WATER APPEARANCE
1 - Clear
2 - Slightly Cloudy
3 - Cloudy
4 - Very Cloudy
5 - Slightly Muddy
6 - Muddy

GALLONS PER FOOT TO GET 1 CASING VOLUME
- 1" PVC - 0.05 gallons/ft.
- 2" PVC - 0.17 gallons/ft.
- 4" PVC - 0.66 gallons/ft.
- 6" PVC - 1.47 gallons/ft.

\DATAFILE\PPT\FORMS\FORMGWL.PPT 2/98 SAB/mk

McMAHON ASSOCIATES, INC. 1445 McMahon Drive/P.O. Box 1025 Neenah, WI 54956/57-1025 Phone: 920-751-4200 Fax: 920-751-4284

GROUNDWATER SAMPLING FIELD PROCEDURES DOCUMENTATION

Facility/Project Name: N. W. Mauthe Superfund Site Date: 6-22-2000
Section/Grid Location or Address: 725 S. Outagamie Street Appleton, WI
Facility Type: Groundwater Treatment System License/Permit #:
DNR Regulatory Program: BRRTS
Weather (temp., cloudiness, bar. pres., wind): 70° Cloudy

Persons Sampling and Title: Mike Kienetz, McMahon Technical Services

Water Level Equipment (type, model): Solinst Water Level Indicator
Purging Equipment (type, model, material): Whale GP916B Purge Pump

Purging Method (4 well vol. or stabilization): Stabilization
How Purge Volume Measured? (eg., calibrated bucket): Calibrated Bucket
Sample Collection Equipment (type, model, material): Whale Purge Pump

Method of Sample Withdrawal (bottom emptying device, low flow): Low Flow Pump
Type of Transfer Containers: NA
Filtering Equipment (type, material): NA
Filter Membrane (type, pore size): NA
When Were Samples Sent to Lab? 6-22-00
What Lab Were the Samples Sent to? Northern Lake Service Crandon, WI
Were Enforcement Samples Sent? NO
How Were Samples Kept Cool (ice, other)? Ice
Equipment Decontamination Procedures? Latex Gloves used during purge & Sampling. Pumps are dedicated to each well
Decontamination Water Disposal? Placed into collection sumps or building sump for treatment
pH Meter (type, model): Orion Model 1230 pH, conductivity, Redox, DO.
Person calibrating: Mike Kienetz
Frequency calibrated: Prior To Sampling Event
Calibration procedures (buffers used): Per Factory Specifications
Problems with meter: None
Conductivity Meter (type, model): As Above
Person calibrating:
Frequency calibrated:
Calibration procedures:
Problems with meter:

Turbidity Equipment (type, model): _____

Person calibrating/set-up: _____

Frequency calibrated: _____

Calibration procedures: _____

Problems with meter: _____

Dissolved Oxygen Meter (type, model): Orion meter

Person calibrating/set-up: As previous Page

Frequency calibrated: _____

Calibration procedures: _____

Problems with meter: _____

When Were In-field Measurements Taken (immediately after collection or XX minutes after collection)?: During Sample Collection

Comments (difficulties, questionable data, deviations from sampling plan, etc): _____

fpd.fm

APPENDIX B

Laboratory Analytical Results
Groundwater Monitoring Wells

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

PAGE: 1 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: W-2 **NLS#: 233654**
Ref. Line 1 of COC 44266 Description: W-2
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	ND	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: W-8 **NLS#: 233655**
Ref. Line 2 of COC 44266 Description: W-8
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	3.1	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	74	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: W-15 **NLS#: 233656**
Ref. Line 3 of COC 44266 Description: W-15
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	1.8	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	11	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: MW-101 **NLS#: 233657**
Ref. Line 4 of COC 44266 Description: MW-101
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	< 1.4 >	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	4.2	15	SW846 6010	07/05/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: MW-102 **NLS#: 233658**
Ref. Line 5 of COC 44266 Description: MW-102
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	ND	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	310	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: MW-103 **NLS#: 233659**
Ref. Line 6 of COC 44266 Description: MW-103
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	130	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	180	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: MW-104 **NLS#: 233660**
Ref. Line 7 of COC 44266 Description: MW-104
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	210	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	41	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: MW-104A **NLS#: 233661**
Ref. Line 8 of COC 44266 Description: MW-104A
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	06/30/00	721026460
Chromium, tot. as Cr by ICP	230	ug/L	0.62	1.6	SW846 6010	06/30/00	721026460
Manganese, tot. as Mn by ICP	3.8	ug/L	0.42	1.5	SW846 6010	06/30/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: MW-105 **NLS#: 233662**
Ref. Line 9 of COC 44266 Description: MW-105
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	07/03/00	721026460
Chromium, tot. as Cr by ICP	< 1.0 >	ug/L	0.62	1.6	SW846 6010	07/03/00	721026460
Manganese, tot. as Mn by ICP	600	ug/L	0.42	1.5	SW846 6010	07/03/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: MW-106 **NLS#: 233663**
Ref. Line 10 of COC 44266 Description: MW-106
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	07/03/00	721026460
Chromium, tot. as Cr by ICP	< 0.73 >	ug/L	0.62	1.6	SW846 6010	07/03/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	4.2	15	SW846 6010	07/05/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: MW-107 **NLS#: 233664**
Ref. Line 11 of COC 44266 Description: MW-107
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	07/03/00	721026460
Chromium, tot. as Cr by ICP	14000	ug/L	62	160	SW846 6010	07/05/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	42	150	SW846 6010	07/05/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	06/28/00	721026460

Sample ID: MW-107A **NLS#: 233665**
Ref. Line 12 of COC 44266 Description: MW-107A
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	07/03/00	721026460
Chromium, tot. as Cr by ICP	14000	ug/L	62	160	SW846 6010	07/05/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	42	150	SW846 6010	07/05/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	06/28/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: MW-108 **NLS#: 233666**
Ref. Line 1 of COC 442676 Description: MW-108
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	07/03/00	721026460
Chromium, tot. as Cr by ICP	6.5	ug/L	0.62	1.6	SW846 6010	07/03/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	4.2	15	SW846 6010	07/05/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: Outfall 001 Process Water **NLS#: 233667**
Ref. Line 2 of COC 442676 Description: Outfall 001
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Chromium, tot. as Cr	0.24	mg/L	0.018	0.071	EPA 200.7	06/30/00	721026460
Metals digestion - total (water) ICP	yes				EPA 200.7	06/26/00	721026460

Sample ID: Trip Blank **NLS#: 233668**
Ref. Line 3 of COC 442676 Description: Trip Blank
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
VOCs by EPA 524.2	see attached				EPA 524.2	06/28/00	721026460

Values in brackets represent results greater than the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than the LOQ are considered to be in the region of "Certain Quantitation".

LOD = Limit of Detection
LOQ = Limit of Quantitation
ND = Not Detected
DWB = Dry Weight Basis
NA = Not Applicable
%DWB = (mg/kg DWB)/10000

Reviewed by: Thomas R. Krueger

Authorized by:
R. T. Krueger
Laboratory Manager

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: N.W. Mauthe
Northern Lake Service Project Number: 54906

Sample: 233664 MW-107 Collected: 22-JUN-00 Analyzed: 28-JUN-00

ANALYTE NAME	233664 MW-107 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	80	26	81	5.0
Chloroform	ND	80	23	72	
1,1-Dichloroethane	ND	80	29	92	
1,1-Dichloroethene	< 50 >	80	28	90	7.0
cis-1,2-Dichloroethene	ND	80	12	38	70
trans-1,2-Dichloroethene	ND	80	31	100	100
Toluene	ND	80	30	95	1000
1,1,1-Trichloroethane	540	80	27	85	200
1,1,2-Trichloroethane	ND	80	9.0	29	5.0
Trichloroethene	850	80	27	86	5.0
Xylene Total	ND	80	57	180	10000

Surrogate Recovery on 4-Bromofluorobenzene = 92.0 %
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 96.0 %

Sample: 233665 MW-107A Collected: 22-JUN-00 Analyzed: 28-JUN-00

ANALYTE NAME	233665 MW-107A ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	100	32	100	5.0
Chloroform	ND	100	28	90	
1,1-Dichloroethane	ND	100	36	120	
1,1-Dichloroethene	< 53 >	100	35	110	7.0
cis-1,2-Dichloroethene	ND	100	15	48	70
trans-1,2-Dichloroethene	ND	100	39	120	100
Toluene	ND	100	37	120	1000
1,1,1-Trichloroethane	580	100	33	110	200
1,1,2-Trichloroethane	ND	100	11	36	5.0
Trichloroethene	910	100	34	110	5.0
Xylene Total	ND	100	71	230	10000

Surrogate Recovery on 4-Bromofluorobenzene = 93.0 %
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 89.0 %

Sample: 233668 Trip Blank Collected: 22-JUN-00 Analyzed: 28-JUN-00

ANALYTE NAME	233668 Trip Blank ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000

Surrogate Recovery on 4-Bromofluorobenzene = 97.0 %
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 97.0 %

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 44266

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

CLIENT: McMahon		DNR LICENSE:	FID:
ADDRESS: Po Box 1025		PROJECT TITLE: N.W. Marble	
CITY: Neenah	STATE: WI	ZIP: 54957-1025	PROJECT NO.:
CONTACT: Joe Stacey		P.O. NO.:	PHONE: 920-751-4100

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE				COLLECTION REMARKS
1.		W-2		6/22/00	7:30P	GW	Grab	HNO3				
2.		W-8		"	"	"	"	"				
3.		W-15		"	"	"	"	"				
4.		MW-101		"	"	"	"	"				
5.		MW-102		"	"	"	"	"				
6.		MW-103		"	"	"	"	"				
7.		MW-104		"	"	"	"	"				
8.		MW-104A		"	"	"	"	"				
9.		MW-105		"	"	"	"	"				
10.		MW-106		"	"	"	"	"				
11.		MW-107		"	"	"	"	"				VOC's Also
12.		MW-107A		"	"	"	"	"				VOC's Also

SAMPLE TYPE:
SW=surface water; WW=wastewater; GW=groundwater; DW=drinking water; TIS=tissue; AIR=air; PROD=product; SOIL=soil; SED=sediment; describe others

CONTAINER: P = plastic; G = glass; V = glass vial; B = plastic bag; describe others

PRESERVATIVES & PREPARATION: NP = nothing added; S = sulfuric acid; N = nitric acid; Z = zinc acetate; OH = sodium hydroxide; HA = hydrochloric & ascorbic acid; H = hydrochloric acid; F = field filtered

COLLECTED BY (signatures): DL XX	CUSTODY SEAL NO. (IF ANY)	DATE/TIME
RELINQUISHED BY (signature): DL XX	RECEIVED BY (signature)	DATE/TIME: 6-23-00 4:00P TULPS
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT	DATE/TIME

RECEIVED AT NLS BY (Signature)	DATE/TIME	CONDITION	TEMP
[illegible]	6/23/00 [illegible]	[illegible]	[illegible]
SEAL INTACT: ☐ YES ☐ NO	SEAL [illegible]	REMARKS & OTHER INFORMATION	

IMPORTANT:
1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

DUPLICATE COPY

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 44267

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

DNR LICENSE		FID	
CLIENT		PROJECT TITLE	
ADDRESS	See PAGE 1	PROJECT NO.	See PAGE 1
P.O. NO.			
CITY	STATE ZIP	CONTACT	PHONE

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE				COLLECTION REMARKS
1.		MW-10S		4/22/00	2:00P	GW	Grab	HNO3	~~HNO3~~			
2.		Outfall 001 Process		"	"	WW	"	X	X			
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												

SAMPLE TYPE:
SW=surface water, WW=wastewater, GW=groundwater, DW=drinking water, TIS=tissue, AIR=air, PROD=product, SOIL=soil, SED=sediment, describe others

CONTAINER: P = plastic, G = glass, V = glass vial, B = plastic bag, describe others

PRESERVATIVES & PREPARATION: NP = nothing added, S = sulfuric acid, N = nitric acid, Z = zinc acetate, OH = sodium hydroxide, HA = hydrochloric & ascorbic acid, H = hydrochloric acid, F = field filtered

COLLECTED BY (signatures) — CUSTODY SEAL NO. (IF ANY) — DATE/TIME

RELINQUISHED BY (signature) — RECEIVED BY (signature) — DATE/TIME: 4/22/00 4:00P TO UPS

RELINQUISHED BY (signature) — RECEIVED BY (signature) — DATE/TIME

DISPATCHED BY (signature) — METHOD OF TRANSPORT — DATE/TIME

RECEIVED AT NLS BY (signature)	DATE/TIME	CONDITION	TEMP

SEAL INTACT? ☐ YES ☐ NO — REMARKS & OTHER INFORMATION

IMPORTANT:
1. TO MEET REGULATORY REQUIREMENTS, THIS FORM **MUST** BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, **NOT** PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

DUPLICATE COPY

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John Steger	44046 – 44047
McMahon	QUOTATION NUMBER:
P.O. Box 1075	
Neenah, WI 54957-1075	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS?
	Total
COPIES TO:	SEND INVOICE TO:
	John Steger

Note "T" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: Marked GW to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryilium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☒ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ Cyanice, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☐ Lead
- ☐ Lithium
- ☐ Magnesium
- ☒ Manganese
- ☐ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic. Sludge WI List
- ☒ VOCs by 8021 – MW-107 & MW-107A ONLY
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☐ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Special Instructions: _____

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John Stegar	4426 - 4427
Mcmda	QUOTATION NUMBER:
P.O. Box 1025	
Neenah, WI 54957-1025	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS?
	Total
COPIES TO:	SEND INVOICE TO:
	John Stegar

Note "T" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: _____ to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☐ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ Cyanide, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☐ Lead
- ☐ Lithium
- ☐ Magnesium
- ☐ Manganese
- ☐ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic. Sludge WI List
- ☐ VOCs by 8021
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☐ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Special Instructions: _____

APPENDIX C

Laboratory Analytical Results
Outfall #001

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 54906

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: N.W. Mauthe

Sample ID: MW-108 **NLS#: 233666**
Ref. Line 1 of COC 442676 Description: MW-108
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	07/03/00	721026460
Chromium, tot. as Cr by ICP	6.5	ug/L	0.62	1.6	SW846 6010	07/03/00	721026460
Manganese, tot. as Mn by ICP	ND	ug/L	4.2	15	SW846 6010	07/05/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	06/26/00	721026460

Sample ID: Outfall 001 Process Water **NLS#: 233667**
Ref. Line 2 of COC 442676 Description: Outfall 001
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Chromium, tot. as Cr	0.24	mg/L	0.018	0.071	EPA 200.7	06/30/00	721026460
Metals digestion - total (water) ICP	yes				EPA 200.7	06/26/00	721026460

Sample ID: Trip Blank **NLS#: 233668**
Ref. Line 3 of COC 442676 Description: Trip Blank
Collected: 06/22/00 Received: 06/23/00 Reported: 07/10/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
VOCs by EPA 524.2	see attached				EPA 524.2	06/28/00	721026460

Values in brackets represent results greater than the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than the LOQ are considered to be in the region of "Certain Quantitation".

LOD = Limit of Detection
LOQ = Limit of Quantitation
ND = Not Detected
DWB = Dry Weight Basis
NA = Not Applicable
%DWB = (mg/kg DWB)/10000

Reviewed by: Thomas R. Krueger

Authorized by:
R. T. Krueger
Laboratory Manager

NO. 44266

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

DNR LICENSE	FID
CLIENT: McMahon	PROJECT TITLE: N.W. Mauthe
ADDRESS: P.O. Box 1025	PROJECT NO. / P.O. NO.
CITY: Neenah STATE: WI ZIP: 54957-1025	CONTACT: John Stoeger PHONE: 920-751-4200

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE HNO3				COLLECTION REMARKS
1.	[redacted]	W-2		6/22/00	2:00P	GW	Grab	HNO3 X				
2.	[redacted]	W-8		|	|	|	|	X				
3.	[redacted]	W-15		|	|	|	|	X				
4.	[redacted]	MW-101		|	|	|	|	X				
5.	[redacted]	MW-102		|	|	|	|	X				
6.	[redacted]	MW-103		|	|	|	|	X				
7.	[redacted]	MW-104		|	|	|	|	X				
8.	[redacted]	MW-104A		|	|	|	|	X				
9.	[redacted]	MW-105		|	|	|	|	X				
10.	[redacted]	MW-106		|	|	|	|	X				
11.	[redacted]	MW-107		|	|	|	|	X				VOC's Also
12.	[redacted]	MW-107A		↓	↓	↓	↓	X				VOC's Also

SAMPLE TYPE:		
SW=surface water	DW=drinking water	PROD=product
WW=wastewater	TIS=tissue	SOIL=soil
GW=groundwater	AIR=air	SED=sediment
describe others		

CONTAINER	PRESERVATIVES & PREPARATION	
P = plastic	NP = nothing added	OH = sodium hydroxide
G = glass	S = sulfuric acid	HA = hydrochloric & ascorbic acid
V = glass vial	N = nitric acid	H = hydrochloric acid
B = plastic bag	Z = zinc acetate	F = field filtered
describe others		

COLLECTED BY (signatures) [signature]	CUSTODY SEAL NO. (IF ANY)	DATE/TIME
RELINQUISHED BY (signature) [signature]	RECEIVED BY (signature)	DATE/TIME 6-22-00 4:00 To LPS
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT	DATE/TIME
RECEIVED AT NLS BY (signature)	DATE/TIME	CONDITION / TEMP.
SEAL INTACT: YES NO	SEAL #	REMARKS & OTHER INFORMATION

[illegible handwritten remarks]

IMPORTANT: 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

DUPLICATE COPY

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 44267

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

CLIENT		DNR LICENSE	FID
ADDRESS	See Page 1	PROJECT TITLE	
CITY	STATE ZIP	PROJECT NO. See Pg 1	P.O. NO.
		CONTACT	PHONE

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE				COLLECTION REMARKS
1.		MW-108		6/22/00	2:00	GW	Grab	~~NONE~~	~~NONE~~			
2.		Outfall 001 Process Water		↓	↓	WW	↓	X	X			
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												

SAMPLE TYPE:
SW=surface water, WW=wastewater, GW=groundwater, DW=drinking water, TIS=tissue, AIR=air, PROD=product, SOIL=soil, SED=sediment, describe others

CONTAINER: P = plastic, G = glass, V = glass vial, B = plastic bag, describe others

PRESERVATIVES & PREPARATION: NP = nothing added, S = sulfuric acid, N = nitric acid, Z = zinc acetate, OH = sodium hydroxide, HA = hydrochloric & ascorbic acid, H = hydrochloric acid, F = field filtered

COLLECTED BY (signatures)	CUSTODY SEAL NO. (IF ANY)	DATE/TIME
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME 4/22/00 4:00 TO UPS
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME
DISPATCHED BY (signature)	METHOD OF TRANSPORT	DATE/TIME

RECEIVED AT LAB BY (signature)	DATE/TIME	CONDITION	ITEM#
CHILLED? ☐ YES ☐ NO	SEAL?	REMARKS & OTHER INFORMATION	

IMPORTANT: 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

DUPLICATE COPY

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John Stegar	44206 - 44247
Menda	QUOTATION NUMBER:
P.O. Box 1025	
Minocqua, WI 54557-1025	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS? Total
COPIES TO:	SEND INVOICE TO: John Stegar

Note "T" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: _____ to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☐ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ Cyanide, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☐ Lead
- ☐ Lithium
- ☐ Magnesium
- ☐ Manganese
- ☐ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic. Sludge WI List
- ☐ VOCs by 8021
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☐ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Special Instructions: _____

Form 13
Evaluation Form 1

INDUSTRIAL USER MONITORING SUMMARY REPORT

(Summation of POTW Compliance Monitoring and Industrial Self-Monitoring)

Industrial User Name N. W. Mauthe Superfund Site / SIU 00 - 21

Location 725 South Outagamie Street

Sampling Point (Refer to Control Document) 001 discharge valve in Pretreatment Facility

SAMPLE TYPE			FP TC (G)	FP TC (G)	FP TC G	FP TC G	FP TC G	FP TC G	FP TC G	FP TC G
			SAMPLE 2/15/00	SAMPLE 3/13/00	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
PARAMETERS	UNIT	LIMITS MAX / AVG	DATE SELF SCHEDUL X UNSCHED DEMAND	DATE SELF X SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND
Flow, Regulated	GPD									
Flow, Unregulated	GPD									
Flow, Dilutional	GPD									
Flow, Total	GPD									
Arsenic	mg/L	1.0	< 0.0020	< 0.003						
Cadmium	mg/L	0.3	< 0.005	< 0.0031						
Chromium	mg/L	7.0	0.09	0.14						
Copper	mg/L	3.5	< 0.05	< 0.006						
Cyanide	mg/L	1.0	< 0.001	< 0.0044						
Lead	mg/L	2.0	< 0.1	< 0.0024						
Nickel	mg/L	2.0	< 0.04	0.0012						
Silver	mg/L									
Zinc	mg/L	10.0	0.028	< 0.012						
Total Toxic Organics	mg/L									
Aluminum	mg/L	70.0	< 0.015	< 0.009						
Hex Chromium	mg/L			< 0.0036						
Mercury	mg/L	0.002	< 0.00013	< 0.00005						
	mg/L									
	mg/L									
pH	s. u.	5.0-12.4	8.54							
Oil & Grease	mg/L									
Phosphorus	mg/L									

QUARTERLY PROGRESS REPORT #6

January, February, March 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

MCO

Midwest Contract Operations, Inc.

June 1, 2000
MCO. No. M050-99746.14
JMS:smd

MCO
Midwest Contract Operations, Inc.
P.O. BOX 418 MENASHA, WI 54952-0418
TEL: (920) 751-4299 FAX: (920) 751-4284
e-mail: mcm@mcmgrp.com

June 1, 2000

Ms. Jennifer Huffman
Wisconsin Department Of Natural Resources
3369 West Brewster Street
Appleton, WI 54912-1602

Re: N.W. Mauthe Groundwater Treatment System
Appleton, Wisconsin
Quarterly Progress Report #6
MCO. No. M050-99746.14

Dear Ms. Huffman:

Enclosed, please find Midwest Contract Operations, Inc.'s "Quarterly Progress Report #6" for the N.W. Mauthe Groundwater Treatment System, 725 South Outagamie Street, Appleton, Wisconsin.

The Progress Report includes a brief background of the site history, a summary of any sampling results at the site or in the adjacent groundwater monitoring wells, operation and maintenance activities, Form 4400-194 Operation & Maintenance Summary, and time versus contaminate graphs. This quarterly report includes the months of January, February and March 2000. The operation and maintenance summary contains the months from October 1999 through March 2000.

If you have any questions or require additional information, feel free to contact me.

Very truly yours,

MIDWEST CONTRACT OPERATIONS, INC.

John M. Stoeger
Project Manager

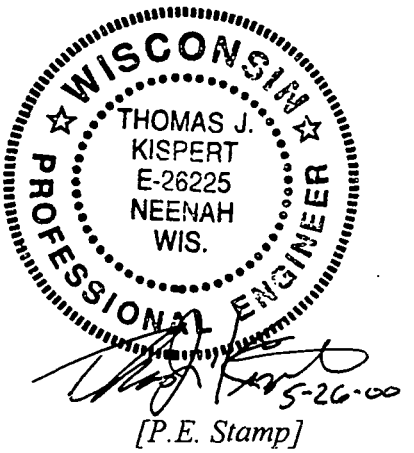
JMS:smd
Enclosure: Quarter Progress Report #6
cc: Jessica Garratt – City of Appleton
Marie Stewart – DNR Madison

Professional Qualifications Statement

"I, Thomas J. Kispert, hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. 700 to 726, Wis. Adm. Code."

Thomas J. Kispert, P.E., C.C.S. / P.E. No. E-26225
Senior Project Engineer

5-26-00
Date

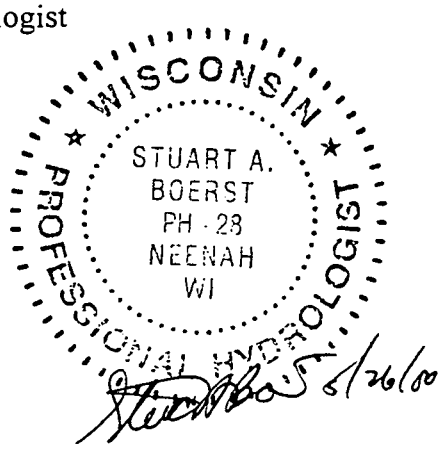


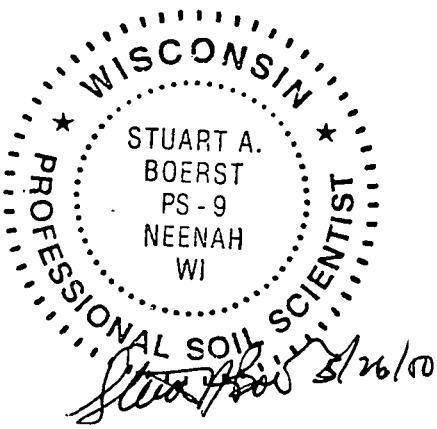
[P.E. Stamp]

"I, Stuart A. Boerst, hereby certify that I am a Hydrogeologist, as the term is defined in s. NR 712.03(1), Wisconsin Administrative Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wisconsin Administrative Code."

Stuart A. Boerst, P.S.S., P.H.
Hydrogeologist

5/26/00
Date





QUARTERLY PROGRESS REPORT #6

January, February, March 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Prepared By
Midwest Contract Operations, Inc.
June 1, 2000
MCO. No. M050-99746.14

Table Of Contents

Table Of Contents (continued)

QUARTERLY PROGRESS REPORT #6

January, February, March 2000

N.W. MAUTHE
GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Prepared By
Midwest Contract Operations, Inc.
June 1, 2000
MCO. No. M050-99746.14

I. SITE BACKGROUND

The N.W. Mauthe site is a former electroplating facility, located at 725 South Outagamie Street, Appleton, Wisconsin (See Figure #1 – Site Location Map). The property was used for a chrome plating company, from 1960 until 1976. Electroplating of zinc, cadmium and, possibly, copper and silver was conducted from 1978 to 1987 in an adjacent building on the same property. After 1987, all plating operations ceased on the property.

Concerns over sub-surface discharges to the surrounding environment led the Wisconsin Department of Natural Resources (DNR) and United States Environmental Protection Agency (USEPA) to conduct a remedial investigation and clean up of the N.W. Mauthe site and surrounding properties.

The investigation determined the N.W. Mauthe site was contaminated with zinc, cadmium, chromium and cyanide. Additionally, several volatile organic compounds (VOC's) were also present.

Based upon the findings of the remedial investigation, the following actions were taken to remediate the N.W. Mauthe site and adjacent properties of the sub-surface contamination.

A. Demolition and removal of the buildings on the N.W. Mauthe property.

B. Excavation and off-site treatment of soils with a total chromium concentration of greater than 500 mg/kg.

C. Backfilling of the excavation with clean soils, capping the site with 2-feet of clay and topsoil, and the establishment of vegetative cover.

D. Installation of groundwater collection trenches and construction and operation of a groundwater treatment facility to contain and/or control groundwater contamination with ultimate compliance with groundwater Applicable or Relevant and Appropriate Requirements (ARAR's).

E. Improvement or installation of foundation drain systems and cleaning, painting or sealing of basement walls and floors, as needed, for homes or businesses in the area of the site, to prevent seepage of contaminated water into the buildings.

The groundwater collection trench system, the location of sump pump and drain connections, and the groundwater monitoring wells and piezometers associated with the site are shown in Figure #2.

Midwest Contract Operations, Inc. (MCO) began operating the groundwater treatment system in February 1997. CH_2M Hill, the site engineer and project manager for the U.S. EPA, retained responsibility for the overall site operations and the groundwater monitoring wells associated with the treatment system.

The objectives of the collection and treatment system are to reduce the contaminant concentrations in the groundwater to achieve federal drinking water standards and/or state groundwater quality standards, whichever are more stringent.

In October 1998, after the first year of operation and maintenance of the remediation system, the Wisconsin DNR assumed the responsibility from the U.S. EPA for all operation and maintenance of the site. MCO was retained by the Wisconsin DNR for the operation and maintenance of the entire groundwater treatment system, including the groundwater monitoring wells. To date, MCO has competed six rounds of groundwater sampling and is operating the batch treatment process, which is designed to remove chromium from the groundwater. A description of the batch process will be discussed in the following section of this report.

II. BATCH TREATMENT PROCESS

As part of the remediation phase at the N.W. Mauthe site, a groundwater collection system was installed on and adjacent to the N.W. Mauthe property. Approximately 1,000 lineal feet of coarse sand filled trenching was installed to draw groundwater from the contaminated areas to two collection sumps. From the collection sumps, groundwater is pumped to a 9,000 gallon holding tank, located within the treatment building.

Each batch of groundwater to be treated is pumped from the storage tank to the reaction tank. The batch process treatment system utilizes ferrous sulfate and caustic additions to treat the contaminated groundwater. Through chemical addition, mixing, aeration and settling, the chromium is removed from the groundwater. The fully automated process treats approximately 2,600 gallons per batch (based on physical tank measurements) and is capable of treating four batches per day.

Treated groundwater decants from the reaction tank to the City of Appleton sanitary sewer system. The chromium containing sludge settles to the bottom of the reaction tank. Excess sludge is pumped to a sludge storage tank, also located within the treatment building.

During each discharge, the effluent is tested for hexavalent chromium using a Hach Test kit. The pH is recorded off two meters, located in the reaction tank. The pH values from the two meters are recorded during discharge as the high and low pH values on a daily log sheet. The average of the two pH values is calculated. The effluent wastewater is tested quarterly for total chromium at a DNR approved environmental laboratory. The total chromium concentration for the sample collected at Outfall #001 on March 13, 2000 was 140 ug/l. Additionally, the City of Appleton conducts semi-annual compliance testing of the treatment system effluent. The most recent compliance sample was collected on February 15, 2000.

For the months of January, February and March 2000, a total of 124,611 gallons of contaminated groundwater was treated and discharged. Using an average groundwater concentration of 1.2 mg/l hexavalent chromium, the calculated reduction in hexavalent chromium would be 1.25 pounds over the three month period. The effluent flows are recorded based upon the effluent meter reading. These readings generally overstate the effluent flows as compared to volumetric tank measurements, due to design constraints regarding the flow meter installation. The flow meter totals have been the accepted method for recording effluent flows. Therefore, all references to flow and calculations are based upon the flow meter readings.

A summary of batches of groundwater treated, for the period of January through March 2000, is included in Table #1.

III. GROUNDWATER SAMPLING

A. Groundwater Sampling Procedures

A total of 11 groundwater monitoring wells are associated with the groundwater treatment system. Additionally, four piezometers were installed to measure the effectiveness of the groundwater collection trench system.

Groundwater levels are measured in the monitoring wells and the piezometers, relative to the north side of the top of the well casing. A summary of the current groundwater levels for the site is included in Table #2. The groundwater contours for groundwater monitoring wells, relative to site, are shown on Figure #3. The groundwater potentiometric contours for the piezometers, relative to the site, are shown on Figure #4.

The 11 groundwater monitoring wells were sampled on March 13, 2000. A dedicated submersible pump is installed in each well. Water level measurements were collected from each monitoring well. Each well was slowly pumped dry and allowed to recharge for approximately 3-hours. The wells were then pumped dry again, allowed to recharge and then sampled. Two duplicate samples were also collected as a quality control measure. Purge water from the wells was collected and dumped into the collection sumps. The pump water volumes collected from the groundwater wells and the field testing data are included in Table #5. The groundwater sampling field documentation sheets are contained in Appendix A.

The sampling process utilized a flow through cell to read the pH, temperature, conductivity, redox potential and dissolved oxygen in each well. The flow through cell consisted of a 1-liter laboratory beaker placed over a 5-gallon bucket. Flow through the cell was maintained at approximately 250 ml/min. utilizing a resister to control pump flow. The same approximate flow rate was maintained for purging and sampling. The pH, conductivity, redox potential and dissolved oxygen readings for each monitoring well were recorded upon stabilization of the conductivity as recorded in the flow through cell. The groundwater samples were collected in the order of VOC vials first and inorganic samples second. The inorganic samples were not filtered. The laboratory containers supplied for inorganic analysis included NA0H and HN03 as preservatives. The collected samples were submitted to Northern Lake Service, Inc., Crandon, Wisconsin. The collected samples were analyzed for inorganic compounds and Volatile Organic Compounds (VOC's), as specified by the Wisconsin DNR. Alkalinity and ferrous iron testing was conducted using field Hach test kits. As of the December 15, 1999 sampling event, the sampling parameters were modified by the Wisconsin DNR. Copper, Cyanide, Mercury and Zinc analysis was discontinued

on all wells. VOC analysis was reduced to annually for all wells except MW-107. MW-107 will continue to be sampled for VOC's quarterly.

B. Groundwater Sampling Results

The collected groundwater samples were analyzed for Cadmium, Chromium and Manganese. Samples collected from all 11 wells were analyzed for VOC's. Field analysis was conducted at each well for pH, temperature, conductivity, dissolved oxygen, Redox potential, alkalinity and ferrous iron. The field analysis sampling results will track the ability of the soil and groundwater to naturally bio-remediate the residual volatile organic compounds at the site.

The laboratory analytical results indicate that levels of total chromium exceed the DNR NR 140.10 Groundwater Enforcement Standard in monitoring wells MW-103 (600 ug/l), MW-104 (300 ug/l) and MW-107 (8,100 ug/L). MW-107 is the closest down-gradient well to the remediation building. Additionally, three VOC compounds in MW-107 (1,1-Dichloroethene, 1,1,1-Trichloroethane and Trichloroethene) were detected in excess of either the NR 149.21(9) maximum contaminant levels (MCL's) or the NR 140.10 Groundwater Enforcement Standards (ES). Exceedances of the MCL and ES for manganese have been found in all of the groundwater wells since sampling began in February 1997. These exceedances also appear in the background wells (W-2 & MW-108) which would indicate that the high levels of manganese in the groundwater occurs naturally. The laboratory analytical results are contained in Tables #3 and #4. The field testing results are contained in Table #5. An isoconcentration map for total chromium concentrations is shown in Figure #5. The chain of custody forms and laboratory analytical data are included in Appendix B.

The City of Appleton's compliance sample, collected on September 21, 1999 at Outfall #001, had a Total Chromium concentration of less than .05 milligrams per liter. Midwest Contract Operations, Inc. has not received the test results from the City of Appleton's February 15, 2000 compliance sampling.

A summary of the sample results from Outfall #001 are shown in Table #6. The sampling results are contained in Appendix C.

The effectiveness of the existing groundwater treatment system will require analysis of data over an extended period of time to evaluate trends in metals and VOC reductions.

IV. PUBLIC CONTACTS

There were no public contacts during the reporting period.

V. SEMI-ANNUAL OPERATION & MAINTENANCE SUMMARY

MCO has included in this report the Wisconsin DNR Form 4400-194 - Operational & Maintenance Summary Form, detailing the operational data over the 6-month period from October 1, 1999 through March 31, 2000. Time versus contaminant graphs were developed for inorganic compounds in all wells and VOC's in MW-107 to present a visual record of contaminant levels over time. The Wisconsin DNR Form 4400-194 is included in Appendix D. The time versus contaminant graphs are contained in Appendices E and F. A table of weekly hexavalent influent chromium concentrations, as measured by the Hach kit, is contained in Appendix G.

A detailed description of MCO's operation and maintenance activities is contained in the Annual Operation & Maintenance Summary, which is submitted after September 30 of each year.

VI. CONCLUSIONS & RECOMMENDATIONS

Groundwater level data collected from the 11 monitoring wells and four piezometers associated with the N.W. Mauthe groundwater treatment system indicate the groundwater collection trenches, installed as part of the site remediation system, have created a capture zone that directs the groundwater flows in the remediation area to the collection trenches and, ultimately, to the groundwater treatment system.

The purpose of creating the capture zone is to contain the migration of the contamination down-gradient of the contamination source and to direct impacted groundwater to the collection system and, ultimately, treatment in the batch process.

The latest round (March 13, 2000) of groundwater samples collected from the 11 monitoring wells, indicates residual chromium contamination above the DNR NR 140.10 ES exists in monitoring wells MW-103, MW-104 and MW-107. Additionally, three VOC compounds in excess of the NR 140.10 ES or the NR 149.21(9) maximum contaminant levels (MCL's) were detected in MW-107. High levels of manganese, noted historically in all wells, appears to occur naturally and may not be related to the past site uses.

A total of 124,611 gallons of impacted groundwater has been treated during the months of January, February, March 2000, and discharged to the City of Appleton municipal sanitary sewer system. Analysis by MCO and the City of Appleton of the treatment

system effluent did not indicate any exceedances of the local discharge permit limits for the site.

Based upon the results of the March 13, 2000 groundwater sampling results and the batch treatment process analytical results, MCO recommends continued operation of the groundwater treatment system at the N.W. Mauthe groundwater remediation site.

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Table #1

GROUNDWATER BATCH DISCHARGES / January, February, March 2000
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chrome Concentration (mg/l)
01/11/00	011100A	1,948,395	3,184	8.40	8.29	8.18	0
01/11/00	011100B	1,951,846	3,451	8.60	8.22	8.41	0
01/11/00	011100C	1,955,082	3,236	8.38	8.04	8.21	0
01/12/00	011200A	1,958,325	3,243	8.28	7.90	8.09	0
01/12/00	011200B	1,961,555	3,230	8.33	8.04	8.18	0
01/13/00	011300A	1,964,784	3,229	8.31	8.00	8.15	0
01/18/00	011800A	1,967,958	3,174	8.44	8.21	8.32	0
01/24/00	012400A	1,971,126	3,168	8.44	8.09	8.16	0
01/29/00	012900A	1,974,325	3,199	8.31	8.20	8.25	0
02/12/00	021200A	1,977,508	3,183	8.31	8.18	8.24	0
02/15/00	021500A	1,980,683	3,175	8.34	8.10	8.22	0
02/24/00	022400A	1,983,884	3,201	8.31	8.18	8.24	0
02/24/00	022400B	1,986,909	3,025	8.28	8.14	8.21	0
02/25/00	022500A	1,990,075	3,166	8.30	8.21	8.26	0
02/25/00	022500B	1,993,290	3,215	8.22	8.18	8.20	0
02/26/00	022600A	1,996,424	3,134	8.24	8.12	8.18	0
02/26/00	022600B	1,999,566	3,142	8.31	8.12	8.22	0
02/27/00	022700A	2,002,738	3,172	8.28	8.14	8.21	0
02/27/00	022700B	2,005,903	3,165	8.30	8.19	8.24	0
02/28/00	022800A	2,009,004	3,101	8.22	8.15	8.19	0
02/28/00	022800B	2,012,209	3,205	8.30	8.21	8.26	0
02/29/00	022900A	2,015,351	3,142	8.18	8.00	8.09	0
02/29/00	022900B	2,018,538	3,187	8.22	8.08	8.15	0
03/01/00	030100A	2,021,749	3,211	8.21	8.18	8.20	0
03/02/00	030200A	2,024,932	3,183	8.20	8.10	8.15	0
03/04/00	030400A	2,028,119	3,187	8.28	8.13	8.20	0
03/06/00	030600A	2,031,303	3,184	8.22	8.10	8.16	0
03/07/00	030700A	2,034,454	3,151	8.17	8.10	8.14	0
03/09/00	030900A	2,037,733	3,279	8.21	8.03	8.12	0
03/10/00	031000A	2,040,919	3,186	8.16	7.94	8.05	0
03/13/00	031300A	2,044,107	3,188	8.21	8.10	8.15	0
03/16/00	031600A	2,047,830	3,723	8.20	8.03	8.11	0
03/18/00	031800A	2,050,909	3,079	8.16	7.99	8.07	0
03/21/00	032100A	2,054,087	3,178	8.18	8.06	8.12	0
03/22/00	032200A	2,057,239	3,152	8.16	8.00	8.08	0
03/27/00	032700A	2,060,471	3,232	8.18	7.99	8.08	0
03/27/00	032700B	2,063,596	3,125	8.22	8.05	8.13	0
03/27/00	032700C	2,066,649	3,053	8.24	8.04	8.14	0
03/30/00	033000A	2,069,822	3,173	8.12	8.00	8.06	0
TOTAL			124,611				

* As tested with a Hach Hexavalent Chromium Field Test Kit.

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Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
W-2	02/01/97	-		798.66
	05/01/97	-		801.01
	09/01/97	-		800.28
	12/01/97	-	804.66	797.69
	03/01/98	-		802.08
	06/01/98	-		799.38
	10/27/98	5.85		798.81
	02/08/99	4.50		800.16
	06/08/99	3.31		801.35
	09/13/99	5.78		798.88
	12/15/99	6.63		798.03
	03/13/00	1.60		803.06
W-8	02/01/97	-		797.22
	05/01/97	-		797.66
	09/01/97	-		798.01
	12/01/97	-	803.36	796.52
	03/01/98	-		798.16
	06/01/98	-		797.31
	10/27/98	6.41		796.95
	02/08/99	5.49		797.87
	06/08/99	4.38		798.98
	09/13/99	6.71		796.65
	12/15/99	6.91		796.45
	03/13/00	6.25		797.11
W-15	02/01/97	-		793.97
	05/01/97	-		796.92
	09/01/97	-		797.23
	12/01/97	-	803.76	795.52
	03/01/98	-		796.78
	06/01/98	-		796.32
	10/27/98	7.95		795.81
	02/08/99	9.19		794.57
	06/08/99	6.89		796.87
	09/13/99	7.85		795.91
	12/15/99	8.97		794.79
	03/13/00	7.80		795.96
MW-101	02/01/97	-		797.16
	05/01/97	-		799.99
	09/01/97	-		798.67
	12/01/97	-	807.59	798.21
	03/01/98	-		803.43
	06/01/98	-		800.48
	10/27/98	10.26		797.33
	02/08/99	11.91		795.68
	06/08/99	9.79		797.80
	09/13/99	10.35		797.24
	12/15/99	9.01		798.58
	03/13/00	12.67		794.92

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-102	02/01/97	-		780.72
	05/01/97	-		780.89
	09/01/97	-		780.79
	12/01/97	-	804.45	780.95
	03/01/98	-		780.47
	06/01/98	-		780.72
	10/27/98	24.11		780.34
	02/08/99	23.84		780.61
	06/08/99	23.59		780.86
	09/13/99	23.70		780.75
	12/15/99	24.27		780.18
	03/13/00	24.00		780.45
MW-103	02/01/97	-		795.29
	05/01/97	-		791.83
	09/01/97	-		789.60
	12/01/97	-	803.74	787.78
	03/01/98	-		791.03
	06/01/98	-		789.13
	10/27/98	11.96		791.78
	02/08/99	10.24		793.50
	06/08/99	8.69		795.05
	09/13/99	9.79		793.95
	12/15/99	12.68		791.06
	03/13/00	9.63		794.07
MW-104	02/01/97	-		792.94
	05/01/97	-		789.91
	09/01/97	-		798.59
	12/01/97	-	807.28	795.70
	03/01/98	-		799.46
	06/01/98	-		796.60
	10/27/98	10.51		796.77
	02/08/99	9.04		798.24
	06/08/99	7.49		799.79
	09/13/99	10.28		797.00
	12/15/99	10.78		796.50
	03/13/00	9.51		797.77
MW-105	02/01/97	-		793.74
	05/01/97	-		800.60
	09/01/97	-		800.37
	12/01/97	-	803.96	799.03
	03/01/98	-		800.08
	06/01/98	-		800.50
	10/27/98	5.41		798.55
	02/08/99	6.46		797.50
	06/08/99	3.04		800.92
	09/13/99	4.60		799.36
	12/15/99	5.28		798.68
	03/13/00	4.97		798.99

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-106	02/01/97	-		794.75
	05/01/97	-		797.23
	09/01/97	-		796.91
	12/01/97	-	804.08	795.48
	03/01/98	-		797.37
	06/01/98	-		796.76
	10/27/98	8.12		795.96
	02/08/99	9.75		794.33
	06/08/99	6.72		797.36
	09/13/99	7.88		796.20
	12/15/99	8.71		795.37
	03/13/00	8.72		795.36
MW-107	02/01/97	-		788.23
	05/01/97	-		796.60
	09/01/97	-		797.64
	12/01/97	-	809.01	796.49
	03/01/98	-		796.68
	06/01/98	-		796.31
	10/27/98	10.71		798.30
	02/08/99	11.11		797.90
	06/08/99	11.04		797.97
	09/13/99	11.55		797.46
	12/15/99	11.66		797.35
	03/13/00	11.13		797.88
MW-108	02/01/97	-		798.36
	05/01/97	-		793.32
	09/01/97	-		790.53
	12/01/97	-	806.61	788.65
	03/01/98	-		795.59
	06/01/98	-		789.30
	10/27/98	6.98		799.63
	02/08/99	6.72		799.89
	06/08/99	5.80		800.81
	09/13/99	6.68		799.93
	12/15/99	6.87		799.74
	03/13/00	6.84		799.77

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
PZ-01	10/27/98	17.43	804.17	786.74
	02/08/99	18.24		785.93
	06/08/99	18.22		785.95
	09/13/99	18.25		785.92
	12/15/99	18.25		785.92
	03/13/00	18.25		785.92
PZ-02	10/27/98	14.66	803.64	788.98
	02/08/99	14.70		788.94
	06/08/99	14.70		788.94
	09/13/99	14.74		788.90
	12/15/99	14.72		788.92
	03/13/00	14.76		788.88
PZ-03	10/27/98	22.71	803.62	780.91
	02/08/99	23.74		779.88
	06/08/99	23.74		779.88
	09/13/99	23.55		780.07
	12/15/99	23.52		780.10
	03/13/00	23.30		780.24
PZ-04	10/27/98	15.18	807.30	792.12
	02/08/99	23.61		783.69
	06/08/99	21.69		785.61
	9/13/99	23.87		783.43
	12/15/99	23.80		783.50
	03/13/00	25.77		781.53

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
W-2	02/20/97	NA	15	26	NA	460.0	NA	49
	05/27/97	0.43	8.5	<10	NA	170.0	<.2	30
	09/18/97	0.27	4.5**	9.5**	3**	116.0	<.03	16.9
	12/12/97	.13*	6.2	<9.7	<.8	133.0	.06*	20.4
	03/25/98	0.08	<3.9	<9.5	<1.7	83.8	.007*	18.6
	06/10/98	.31*	16.4	18.6**	<1.7	466.0	.027*	40.8
	10/27/98	.51*	3.60	4.7*	<.0032	69.0	<.05	170
	02/09/99	.46*	<.62	4.0	<.0032	240.0	<0.05	23
	06/08/99	<.31	<.62	1.8*	<.0032	290.0	<0.05	<12
	09/13/99	<.31	2.00	3.2	<.0032	240.0	<.05	<12
	12/15/99	<.31	.72 *	NA	NA	2.8	NA	NA
	03/13/00	<.31	.79 *	NA	NA	7.8	NA	NA
W-8	02/20/97	NA	17	22	NA	320.0	NA	34
	05/27/97	1.6	37	27	NA	670.0	<.2	54
	09/18/97	0.45	14.4	14.6**	1**	338.0	.11**	31.8
	12/12/97	0.5*	5.7	<9.7	<.8	147.0	.07*	17.1
	03/25/98	0.43	10.1	15**	<1.7	205.0	.007*	21
	06/10/98	0.54	9.9	12.6**	<1.7	264.0	.016*	21.6
	10/27/98	0.80	3.90	4.8*	<.0032	64.0	<.05	85
	02/09/99	<.31	<.62	<60	<.0032	850.0	<.05	12
	06/08/99	<.31	<.62	2.6	<.0032	50.0	<.05	<12
	09/13/99	<.31	1.90	2.7	<.0032	98.0	<.05	29
	12/15/99	<.31	2.80	NA	NA	180.0	NA	NA
	03/13/00	<.31	1.4 *	NA	NA	65.0	NA	NA
W-15	02/20/97	NA	32	52	NA	430.0	NA	88
	05/27/97	0.27	5.9	15	NA	97.0	<.2	39
	09/18/97	0.31	13.9	18.8**	<.78	325.0	<.03	35.5
	12/12/97	.12*	5.7	9.7**	<.8	80.9	.03*	18.5
	03/25/98	.04*	<3.9	<9.5	<1.7	85.7	.038*	13.7
	06/10/98	.11*	10	13.2**	<1.7	147.0	.016*	18.8
	10/27/98	.41*	6.80	7.40	<.0032	110.0	<.05	100
	02/09/99	<.31	<.62	<.60	<.0032	320.0	<.05	<12
	06/08/99	<.31	2.40	14.00	<.0032	130.0	<.05	66
	09/13/99	<.31	5.30	6.40	<.0032	130.0	<.05	16
	12/15/99	<.31	5.00	NA	NA	90.0	NA	NA
	03/13/00	<.31	7.00	NA	NA	130.0	NA	NA
MW-101	02/20/97	NA	36	41	NA	820.0	NA	49
	05/27/97	<.2	10	11	NA	170.0	<.03	18
	09/18/97	.06**	11.9	10.7**	1**	145.0	<.05	18.2
	12/12/97	.06*	12.8	<9.7	<.8	176.0	.05*	20.7
	03/25/98	.04*	20.9	21.6**	<1.7	239.0	.007*	32.7
	06/10/98	.27*	48.2	46.8	<1.7	604.0	.044*	75.9
	10/27/98	<.16	3.20	4.2*	<.0032	24.0	<.05	54
	02/09/99	<.31	<.62	<.60	<.0032	1900.0	<.05	14
	06/08/99	<.31	1.80	8.2	<.0032	380.0	<.05	39
	09/13/99	<.31	2.90	5.1	<.0032	31.0	<.05	<12
	12/15/99	<.31	2.50	NA	NA	9.1	NA	NA
	03/13/00	<.31	2.30	NA	NA	100.0	NA	NA

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-102	02/20/97	NA	26	38	NA	570.0	NA	34
	05/27/97	0.21	48	77	NA	920.0	<.2	73
	09/18/97	.08**	<3.92	6.9**	2**	302.0	<.03	8.7
	12/12/97	.04*	<3.9	<9.7	<.8	387.0	.04*	10.9
	03/25/98	.11*	<3.9	9.5**	<1.7	302.0	.007*	7.4*
	06/10/98	.04*	<3.9	<9.8	<1.7	318.0	.018*	9.5
	10/27/98	.27*	.98*	3.2*	<.0032	340.0	<.05	24
	02/09/99	<.31	.73*	<.60	<.0032	670.0	<.05	20
	06/08/99	<.31	1.2*	5.8	<.0032	140.0	<.05	36
	09/13/99	<.31	4.00	15.0	<.0032	160.0	<.05	73
	12/15/99	<.31	1.2 *	NA	NA	550.0	NA	NA
	03/13/00	<.31	1.70	NA	NA	580.0	NA	NA
MW-103	02/20/97	NA	1,300	47	NA	800.0	NA	27
	05/27/97	<.2	160.0	31	NA	900.0	<.2	29
	09/18/97	.06**	35.2	13.5**	3**	287.0	<.03	13.7
	12/12/97	.04*	16.3	<9.7	<.8	84.3	.09*	21.4
	03/25/98	.04*	15.5	<9.5	<1.7	83.0	.007*	7.5*
	06/10/98	.15*	57.6	27.5	<1.7	417.0	.02*	33.7
	10/27/98	<.16	6.30	2.3*	<.0032	27.0	<.05	30.0
	06/08/99	<.31	87.00	3.5	<.0032	810.0	<.05	30
	09/13/99	<.31	720.00	5.9	<.0032	83.0	<.05	15
	12/15/99	<.31	260.00	NA	NA	160.0	NA	NA
	03/13/00	<.31	600.00	NA	NA	79.0	NA	NA
MW-104	02/20/97	NA	5.9	15	NA	550.0	NA	6.9
	05/27/97	<.02	6.9	11	NA	470.0	<.2	5.2
	09/18/97	<.04	35.6	5**	3**	235.0	<.03	4.74
	12/12/97	.04*	61.8	9.8**	<.8	279.0	.05*	14
	03/25/98	.04*	66.8	<9.5	<1.7	73.6	.008*	7.4*
	06/10/98	.04*	219	<9.8	<1.7	107.0	.016*	12.8
	10/27/98	.29*	150.0	2.3*	<.0032	25.0	<.05	30
	02/09/99	<.31	94.00	1.4*	<.0032	1000.0	<.05	<12
	06/08/99	1*	62.00	12.0	<.0032	620.0	<.05	17
	09/13/99	<.31	80.00	3.2	<.0032	9.2	<.05	<12
	12/15/99	<.31	170.00	NA	NA	1.6	NA	NA
	03/13/00	<.31	300.00	NA	NA	13.0	NA	NA
MW-105	02/20/97	NA	21	22	NA	1100.0	NA	23
	05/27/97	<.2	5	<10	NA	120.0	<.2	12
	09/18/97	.14**	29.5	28.3	1**	532.0	<.03	46
	12/12/97	.36*	15.8	12.5**	<.8	297.0	.03*	27.1
	03/25/98	.04*	30.8	27.6	<1.7	518.0	.064*	44
	06/10/98	.048*	13.7	15.3**	<1.7	217.0	.016*	22.1
	10/27/98	.29*	8.80	8.20	<.0032	150.0	<.05	70
	02/09/99	<.31	1.3*	4.30	<.0032	2000.0	<.05	19
	06/08/99	<.31	1*	18.00	<.0032	1300.0	<.05	66
	09/13/99	<.31	.64*	24.00	<.0032	1700.0	<.05	30
	12/15/99	<.31	<.62	NA	NA	860.0	NA	NA
	03/13/00	<.31	4.80	NA	NA	660.0	NA	NA

Table #3

LABORATORY ANALYTICAL RESULTS / Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/l)	Mercury (ug/l)	Zinc (ug/l)
MW-106	02/20/97	NA	21	24	NA	320.0	NA	26
	05/27/97	<.02	40	35	NA	590.0	<.2	68
	09/18/97	.05**	5.5	6.2**	1**	56.9	<.03	35.6
	12/12/97	.04*	9.2	9.7**	<.08	155.0	.03*	18.4
	03/25/98	NA	13.40	14.4**	<1.7	150.0	.007*	18.5
	06/10/98	.04*	<3.9	10.2**	<1.7	10.0	.016*	10.9
	10/27/98	.27*	3.20	4.3*	<.0032	38.0	<.05	88
	02/09/99	<.31	<.62	1.1*	<.0032	760.0	<.05	22
	06/08/99	<.31	.79*	2.3	<.0032	900.0	<.05	<12
	09/13/99	<.31	1.80	4.7	<.0032	1100.0	<.05	30
	12/15/99	<.31	1.3 *	NA	NA	130.0	NA	NA
	03/31/00	<.31	2.30	NA	NA	270.0	NA	NA
MW-107	02/20/97	NA	2,000	13	NA	190.0	NA	6.9
	05/27/97	<.2	3,600	<10	NA	91.0	<.2	10
	09/18/97	<.04	2,670	<8.1	1**	59.3	<.03	33.5
	12/12/97	.04*	2,310	<9.7	<.8	48.4	.1*	6.7
	03/25/98	.04*	11200*	12.1**	<1.7	68.2	.041*	9.3*
	06/10/98	.11*	6,240	13.8**	<1.7	161.0	.027*	17.3*
	10/27/98	<.16	7,100	1.2*	<.0032	28.0	<.05	94
	02/09/99	<.31	3,200	1.9*	<.0032	49.0	<.05	<12
	06/08/99	<.31	5,800	3.0	<.0032	25.0	<.05	<12
	09/13/99	<.31	4,000	1.9*	<.0032	18.0	<.05	<12
	12/15/99	<.31	14,000	NA	NA	.83 *	NA	NA
	03/13/00	<.31	8,100	NA	NA	22.0	NA	NA
MW-108	02/20/97	NA	25	23	NA	490.0	NA	31
	05/27/97	<.2	11	13	NA	210.0	<.2	15
	09/18/97	.14**	27.4	22.4**	1**	462.0	<.03	36.6
	12/12/97	.04*	5.6	<9.7	<.8	74.8	.03*	27.9
	03/25/98	.04*	9.4	10.4**	<1.7	142.0	.007*	13.8
	06/10/98	.14*	28.4	25.5	<1.7	478.0	.021*	40.5
	10/27/98	.26*	8.90	7.40	<.0032	88.0	<0.5	44
	02/09/99	<.31	1.70	3.90	<.0032	560.0	<.05	30
	06/08/99	<.31	3.10	1.4*	<.0032	450.0	<.05	54
	09/13/99	<.31	4.50	5.30	<.0032	100.0	<.05	<12
	12/15/99	<.31	6.10	NA	NA	79.0	NA	NA
	03/13/00	<.31	3.6	NA	NA	41.0	NA	NA
Maximum Contaminant Level (MCL)		5	100	100	200	50.0	2	5,000
Enforcement Standard Chapter NR 140.10		5	100	1,300	200	50.0	2	5,000
Preventive Action Limit Chapter NR 140.1(		0.5	10	130	40	25.0	0.2	2,500

EXPLANATION:

Samples collected prior to 10/27/98 were collected by CH2M Hill.
* = Detection of compound in area of less certain quantification.
** = Compound was found in sample and blank.
ND = Not detected above the analytical laboratories method detection limit
NA = Not Analyzed
MW-104 = Was tested for Aluminum, Nickel, Arsenic & Lead. No quantifiable detections were noted for any of the analytes.
ug/L = Microgram/Liter
mg/L = Milligram / Liter
Indicates an exceedance of the NR 140 Groundwater Quality Enforcement Standard

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
W-2	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.8	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.8	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.8	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	06/10/98	<.5	<.8	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.15*	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.13*	<.14	<.15	<.14	***	<37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
W-8	02/20/97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.8	<85	<40	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.8	<85	<40	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	03/25/98	<.5	<.8	<85	<40	<7	<7	<.3	<68	<40	<.5	<.5	.3**	-
	06/10/98	<.5	<.8	<85	<40	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.19*	<.15	<.15	<.15	<.16	<.17	***	.15*	<.14	<.15	<.15	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
W-15	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	0.22	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.8	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.8	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.8	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**	-
	06/10/98	<.5	<.8	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	06/08/99	.16*	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-101	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	.491*	.353*	<7	<7	<124	<68	3.03	<.5	3.31	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.91	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-102	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<.85	<85	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<85	<7	<7	<.4	<68	<40	<.5	<.5	.4*	-
	06/10/98	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.65	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.21*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-103	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.15*	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-104	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<88	.324*	<.5	<.5	<124	-
	12/12/97	<.5	<.6	0.4	<.7	<7	<7	<120	<88	1*	<.5	0.9	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	.8*	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	.2*	<.5	<.5	<120	-
	10/27/98	<.24	<.23	.35*	<.28	<.27	<.26	<.17	<.21	1.8	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	.38*	<.15	<.16	<.17	***	.17*	1.5	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	.34*	<.15	<.16	<.17	***	.14*	1.4	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	.38*	<.15	<.16	<.17	***	.27*	1.6	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	.38 *	<.35	<.15	<.39	***	<.37	1.6	<.11	<.34	***	<.71
MW-105	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<88	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<88	<40	<.5	<.5	.4*	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.16*	<.15	<.14	<.15	<.16	<.17	***	.3*	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.34	***	<.71
MW-106	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<88	2.73*	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<88	<40	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	.18*	<.15	<.14	<.15	<.16	<.17	***	<.17	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	<.13	<.14	<.15	<.14	***	<.37
	03/13/00	<.32	<.28	<.36	<.35	<.15	0.39	***	<.37	<.33	<.11	<.34	***	<.71

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	cis-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)	Total Xylenes (ug/l)
MW-107	02/20/97	<.5	0.3	11	8.4	0.7	<.7	<.5	<.5	81	0.6	50	<.5	-
	05/27/97	0.09	1.10	36	40	3.1	<3.1	<.5	0.34	390	3.5	420	<.5	-
	09/18/97	<10	<12	47.6*	22.1	2.61*	<2.61	<2480	<68	265*	2.83	295	<2480	-
	12/12/97	<10	<12	56*	23	3*	<3	<2500	<68	280	3	290	<2500	-
	03/25/98	<25	<30	61*	69	5*	<5	<17	<68	720	5	620	17*	-
	06/10/98	<12	<15	59*	58	<3	<3	<3100	63*	340*	4*	390	<3100	-
	10/27/98	<.24	1.4	62	46*	3.6	.51*	<.17	<.21	550	4.9	640	<.36	-
	02/09/99	<3.2	<3.8	48	24	<4.0	<4.2	***	<3.2	220	<.38	250	***	<9.2
	06/08/99	<2.6	<3.0	42	20	<3.2	<3.4	***	<2.6	200	<3.0	310	***	<7.4
	09/13/99	<.26	<3.0	34	19	<.32	<3.4	***	<2.6	180	<.3.0	320	***	<.7.4
	12/15/99	<3.2	<3.8	37	56	4.6 *	<4.2	***	<3.2	570	4.5 *	880	***	<9.2
	03/13/00	<26	<23	50 *	32 *	<12	<31	***	<30	340	<.90	630	***	<57
MW-108	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	-
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124	-
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120	-
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<44	<.5	<.5	<120	-
	10/27/98	<.24	<.23	<.22	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36	-
	02/09/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.83	<.14	<.15	<.14	***	<.37
	06/08/99	<.13	<.15	<.14	<.15	<.16	<.17	***	.15*	<.14	<.15	<.14	***	<.37
	09/13/99	<.13	<.15	<.14	<.15	<.16	<.17	***	0.84	<.14	<.15	<.14	***	<.32
	03/13/00	<.32	<.28	<.36	<.35	<.15	<.39	***	<.37	<.33	<.11	<.36	***	<.71
MCL NR 149.21 (9)		5.0	-	-	7.0	70	100	-	1,000	200	5.0	5.0	---	-
Enforcement Standards (ES) 140.10		5	6	850	7	70	100	620**	343	200	5	5	620**	620
Preventive Action Plan (PAL) 140.10		0.5	0.6	85	0.7	7	20	124**	686	40	0.5	0.5	124**	124

EXPLANATION:

Results prior to 10/27/98 for cis-1,2,-Dichloroethene and Trans-1,2 Dichloroethene were listed as Total Dichloroethene and were placed in this table under the heading cis-1,2,-Dichloroethene.
Results prior to 10/27/98 for Ortho Xylene and Meta, para Xylene were listed as Total Xylenes and were placed in this table under the heading Meta, para Xylene.

* = Detection of compound in area of less certain quantification
** = Standard includes Ortho-, Meta, para-Xylenes
*** = As of 02/09/99 Xylene results are listed as "Total Xylenes".
ND = Not Detected
NA = Not Analyzed
MCL = Maximum Contaminant Levels
ug/l = Microgram/Liter
= Indicates an exceedance of the MCL 149.21(9) or ES 140.10

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Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
W-2	02/20/97	NR	8.00	6.00	750 us	NA	NA	NA	NA
	05/27/97	NR	7.74	10.10	NA	NA	NA	NA	NA
	09/18/97	NR	7.01	14.50	910 us	NA	NA	NA	NA
	12/12/97	NR	7.33	9.50	820 us	NA	NA	NA	NA
	03/25/98	NR	7.96	7.90	1235 us	NA	NA	NA	NA
	06/10/98	NR	6.59	10.20	1057 us	NA	NA	NA	NA
	10/27/98	4.00	7.93	14.80	1278 us	1.40	119.00	12.00	0.00
	02/09/99	4.00	8.47	9.50	1278 us	2.10	146.00	16.00	0.20
	06/08/99	4.00	7.20	14.60	1234 us	1.00	85.00	11.20	1.00
	09/13/99	5.10	7.34	15.00	1254 us	1.90	(136.00)	9.60	0.00
	12/15/99	4.80	7.77	11.80	1199 us	1.50	(231.00)	4.80	0.00
	03/13/00	7.00	6.17	8.90	1278 us	1.30	59.00	7.60	0.00
W-8	02/20/97	NR	8.20	7.50	1000 us	NA	NA	NA	NA
	05/27/97	NR	7.30	10.40	NA	NA	NA	NA	NA
	09/18/97	NR	7.07	17.00	1250 us	NA	NA	NA	NA
	12/12/97	NR	7.32	11.20	1090 us	NA	NA	NA	NA
	03/25/98	NR	7.34	7.90	1590 us	NA	NA	NA	NA
	06/10/98	NR	6.95	11.50	1407 us	NA	NA	NA	NA
	10/27/98	5.00	7.42	16.70	1459 us	1.30	97.00	14.40	0.20
	02/09/99	3.90	8.08	11.20	1386 us	1.30	21.00	8.00	2.40
	06/08/99	5.50	7.23	14.80	1283 us	1.80	85.00	14.00	5.60
	09/13/99	5.20	7.12	16.30	1363 us	1.70	(143.00)	14.40	1.60
	12/15/99	5.10	7.25	10.30	1375 us	0.90	(288.00)	14.40	1.20
	03/13/00	5.00	7.06	8.80	1277 us	1.10	(33.00)	8.40	1.00
W-15	02/20/97	NR	8.15	9.00	920 us	NA	NA	NA	NA
	05/27/97	NR	7.66	10.00	NA	NA	NA	NA	NA
	09/18/97	NR	7.22	16.00	1300 us	NA	NA	NA	NA
	12/12/97	NR	7.18	10.40	1180 us	NA	NA	NA	NA
	03/25/98	NR	7.70	8.40	1450 us	NA	NA	NA	NA
	06/10/98	NR	6.46	11.60	1496 us	NA	NA	NA	NA
	10/27/98	4.00	7.27	16.00	1551 us	0.80	137.00	14.40	0.00
	02/09/99	2.60	8.07	10.00	1418 us	1.30	7.00	12.00	0.60
	06/08/99	4.50	7.54	16.70	1465 us	1.50	75.00	12.00	1.40
	09/13/99	3.60	7.18	17.60	1647 us	1.90	(137.00)	10.40	0.80
	12/15/99	3.30	7.52	11.70	1544 us	1.50	(281.00)	12.40	1.00
	03/13/00	4.00	7.14	8.90	1266 us	1.40	(19.00)	7.60	0.40
MW-101	02/20/97	NR	7.12	8.00	1400 us	NA	NA	NA	NA
	05/27/97	NR	7.56	12.90	NA	NA	NA	NA	NA
	09/18/97	NR	6.54	14.00	1380 us	NA	NA	NA	NA
	12/12/97	NR	6.64	11.40	1390 us	NA	NA	NA	NA
	03/25/98	NR	7.58	10.50	2142 us	NA	NA	NA	NA
	06/10/98	NR	6.29	11.50	2116 us	NA	NA	NA	NA
	10/27/98	9.00	7.13	14.10	2.27 ms	0.50	116.00	12.00	0.00
	02/09/99	7.00	8.11	12.70	2.11 ms	1.10	165.00	8.80	0.20
	06/08/99	6.00	7.05	15.00	2.17 ms	0.70	161.00	8.00	0.20
	09/13/99	5.90	7.25	14.90	2.12 ms	0.90	(125.00)	13.60	0.00
	12/15/99	6.00	8.71	12.70	2.06 ms	1.00	(262.00)	8.80	0.00
	03/13/00	7.00	6.34	11.60	1939 us	1.10	44.00	8.00	0.00

Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-102	02/20/97	NR	8.00	10.50	700 us	NA	NA	NA	NA
	05/27/97	NR	7.47	10.50	NA	NA	NA	NA	NA
	09/18/97	NR	6.99	13.00	810 us	NA	NA	NA	NA
	12/12/97	NR	7.23	8.50	690 us	NA	NA	NA	NA
	03/25/98	NR	7.68	10.20	1145 us	NA	NA	NA	NA
	06/10/98	NR	6.97	10.30	1046 us	NA	NA	NA	NA
	10/27/98	2.00	8.07	13.00	1197 us	1.50	103.00	17.60	0.40
	02/09/99	0.50	7.48	11.00	1164 us	1.00	0.33	14.40	0.00
	06/08/99	0.50	7.89	18.60	1226 us	1.00	151.00	4.80	0.80
	09/13/99	0.50	7.84	13.30	1208 us	1.20	(246.00)	10.00	1.20
	12/15/99	0.50	7.78	9.00	1152 us	1.60	(288.00)	10.80	1.00
	03/13/00	0.50	6.74	9.70	1096 us	1.20	(260.00)	6.80	0.00
MW-103	02/20/97	NR	6.30	6.00	700 us	NA	NA	NA	NA
	05/27/97	NR	7.67	11.60	NA	NA	NA	NA	NA
	09/18/97	NR	7.21	10.50	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.43	9.00	970 us	NA	NA	NA	NA
	03/25/98	NR	7.82	9.40	1441 us	NA	NA	NA	NA
	06/10/98	NR	6.24	9.90	1356 us	NA	NA	NA	NA
	10/27/98	8.00	7.66	12.70	1566 us	0.70	147.00	12.00	0.20
	02/09/99	7.80	7.48	9.90	1443 us	1.40	53.00	11.20	0.80
	06/08/99	9.50	7.42	13.90	1350 us	0.70	109.00	7.20	0.00
	09/13/99	4.10	7.41	12.90	985 us	1.60	(165.00)	12.00	0.00
	12/15/99	4.60	7.82	10.60	2.58 ms	1.40	(294.00)	10.80	0.00
	03/13/00	4.00	6.57	9.40	1292 us	1.00	76.00	8.40	0.40
MW-104	02/20/97	NR	7.43	8.00	1000 us	NA	NA	NA	NA
	05/27/97	NR	8.00	12.00	NA	NA	NA	NA	NA
	09/18/97	NR	7.13	10.50	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.10	9.60	1000 us	NA	NA	NA	NA
	03/25/98	NR	7.94	8.30	1378 us	NA	NA	NA	NA
	06/10/98	NR	6.53	9.70	1101 us	NA	NA	NA	NA
	10/27/98	8.00	7.84	13.20	1272 us	0.90	103.00	16.40	0.40
	02/09/99	9.50	7.66	10.10	1126 us	1.50	193.00	11.20	0.00
	06/08/99	13.00	6.80	15.60	1259 us	1.60	103.00	6.40	0.00
	09/13/99	13.80	7.08	13.90	1334 us	1.80	(146.00)	10.80	0.00
	12/15/99	11.20	7.68	10.80	1172 us	2.00	(232.00)	11.20	0.00
	03/13/00	16.50	6.91	10.20	1121 us	0.40	69.00	11.20	0.60
MW-105	02/20/97	NR	7.70	7.00	1600 us	NA	NA	NA	NA
	05/27/97	NR	7.44	10.50	NA	NA	NA	NA	NA
	09/18/98	NR	6.89	16.00	2150 us	NA	NA	NA	NA
	12/12/97	NR	7.04	12.00	2050 us	NA	NA	NA	NA
	03/25/98	NR	7.35	6.70	2878 us	NA	NA	NA	NA
	06/10/98	NR	6.25	11.10	2695 us	NA	NA	NA	NA
	10/27/98	5.00	7.57	16.80	2.87 ms	0.10	121.00	13.60	0.00
	02/09/99	5.90	7.34	10.60	2.76 ms	0.90	281.00	16.80	1.80
	06/08/99	5.00	7.32	17.80	2.87 ms	0.70	90.00	9.60	0.20
	09/13/99	3.50	7.00	17.20	2.74 ms	1.70	(182.00)	13.20	1.40
	1215/99	3.60	7.36	13.00	2.62 ms	1.60	(255.00)	8.80	1.20
	03/13/00	4.50	6.58	8.40	2430 us	1.30	23.00	9.60	0.80

Table #5

NATURAL ATTENTUTION-GEOCHEMICAL PARAMETERS

N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-99746.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-106	02/20/97	NR	7.75	10.00	1000 us	NA	NA	NA	NA
	05/27/97	NR	7.47	10.10	NA	NA	NA	NA	NA
	09/18/97	NR	7.19	15.00	1310 us	NA	NA	NA	NA
	12/12/97	NR	7.06	11.50	1260 us	NA	NA	NA	NA
	03/25/98	NR	7.61	8.70	1716 us	NA	NA	NA	NA
	06/10/98	NR	7.11	11.60	1604 us	NA	NA	NA	NA
	10/27/98	4.00	7.31	16.80	1824 us	1.20	138.00	12.80	0.00
	02/09/99	2.50	7.33	10.20	1605 us	1.10	197.00	20.80	0.00
	06/08/99	3.50	7.15	15.40	1332 us	0.70	17.00	6.40	0.20
	09/13/99	2.30	7.02	17.40	1357 us	1.00	(168.00)	11.60	0.00
	12/15/99	2.00	8.41	12.10	1445 us	0.80	(266.00)	10.00	0.00
	03/13/00	2.50	6.92	9.10	1513 us	1.60	18.00	10.40	0.00
MW-107	02/20/97	NR	7.46	9.00	650 us	NA	NA	NA	NA
	05/27/97	NR	7.12	10.80	NA	NA	NA	NA	NA
	09/18/97	NR	7.07	12.50	700 us	NA	NA	NA	NA
	12/12/97	NR	7.08	10.50	730 us	NA	NA	NA	NA
	03/25/98	NR	7.87	10.20	1081 us	NA	NA	NA	NA
	06/10/98	NR	7.17	10.60	1042 us	NA	NA	NA	NA
	10/27/98	10.00	7.41	12.10	1179 us	1.10	62.00	20.00	10.00
	02/09/99	9.00	8.10	12.00	1189 us	1.30	263.00	7.20	0.40
	06/08/99	9.00	7.48	15.60	1406 us	2.20	163.00	4.80	0.40
	09/13/99	8.00	7.30	12.90	1301 us	2.60	(114.00)	14.00	0.60
	12/15/99	10.00	7.63	11.30	1419 us	2.80	(42.00)	12.40	1.00
	03/13/00	14.50	5.76	10.90	1389 us	1.20	58.00	8.40	0.60
MW-108	02/20/97	NR	8.10	10.00	100 us	NA	NA	NA	NA
	05/27/97	NR	6.02	11.40	NA	NA	NA	NA	NA
	09/18/97	NR	6.51	12.00	1160 us	NA	NA	NA	NA
	12/12/97	NR	6.98	10.40	1130 us	NA	NA	NA	NA
	03/25/98	NR	7.64	10.20	1568 us	NA	NA	NA	NA
	06/10/98	NR	6.54	10.70	1525 us	NA	NA	NA	NA
	10/27/98	10.00	7.95	14.30	1696 us	1.40	116.00	12.80	0.20
	02/09/99	8.10	7.51	11.00	1810 us	1.10	(65.00)	10.40	0.40
	06/08/99	12.50	7.60	15.00	1706 us	0.90	173.00	7.20	0.60
	09/13/99	13.50	7.29	13.60	1849 us	1.20	(180.00)	8.00	0.00
	12/15/99	12.80	7.68	11.80	1885 us	1.00	(286.00)	8.40	0.00
	03/13/00	14.00	6.25	10.20	1642 us	1.70	(4.00)	9.20	0.20

ppm = parts per million
us = microsiemens / centimeter
mV = millivolts
gpg = grains per gallon
ms = millisiemens / centimeter
NA = not analyzed
NR = not recorded
* = Each monitoring well was purged dry twice prior to sampling
The second purging was conducted approximately 3-hrs after initial purging. The volume of purge water collected represents the total of the two well purges. Purge volumes prior to 10/27/98 were not available.
( ) = Indicates a negative value.

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Table #6

LABORATORY ANALYTICAL RESULTS
Effluent Point 001
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Sample Name	Sample Date	Aluminum (mg/l)	Arsenic (mg/l)	Cadmium (mg/l)	Chromium Total (mg/l)	Copper (mg/l)	Cyanide (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Zinc (mg/l)	Hexavalent Chromium (mg/L)
Outfall 001*	02/20/97	<.02	<.003	<.00050	0.0400	<.01	<.00001	<.005	<.0002	<.005	0.0051	<.01
Outfall 001*	05/27/97	NA	NA	NA	0.2600	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	09/11/97	NA	NA	NA	0.5570	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	12/12/97	NA	NA	NA	0.2790	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	03/24/98	0.0152	<.002	<.00004	0.0637	<.0095	<.0017	<.0006	<.000015	<.0095	0.0046	0.1000
Outfall 001**	04/29/98	<.011	<.002	<.005	0.2200	<.05	0.0020	<.1	<.0002	<.04	<.005	NA
Outfall 001*	06/10/98	NA	NA	NA	0.0784	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	10/07/98	<.011	<.002	0.0050	0.1700	<.05	<.001	<.1	<.0002	<.04	0.0250	NA
Outfall 001***	10/27/98	NA	NA	NA	0.0940	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	02/09/99	NA	NA	NA	0.1600	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	03/18/99	<.009	<.003	<.0031	NA	.00068****	<.000032	<.0024	<.00005	.00351****	<.012	<.0036
Outfall 001**	03/18/99	<.011	<.002	<.005	<0.05	<.05	0.0010	0.1000	<.00005	0.0400	0.0180	NA
Outfall 001***	06/08/99	NA	NA	NA	0.1900	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	09/13/99	NA	NA	NA	0.1700	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	09/21/99	<.011	<.002	<.005	<.05	<.05	0.0030	<.1	<.00015	<.04	0.0080	NA
Outfall 001***	12/15/99	NA	NA	NA	0.0870	NA	NA	NA	NA	NA	NA	NA
Outfall 001***	03/13/00	<.009	<.003	<.00031	0.1400	<.0006	<.0044	<.0024	<.00005	.0012***	<.012	NA
Effluent Limits Permit #97-21		70.0000	1.0000	0.3000	7.0000	3.5000	1.0000	2.0000	0.0020	2.0000	10.0000	4.5000

mg/l = milligram / liter
ug/l = microgram / liter
NA = not analyzed
* = Sampled by CH2M Hill
** = Sampled by the City of Appleton
*** = Sampled by MCO
**** = Detected of compound in area of less certain quantitation.

JMS:smd
I.D.\Report\M050\98808\Qtrly-PR#6-JMS.xls

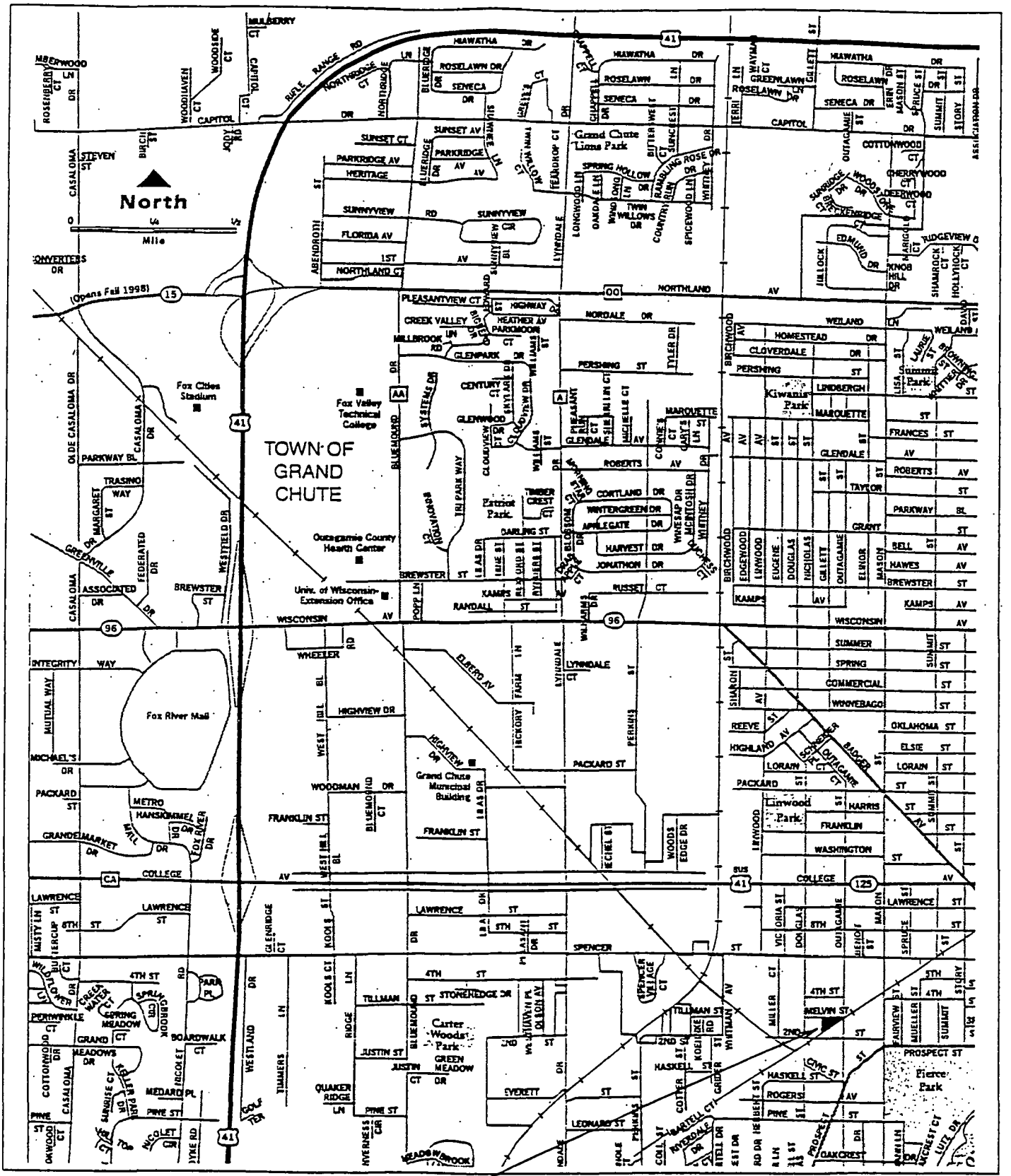

FIGURE 1

SITE LOCATION MAP

N.W. MAUTHE SUPERFUND SITE
APPLETON, WI

McM #M050-98808 July, 99

McMAHON ASSOCIATES, INC.

ENGINEERS ▪ ARCHITECTS
SCIENTISTS ▪ SURVEYORS

MW-108

W-2

MELVIN STREET

ELECTRIC SUBSTATION

PZ-4

WEST GROUNDWATER COLLECTION TRENCH

MW-101

GROUNDWATER TREATMENT FACILITY

MW-107

MANHOLE No.2

MW-102

HSE

CENTRAL GROUNDWATER COLLECTION TRENCH

PZ-3

FOUNDATION DRAIN LATERAL

MW-103

PZ-1

W-15

MANHOLE No.1

BLDG

GAR

FOUNDATION DRAIN LATERAL

MW-104

GAR

HSE

HSE

TAVERN

MW-106

PZ-2

TAVERN SUMP EFFLUENT PIPE

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8

MW-105

OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE – FEET

C:\DwgCNC\M050\99746-14\0313200\Fig-02.dwg 05/31/00 10:24 AM

FIGURE 2

COLLECTION TRENCH AND MONITORING WELL LOCATIONS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-99746.14 MARCH 13, 2000

MW-108
799.77

W-2
803.06

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4

MW-101
794.92

GROUNDWATER TREATMENT FACILITY

MW-107
797.88

MANHOLE No.1

MANHOLE No.2

MW-102
780.45

HSE

CENTRAL GROUNDWATER COLLECTION TRENCH

FOUNDATION DRAIN LATERAL

PZ-3

MW-103
794.07

PZ-1

W-15
795.96

BLDG

GAR

MW-104
797.77

GAR

FOUNDATION DRAIN LATERAL

HSE

HSE

TAVERN

PZ-2

MW-106
795.36

TAVERN

SUMP EFFLUENT PIPE

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

SECOND STREET

W-8
797.11

MW-105
798.99

-OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE - FEET

LEGEND

W-2 803.06 — MONITORING WELL & GROUNDWATER ELEVATION

GROUNDWATER FLOW DIRECTION

798 — GROUNDWATER CONTOUR

FIGURE 3

GROUNDWATER MONITORING WELLS LOCATIONS & GROUNDWATER CONTOURS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-99746.14 MARCH 13, 2000

C:\DwgCNC\M050\99746-14\0313200\Fig-03.dwg 05/31/00 10:33 AM

MW-108

W-2

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4
781.53

MW-101

781

GROUNDWATER TREATMENT FACILITY

MW-107

MANHOLE No.1

MANHOLE No.2

CENTRAL GROUNDWATER COLLECTION TRENCH

MW-102

HSE

FOUNDATION DRAIN LATERAL

PZ-3
780.24

781
782
783
784
785
786

MW-103

PZ-1
785.92

W-15

BLDG

GAR

MW-104

GAR

FOUNDATION DRAIN LATERAL

HSE

HSE

787
788

TAVERN

TAVERN

SUMP EFFLUENT PIPE

MW-106

PZ-2
788.88

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

OUTAGAMIE STREET

SECOND STREET

W-8

MW-105

NORTH

40 20 0 40

SCALE - FEET

LEGEND

PZ-1
785.92 — PIEZOMETER & POTENTIOMETRIC SURFACE ELEVATION

POTENTIOMETRIC GRADIENT

FIGURE 4

PIEZOMETER LOCATIONS AND POTENTIOMETRIC CONTOURS
N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-99746.14 MARCH 13, 2000

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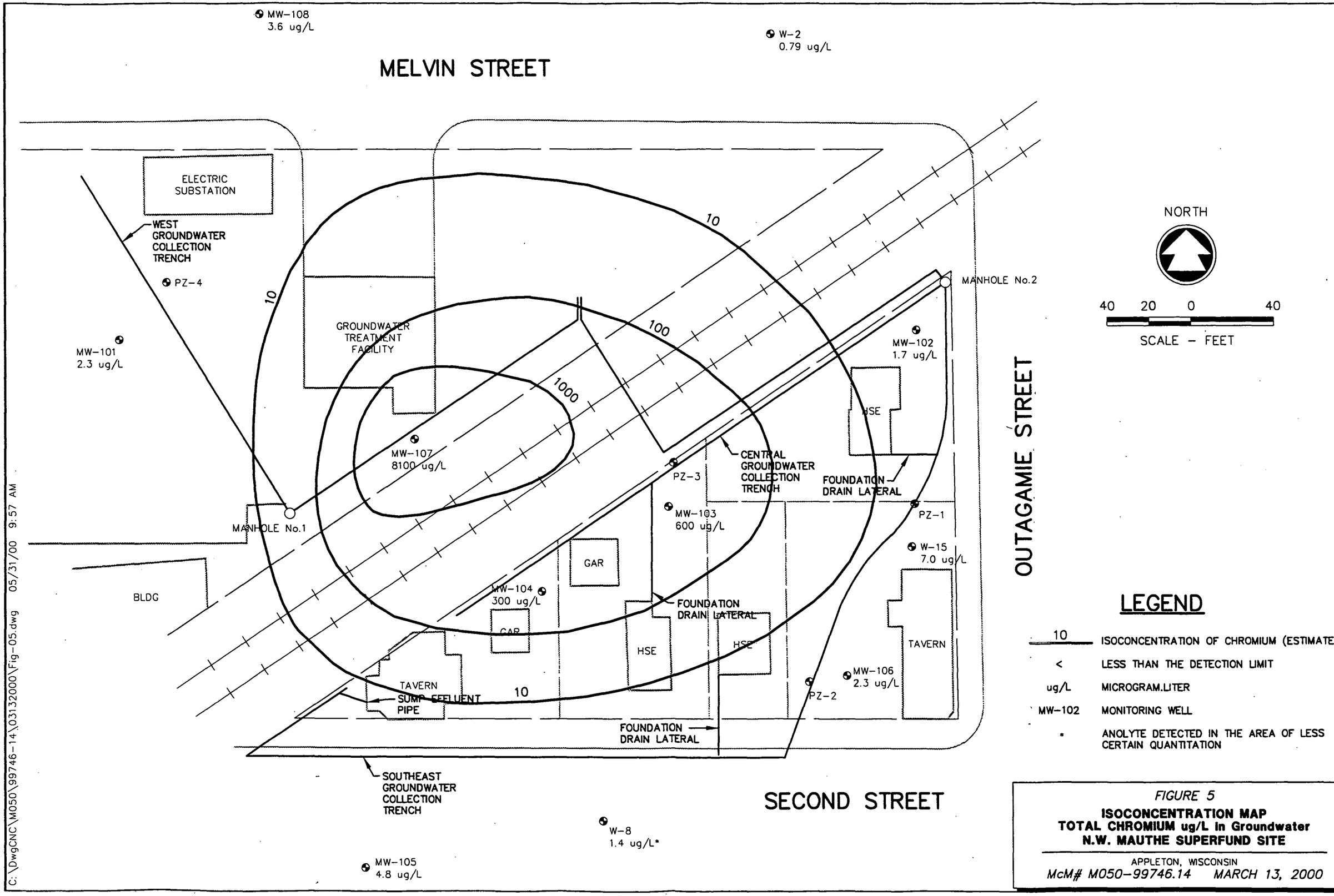

LEGEND

10	ISOCONCENTRATION OF CHROMIUM (ESTIMATED)
<	LESS THAN THE DETECTION LIMIT
ug/L	MICROGRAM.LITER
MW-102	MONITORING WELL
*	ANOLYTE DETECTED IN THE AREA OF LESS CERTAIN QUANTITATION

FIGURE 5

ISOCONCENTRATION MAP
TOTAL CHROMIUM ug/L in Groundwater
N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN
McM# M050-99746.14 MARCH 13, 2000

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APPENDIX A

Groundwater Sampling
Data Sheets

Groundwater Monitoring Field Form

McM

Project Number _____

Project Name NW Mantle

Location 725 S Outagamie Street

Date 3-13 00

Personnel JMS/MHK

Temp./Weather Cloudy/Snow 35°

Well	Date	Time	Depth to Water (Top of PVC) (ft)	Total Well Depth (Top of PVC) (ft)	Water Column Length (ft)	Req'd Gals to Purge 4 Casing Volumes	Amount Purged (gal)	Water Appear. (see below)	Sampling Method (see below)	Free Product (ft)	Sampl. (Y/N)	pH	Temp °C	Conductivity uS	D.O. mg/l	Redox mV	Alkalinity gpg	Ferrous Iron mg/l	Comments
W-2	3/13/00	7:30a	1.60	13	11.40	7.7	7	2	EP	2	Y	6.17	8.9	1228	1.3	59	7.6	0	4,3
W-8			6.75	14.5	8.25	5.6	5	3	EP	2	Y	7.06	8.8	1277	1.1	-33	8.4	1.0	3,2
W-15			7.80	15	7.20	4.9	4	2	EP	2	Y	7.14	8.9	1266	1.4	-19	7.6	.4	2.5, 1.5
MW-101			12.67	27.5	14.83	10.1	7	2	EP	2	Y	6.34	11.6	1939	1.1	44	8	0	4,3
MW-102			24.00	28	4.00	2.7	.5	2	EP	2	Y	6.74	9.7	1096	1.2	-260	6.8	0	.5
MW-103			9.63	27	17.37	11.8	4	3	EP	2	Y	6.57	9.4	1292	1.0	76	8.4	.4	2.5, 1.5
MW-104			9.51	26	16.49	11.2	16.5	2	EP	2	Y	6.91	10.2	1121	.4	69	11.2	.6	10.5, 6
MW-105			4.97	15.5	10.53	7.2	4.5	3	EP	2	Y	6.58	8.4	2430	1.3	23	9.6	.8	2.5, 2
MW-106			8.72	16	7.28	5.0	2.5	2	EP	2	Y	6.92	9.1	1513	1.6	18	10.4	0	1.5, 1
MW-107			11.13	30.5	19.37	13.17	14.5	4	EP	Y	Y	5.76	10.9	1389	1.2	58	8.4	.6	8.5, 6
MW-108			6.84	27	20.16	13.70	14.0	3	EP	2	Y	6.25	10.2	1642	1.7	-4	9.2	.2	9, 5
P2-1			18.25	–															
P2-2			14.76	–															
P2-3			23.38	–															
P2-4	↓	↓	25.77	–															

EQUIPMENT USED:
- ☑ Solinst Water Level Indicator
- ☐ Keck Interface Probe
- ☑ Alkalinity Hach Kit
- ☑ Ferrous Iron Hach Kit
- ☑ EC20 Portable Meter
- ☐ ICM Water Analyzer
- ☐ Other: _____

Comments: _____

SAMPLING METHOD
- DB - Disposable Bailer
- PP - Peristaltic Pump
- EP - Electric Pump (whale)

WATER APPEARANCE
1 - Clear
2 - Slightly Cloudy
3 - Cloudy
4 - Very Cloudy
5 - Slightly Muddy
6 - Muddy

GALLONS PER FOOT TO GET 1 CASING VOLUME
- 1" PVC - 0.05 gallons/ft.
- 2" PVC - 0.17 gallons/ft.
- 4" PVC - 0.66 gallons/ft.
- 6" PVC - 1.47 gallons/ft.

'DATAFILE/PPT/FORMS/FORMEMI_PPT 2/98 SAB/jms

McMAHON ASSOCIATES, INC. 1445 McMahon Drive/P.O. Box 1025 Neenah, WI 54956/57-1025 Phone: 920-751-4200 Fax: 920-751-4284

GROUNDWATER SAMPLING FIELD PROCEDURES DOCUMENTATION

Facility/Project Name: N.W. Mantle Site Date: 3-13-2020
Section/Grid Location or Address: 725 S. Outagamie St Appleton, WI
Facility Type: Groundwater Treatment System License/Permit #:
DNR Regulatory Program: BRRTS
Weather (temp., cloudiness, bar. pres., wind): Overcast 35°

Persons Sampling and Title: John M Stoeger Project Manager
Michael Kienetz McMahon Technical Services

Water Level Equipment (type, model): Solinst Water Level Indicator
Purging Equipment (type, model, material): Whale Model GP916B Purge Pump

Purging Method (4 well vol. or stabilization): 4 well Volumes
How Purge Volume Measured? (eg., calibrated bucket): Calibrated Bucket
Sample Collection Equipment (type, model, material): Whale Purge Pump

Method of Sample Withdrawal (bottom emptying device, low flow): Low flow pump
Type of Transfer Containers: NA
Filtering Equipment (type, material): NA
Filter Membrane (type, pore size): NA
When Were Samples Sent to Lab? 3-13-2020
What Lab Were the Samples Sent to? Northern Lake Service Crandon, WI
Were Enforcement Samples Sent? NO
How Were Samples Kept Cool (ice, other)? ICE
Equipment Decontamination Procedures? Latex Gloves used during sample collection - Pumps are dedicated to each well.
Decontamination Water Disposal? Placed purge water in building sump
pH Meter (type, model): Orion Model 1230 pH, conductivity, redox, DO
Person calibrating: Michael Kienetz
Frequency calibrated: Prior to Sampling
Calibration procedures (buffers used): Per O/M Manual
Problems with meter: None
Conductivity Meter (type, model): As Above
Person calibrating:
Frequency calibrated:
Calibration procedures:
Problems with meter:

Turbidity Equipment (type, model): _____

Person calibrating/set-up: _____

Frequency calibrated: _____

Calibration procedures: _____

Problems with meter: _____

Dissolved Oxygen Meter (type, model): Orion Mod

Person calibrating/set-up: See previous page

Frequency calibrated: _____

Calibration procedures: _____

Problems with meter: _____

When Were In-field Measurements Taken (immediately after collection or XX minutes after collection)?: During Collection

Comments (difficulties, questionable data, deviations from sampling plan, etc): _____

fpd.fm

APPENDIX B

Laboratory Analytical Results
Groundwater Monitoring Wells

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

NLS PROJECT# 53191

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: W-2 **NLS#: 225666**
Ref. Line 1 of COC 42564 Description: W-2
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	< 0.79 >	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	7.8	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

Sample ID: W-8 **NLS#: 225667**
Ref. Line 2 of COC 42564 Description: W-8
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	< 1.4 >	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	65	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 53191

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: W-15 **NLS#: 225668**
Ref. Line 3 of COC 42564 Description: W-15
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	7.0	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	130	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

Sample ID: MW-101 **NLS#: 225669**
Ref. Line 4 of COC 42564 Description: MW-101
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	2.3	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	100	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

NLS PROJECT# 53191

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: MW-102 NLS#: 225670
Ref. Line 5 of COC 42564 Description: MW-102
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	1.7	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	580	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

Additional Comments: High level of Tetrahydrofuran present.

Sample ID: MW-103 NLS#: 225671
Ref. Line 6 of COC 42564 Description: MW-103
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	600	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	79	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 53191

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: MW-104 **NLS#: 225672**
Ref. Line 7 of COC 42564 Description: MW-104
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	300	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	13	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

Sample ID: MW-104A **NLS#: 225673**
Ref. Line 8 of COC 42564 Description: MW-104A
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	300	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	13	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 53191
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: MW-105 **NLS#: 225674**
Ref. Line 9 of COC 42564 Description: MW-105
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	4.8	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	660	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

Sample ID: MW-106 **NLS#: 225675**
Ref. Line 10 of COC 42564 Description: MW-106
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	2.3	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	270	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

NLS PROJECT# 53191

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: MW-107 **NLS#: 225676**
Ref. Line 11 of COC 42564 Description: MW-107
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	8100	ug/L	6.2	16	SW846 6010	03/22/00	721026460
Manganese, tot. as Mn by ICP	22	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/17/00	721026460

Sample ID: MW-107A **NLS#: 225677**
Ref. Line 12 of COC 42564 Description: MW-107A
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	8300	ug/L	6.2	16	SW846 6010	03/22/00	721026460
Manganese, tot. as Mn by ICP	16	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/21/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 53191
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: MW-108 **NLS#: 225678**
Ref. Line 1 of COC 42565 Description: MW-108
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	3.6	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	41	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/20/00	721026460

Sample ID: Process Outfall **NLS#: 225679**
Ref. Line 2 of COC 42565 Description: Process Outfall
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Aluminum, tot. as Al by ICP	ND	mg/L	0.0090	0.032	SW846 6010	03/21/00	721026460
Arsenic, tot. as As by ICP	ND	ug/L	3.0	10	SW846 6010	03/21/00	721026460
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	140	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Copper, tot. as Cu by ICP	ND	ug/L	0.60	2.1	SW846 6010	03/21/00	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0044	0.015	EPA 335.4	03/23/00	721026460
Lead, tot. as Pb by ICP	ND	ug/L	2.4	8.4	SW846 6010	03/21/00	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	03/22/00	721026460
Nickel, tot. as Ni by ICP	< 1.2 >	ug/L	1.0	3.6	SW846 6010	03/21/00	721026460
Zinc, tot. as Zn by ICP	ND	ug/L	12	12	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 53191
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: Trip Blank **NLS#: 225680**
Ref. Line 4 of COC 42565 Description: Trip Blank
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
VOCs by EPA 524.2	see attached				EPA 524.2	03/20/00	721026460

Values in brackets represent results greater than the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than the LOQ are considered to be in the region of "Certain Quantitation".

LOD = Limit of Detection
DWB = Dry Weight Basis
LOQ = Limit of Quantitation
NA = Not Applicable
ND = Not Detected
%DWB = (mg/kg DWB)/10000

Jerry R Bock

Reviewed by:

Authorized by:

R. T. Krueger
Laboratory Manager

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Superfund Site
Northern Lake Service Project Number: 53191

Analyte Name	225666 W-2 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 111 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 111 %					

Analyte Name	225667 W-8 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 108 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 105 %					

Analyte Name	225668 W-15 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 109 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 107 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Superfund Site
Northern Lake Service Project Number: 53191

Analyte Name	225669 MW-101 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 112 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 108 %					

Analyte Name	225670 MW-102 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 103 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 104 %					

Analyte Name	225671 MW-103 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 109 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 103 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Superfund Site
Northern Lake Service Project Number: 53191

Analyte Name	225672 MW-104 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	< 0.38 >	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	1.6	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 109 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 102 %					

Analyte Name	225673 MW-104A ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	1.3	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 116 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 107 %					

Analyte Name	225674 MW-105 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 106 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 103 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Superfund Site
Northern Lake Service Project Number: 53191

Analyte Name	225675 MW-106 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 111 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 108 %					

Analyte Name	225676 MW-107 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	80	26	81	5.0
Chloroform	ND	80	23	72	
1,1-Dichloroethane	< 50 >	80	29	92	
1,1-Dichloroethene	< 32 >	80	28	90	7.0
cis-1,2-Dichloroethene	ND	80	12	38	70
trans-1,2-Dichloroethene	ND	80	31	100	100
Toluene	ND	80	30	95	1000
1,1,1-Trichloroethane	340	80	27	85	200
1,1,2-Trichloroethane	ND	80	9.0	29	5.0
Trichloroethene	630	80	27	86	5.0
Xylene Total	ND	80	57	180	10000
Surrogate Recovery on 4-Bromofluorobenzene = 110 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 106 %					

Analyte Name	225677 MW-107A ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	50	16	51	5.0
Chloroform	ND	50	14	45	
1,1-Dichloroethane	< 54 >	50	18	58	
1,1-Dichloroethene	< 33 >	50	18	56	7.0
cis-1,2-Dichloroethene	ND	50	7.6	24	70
trans-1,2-Dichloroethene	ND	50	20	62	100
Toluene	ND	50	19	59	1000
1,1,1-Trichloroethane	350	50	17	53	200
1,1,2-Trichloroethane	ND	50	5.6	18	5.0
Trichloroethene	630	50	17	54	5.0
Xylene Total	ND	50	36	110	10000
Surrogate Recovery on 4-Bromofluorobenzene = 107 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 103 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Superfund Site
Northern Lake Service Project Number: 53191

Analyte Name	225678 MW-108 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 107 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 106 %					

Analyte Name	225680 Trip Blank ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.32	1.0	5.0
Chloroform	ND	1	0.28	0.90	
1,1-Dichloroethane	ND	1	0.36	1.2	
1,1-Dichloroethene	ND	1	0.35	1.1	7.0
cis-1,2-Dichloroethene	ND	1	0.15	0.48	70
trans-1,2-Dichloroethene	ND	1	0.39	1.2	100
Toluene	ND	1	0.37	1.2	1000
1,1,1-Trichloroethane	ND	1	0.33	1.1	200
1,1,2-Trichloroethane	ND	1	0.11	0.36	5.0
Trichloroethene	ND	1	0.34	1.1	5.0
Xylene Total	ND	1	0.71	2.3	10000
Surrogate Recovery on 4-Bromofluorobenzene = 107 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 104 %					

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John M Stoeger	42564 & 42565
McMahon Associates, Inc	QUOTATION NUMBER:
1445 McMahon Drive	99917
Box 1025	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS?
Ntench, WI 54557-1025	T
COPIES TO: ~~John M S~~	SEND INVOICE TO: McMah-

Note "TL" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: Marked GW to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☒ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total *
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ Cyanide, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☐ Lead
- ☐ Lithium
- ☐ Magnesium
- ☒ Manganese
- ☐ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, freon
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic. Sludge WI List
- ☐ VOCs by 8021
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☒ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate, by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

* = This is a Presence / Absence test for bacteria in drinking water

Special Instructions: _____

1/2

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO: 42564

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES

DNR LICENSE | FID

CLIENT: McMahon Associates Inc | PROJECT TITLE: N.W. Marathon Superfund - S.B.

ADDRESS: 1445 McMahon Drive Box 1025 | PROJECT NO. | P.O. NO:

CITY: Neenah | STATE: WI | ZIP: 54957-1025 | CONTACT: John Stoeger | PHONE: 920-751-4200

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP	CONTAINER/PRESERVATIVE HCL	UNPRES			COLLECTION REMARKS
1.		W-2		3/13/00	10 AM	GW	GRAB					
2.		W-9			11 AM							
3.		W-15			9 AM							
4.		MW-101			10 AM							
5.		MW-102			10:30							
6.		MW-103			10:45A							
7.		MW-104			11:30							
8.		MW-104A			12:30							
9.		MW-105			11 AM							
10.		MW-106			11:30							
11.		MW-107			1:30							
12.		MW-107A			1:30							

SAMPLE TYPE: SW=surface water; WW=wastewater; GW=groundwater; DW=drinking water; TIS=tissue; AIR=air; PROD=product; SOIL=soil; SED=sediment; describe others

CONTAINER: P = plastic; G = glass; V = glass vial; B = plastic bag; describe others

PRESERVATIVES & PREPARATION: NP = nothing added; S = sulfuric acid; N = nitric acid; Z = zinc acetate; OH = sodium hydroxide; HA = hydrochloric & ascorbic acid; H = hydrochloric acid; F = field filtered

COLLECTED BY (signatures) | CUSTODY SEAL NO. (IF ANY) | DATE/TIME

RELINQUISHED BY (signature) | RECEIVED BY (signature) | DATE/TIME

RELINQUISHED BY (signature) 10 UPS | RECEIVED BY (signature) | DATE/TIME 3/14/00 1:45pm

DISPATCHED BY (signature) | METHOD OF TRANSPORT | DATE/TIME

REMARKS & OTHER INFORMATION

IMPORTANT: 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

CLIENT COPY

2/2

NO. 42565

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No: 721026460

RETURN THIS FORM WITH SAMPLES

CLIENT	DNR LICENSE	FID
ADDRESS See Page 1	PROJECT TITLE N.W. Marth Superfund Site	
CITY STATE ZIP	PROJECT NO.	P.O. NO.
	CONTACT	PHONE

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP	CONTAINER/PRESERVATIVE HCL	HNO3	NaOH		COLLECTION REMARKS
1.		MW-108		3/13/00	1:30P	GW	Grab	X	X			
2.		Process Water			8:00A	WW	Grab		X	X		
3.		Outfall 001										
4.		Trip										
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												

SAMPLE TYPE:
SW=surface water DW=drinking water PROD=product
WW=wastewater TIS=tissue SOIL=soil
GW=groundwater AIR=air SED=sediment
describe others

CONTAINER
P = plastic
G = glass
V = glass vial
B = plastic bag
describe others

PRESERVATIVES & PREPARATION
NP = nothing added OH = sodium hydroxide
S = sulfuric acid HA = hydrochloric &
N = nitric acid A = ascorbic acid
Z = zinc acetate H = hydrochloric acid
F = field filtered

COLLECTED BY (signatures) CUSTODY SEAL NO. (IF ANY) DATE/TIME

RELINQUISHED BY (signature) RECEIVED BY (signature) DATE/TIME 3/14/00 11 AM

RELINQUISHED BY (signature) RECEIVED BY (signature) DATE/TIME

DISPATCHED BY (signature) METHOD OF TRANSPORT DATE/TIME

REMARKS & OTHER INFORMATION

IMPORTANT:
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CLIENT COPY

APPENDIX C

Laboratory Analytical Results
Outfall #001

City Of Appleton

DEPARTMENT OF UTILITIES

WASTEWATER DIVISION • CENTRAL BUILDING MAINTENANCE DIVISION
2006 East Newberry Street • Appleton, WI 54915-2758
920/832-5945 • 920/832-5514 • FAX 920/832-5949

March 6, 2000

John M. Stoeger
Project Manager
N.W. Mauthe Superfund Site
c/o Midwest Contract Operations, Inc.
P. O. Box 418
Menasha, Wisconsin 54952-0418

RE: Semi-annual Compliance Monitoring Results

Dear Mr. Stoeger:

The City of Appleton, Pretreatment Program staff recently visited your facility in order to obtain a sample of the wastewater discharged from your site to the sanitary sewer.

This outfall(s) sample(s) was tested for process-specific pollutants, if applicable, identified in your wastewater discharge permit and Local Limit pollutant parameters identified in your discharge permit and the sewer use ordinance, Chapter 20, Utilities.

The City of Appleton, Pretreatment Program conducts this analysis for compliance monitoring twice, annually for each permitted industry. Pretreatment compliance monitoring is a required component of the state and federal mandated program implementation.

Your facility's effluent was analyzed for the pollutants listed in FORM 13 (attached) that have sample results indicated. This form is the monitoring summary which is submitted to the Wisconsin Department of Natural Resources on a semi-annual basis to reflect all monitoring for the City of Appleton Pretreatment Program.

Your wastestream was Compliant for all parameters indicated above for the sample(s) identified on Form 13.

Thank you for accommodating the laboratory staff during these often unannounced visits. This format lends true credibility to our compliance monitoring program and demonstrates the high level of cooperation the City shares with local industries.

Best regards,

Jessica A. Garratt

Jessica A. Garratt
Pretreatment Coordinator
comply951/enc.

Form 3
Evaluation Form 1

INDUSTRIAL USER MONITORING SUMMARY REPORT
(Summation of POTW Compliance Monitoring and Industrial Self-Monitoring)

Industrial User Name N. W. Mauthe Superfund Site / SIU 97 - 21
Location 725 South Outagamie Street

Sampling Point (Refer to Control Document) 001 discharge valve in Pretreatment Facility

SAMPLE TYPE			FP TC G	FP TC G	FP TC G	FP TC G	FP TC G	FP TC G	FP TC G	FP TC G
			SAMPLE 3/18/99	SAMPLE 3/18/99	SAMPLE 9/21/99	SAMPLE	SAMPLE	SAMPLE	SAMPLE	SAMPLE
PARAMETERS	UNIT	LIMITS MAX / AVG	DATE SELF SCHEDUL X UNSCHED DEMAND	DATE SELF X SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL X UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND	DATE SELF SCHEDUL UNSCHED DEMAND
Flow, Regulated	GPD									
Flow, Unregulated	GPD									
Flow, Dilutional	GPD									
Flow, Total	GPD									
Arsenic	mg/L	1.0	< 0.002	< 0.003	< 0.002					
Cadmium	mg/L	0.3	< 0.005	< 0.0031	< 0.005					
Chromium	mg/L	7.0	< 0.05	0.16	< 0.05					
Copper	mg/L	3.5	< 0.05	0.00068	< 0.05					
Cyanide	mg/L	1.0	0.001	< 0.0032	0.003					
Lead	mg/L	2.0	0.1	< 0.0024	< 0.1					
Nickel	mg/L	2.0	0.04	0.0035	< 0.04					
Silver	mg/L									
Zinc	mg/L	10.0	0.018	< 0.012	0.008					
Total Toxic Organics	mg/L									
Aluminum	mg/L	70.0	< 0.011	< 0.009	< 0.011					
Hex Chromium	mg/L	4.5		< 0.0036						
Mercury	mg/L	0.002	< 0.00015	< 0.00005	< 0.00015					
	mg/L									
	mg/L									
pH	s. u.	5.0-12.4	8.65		8.3					
Oil & Grease	mg/L									
Phosphorus	mg/L									

2/2

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 42565

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES

DNR LICENSE		FID
CLIENT	PROJECT TITLE: N.W. Mackinac Superfund Site	
ADDRESS: See Page 1	PROJECT NO.	P.O. NO.
CITY / STATE / ZIP	CONTACT	PHONE

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE HCl	HNO3	Vol#	COLLECTION REMARKS
1.		MW-108		3/13/00	1:30P	GW	Grab	X	X		
2.		Process Water			8:00A	WW	Grab		X	X	
3.		Outfall 001									
4.		Trip									
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											

SAMPLE TYPE:
SW=surface water; DW=drinking water; PROD=product
WW=wastewater; TIS=tissue; SOIL=soil
GW=groundwater; AIR=air; SED=sediment
describe others

CONTAINER
P = plastic; G = glass; V = glass vial; B = plastic bag
describe others

PRESERVATIVES & PREPARATION
NP = nothing added; OH = sodium hydroxide
S = sulfuric acid; HA = hydrochloric & ascorbic acid
N = nitric acid; Z = zinc acetate; H = hydrochloric acid
F = field filtered

COLLECTED BY (signatures): [signature]

CUSTODY SEAL NO. (IF ANY) DATE/TIME

RELINQUISHED BY (signature): [signature] RECEIVED BY (signature) DATE/TIME 3/14/00 9:00AM

RELINQUISHED BY (signature) RECEIVED BY (signature) DATE/TIME

DISPATCHED BY (signature) METHOD OF TRANSPORT DATE/TIME

REMARKS & OTHER INFORMATION

IMPORTANT: 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

CLIENT COPY

ORDER OF ANALYSIS

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715) 478-2777 FAX: (715) 478-3060

SEND RESULTS TO:	CHAIN OF CUSTODY RECORD NUMBER:
John M Staeger	42564 - 42565
McMcL Associates Inc	QUOTATION NUMBER:
1445 McMahon Drive	99917
Box 1025	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS?
Neenah, WI 549571025	T
COPIES TO:	SEND INVOICE TO:
	McMcL--

Note "TL" for trace-level ICP analysis, and "F" for furnace analysis.

Samples on Chain of Custody line #s: Marked WW to be analyzed for the parameters checked below:

- ☐ Acidity
- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☒ Aluminum
- ☐ Antimony
- ☒ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ BOD – 5 Day
- ☐ BOD, carbonaceous
- ☐ Boron
- ☐ Bromide
- ☒ Cadmium
- ☐ Calcium
- ☐ COD
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hex.
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total *
- ☐ Color
- ☐ Conductivity
- ☒ Copper
- ☒ Cyanide, total
- ☐ Cyanide, amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Iron Bacteria
- ☒ Lead
- ☐ Lithium
- ☐ Magnesium
- ☐ Manganese
- ☒ Mercury
- ☐ Mercury, low level
- ☐ Molybdenum
- ☒ Nickel
- ☐ Nitrogen, Ammonia
- ☐ Nitrogen, Total
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl Nitrogen
- ☐ Total Organic Nitrogen
- ☐ Oil & Grease, freon
- ☐ Oil & Grease, hexane
- ☐ pH
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Phosphorus, tot. ortho
- ☐ Phosphorus, dis. ortho
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Solids, total dissolved
- ☐ Solids, total suspended
- ☐ Solids, total volatile
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ Titanium
- ☐ TOC
- ☐ TOX
- ☐ Vanadium
- ☒ Zinc
- ☐ Munic. Sludge WI List
- ☐ VOCs by 8021
- ☐ VOCs by 624/8260
- ☐ VOCs by 8010/8020
- ☐ VOCs by 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified
- ☐ GRO+PVOC-WI Modified
- ☐ DRO-WI Modified
- ☐ Naphthalene
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ PAHs by 610LC/8310
- ☐ Chlorinated Hydrocarbons by 612/8121
- ☐ Pesticides – Organochlorine by 608/8081
- ☐ Pesticides – Organophosphate by 8141
- ☐ PCBs by 608/8082
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8151
- ☐ TCLP – metals
- ☐ TCLP – pesticides/herbicides
- ☐ TCLP – BNAs
- ☐ TCLP – VOCs
- ☐ SPLP – metals
- ☐ SPLP –
- ☐ ASTM – metals
- ☐ ASTM –
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

* = This is a Presence / Absence test for bacteria in drinking water

Special Instructions: _____

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 53191
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Superfund Site

Sample ID: MW-108 **NLS#: 225678**
Ref. Line 1 of COC 42565 Description: MW-108
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	3.6	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Manganese, tot. as Mn by ICP	41	ug/L	0.42	1.5	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	03/20/00	721026460

Sample ID: Process Outfall **NLS#: 225679**
Ref. Line 2 of COC 42565 Description: Process Outfall
Collected: 03/13/00 Received: 03/15/00 Reported: 03/23/00

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Aluminum, tot. as Al by ICP	ND	mg/L	0.0090	0.032	SW846 6010	03/21/00	721026460
Arsenic, tot. as As by ICP	ND	ug/L	3.0	10	SW846 6010	03/21/00	721026460
Cadmium, tot. as Cd by ICP	ND	ug/L	0.31	1.1	SW846 6010	03/21/00	721026460
Chromium, tot. as Cr by ICP	140	ug/L	0.62	1.6	SW846 6010	03/21/00	721026460
Copper, tot. as Cu by ICP	ND	ug/L	0.60	2.1	SW846 6010	03/21/00	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0044	0.015	EPA 335.4	03/23/00	721026460
Lead, tot. as Pb by ICP	ND	ug/L	2.4	8.4	SW846 6010	03/21/00	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	03/22/00	721026460
Nickel, tot. as Ni by ICP	< 1.2 >	ug/L	1.0	3.6	SW846 6010	03/21/00	721026460
Zinc, tot. as Zn by ICP	ND	ug/L	12	12	SW846 6010	03/21/00	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	03/16/00	721026460

APPENDIX D

Wisconsin Department Of Natural Resources
Form 4400-194

State of Wisconsin
Department of
Natural Resources

OPERATION, MAINTENANCE, MONITORING AND OPTIMIZATION REPORTING OF SOIL AND GROUNDWATER REMEDIATION SYSTEMS

PURPOSE AND APPLICABILITY OF THIS FORM: Completion of this form is required under s. NR 724.13(e), Wis. Adm. Code. Use of this form is mandatory. Failure to submit this form as require is a violation of s. NR 724.13, Wis. Adm. Code, and is subject to the penalties in s. 144.99, Wis. Stats. This form must be submitted every six months for active soil and groundwater remediation projects and every twelve months for passive (natural attenuation) remediation projects that are regulated under the NR 700 series of Wis. Adm. Code. Specifically, for sites meeting any of the following criteria:

- Soil or groundwater remediation projects that report progress in accordance with s. NR 700.11(1), Wis. Adm. Code.
- Soil or groundwater remediation projects that report progress in accordance with s. NR 724.13(3), Wis. Adm. Code. (Note: s. NR 724.13(3) requires progress reports for operation and maintenance of active systems to be submitted every three months however the Department considers submittal of this form every six months to satisfy the requirements of the rules, unless otherwise directed by the Department on a site specific basis.)
- Soil or groundwater remediation projects that report progress in accordance with s. NR 724.17(3), Wis. Adm. Code. (Note: s. NR 724.17(3) requires progress reports every time that samples are collected however the Department considers submittal of this form every twelve months to satisfy the requirements of the rules for monitoring natural attenuation, unless otherwise directed by the Department on a site specific basis.)

Submittal of this form is not a substitute for reporting required by Department programs such as Wastewater or Air Management. Personally identifiable information on this form is not intended to be used for any other purpose than tracking progress of the remediation by the Bureau for Remediation and Redevelopment.

Please refer to the instructions that are attached to the back of these forms starting on page INS-1. In all cases, when asked to "explain," those explanations are to be included on separate sheets of paper. Explanations must include a title that refers to the page and item number, for example: Page GI-2, C.1.a.

A. GENERAL INFORMATION:

1. Site name: NW Mauthe Superfund Sb
2. Reporting period from: October 1, 1999 To: March 31, 2000 Days in period: 183
3. Regulatory agency (enter DNR, DCOM, DATCP and/or other): WDNR, U.S. EPA
4. DNR issued site number: BRRTS ID # 02-45-000127
5. State reimbursement fund claim number and fund name (if not applicable, enter NA): NA
6. Site location:
   a. DNR region and county: Northeast Region Outagamie County
   b. Street address and municipality: 725 South Outagamie Street Appleton, WI
   c. Township, range, section and quarter quarter section: NE 1/4 of NW 1/4, Section 34
      Township 21 North, Range 17 East
7. Responsible party:
   a. Name: Carol Mauthe (WDNR Contact Jennifer Huffman)
   b. Mailing address: WDNR 3369 West Brewster Street
      Appleton, WI 54914-1607
   c. Phone number: 920-832-1803
8. Consultant:
   a. Company name: McMahon Associates, Inc
   b. Mailing address: P.O. Box 1025
      Neenah, WI 54957-1025
   c. Phone number: 920-751-4200
9. Contaminants: Chromium, VOC's
10. Soil types (USCS or USDA): Clay, Silty Clay
11. Hydraulic conductivity (cm/sec): 1×10^{-7} (estimated) 12. Average linear velocity of groundwater (ft/yr): 10.34

GENERAL SITE INFORMATION, CONTINUED

SITE NAME AND REPORTING PERIOD:

Site name: N.W. Mantle Superfund Site

Reporting period from: October 1, 2000 To: March 31, 2001 Days in period: 183

A. GENERAL INFORMATION (CONTINUED):

13. If soil is treated ex situ, is the treatment location off site? (Y/(N)) If yes, give location:

    a. DNR region and county: _____

    b. Township, range, section and quarter quarter section: _____

B. REMEDIATION METHOD: Only submit pages that apply to an individual site. Check all that apply:

- [X] Groundwater extraction (submit a completed page GW-1).
- [ ] Free product recovery (submit a completed page GW-1).
- [ ] In situ air sparging (submit a completed page GW-2).
- [ ] Groundwater natural attenuation (submit a completed page GW-3).
- [X] Other groundwater remediation method (submit a completed page GW-4).
- [ ] Soil venting (including soil vapor extraction and bioventing, submit a completed page IS-1).
- [ ] Soil natural attenuation (submit a completed page IS-2).
- [ ] Other in situ soil remediation method (submit a completed page IS-3).
- [ ] Biopiles (submit a completed page ES-1).
- [ ] Landspreading/thinspreading of petroleum contaminated soil (submit a completed page ES-2).
- [ ] Other ex situ soil remediation method (submit a completed page ES-3).

C. GENERAL EFFECTIVENESS EVALUATION FOR ALL ACTIVE SYSTEMS: If the remediation is active (not natural attenuation), complete this subsection.

1. Is the system operating at design rates and specifications? ((Y)/N): _____
   If the answer is no, explain whether or not modifications are necessary to achieve the goal that was previously established in design.
2. Are modifications to the system warranted to improve effectiveness? (Y/(N)) If yes, explain: _____
3. Is natural attenuation an effective low cost option at this time? ((Y)/N) _____
4. Is closure sampling warranted at this time? ((Y)/N) _____
5. Are there any modifications that can be made to the remediation to improve cost effectiveness? (Y/(N)) If yes, explain: _____

D. ECONOMIC AND COST DATA TO DATE:

1. Total investigation costs ($): NA
2. Implementation costs (design, capital and installation costs, excluding investigation costs) ($): NA
3. Total costs during the previous reporting period ($): $80,189 (1 year)
4. Total costs during this reporting period ($): $37,770 (6 months)
5. Total anticipated costs for the next reporting period ($): 37,770 (6 months)
6. Are any unusual or one-time costs listed in the reporting periods covered by D.3., D.4. or D.5. above? (Y/(N)) If yes explain: _____
7. If close out is anticipated within 12 months, estimated costs for project closeout ($): NO

GENERAL SITE INFORMATION, CONTINUED

SITE NAME AND REPORTING PERIOD:

Site name: N.W. Manitowoc Superfund Site

Reporting period from: October 1, 1999 To: March 31, 2000 Days in period: 183

E. NAME(S), SIGNATURE(S) AND DATE OF PERSON(S) SUBMITTING FORM: Legibly print name, date and sign. Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form.

Registered Professional Engineers:

I (print name) THOMAS J. KISPERT, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Signature, title, P.E. number and date: Thomas J. Kispert, ASSOCIATE, PE# E-26225 5-26-00

Hydrogeologists:

I (print name) Stuart A Boerst, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

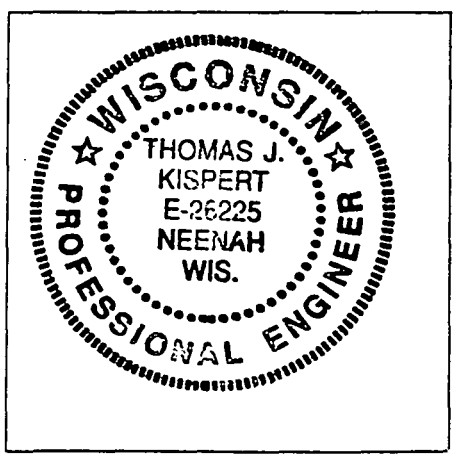
Signature, title and date: Stuart A Boerst, Hydrogeologist, PG-9, PH-28 5/26/00

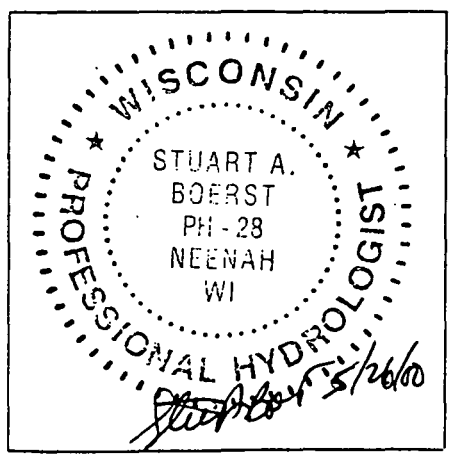
Scientists:

I (print name) Stuart Boerst, hereby certify that I am a scientist as that term is defined in s. NR 712.03(3), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Signature, title and date: Stuart A Boerst, Hydrogeologist, PG-9, PH-28 5/26/00

Professional Seal(s), if applicable:





State of Wisconsin
Department of
Natural Resources

OPERATION, MAINTENANCE, MONITORING AND OPTIMIZATION REPORTING OF SOIL AND GROUNDWATER REMEDIATION SYSTEMS

Form 4400-194
7-96

GROUNDWATER PUMP AND TREAT SYSTEMS AND FREE PRODUCT RECOVERY SYSTEMS

SITE NAME AND REPORTING PERIOD:

Site name: N. W. Mauth Superfund S.G

Reporting period from: October 1, 1999 To: March 31, 2000 Days in period: 183

Date that the system was first started up: January 14, 1997

A. GROUNDWATER EXTRACTION SYSTEM OPERATION:

1. Total number of groundwater extraction wells or trenches available and the number in use during period: 2/2
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain): 183
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain: 100
4. Quantity of groundwater extracted during this time period (gallons): 187,699
5. Average groundwater extraction rate (gpm): .71
6. Quantity of dissolved phase contaminants removed during this time period in pounds:

B. FREE PRODUCT RECOVERY SYSTEM OPERATION:

1. Is free product (nonaqueous phase liquid) being recovered at this site? (Y/(N)) If yes, list method:
2. Quantity of free product extracted during this time period (gallons, enter none if none): NONE
3. Average free product extraction rate (gpd): NA

C. SYSTEM EFFECTIVENESS EVALUATION:

1. Is a contaminated groundwater plume fully contained in the capture zone? ((Y)/N) If no, explain:
2. If free product is present, is the free product fully contained in capture zone? (Y/N) If no, explain: NA
3. If free product is present in any wells at the site, but free product was not recovered during reporting period, explain.
4. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in C.4.a.
   a. Contaminant: Chromium 14,000 ug/L
   b. Percent reduction necessary to reach ch. NR 140 ES and PAL: ES 99.3% PAL 99.93%
   c. Maximum contaminant concentration level in any monitoring well of that contaminant (µg/L): 14,000 ug/L MW-107
   d. Maximum contaminant concentration level in any extraction well of that contaminant (µg/L): NA
   e. If the maximum concentration in a monitoring well is more that one order of magnitude above the concentration measured in an extraction well, explain why the extracted groundwater contamination levels are significantly less than the levels at other locations within the aquifer.

D. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Most recent report to the DNR Wastewater Program, if applicable.
- Groundwater contour map with capture zone indicated.
- Groundwater contaminant distribution map (may be combined with contour map).
- Graph of cumulative contaminant removal, if both free product recovery and ground water extraction are used, provide separate graphs.
- Time versus groundwater contaminant concentration graphs for the contaminant listed in C.4.a. (above), as follows:
  - — Graph of contaminant concentrations versus time for each extraction well in use during the period.
  - — Graph of contaminant concentrations versus time for the monitoring well with the greatest level of contamination.
- Groundwater contaminant chemistry table.
- Groundwater elevations table.
- System operational data table.

IN SITU AIR SPARGING SYSTEMS

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

Date that the system was first started up: _____

A. IN SITU AIR SPARGING SYSTEM OPERATION:

1. Number of air injection wells at the site and the number actually in use during the period: _____
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain): _____
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain: _____

B. SYSTEM EFFECTIVENESS EVALUATION:

1. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in B.1.a.

   a. Contaminant: _____

   b. Percent reduction necessary to reach ch. NR 140 ES and PAL: _____

   c. Maximum contaminant concentration level in any monitoring well (µg/L): _____

2. Is there any evidence that air is short circuiting through natural or man-made pathways? (Y/N) If so, explain: _____
3. Is the size of the plume increasing, stabilized, or decreasing (if increasing, explain): _____

C. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Groundwater contour map.
- Groundwater contaminant distribution map (may be combined with contour map).
- When contaminants are aerobically biodegradable, attach a dissolved oxygen in groundwater map (dissolved oxygen may be combined with the contaminant data on a single map).
- Site map with all air injection wells and groundwater monitoring points.
- Graph of contaminant concentrations versus time for the contaminant listed in B.1.a. (above) for the monitoring point with the greatest level of contamination.
- Groundwater contaminant chemistry table.
- Groundwater elevations table.
- System operational data table.

NATURAL ATTENUATION (PASSIVE BIOREMEDIATION) IN GROUNDWATER

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

A. EFFECTIVENESS EVALUATION:

1. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in A.1.a.

   a. Contaminant: _____

   b. Percent reduction necessary to reach ch. NR 140 ES and PAL: _____

   c. Maximum contaminant concentration level in any monitoring well (µg/L): _____

2. Aquifer parameters:

   a. Hydraulic conductivity (cm/sec): _____

   b. Groundwater average linear velocity (ft/yr): _____

3. Is there a downgradient monitoring well that meets ch. NR 140 standards (Y/N): _____

4. Based on water chemistry results, is the plume expanding, stabilized or contracting: _____

5. If the answer in 4. (above) is "expanding," is natural attenuation still the best option? (Y/N) If yes, explain: _____

6. Biodegradation parameters:

   a. Upgradient (or other site specific background) DO level (mg/L): _____

   b. DO levels in the part of the plume that is most heavily contaminated (mg/L): _____

7. Is site closure a viable option within 12 months from the date of this form? (Y/N): _____

8. Are there any modifications that can improve cost effectiveness? (Y/N) If yes, explain: _____

9. Have groundwater table fluctuations changed the contaminant level trends over time? (Y/N) If yes, explain): _____

10. Has the direction of ground water flow changed during the reporting period? (Y/N) If yes, approximate change in degrees: _____

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Groundwater contour map.
- Groundwater contaminant distribution map (may be combined with contour map).
- When contaminants are aerobically biodegradable, attach a dissolved oxygen in groundwater map (dissolved oxygen may be combined with the contaminant data on a single map).
- Graph of contaminant concentrations versus time for the contaminant listed in A.1.a. (above) for the monitoring point with the greatest level of contamination.
- Graph of contaminant concentrations versus distance.
- Groundwater contaminant chemistry table.
- Groundwater biological parameters.
- Groundwater elevations table.

OTHER GROUNDWATER REMEDIATION METHODS

SITE NAME AND REPORTING PERIOD:

Site name: N.W. Mauthe Superfund Site

Reporting period from: October 1, 1999 To: March 31, 2000 Days in period: 183

Date that the system was first started up: January 14, 1997

A. EFFECTIVENESS EVALUATION:

1. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in A.1.a.

   a. Contaminant: Chromium

   b. Percent reduction necessary: ES 99.3 PAL 99.93

   c. Maximum contaminant concentration level in any monitoring well (µg/L): 14,000 ug/L MW-107

2. Is the size of the plume increasing, stabilized, or decreasing: Stabilized

3. Describe the method used to remediate groundwater at the site.

   See Section II of Enclosed Report

4. List any additional information required by the DNR for this method for this site:

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Groundwater contour map.
- Groundwater contaminant distribution map (may be combined with contour map).
- When contaminants are aerobically biodegradable, attach a dissolved oxygen in groundwater map (dissolved oxygen may be combined with the contaminant data on a single map).
- Graph of contaminant concentrations versus time for the contaminant listed in A.1.a. (above) for the monitoring point with the greatest level of contamination.
- Groundwater contaminant chemistry table.
- Groundwater elevations table.
- Any other attachments required by the DNR for this remediation method.

OPERATION, MAINTENANCE, MONITORING AND OPTIMIZATION REPORTING OF SOIL AND GROUNDWATER REMEDIATION SYSTEMS

SOIL VENTING (INCLUDING BOTH SOIL VAPOR EXTRACTION AND BIOVENTING)

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

Date that the system was first started up: _____

A. SOIL VENTING SYSTEM OPERATION:

1. Number of air extraction wells available and number of wells actually in use during the period: _____
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain): _____
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If less than 80%, explain: _____
4. Average depth to groundwater: _____

B. EFFECTIVENESS EVALUATION:

1. Average contaminant removal rate for the entire system (pounds per day): _____
2. Average contaminant removal rate per well (pounds per day): _____
3. If the average contaminant removal rate is less than one pound per day for the entire system, or if the average contaminant removal rate per well is less than one tenth of a pound per day, evaluate the following:

   a. If contaminants are aerobically biodegradable and confirmation borings have not been drilled in the past year:

      i. Oxygen levels in extracted air (percent): _____

      ii. Methane levels in extracted air (ppm_v) If over 10 ppm_v, explain: _____

      iii. If methane is not present above 10 ppm_v and if oxygen is greater than 20 percent in extracted air, you should either:
      - Drill confirmation borings during the next reporting period, if the entire site should be considered for closure.
      - Or, perform an in situ respirometry test in a zone of high contamination. Do not perform the test in an air extraction well, use a gas probe or water table well. If a zero order rate of decay based on oxygen depletion is less than 2 mg/kg per day, then you should drill confirmation borings, if the entire site should be considered for closure. If the rate of decay is between 2 and 10 mg/kg, operate for one more reporting period before evaluating further. If the zero order rate of decay is greater than 10 mg/kg total hydrocarbons, continue operating the system in a manner than maximizes aerobic biodegradation.

   b. If contaminants are not aerobically biodegradable and confirmation borings have not been recently drilled during the past year, you should drill confirmation borings during the next reporting period if the entire site should be considered for closure.

   c. If soil borings were drilled during the past year and soil contamination remains above acceptable levels, explain if the system effectiveness can be increased and/or if other options need to be considered to achieve cleanup criteria.

C. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Well and soil sample location map indicating all air extraction wells. If forced air injection wells are also in use, identify those wells.
- If water table monitoring wells are present at the site, a map of well locations.
- Time versus vapor phase contaminant concentration graph.
- Time versus cumulative contaminant removal graph.
- Groundwater elevations table, if water table wells are present at the site; also list screen lengths and elevations.
- Table of soil contaminant chemistry data.
- Soil gas data, if gas probes are used to monitor subsurface conditions in locations other than where air is extracted.
- System operational data table.

NATURAL ATTENUATION (PASSIVE BIOREMEDIATION) IN SOIL

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

A. EFFECTIVENESS EVALUATION:

1. Soil gas information in the soil that is most contaminated from a permanently installed gas probe(s) or water table monitoring well(s).

   a. Hydrocarbon levels (ppm, with an FID): _____

   b. Oxygen levels (percent): _____

   c. Carbon dioxide levels (specify ppm, or percent): _____

   d. Methane levels (ppm,): _____

2. Soil gas information in background (uncontaminated soil) from permanently installed gas probe(s) or water table monitoring well(s):

   a. Hydrocarbon levels (ppm, with an FID): _____

   b. Oxygen levels (percent): _____

   c. Carbon dioxide levels (specify ppm, or percent): _____

   d. Methane levels (ppm,): _____

3. List the results of the single boring that had the highest levels of soil contamination during the last round of soil sampling, and the date those samples were collected. Since soil borings are only drilled periodically, list the most recent data even if the data is prior to this reporting period. Since this data is used to assess progress based on the most recent soil sampling event, do not list data from prior sampling events.

   a. Total hydrocarbons. Specify if GRO and/or DRO. (mg/kg): _____

   b. Specific compounds (µg/kg):
      i. Benzene: _____
      ii. 1,2 Dichloroethane: _____
      iii. Ethylbenzene: _____
      iv. Toluene: _____
      v. Total xylenes: _____

4. Is there any evidence that contaminants are leaching into groundwater? (Y/N): _____
   If the answer is yes and if groundwater quality is not being monitored, explain.

5. Is site closure a viable option within 12 months from the date of this form? (Y/N): _____

6. Are there any modifications that can be made to the remediation to improve cost effectiveness? (Y/N) If yes, explain: _____

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Well and soil sample location map.
- Cross sections showing the water table, soil sampling locations, screened intervals for gas probes or water table wells, geologic contacts, and any former excavation boundaries.
- Graphs of contaminant concentrations, oxygen, carbon dioxide and methane levels over time.
- Groundwater elevations table, if water table wells are present at the site.
- Table of soil contaminant chemistry.
- Table of soil gas readings.

OTHER IN SITU SOIL REMEDIATION METHODS

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

Date that the system was first started up: _____

A. EFFECTIVENESS EVALUATION:

1. Describe the method used to remediate soil at the site. _____

2. List all information required by the DNR for this remediation method for this site:

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Any other attachments required by the DNR for this remediation method.

EX SITU SOIL TREATMENT USING BIOPILES

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

Date that the system was first started up: _____

A. EFFECTIVENESS EVALUATION:

1. Volume of soil in the biopile (if multiple biopiles, list number of piles and total volume): _____

2. Monitoring used to assess progress and verify optimal conditions for biodegradation.

   a. Vapor phase measurements of gases (average of all readings from most recent sampling event):
      i. VOCs by FID (ppm_v): _____
      ii. Oxygen (percent): _____
      iii. Carbon dioxide (percent): _____
      iv. Methane (ppm_v): _____

   b. Soil temperature (°F): _____

   c. Soil moisture sensors, if used (percent): _____

3. Treatment amendments added to the soil during construction:

   a. Artificial nutrients, excluding manure.
      i. Type(s) and total pounds added: _____
      ii. Nitrogen and phosphorous content of the added amendment (percent): _____

   b. Manure (total pounds): _____

   c. Natural organic materials (straw, wood chips, etc.) (type and total pounds): _____

4. Forced air biopiles only answer the following:

   a. Total air flow rate of the ventilation system (scfm): _____

   b. Average contaminant removal rate (pounds per day): _____

   c. Average biodegradation rate based on oxygen utilization (pounds per day): _____

5. If soil samples have been taken to monitor progress, list results. Only list the most recent results. If none collected enter NA.

   a. Total hydrocarbons. Specify if GRO and/or DRO. (mg/kg): _____

   b. Specific compounds (µg/kg):
      i. Benzene: _____
      ii. 1,2 Dichloroethane: _____
      iii. Ethylbenzene: _____
      iv. Toluene: _____
      v. Total xylenes: _____

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Figure showing the construction details of the biopile and any sampling locations within the biopile.
- Table of soil contaminant chemistry data.
- Table of operational data.

EX SITU SOIL TREATMENT USING LANDSPREADING/THINSPREADING

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

Date that soil was landspread/thinspread: _____

A. EFFECTIVENESS EVALUATION:

1. Method used (landspreading or thinspreading): _____
   Note: For purposes of this form, "landspreading" is the placement of contaminated soil on native topsoil, incorporation of that soil into the native soil and planting crops or other plants on it. The term "thinspreading" refers to placing contaminated soil on an impervious base for aeration.

2. Was any progress monitoring using field screening on soil conducted during this reporting period? (Y/N): _____

3. If the answer to A.2. (above) is yes:

   i. List monitoring method: _____

   ii. List monitoring results: _____

4. Is there any evidence of soil erosion at the landspreading/thinspreading location? (Y/N): _____

5. Spreading thickness (inches): _____

6. Type of crop planted (if thinspreading with no crop planted, so state): _____

7. Anticipated confirmation sampling date: _____

8. Soil sample results. If soil samples for laboratory analysis have been collected to monitor progress. Only list the highest result of the most recent sampling round. If no samples have been collected, enter NA.

   a. Total hydrocarbons. Specify if GRO and/or DRO. (mg/kg): _____

   b. Specific compounds (µg/kg):
      i. Benzene: _____
      ii. 1,2 Dichloroethane: _____
      iii. Ethylbenzene: _____
      iv. Toluene: _____
      v. Total xylenes: _____

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Map of the landspreading/thinspreading area. If soil samples have been collected, specify locations of samples and dates of sampling.
- Table of soil contaminant chemistry data.
- Table of any field screening results with dates of sample collection.

OTHER EX SITU SOIL REMEDIATION METHODS

SITE NAME AND REPORTING PERIOD:

Site name: _____

Reporting period from: _____ To: _____ Days in period: _____

Date that the system was first started up: _____

A. EFFECTIVENESS EVALUATION:

1. Describe the method used to remediate soil at the site. _____

2. List all information required by the DNR for this remediation method for this site:

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

Any other attachments required by the DNR for this remediation method.

INSTRUCTIONS AND INFORMATION.

Specific Page by Page Instructions for This Form. The site name and reporting period is listed on every page. Then if the pages are inadvertently separated, that information can be used to determine which pages form the report.

When the form specifies that the person filling in the form "explain," those explanations are to be included on separate sheets of paper. Explanations must include a title that refers to the page and item, for example: Page GI-2, C.1.a.

Page GI-1, General Site Information.

- A.1. List the name as it appears on the DNR tracking system. If the person filling out the form does not know what the name on the tracking system is, use the name that the DNR used in the most recent correspondence.
- A.2. The reporting period should be either from January 1 to June 30 or July 1 to December 31 for active systems. For passive systems, use a calendar year basis. If however the report covers a newly installed system, list the actual startup date instead of January 1 or July 1. For new passive systems, use the first date that monitoring data is available as the date of startup.
- A.3. Enter all regulatory agencies that regulate the site.
- A.4. This form is a DNR form. For that reason, list the DNR site number. If there are other agencies regulating the site, listing identification numbers for other agencies is also recommended, but not mandatory, unless specified by those other agencies.
- A.5. Some sites are eligible for reimbursement from one or more state agencies. List all agencies that will be asked to reimburse costs on this site and the claim numbers issued by those agencies.
- A.6. If the information listed for the site location is not sufficient information for a person to use to drive to a site (example: no street address in a rural area), also include a map that is sufficient for a person to use to drive to the site. A U.S.G.S. topographic map that shows the site location may be used.
- A.7. Self explanatory.
- A.8. Self explanatory.
- A.9. List the contaminants that have at one time exceeded the PALs or Table Values in ch. NR 720. If GRO and/or DRO exceed the ch. NR 720 standards, also list GRO and/or DRO. Do not list other contaminants that have never exceeded state standards at the site. If more room is necessary, write "SEE ATTACHED SHEETS" and list all contaminants on a separate sheet.
- A.10. List the predominant soil types that are contaminated. If there is both contaminated soil and groundwater at the site, list soil types both above and below the water table. If only some soil is contaminated, do not list the soil types that are uncontaminated. If the site soils meet soil cleanup criteria, but groundwater is contaminated, so state that. Specify if the USCS or USDA system is used for soil descriptions. This line specifies soil because the vast majority of contaminated sites do not have contaminated bedrock. If bedrock is contaminated, also list that bedrock type.
- A.11. If the groundwater meets ch. NR 140 standards, enter "NA - NO NR 140 EXCEEDANCES". Otherwise, list the estimated hydraulic conductivity and the method used to estimate it (bail-down tests, calculations based on grain size, pumping test, etc.) If the hydraulic conductivity has not been determined. state when the tests are to be conducted. When a number of test results are available, list the range of results and the geometric mean. If however some results have a low level of accuracy and some results have a high level of accuracy, you should only list the most accurate results. See the Section on aquifer testing in the *Guidance on Design, Installation and Operation of Ground Water Extraction and Product Recovery Systems* for more information.
- A.12. If the groundwater meets ch. NR 140 standards, enter "NA - NO NR 140 EXCEEDANCES". Otherwise, enter groundwater average linear velocity as a function of hydraulic conductivity, effective porosity and the groundwater gradient. You should use the geometric mean from A.11. (above) and the most representative value for the gradient at the site. Estimate the effective porosity based on soil types and geologic origin of the soil. If there are reasons to believe that the average liner velocity estimate is less than the actual rate at the site, so state that reason. Secondary porosity effects, flow through submerged utility trenches, widespread contaminant distribution in low permeability soils, etc., are reasons to assume that the actual migration rate is much greater than the predicted average linear velocity. In such cases, you should explain the reasoning for doubting the predicted average linear velocity.

Page GI-2. General Site Information Continued.

List site name as shown on page GI-1 and the reporting period.

- A.13. If the information listed for the soil treatment location is not sufficient information for a person to use to drive to a site, also include a map that is sufficient for a person to use to drive to the site. A U.S.G.S. topographic map or a plat map that shows the site location may be used.

Page GI-2. General Site Information Continued.

— B. Check all methods used at a site. For example, if groundwater extraction, free product recovery and soil venting are used, check all three methods and submit the additional pages for those methods. If dual-phase or bioslurping are used, these methods extract both air and groundwater, check boxes for and attach additional pages for both soil venting and pump and treat.

— C. Remediation systems that use any form of enhancement are considered "active" and sites where there are no enhancements of any kind are considered "passive" forms of remediation. For purposes of these forms, natural attenuation (also called naturally occurring bioremediation) is "passive" and all other remediation methods are "active" methods.

— C.1. Design flow rates refers to flow rates such as gallons per minute extracted by a ground water extraction system, standard cubic feet per minute extracted by a soil venting system, standard cubic feet per minute injected by an in situ air sparging system, etc. If the actual flow rate is within 80 percent of the rate predicted in the design, consider that as meeting the design specification.

— C.2. Self explanatory.

— C.3. Self explanatory.

— C.4. Self explanatory.

— C.5. Self explanatory.

— D. The cost data in this section is used by DNR staff to evaluate whether or not the selected remedy is the most cost effective remedy and whether or not system modifications may be warranted to improve efficiency and/or cost effectiveness. Responsible parties and consultants are encouraged to submit cost information so that DNR staff may assist responsible parties and consultants accomplish environmental cleanups in the most cost effective manner.

Total costs for past costs are all costs to date. This information is for all costs that were incurred to investigate and/or remediate the site. These costs include but are not limited to: consulting labor and supplies, laboratory testing, transportation, equipment, etc. If the consultant does not pass all costs through the consulting firm, the consultant will need to contact their client for other non-consulting costs to determine total costs. Exceptions include costs for attorney fees, accounting, claim assistance in preparing claims to state reimbursement funds, or other indirect expenses that are not essential to remediating the site.

— D.1. Self explanatory.

— D.2. The initial implementation costs are all costs that are incurred to start implementing a remedy at a site. Costs for the investigation however are excluded because those costs are incurred prior to remedy selection. Since costs for treatability and/or pilot testing are used to procure data for remedial design and are specific to different remediation methods, these costs should be included in implementation costs and not investigation costs. Startup or shakedown costs are also considered implementation costs and should not be considered operation and maintenance costs.

— D.3. Costs for implementation or investigation should not be repeated here or they will be double counted.

— D.4. Costs for implementation or investigation should not be repeated here or they will be double counted.

— D.5. Costs for implementation or investigation should not be repeated here or they will be double counted.

— D.6. Examples of one-time or unusual costs include the following:

- Replacing a burned out motor on a pump.
- Replacement of a well that was destroyed by a snowplow.
- Confirmation sampling to determine if the site meets closeout criteria. This type of cost is considered an unusual cost because this type of sampling is not conducted during most reporting periods.

— D.7. This estimate of costs is for all costs to close out a site minus the salvage value of any remediation equipment. Pertinent costs include items such as well abandonment, equipment removal from the site, consulting costs associated with these items, etc. Do not include any costs that will not be paid by a state reimbursement fund, such as repaving.

Page GI-3. General Site Information Continued.

— E. Self explanatory.

Page GW-1. Groundwater Extraction and Product Recovery.

List site name as shown on page GI-1 and the reporting period.

— A.1. List two numbers, the total number of extraction wells at the site and the number that were in actual use during the period. If all wells were in use, state that on the form.

— A.2. The number of days of operation are the number of days that the system was actually operated. If the system was shut down for reasons such as: repairs were necessary, piping froze, shut down to provide time for subsurface conditions to equilibrate before sampling, etc., do not list those days as being in operation.

— A.3. System utilization is a measure of the amount of time that the system operated relative to the amount of time that it could have operated.

Page GW-1, Groundwater Extraction and Product Recovery (Continued).

— A.4. Self explanatory.
— A.5. The average is for the entire site, not per well or trench. For purposes of determining the average ground water extraction rate, calculate the average based on the total volume of groundwater extracted divided by the time of the reporting period. For example, if the system operated at 10 gallons per minute for one month, the amount of water extracted would be approximately 432,000 gallons. If the reporting period was six months long, then the time period is approximately 260,000 minutes. Therefore, the average flow rate over six months is 432,000 divided by 260,000 minutes for an average flow rate of 1.67 gallons per minute (gpm).
— A.6. Calculate the total dissolved contaminants removed in pounds. If the estimate is a sum of BTEX and not based on a total hydrocarbon test (GRO and/or DRO), so state that on the form.

— B.1. Self explanatory.
— B.2. Self explanatory.
— B.3. The average should be based on the entire site over the entire reporting period. See instructions above for A.5. List the free product recovery rate as gallons per day (gpd), not gallons per minute (gpm).

— C.1. To answer this question, a thorough evaluation of water levels and chemical analyses in all monitoring points at the site is necessary.
— C.2. If the capture zone has not been determined mathematically, it will need to be determined to answer this question. See the *Guidance on Design, Installation and Operation of Ground Water Extraction and Product Recovery Systems* for and any recent update or errata sheets for more information on plume capture.
— C.3. Self explanatory.
— C.4. When free product is present, line C.4.a. should state "FREE PRODUCT" and lines C.4.b. through C.4.d. are left blank. Otherwise, complete the following calculations.
There typically are several compounds at most contaminated sites that exceed the standards in ch. NR 140. The purpose of this question is to focus on the single contaminant that requires the most treatment to achieve groundwater quality standards on a percent reduction basis. For example, the most recent round of sampling at an example site demonstrated the highest levels of contaminants were 1,000 µg/L benzene and 1,000 µg/L toluene in the most heavily contaminated monitoring well. The ES and PAL for benzene is 5 µg/L and 0.5 µg/L (respectively) and for toluene the ES and PAL is 343 µg/L and 68.6 µg/L (ES and PAL data as of August 1995). Therefore the percent reduction to meet the ES and PAL for benzene is 99.5 and 99.95 percent and for toluene it is 65.7 and 93.14 percent. For that reason, the single contaminant that is most critical to reaching state groundwater standards is benzene. Therefore benzene is entered on line a. In this example, 99.5 and 99.95 percent is entered on line b. In this example, 1,000 µg/L is entered on line c. In this example, benzene is the driving factor, therefore enter the maximum benzene level in the single most heavily contaminated extraction well during the most recent sampling period on line d.

— D. See the generic discussion at the end of the instructions (below) for figures, graphs and tables, starting on page INS-7.

Page GW-2, In Situ Air Sparging.

List site name as shown on page GI-1 and the reporting period.

— A.1. Self explanatory.
— A.2. Self explanatory.
— A.3. Self explanatory.

— B.1. See instructions for Page GW-1, Item C.4.
— B.2. Self explanatory.
— B.3. Self explanatory.

— C. See the generic discussion at the end of the instructions (below) for figures, graphs and tables, starting on page INS-7.

Page GW-3, Natural Attenuation in Groundwater.

List site name as shown on page GI-1 and the reporting period.

— A.1. See instructions for page GW-1, Item C.4.
— A.2.a. List the estimated hydraulic conductivity that was listed on line A.11 on page GI-1.
— A.2.b. List the groundwater average linear velocity that was listed on line A.12 on page GI-1.
— A.3. Assess the monitoring well network to determine if there is a down gradient well that has not been impacted by the contaminants. Consider the possibility of a submerged (or diving) plume in that assessment. If all evidence indicates that the plume does not extend to the farthest "clean" downgradient well, indicate "YES" on the form. Otherwise indicate "NO" on the form. If there are not plans to install such a well, explain.

Page GW-3, Natural Attenuation in Groundwater (Continued).

— A.4. Based on the contaminant distribution, evaluate whether or not the plume is expanding, stabilized, or contracting. When making this determination, consider the contaminant that requires the greatest percent reduction to achieve ch. NR 140 standards.

— A.5. If the plume is expanding and a justification is necessary, add additional sheets justifying why natural attenuation is still the appropriate remedy. If it is not, further describe in the explanation the plans to use a different remedy.

— A.6.a. Enter the upgradient dissolved oxygen (DO) level(s). If however there are contaminants measured in the upgradient well, it is not a true background measurement. In that case enter "UNKNOWN" on the form.

— A.6.b. Enter the range of DO values measured in wells within the plume.

— A.7. Self explanatory.

— A.8. Self explanatory.

— A.9. Self explanatory.

— A.10. Self explanatory.

— B. See the generic discussion at the end of the instructions (below) for figures, graphs and tables, starting on page INS-7.

Page GW-4, Other Groundwater Remediation Methods.

List site name as shown on page GI-1 and the reporting period.

— A.1. See instructions for page GW-1, Item C.4.

— A.2. Self explanatory.

— A.3-4. Enter the information specified by the DNR for this method at this site.

Page IS-1, Soil Venting (Including both Soil Vapor Extraction and Bioventing).

List site name as shown on page GI-1 and the reporting period.

— A.1. Self explanatory.

— A.2. Self explanatory.

— A.3. Self explanatory.

— B.1 Self explanatory.

— B.2. Self explanatory.

— B.3. This subsection is used as a trigger for determining if the system requires an evaluation for future activities, such as improvements, converting the site to monitoring for natural attenuation, closure, etc. If an in situ respiration test must be performed, see Hinchee, R.E. and Ong, S.K. 1992. A Rapid In Situ Respiration Test for Measuring Aerobic Biodegradation Rates of Hydrocarbons in Soil. *Journal of the Air and Waste Management Association.* Volume 42, Number 10. Pages 1305 to 1312 for general procedures. For a discussion of methane monitoring, see the instructions for page IS-2, item A.1.d., below. If the contaminant extraction rate in B.3. is greater than the trigger levels, leave lines B.3.a.i. and B.3.a.ii. blank.

— C. See the generic discussion at the end of the instructions (below) for figures, graphs and tables, starting on page INS-7.

Page IS-2, Natural Attenuation in Soil.

List site name as shown on page GI-1 and the reporting period.

— A.1. This data is used to assess subsurface conditions based on soil gas data. Whenever possible, a permanently installed gas probe should be used. If at all possible, the gas probe should be located in the part of the site that is most heavily contaminated, since that is the part of the site that is likely to take the longest amount of time to meet ch. NR 720 standards. Water table wells that have screen exposed above the water table are also good measuring points. When installing permanent gas probes, you should install the screen deep enough that a true measure of the most heavily contaminated soil is possible, but install the screen shallow enough to assure that it is not submerged by groundwater table fluctuations. In some situations where the depth of contamination is variable, consideration should be given to using nested gas probes instead of only using probes at a single depth. Measuring points that should not be used include temporary gas probes because these points are less repeatable from one monitoring event to the next. Also, if there has been an active soil venting system in use at the site, the air extraction wells should not be used because these wells are in locations that have had much more aggressive treatment than the rest of the site.

— A.1.a. A flame ionization detector (FID) is specified instead of a photo ionization detector (PID) because PIDs often read inaccurately in moist oxygen deficient/carbon dioxide rich atmospheres. Also, PIDs do not detect some petroleum compounds.

— A.1.b. Self explanatory.

Page IS-2. Natural Attenuation in Soil (Continued).

— A.1.c. Self explanatory.

— A.1.d. Methane readings are used to measure for anaerobic conditions. When the original product that is lost is a refined petroleum product (not crude oil), there should not be any methane within the product. Methane however may be produced under very anaerobic conditions. Any method may be used for measuring methane provided that the detection limit is less than a few ppm_v. One convenient method is to use an FID that is equipped with a granular activated carbon filter to filter out non-methane components. Some instrument manufacturers make these filters available as options. In some cases an FID will flame out due to an oxygen deficiency. Some instrument manufacturers offer a dilution device as an accessory that is designed to prevent flameouts and also raises the upper limit of measurement to 10,000 ppm_v or higher. If the meter "pegs" at 10,000 ppm_v (or one percent), enter ">10,000 ppm_v."

— A.2. The background monitoring point is predominantly used to measure natural oxygen and carbon dioxide levels in soil over time. For this reason, the background monitoring point should be reasonably close to the site, but not so close that the conditions are no longer representative. Considerable variations over time can occur, this background point should be measured during every sample event. Considerations for determining if a background point is representative include:

- If an on-site background point has minor levels of VOCs in it due to gas phase diffusion, that is acceptable, but if the levels are high, it may not be representative of true background conditions.
- Background oxygen and carbon dioxide levels vary with soil type and natural organic carbon content. For this reason, if at all possible, the soil types should be identical within the screened interval of all gas probes.
- The same depths should be used for all gas probes to allow comparison from one location to the next. If the depth to water varies greatly across the site, a certain amount of confusion in the data is likely. In this case, use professional judgement to provide the best data possible at a reasonable cost.

— A.3. Enter this data for petroleum fuel sites. For other sites, provide the data that is most appropriate for the situation.

— A.4. Self explanatory.

— A.5. Self explanatory.

— A.6. Self explanatory.

— B. Cross sections are self explanatory, see the generic discussion at the end of the instructions (below) for other attachments.

Page IS-3. Other In Situ Soil Treatment Methods.

List site name as shown on page GI-1 and the reporting period.

— A.1. Self explanatory.

— A.2. Enter the information specified by the DNR for this method at this site.

Page ES-1, Ex Situ Soil Treatment Using Biopiles.

List site name as shown on page GI-1 and the reporting period.

— A.1. Self explanatory.

— A.2. Self explanatory.

— A.3.a. The term "artificial nutrients" essentially means agricultural fertilizers or any other fertilizer products.

— A.3.a.i. The types of fertilizers that are added should be listed here by chemical names, not by vendor trade names.

— A.3.a.ii. List nitrogen content as N, list phosphorous content as phosphoric acid (P_2O_5). Note: Fertilizer ratings are based not on actual content of N, P and K, but on nitrogen (as N), phosphorous (as P_2O_5) and potassium (as K_2O).

— A.3.b. Self explanatory.

— A.3.c. Self explanatory.

— A.4.a. Self explanatory.

— A.4.b. Self explanatory.

— A.4.c. See example calculations at the end of this set of instructions.

— A.5. Enter this data for petroleum fuel sites. For other sites, provide the data that is most appropriate for the situation.

— B. The figure is self explanatory. See the generic discussion at the end of the instructions (below) for instructions for the tables.

Page ES-2, Ex Situ Soil Treatment Using Landspreading/Thinspreading.

List site name as shown on page GI-1 and the reporting period.

— A.1. Self explanatory.
— A.2. Self explanatory.
— A.3. Self explanatory.
— A.4. Self explanatory.
— A.5. Self explanatory.
— A.6. Self explanatory.
— A.7. Self explanatory.
— B. A map to scale of the landspreading location including and landmarks or benchmarks. When samples have been collected, the distances to any landmarks or benchmarks should be indicated.

Page ES-3, Other Ex Situ Soil Treatment Methods.

List site name as shown on page GI-1 and the reporting period.

— A.1. Self explanatory.
— A.2. Enter the information specified by the DNR for this method at this site.

Figures, Graphs and Tables. When figures and graphs are specified, they should at a minimum contain the following information, or an explanation as to why the information is not necessary.

Maps. All maps should include the applicable information specified in s. NR 724.11(6), Wis. Adm. Code. In most cases, all information can be combined into a single map. There are times that a single map will have so much data that it is essentially unreadable. The consultant should use professional judgement when determining if a single map or multiple maps best portray the information necessary.

Groundwater Contour Map Guidelines.

- List groundwater elevations for each measuring point on the map.
- Use the most recent data available.
- For water table maps, do not use data from deeper piezometers. If piezometer data is shown, use a different symbol for the piezometers than used for water table wells.
- If any wells are dry, indicate that on the map.
- If free product is present at site, shade the area where free product is estimated to be present.
- If groundwater is extracted with a pump and treat system, also denote plume capture zone.
- If in situ air sparging or soil venting is in use, specify on the map if the system was operating or shut down during the water level measurements. See the Subsection on water table maps in the *Guidance on Design, Installation and Operation of Ground Water Extraction and Product Recovery Systems* for more information on this topic.

Groundwater Contaminant Distribution Map Guidelines.

- Only contaminants that exceed the ch. NR 140 ES or PAL should be shown on the map. When contaminants are above the PAL or ES at some data points and below the PAL or ES at other data points, list the data for all locations to portray which areas of the site meet ch. NR 140 groundwater quality standards.
- If a well is not sampled due to the presence of free product indicate "FREE PRODUCT" at those data points.
- If more than five contaminants exceed ch. NR 140 ES, only the five contaminants that require the greatest percent reduction to achieve ch. NR 140 ES or PAL should be shown on the map.
- Drawing isoconcentration lines is optional, unless specified for the site on a site specific basis.
- If the contamination has crossed the property line, that property line should be clearly denoted on the map.
- If in situ air sparging is used, water samples from ch. NR 141 type monitoring wells may not represent aquifer water quality as a whole. For that reason, groundwater data should be obtained from driven probes with no filter pack. If there are no driven probes and conventional ch. NR 141 monitoring wells are used, shut down the air injection system at least two weeks prior to collecting groundwater samples. See the *Guidance on Design, Installation and Operation of In Situ Air Sparging Systems* and the August 1995 update sheets for more information on this topic.

Dissolved Oxygen Map Guidelines.

- Dissolved oxygen data may be shown on the contaminant concentration graphs or on a separate graph.
- Dissolved oxygen maps are optional for ground water extraction and product recovery systems.
- When in situ air sparging is used, monitoring points may not represent aquifer water quality as a whole. For that reason, groundwater data should be obtained from driven probes with no filter pack. If there are no driven probes and conventional ch. NR 141 monitoring wells are used, shut down the air injection system at least two weeks prior to collecting groundwater samples for DO. See the *Guidance on Design, Installation and Operation of In Situ Air Sparging Systems* and the August 1995 update sheets for more information on this topic.

Well and Soil Sample Location Map Guidelines. Well and sample location maps for all methods should clearly indicate the location(s) of the release or the area where soil contamination historically has been highest. Also, if part of the contamination has been excavated, the pit boundaries.

The recommended documentation for each remedial method is as follows:

- Groundwater Extraction and Product Recovery - separate well location maps should not be provided, instead the wells should be indicated on the groundwater contour and contaminant distribution maps.
- In Situ Air Sparging - the map should indicate all air injection wells, soil venting extraction wells, and all groundwater monitoring points.
- Natural Attenuation in Groundwater - separate well location maps should not be provided, instead the wells should be indicated on the groundwater contour maps.
- Soil Venting - indicate all air extraction wells. If any gas probes are used to assess subsurface conditions in either contaminated zones or background locations, also indicate those data points with a different symbol. If soil samples have been collected recently to track progress, indicate those locations with the date of sampling noted on the map.
- Natural Attenuation in Soil - show all monitoring points. Indicate which data points are background measuring points. If soil samples have been collected recently to track progress, indicate those locations with the date of sampling noted on the map. If the site was previously treated by soil venting, the locations of former air extraction wells should also be shown since these are areas where aggressive treatment has been applied. Also show area(s) of paved and unpaved ground surface. If pavement is significantly broken to allow significant water infiltration and air diffusion, map that area as broken pavement.

Graphs. All graphs that show time versus contaminant concentration or cumulative contaminant removal should be based on total time, not only operation time. All graphs that denote cumulative removal should use pounds of contaminant removed. Graphs should accurately show the time period(s) when the system was not operating. Plot time on the X axis, concentration or cumulative removal data on the Y axis.

Time Versus Cumulative Removal. The recommended documentation for each remedial method is as follows:

- Groundwater Extraction and Product Recovery - separate graphs should be used for free product recovery and dissolved phase recovery. A single graph for each phase is adequate, per well graphs are only necessary when specified by the Department on a site specific basis.
- In Situ Air Sparging - no graph is necessary (removal data is shown on the graphs for the soil venting system).
- Natural Attenuation in Groundwater - no graph is necessary.
- Soil Venting - provide a graph of cumulative removal for total VOCs for the total system.
- Natural Attenuation in Soil - no graph is necessary.
- Ex Situ Soil Treatment Using Biopiles - Provide two graphs, one showing cumulative removal of total VOCs and a second graph showing total contaminant biodegradation over time.
- Ex Situ Soil Treatment Using Landspreading/Thinspreading - no graphs are needed.

Time Versus Contamination Concentration Graphs. Create graphs with contamination level on the y axis (semilog scale) and time on the x axis (linear scale). If free product is present, time versus contamination concentration graphs are not necessary.

The recommended documentation for each remedial method is as follows:

- Groundwater Extraction and Product Recovery - graph the contaminant level over time for the groundwater that is extracted by the extraction system. List all compounds that exceed ch. NR 140 ES or PAL. If over five contaminants exceed ch. NR 140 ES or PAL, only list the five contaminants that exceed ch. NR 140 standards by the greatest percent.
- In Situ Air Sparging - provide a graph for the single monitoring well that is most heavily contaminated. If over five contaminants exceed ch. NR 140 ES or PAL, only list the five contaminants that exceed ch. NR 140 standards by the greatest percent.
- Natural Attenuation in Groundwater - provide a graph for all monitoring wells that contain any compounds that exceed ch. NR 140 standards. If over five contaminants exceed ch. NR 140 ES or PAL, only list the five contaminants that exceed ch. NR 140 standards by the greatest percent.
- Soil Venting - provide a graph of contaminant concentration over time for the entire system for total VOCs. If any gas probes are used to assess subsurface conditions in either contaminated zones, also provide a graph with the data from the most heavily contaminated gas probe.
- Natural Attenuation in Soil - provide a graph of contaminant concentration over time for total vapor phase VOCs as measured with an FID, oxygen, carbon dioxide and methane in an gas probe.
- Ex Situ Soil Treatment Using Biopiles - no graph is necessary.
- Ex Situ Soil Treatment Using Landspreading/Thinspreading - no graphs are needed.

Graph of Contaminant Concentrations Versus Distance. If free product is present, a graph of contaminant concentrations versus distance is not necessary.

The recommended documentation for each remedial method is as follows:

- Groundwater Extraction and Product Recovery - no graph is necessary.
- In Situ Air Sparging and Natural Attenuation in Groundwater - plot a graph with distance (on the x axis, linear scale) and contaminant concentrations (y axis, log scale) from the upgradient measurement point to the farthest downgradient data point along the centerline of the plume. List the same contaminants as shown on the Time Versus Contaminant Concentration Graphs. Clearly show the source area on the graph. If free product has been present, label the data points that previously contained free product. For in situ air sparging, see comments above about samples collected from conventional monitoring wells with filter packs versus driven probes.

Tables. Whenever possible, data over the life of the project should be listed.

The recommended documentation for each type of table is as follows:

Groundwater Contaminant Chemistry Data.

List:

- Contamination levels for all contaminants that exceed ch. NR 140 standards.
- Dissolved oxygen levels if applicable.
- Other biological parameters, if applicable (nitrogen, phosphorous, manganese, sulphate, iron, dissolved methane, redox potential, pH, microbial population size, etc.). See instructions for page GW-3 for more information on these parameters. Also, list the dates the samples were collected and the standard methods used to analyze the samples.

Groundwater Biological Parameters.

For natural attenuation in groundwater only, these measurements should be listed (if known) to provide information on biodegradation. This table is not necessary for free product extraction, groundwater extraction or in situ air sparging.

Provide a table that includes any results of tests conducted for dissolved oxygen, nitrate, manganese, iron, sulphate, methane, redox potential, heterotrophic and/or hydrocarbon degrading microorganism populations. Identify on the table if the monitoring locations are upgradient, side gradient, downgradient, or within the plume, dates of sampling, and the analytical methods used for those parameters. Include all data for the life of the project. Since some of these tests are only conducted once, or periodically - enter "NS" in the table for not sampled for any parameters that were not sampled during a particular round of sampling.

When asked to list the standard methods, list the method if a standard method exists. There are however some tests (for example dissolved methane) where there are no official standard laboratory or field methods. In this case the laboratory will have to create their own standard procedures. In these cases list the name of the laboratory and that laboratory's name for that test.

Specific considerations for each parameter are as follows:

- Dissolved oxygen (mg/L). The most efficient mechanism for natural or enhanced biodegradation of petroleum compounds is aerobic biodegradation.
- Nitrate (mg/L as N). Nitrate (NO_3^{-1}) is a potential electron acceptor for denitrification and also serves as a nutrient for heterotrophic microbial populations to enhance aerobic biodegradation. Decreasing nitrate levels from background wells to wells within the plume are an indication of either aerobic or anaerobic biodegradation.
- Manganese as Mn^{+2} (mg/L). Manganese as Mn^{+4} is converted to soluble manganese as Mn^{+2} under anaerobic biodegradation. For this reason, total manganese analysis is not appropriate, only soluble manganese as Mn^{+2}. When the levels of soluble manganese are higher in wells within the plume than in background wells, that is an indication of anaerobic biodegradation.
- Iron as Fe^{+2} (mg/L). Iron as Fe^{+3} is converted to soluble iron as Fe^{+2} under anaerobic biodegradation. For this reason, total iron analysis is not appropriate, only soluble iron as Fe^{+2}. When the levels of soluble iron are higher in wells within the plume than in background wells, that is an indication of anaerobic biodegradation.
- Dissolved sulphate (SO_4^{-2}, mg/L). Sulphate (SO_4^{-2}) is a potential electron acceptor. Decreasing sulphate levels from background wells to wells within the plume are an indication of anaerobic biodegradation.
- Dissolved methane (mg/L). Methane is produced under anaerobic conditions. Since background methane levels can usually be assumed to be zero, in most cases only measurements within the plume are used. Exceptions are when the natural soils have very high levels of TOC (for example peat), background methane levels are also warranted. When the contaminant is crude oil instead of a refined petroleum product, methane measurements may however cause erratic results. Significant amounts of methane may be created when other electron acceptors (NO_3^{-1}, Mn^{+4}, Fe^{+3} and SO_4^{-2}) are exhausted. For this reason, significant levels of methane are indicative of very very anaerobic conditions.
- Redox potential (millivolts, include + or - sign). Redox potential is another measure of the level of aerobic/anaerobic conditions, however it is a much more sensitive measurement than DO at very low levels of DO.
- Heterotrophic and hydrocarbon degrading microorganism populations (CFU/mL). Heterotrophic and specific hydrocarbon degrader population sizes should be listed for both background locations and locations within the plume, if there is information available. There is disagreement by many of the experts within the field as to the merits of sampling for this parameter. Refer to other DNR guidance documents on natural attenuation (or passive bioremediation) for more information on this topic.

Groundwater Elevations.

Self explanatory.

Soil Contaminant Chemistry Data.

Self explanatory.

Tables (Continued).

Soil Gas Data.

The recommended documentation for each remedial method is as follows:

— When natural attenuation in soil is used, provide a graph of all soil gas readings over time for every data point.
— When soil venting is used, if a gas probe is used to assess subsurface conditions over time in a location where air is not extracted, provide that data in a table.

System Operational Data.

The recommended documentation for each remedial method is as follows:

— Groundwater Extraction and Product Recovery:

- Well by well flow rates in gpm for each extraction well. If a well is off line, list flow rate as "ZERO." Clearly denote on the table periods of system shutdown.

— In Situ Air Sparging:

- Air pressure and injection flow rates in scfm for each well. If a well is off line, list flow rate as "ZERO." Clearly denote on the table periods of system shutdown.

— Natural Attenuation in Groundwater - no table needed.

— Soil Venting:

- Vacuum readings and extraction rates in scfm for each well. If a well is off line, list flow rate as "ZERO." Clearly denote on the table periods of system shutdown.
- Air concentrations in ppm, or in mg/L for total VOCs.
- Total system contaminants removed in pounds and the pounds per day removal rate.

— Natural Attenuation in Soil - no table needed.

— Ex Situ Soil Treatment Using Biopiles:

- If forced air ventilation is used:
  - System extraction rates in scfm.
  - Air concentrations in ppm, for total VOCs.
  - Total system contaminants removed in pounds and the pounds per day removal rate.
  - Temperature.
- If passive ventilation is used, a table of temperatures.

— Ex Situ Soil Treatment Using Landspreading/Thinspreading - no table is needed.

Acronyms and Abbreviations:

CFU/mL	colony forming units per milliliter
cm/sec	centimeters per second
DATCP	Department of Agriculture, Trade and Consumer Protection
DCOM	Department of Commerce
DNR	Department of Natural Resources
DO	Dissolved Oxygen
DRO	Diesel Range Organics
ES	Enforcement Standards in NR 140
FID	Flame Ionization Detector
ft/yr	feet per year
gpd	gallons per day
gpm	gallons per minute
GRO	Gasoline Rage Organics
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NR	prefix for rules established by the DNR
P.E.	Registered Professional Engineer
P.G.	Registered Professional Geologist
PAL	Preventative Action Limit in NR 140
PECFA	the state sponsored cleanup fund for certain petroleum contaminated sites
ppm	parts per million by volume (vapor phase only)
scfm	standard cubic feet per minute
TOC	Total Organic Carbon
USCS	Unified Soil Classification System
USDA	United States Department of Agriculture
µg/kg	micrograms per kilogram
µg/mL	micrograms per milliliter
VOC	Volatile Organic Compounds
Y/N	Yes or No

Example Calculations for Determining the Biodegradation Rate on Forced Air Biopiles.

Important Note: This page uses a nonproportional font and characters that are unique to WordPerfect. If the user received this document electronically, this page may need to be converted to a different font for the formulas to print correctly. The original font used for this page was prestige elite with 16.67 characters per inch.

Assumptions:

- The measurements at the stack are as follows:
  - Average flow rate is 20 scfm.
  - Average oxygen level extracted from biopile is 14.0 percent by volume.
  - Average carbon dioxide level extracted from biopile is 3.5 percent by volume or 35,000 ppm_v.
- Atmospheric air contains 21 percent oxygen by volume and 400 ppm_v (or 0.04 percent) carbon dioxide. (Note: On each site visit, the consultant should check atmospheric air to assure that the instrument is spanned correctly.)
- Atmospheric air weight 0.0763 pounds per cubic foot at standard temperature and pressure (Gibbs, 1971).
- Average molecular weight of air is 28.97 (Gibbs, 1971) which is rounded off to 29, molecular weight of O_2 is 32, molecular weight of CO_2 is 44.
- For every pound of contaminants biodegraded, 3.3 pounds of oxygen is utilized and up to 3.2 pounds of carbon dioxide is generated.
  - The stoichiometry of aerobic benzene biodegradation can be described as follows:

    $$C_6H_6 + 7.5\ O_2 \longrightarrow 6\ CO_2 + 3\ H_2O$$

    Based on this, benzene biodegradation requires that 3.07 pounds of oxygen are utilized to fully oxidize one pound of benzene, assuming no electron acceptors other than oxygen are used. Assuming no biomass is produced and no geochemical reactions consume carbon dioxide, 3.38 pounds of carbon dioxide is generated from one pound of benzene.
  - The stoichiometry of aerobic hexane biodegradation can be described as follows:

    $$C_6H_{14} + 9.5\ O_2 \longrightarrow 6\ CO_2 + 7\ H_2O$$

    Based on the above assumptions, hexane biodegradation requires 3.52 pounds of oxygen and generates up to 3.06 pounds of carbon dioxide.

  Other hydrocarbons also require a similar ratio of oxygen for aerobic biodegradation. For purposes of this guidance it is assumed that a pound of petroleum contamination requires 3.3 pounds of oxygen and generates up to 3.2 pounds of carbon dioxide and 1.1 pounds of water in the biodegradation reaction.

Calculations:

Oxygen utilization rate:

$$(0.21 - 0.14) * \frac{32}{29} * 0.0763\ \frac{\text{pounds}}{\text{ft}^3} * 20\ \frac{\text{ft}^3}{\text{min}} * 60\ \frac{\text{min}}{\text{hour}} = 7.07\ \frac{\text{pounds}}{\text{hour}}$$

Carbon dioxide production rate:

$$(0.035 - 0.0004) * \frac{44}{29} * 0.0763\ \frac{\text{pounds}}{\text{ft}^3} * 20\ \frac{\text{ft}^3}{\text{min}} * 60\ \frac{\text{min}}{\text{hour}} = 4.81\ \frac{\text{pounds}}{\text{hour}}$$

Biodegradation rate based on oxygen:

7.07 / 3.3 = 2.1 pounds per hour

Biodegradation rate based on carbon dioxide:

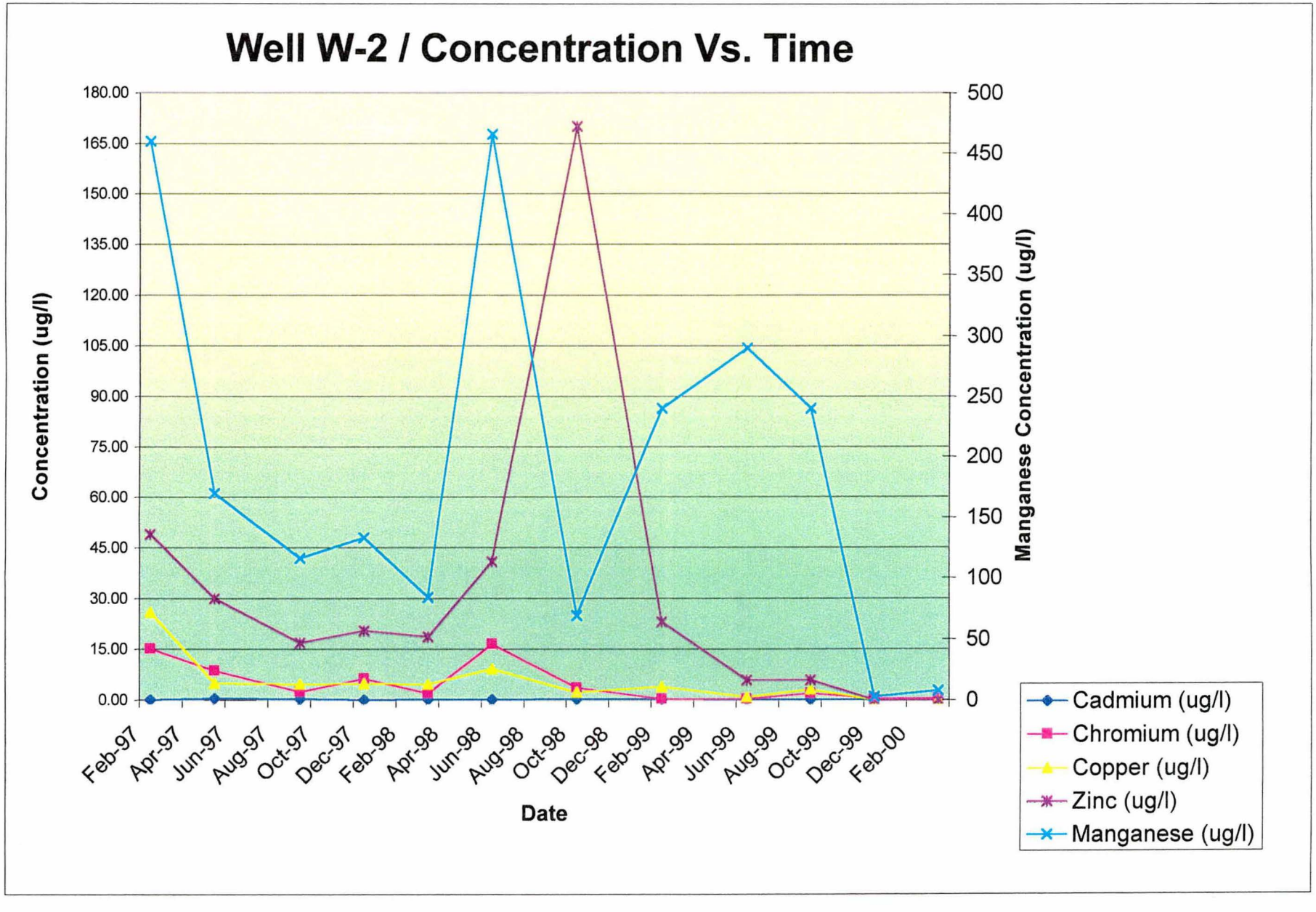
4.81 / 3.2 = 1.5 pounds per hour

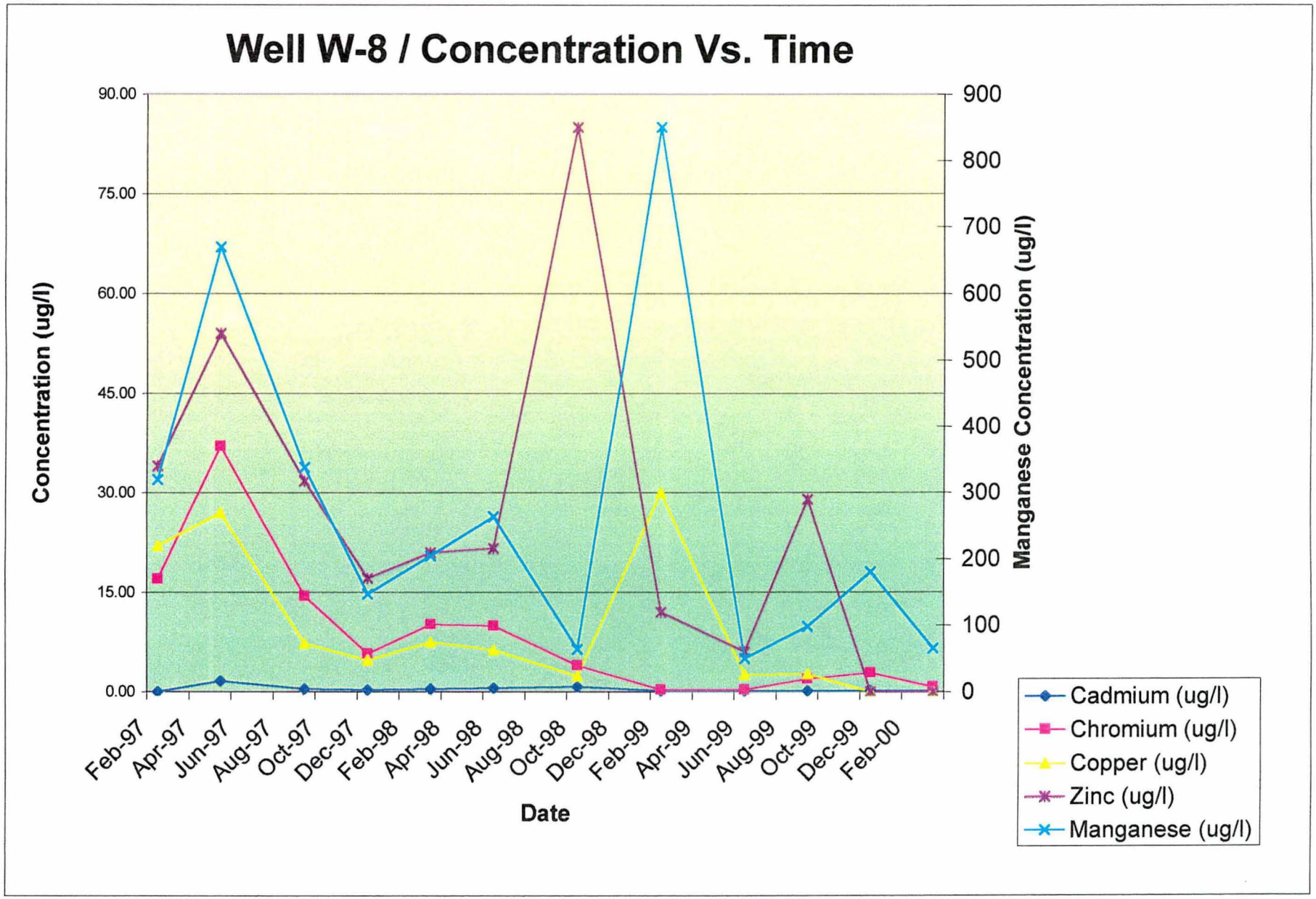
Since the biodegradation rate is based on oxygen utilization and/or carbon dioxide generation, it is a measure of the overall biodegradation rate of all carbon sources, including natural organic carbon and any organic materials that were added. For this reason, the biodegradation rate is not specific to hydrocarbons and it is likely that the measured biodegradation rate will overestimate the rate of contaminant reduction.

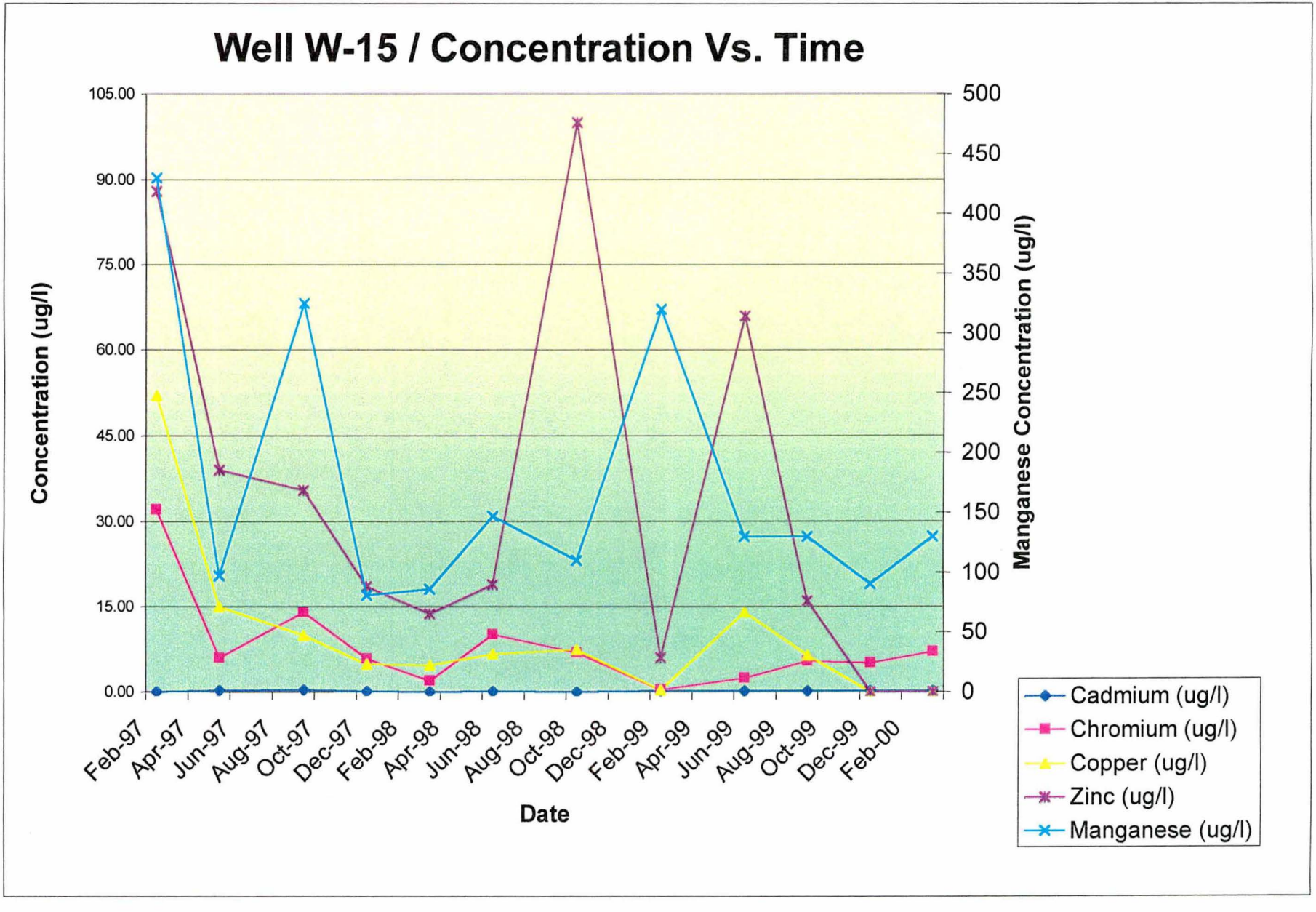
Commonly the measured biodegradation rate based on carbon dioxide generation is less than the rate estimated with oxygen. Because of geochemical interferences and biomass formation, estimates based on carbon dioxide measurements are often low. If however the biodegradation rate estimate based on carbon dioxide is significantly greater than the estimate based on oxygen, it is likely that there is a measurement or calculation error. In this way, the carbon dioxide measurements can be used to double check the oxygen measurements and calculations.

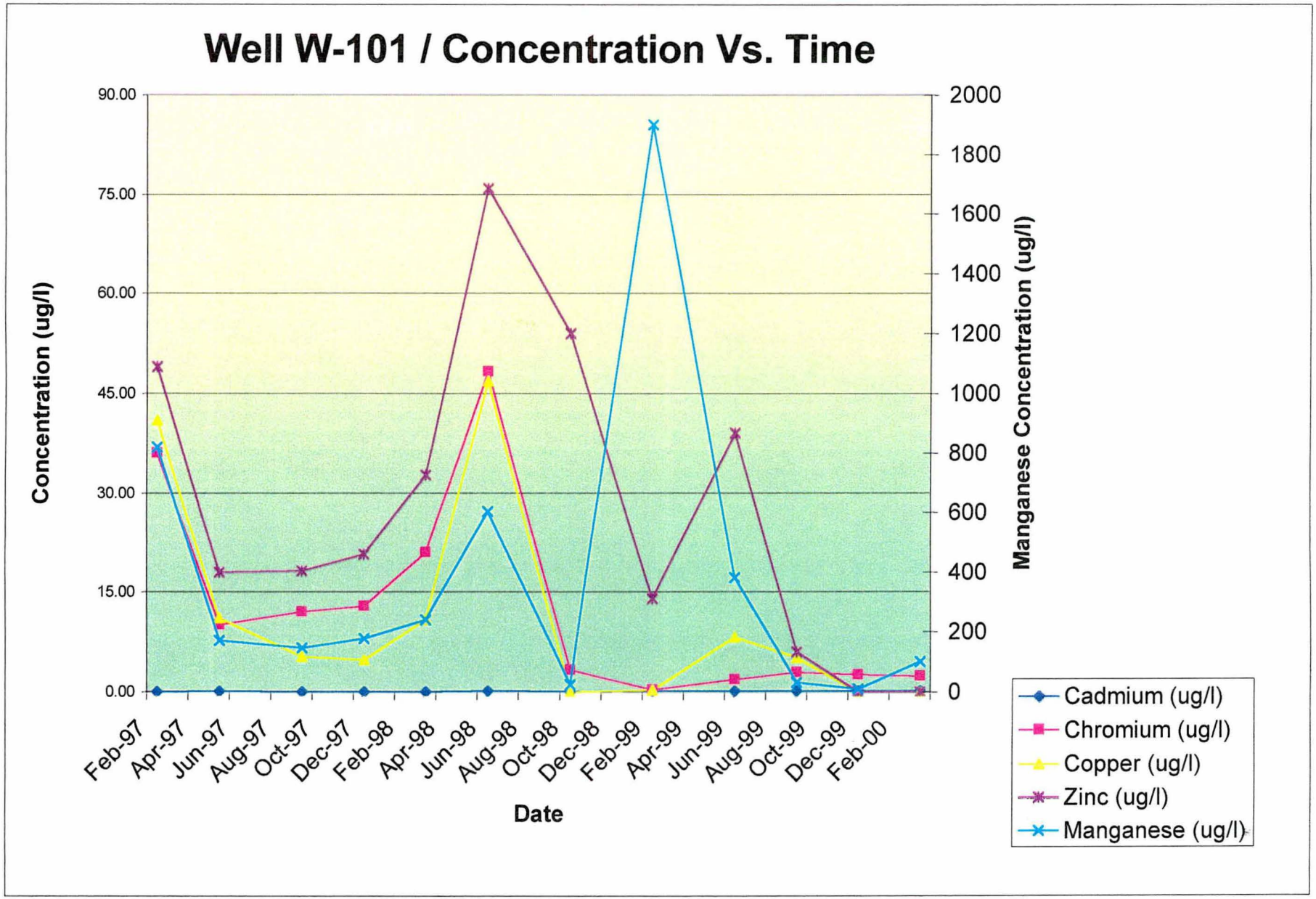
APPENDIX E

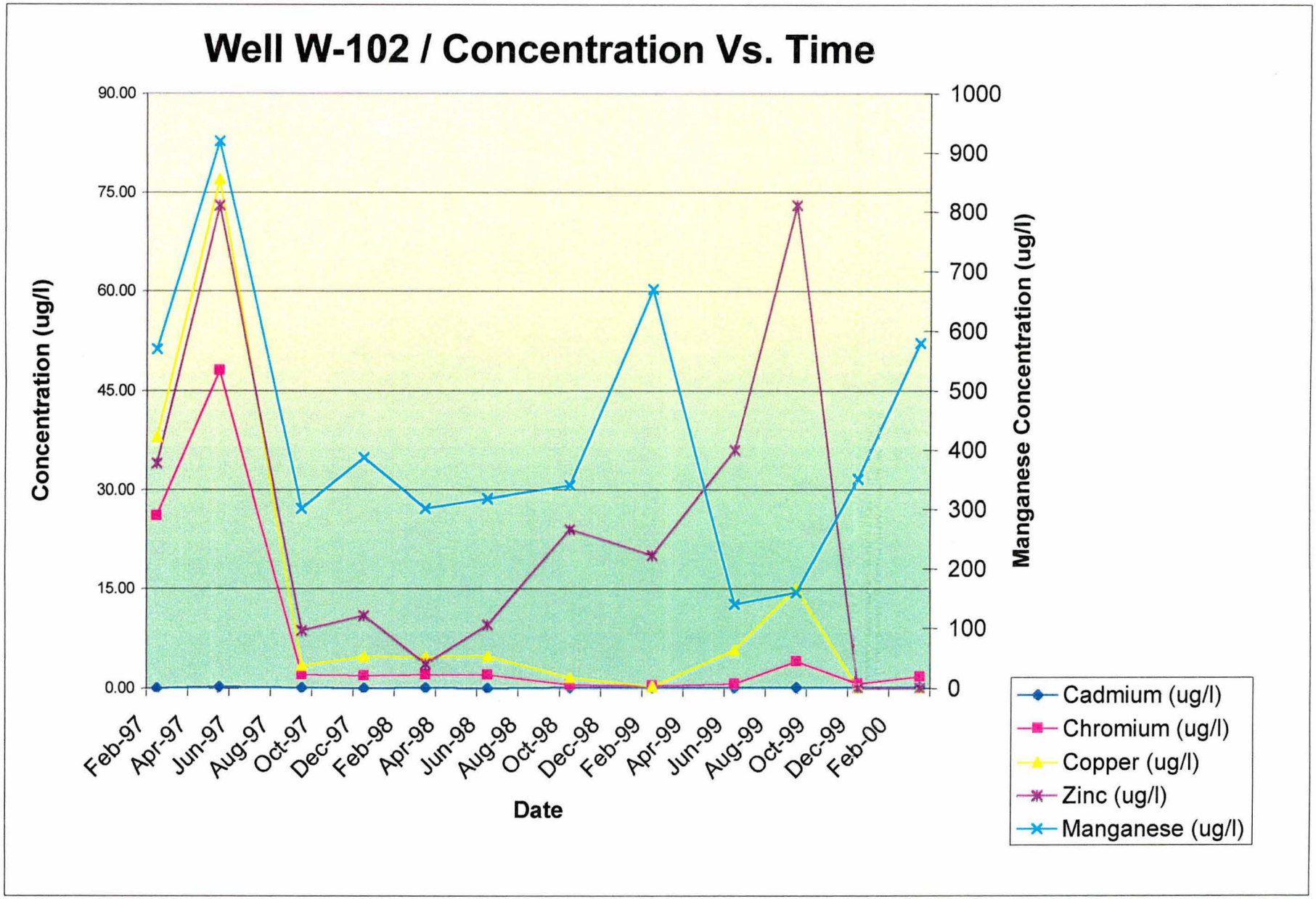
Time Versus Contaminant Graphs
All Wells - Inorganic Compounds

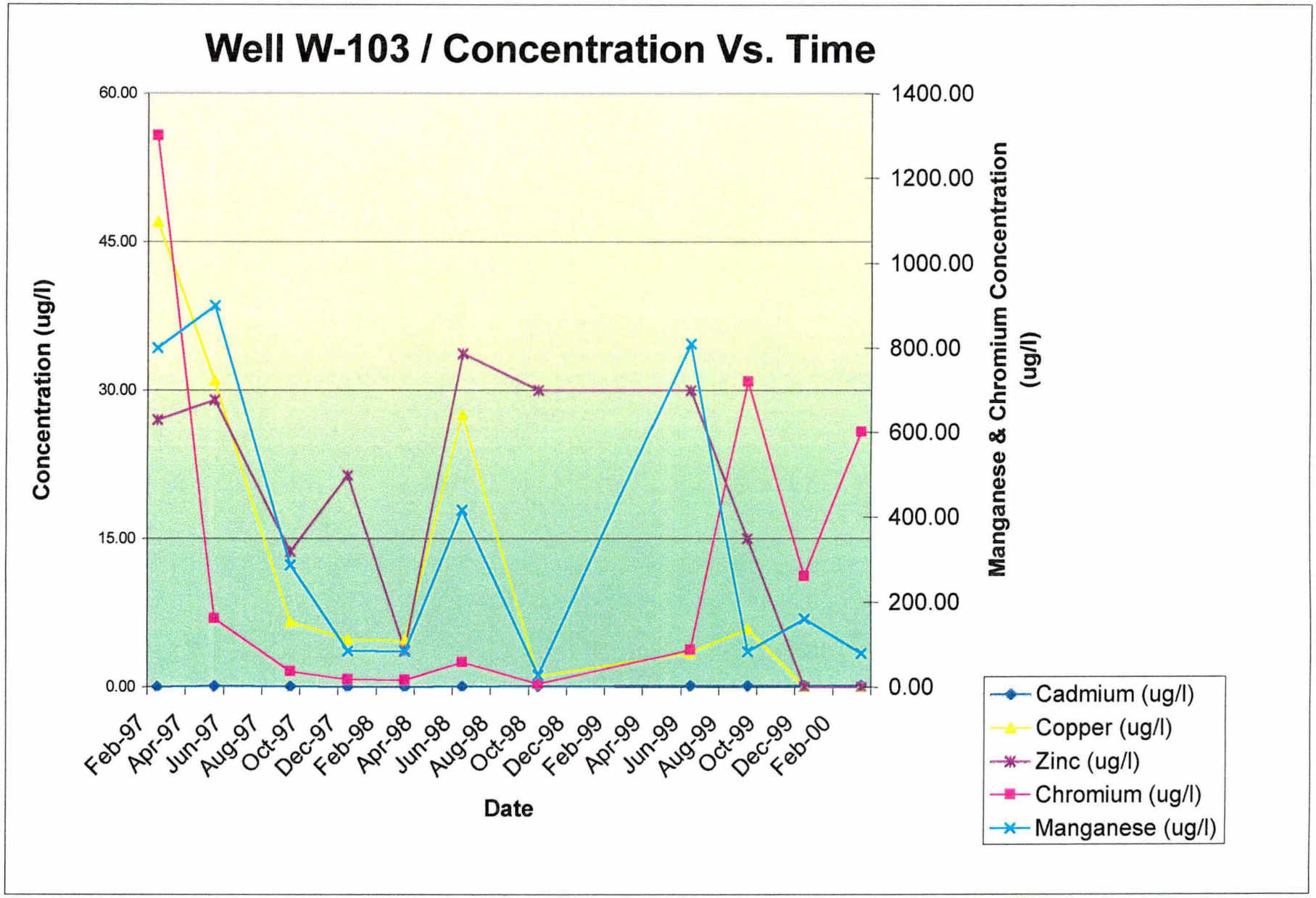

Well W-2 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
Date
180.00
165.00
150.00
135.00
120.00
105.00
90.00
75.00
60.00
45.00
30.00
15.00
0.00
500
450
400
350
300
250
200
150
100
50
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

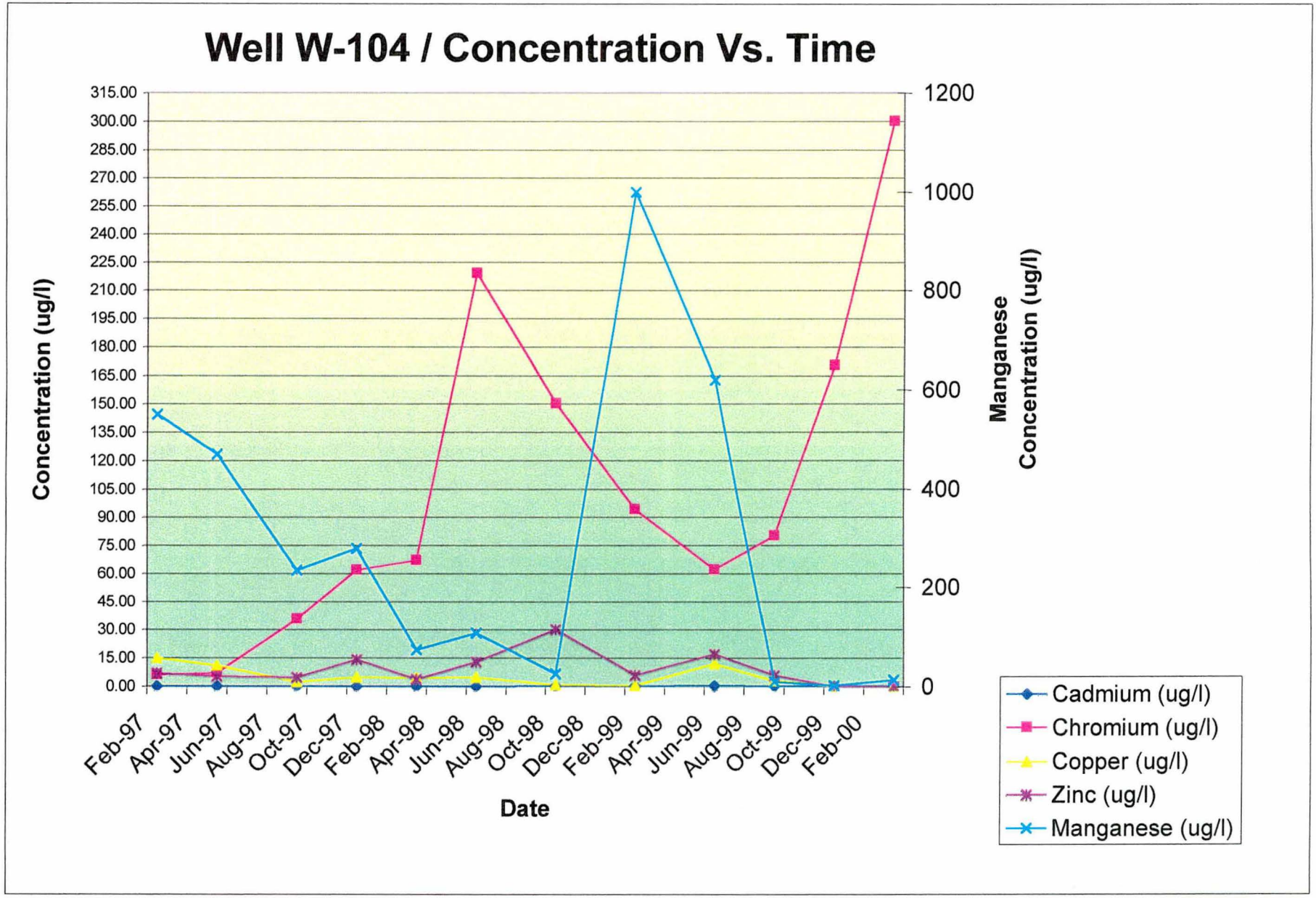

Well W-8 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
90.00
75.00
60.00
45.00
30.00
15.00
0.00
900
800
700
600
500
400
300
200
100
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Date
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

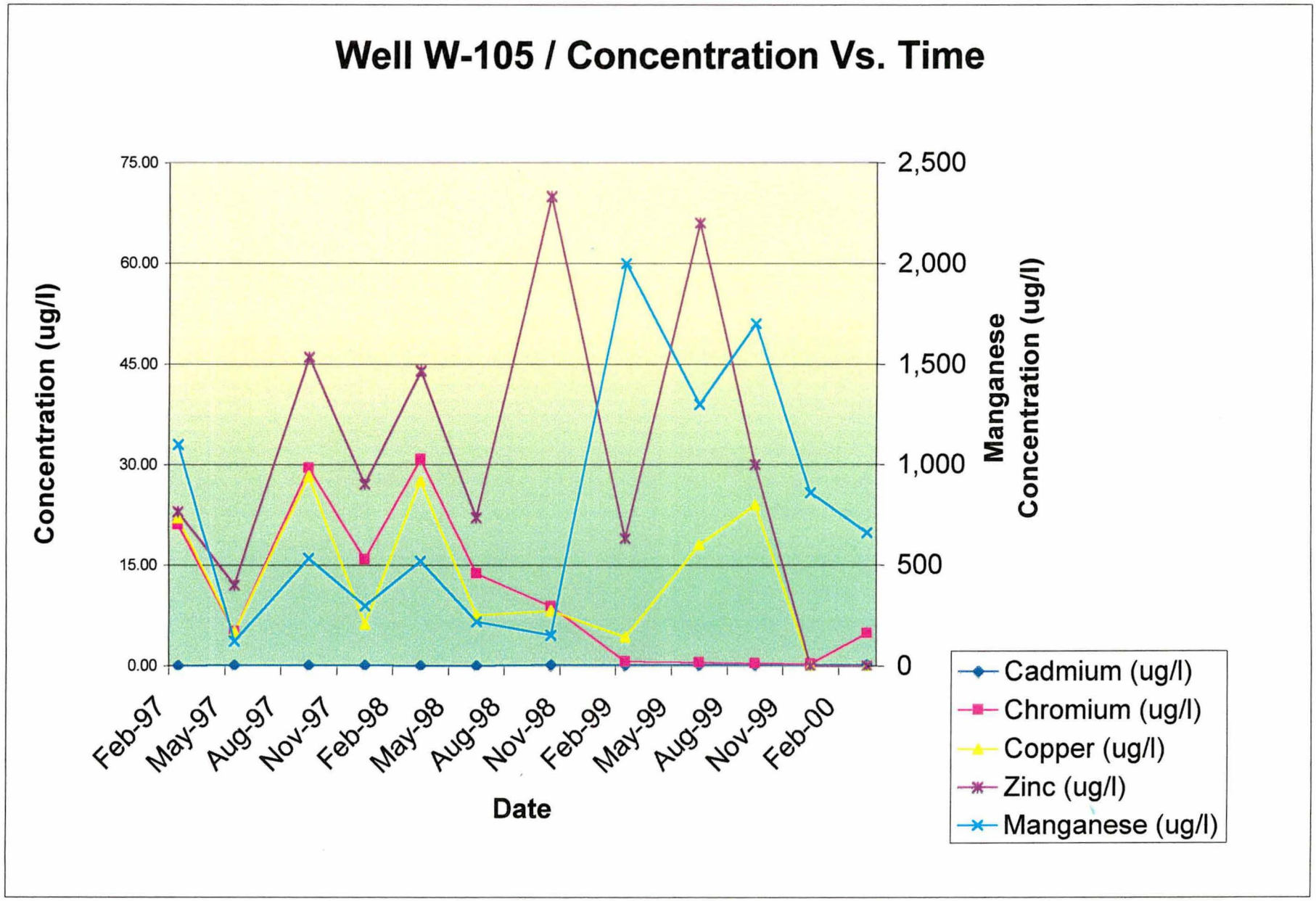

Well W-15 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
105.00
90.00
75.00
60.00
45.00
30.00
15.00
0.00
500
450
400
350
300
250
200
150
100
50
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Date
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

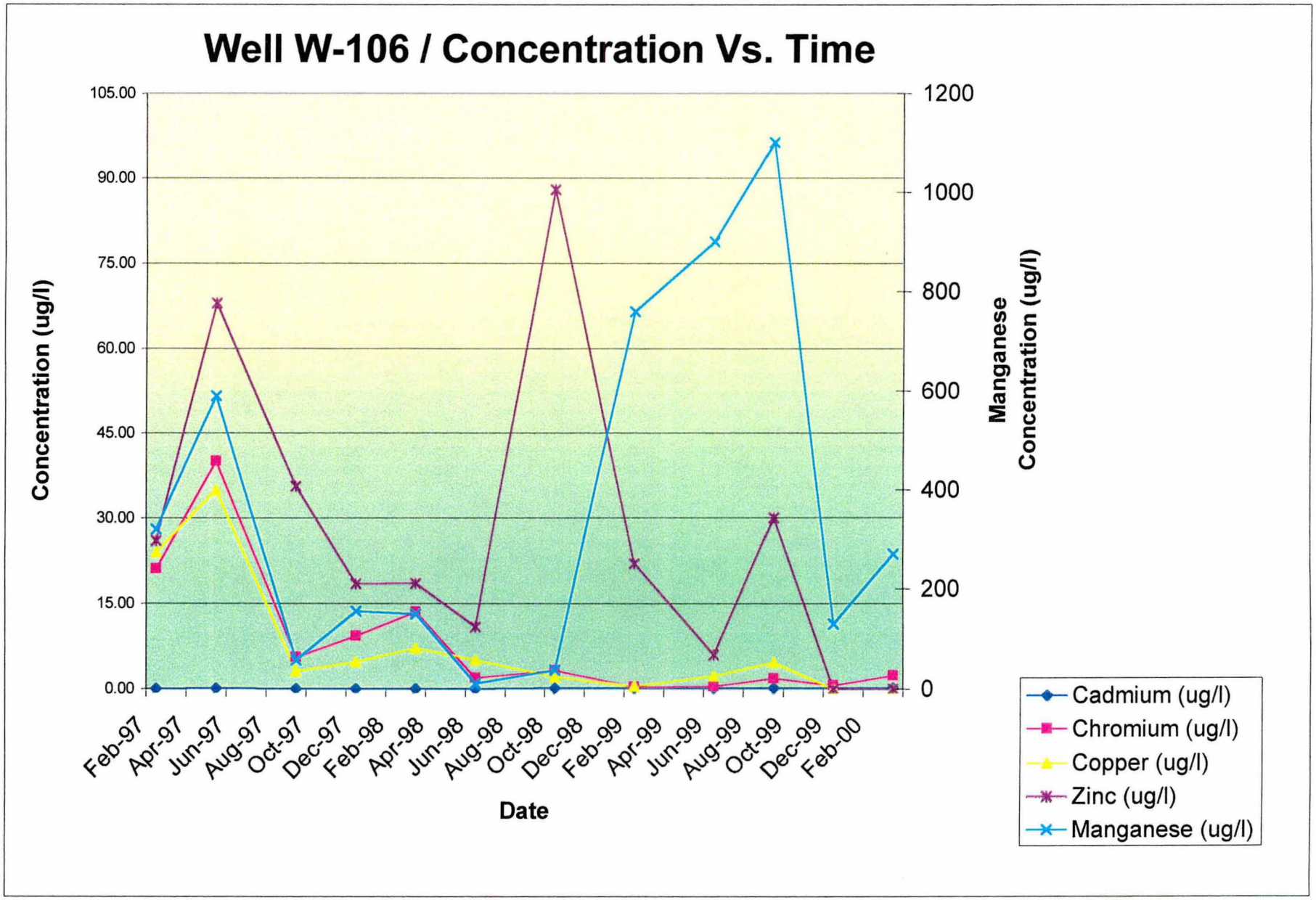

Well W-101 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
Date
90.00
75.00
60.00
45.00
30.00
15.00
0.00
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

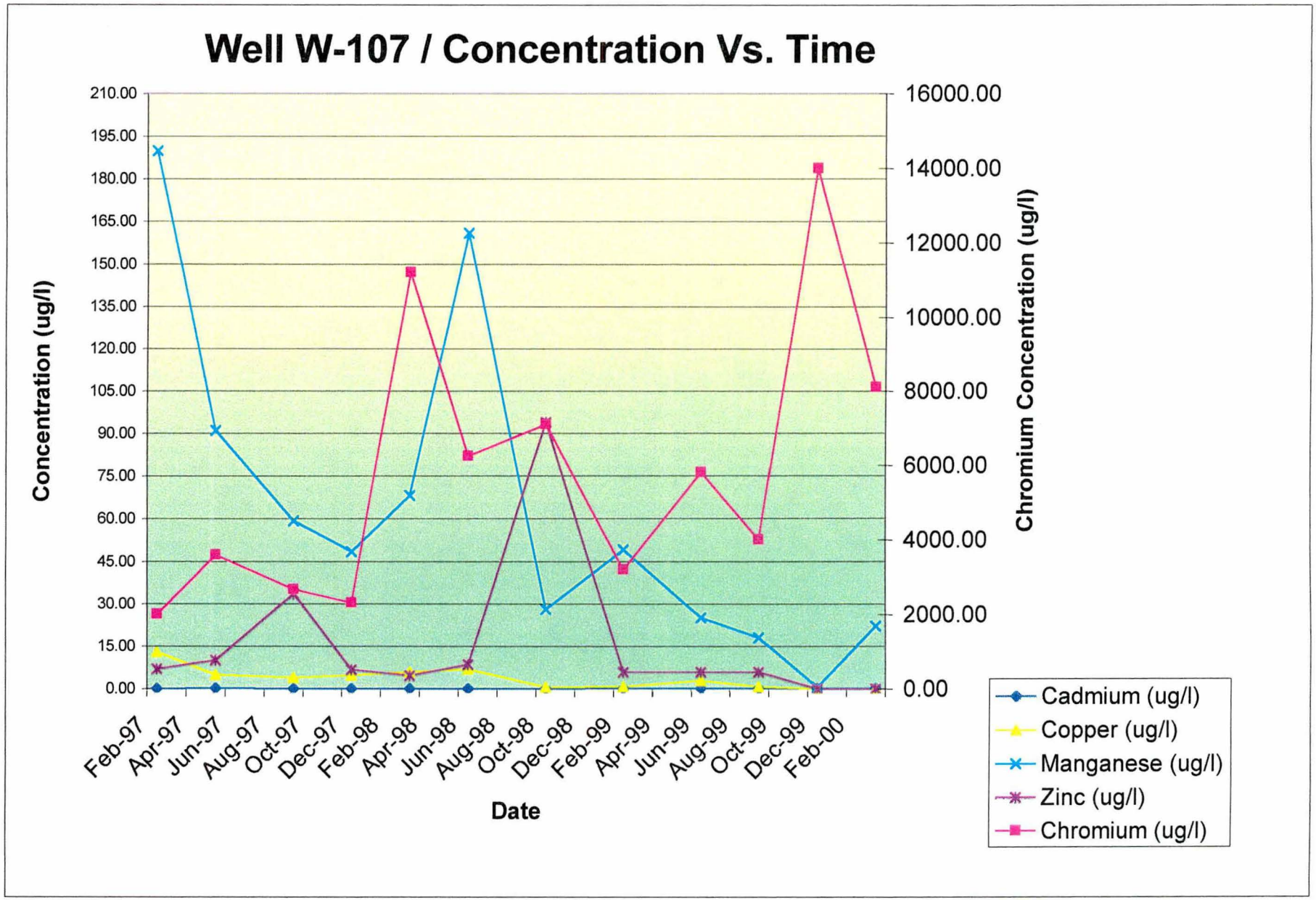

Well W-102 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
Date
90.00
75.00
60.00
45.00
30.00
15.00
0.00
1000
900
800
700
600
500
400
300
200
100
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

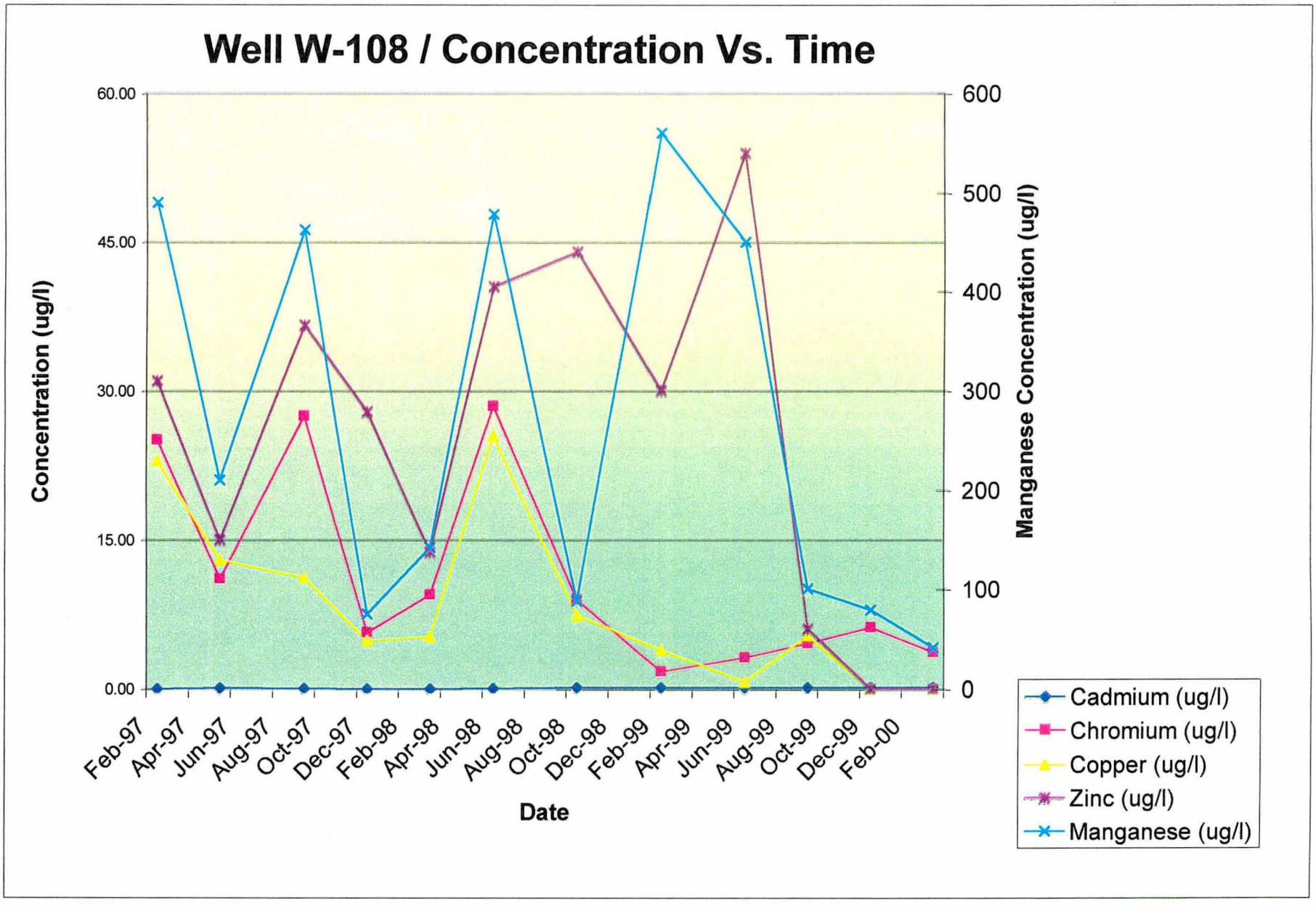

Well W-103 / Concentration Vs. Time
Concentration (ug/l)
Manganese & Chromium Concentration (ug/l)
60.00
45.00
30.00
15.00
0.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Date
Cadmium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Chromium (ug/l)
Manganese (ug/l)


Well W-104 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
315.00
300.00
285.00
270.00
255.00
240.00
225.00
210.00
195.00
180.00
165.00
150.00
135.00
120.00
105.00
90.00
75.00
60.00
45.00
30.00
15.00
0.00
1200
1000
800
600
400
200
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Date
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)


Well W-105 / Concentration Vs. Time
Concentration (ug/l)
75.00
60.00
45.00
30.00
15.00
0.00
2,500
2,000
1,500
1,000
500
0
Manganese Concentration (ug/l)
Feb-97
May-97
Aug-97
Nov-97
Feb-98
May-98
Aug-98
Nov-98
Feb-99
May-99
Aug-99
Nov-99
Feb-00
Date
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

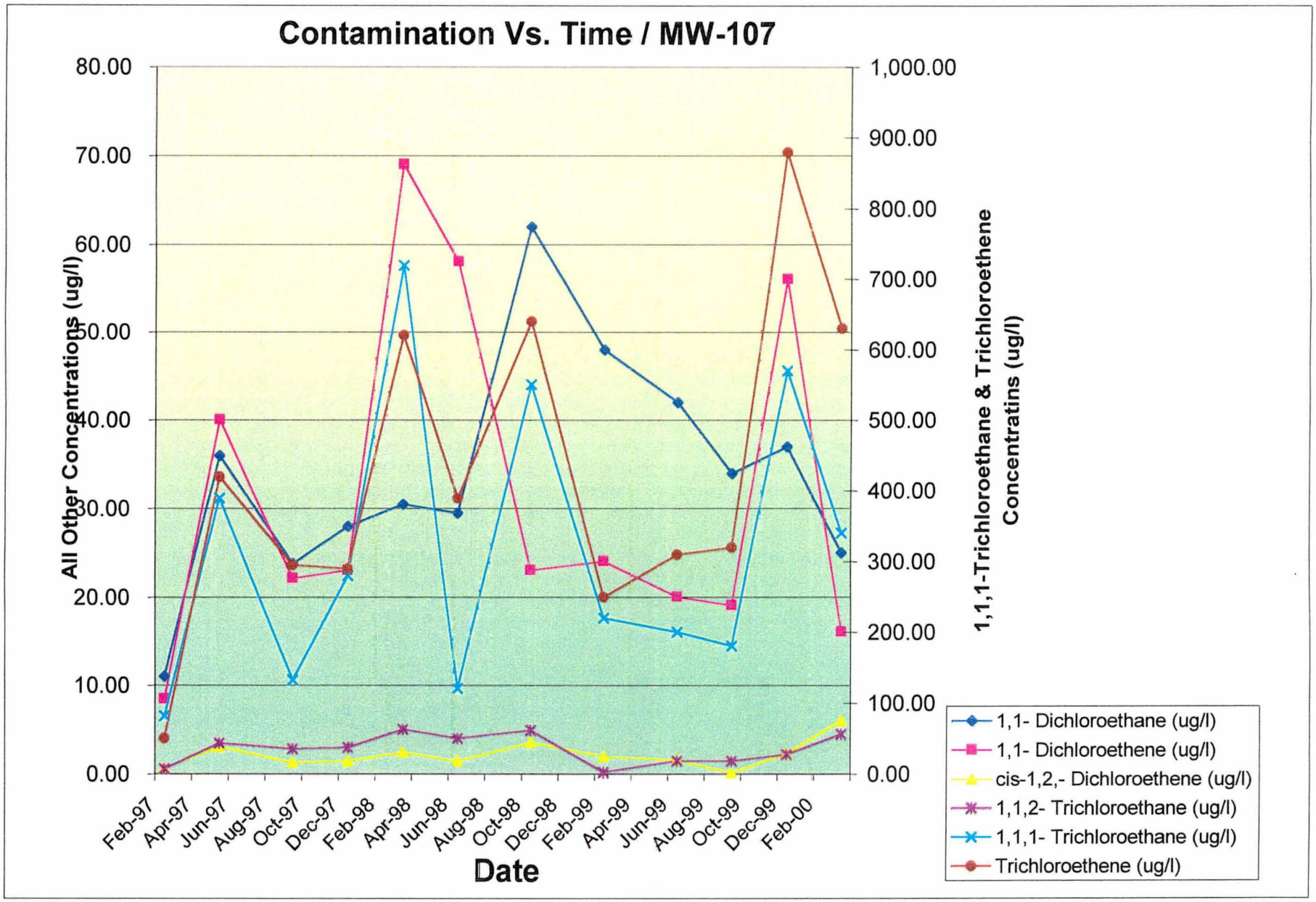

Well W-106 / Concentration Vs. Time
Concentration (ug/l)
105.00
90.00
75.00
60.00
45.00
30.00
15.00
0.00
Manganese Concentration (ug/l)
1200
1000
800
600
400
200
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Date
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)


Well W-107 / Concentration Vs. Time
Concentration (ug/l)
Chromium Concentration (ug/l)
Date
210.00
195.00
180.00
165.00
150.00
135.00
120.00
105.00
90.00
75.00
60.00
45.00
30.00
15.00
0.00
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Cadmium (ug/l)
Copper (ug/l)
Manganese (ug/l)
Zinc (ug/l)
Chromium (ug/l)


Well W-108 / Concentration Vs. Time
Concentration (ug/l)
Manganese Concentration (ug/l)
60.00
45.00
30.00
15.00
0.00
600
500
400
300
200
100
0
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Date
Cadmium (ug/l)
Chromium (ug/l)
Copper (ug/l)
Zinc (ug/l)
Manganese (ug/l)

APPENDIX F

Time Versus Contaminant Graph
Detected VOC's - MW-107


Contamination Vs. Time / MW-107
All Other Concentrations (ug/l)
1,1,1-Trichloroethane & Trichloroethene Concentratins (ug/l)
Date
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
1,000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
1,1- Dichloroethane (ug/l)
1,1- Dichloroethene (ug/l)
cis-1,2,- Dichloroethene (ug/l)
1,1,2- Trichloroethane (ug/l)
1,1,1- Trichloroethane (ug/l)
Trichloroethene (ug/l)

APPENDIX G

Weekly Influent Chromium Concentrations

WEEKLY INFLUENT HEXAVALENT CHROMIUM RESULTS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO. No. M050-99746.14

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
02/26/97	1.0
03/03/97	.8
03/06/97	1.0
03/10/97	1.5
03/23/97	.9
03/29/97	1.2
04/06/97	1.1
04/09/97	1.2
04/16/97	1.0
04/25/97	1.0
04/27/97	1.1
05/02/97	1.1
05/08/97	1.1
05/13/97	1.2
05/21/97	1.1
05/29/97	1.1
06/06/97	1.2
06/13/97	1.2
06/17/97	1.3
06/23/97	1.2
07/02/97	1.2
07/08/97	1.2
07/14/97	1.2
07/21/97	1.2
07/28/97	1.4
08/04/97	1.4
08/13/97	1.3
08/18/97	1.3
08/25/97	1.3
09/04/97	1.3
09/08/97	1.5
09/15/97	1.4
09/24/97	1.3
10/01/97	1.3
10/08/97	1.4
10/15/97	1.3
10/22/97	1.4
10/29/97	1.4
11/05/97	1.3
11/11/97	1.2
11/22/97	1.0
11/24/97	1.0
12/03/97	1.0
12/10/97	1.0
12/17/97	1.1
01/07/98	1.0
01/14/98	1.0
01/21/98	1.0

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
01/28/98	1.0
02/04/98	1.4
02/11/98	1.4
02/18/98	1.4
02/25/98	0.8
03/04/98	1.3
03/11/98	1.3
03/18/98	1.3
03/26/98	1.3
04/01/98	0.8
04/08/98	1.0
04/15/98	1.3
04/23/98	1.3
04/29/98	1.3
05/06/98	1.3
05/13/98	1.3
05/20/98	1.3
05/27/98	1.4
06/03/98	1.3
08/10/98	1.4
08/17/98	1.2
06/24/98	1.2
07/01/98	1.1
07/08/98	1.1
07/15/98	1.1
07/23/98	1.3
07/29/98	1.3
08/06/98	1.2
08/12/98	1.2
08/19/98	1.2
08/26/98	1.2
09/02/98	1.2
09/09/98	1.2
09/16/98	1.2
09/23/98	1.2
09/30/98	1.2
10/07/98	1.0
10/15/98	1.1
10/21/98	1.3
10/28/98	1.3
11/04/98	1.1
11/11/98	1.1
11/18/98	1.2
11/25/98	1.2
12/02/98	1.2
12/09/98	1.5
12/16/98	1.3
12/23/98	1.3

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
12/30/98	1.3
01/06/99	1.3
01/12/99	1.1
01/20/99	1.2
01/28/99	1.3
02/03/99	1.3
02/10/99	1.4
02/17/99	1.4
02/24/99	1.4
03/03/99	1.3
03/10/99	1.3
03/17/99	1.3
03/24/99	1.3
03/31/99	1.3
04/07/99	1.2
04/14/99	1.2
04/21/99	1.1
04/28/99	1.2
05/05/99	1.2
05/12/99	1.2
05/19/99	1.1
05/26/99	1.2
06/02/99	1.1
06/10/99	1.4
06/16/99	1.5
06/23/99	2.2
06/30/99	2.2
07/07/99	2.4
07/14/99	2.0
07/21/99	1.8
07/28/99	1.2
08/04/99	1.5
08/11/99	1.4
08/18/99	1.3
08/25/99	1.3
09/01/99	1.3
09/08/99	1.4
09/15/99	1.5
09/21/99	1.3
09/29/99	1.2
10/06/99	1.4
10/13/99	1.5
10/20/99	1.4
10/27/99	1.4
11/04/99	1.3
11/10/99	1.2
11/18/99	1.3
11/24/99	1.2

DATE	INFLUENT HEXAVALENT CHROMIUM* (ppm)
11/30/99	1.3
12/08/99	1.3
12/15/99	1.2
12/22/99	1.3
12/29/99	1.2
01/06/00	1.3
01/12/00	1.3
01/19/00	1.2
01/26/00	1.2
02/02/00	1.1
02/09/00	1.1
02/16/00	1.2
02/23/00	1.3
03/01/00	1.2
03/08/00	1.3
03/14/00	1.2
03/22/00	1.2
3/29/00	1.1

is Measured Utilizing a Hach Test Kit.

JMS:blm
ID\REPORTW050\99746\Qtrly-PR#6-AppendixG.xls