Report

Volatile Organic Compounds Remedial Action Options Report

Former Wisconsin Chrome Corporation Site
2101 Hyland Avenue

Kaukauna, Wisconsin

WDNR ERP Case #: 02-45-000225

WDNR Project: RRSX
Project I.D.: 13W029

Prepared for Wisconsin Department of Natural Resources
Oshkosh, Wisconsin

March 2015

Foth

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March 11, 2015

Ms. Jennifer Borski
Wisconsin Department of Natural Resources
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Dear Ms. Borski:

RE: *Volatile Organic Compounds Remedial Action Options Report* for the Former Wisconsin Chrome Corporation Site, 2101 Hyland Avenue, Kaukauna, Wisconsin

Enclosed please find the *Volatile Organic Compounds Remedial Action Options Report* (RAOR) prepared by Foth Infrastructure & Environment, LLC (Foth) for the Former Wisconsin Chrome Corporation (WCC) Site (Project Site), 2101 Hyland Avenue, Kaukauna, Wisconsin. This Report provides the third of three deliverables identified in Attachment 2 of the *State Funded Response Design, Oversight, and Evaluation Services Scope of Work for the Former Wisconsin Chrome Corporation.*

If you have any questions, please contact the undersigned at (920) 497-2500.

Sincerely,

Foth Infrastructure & Environment, LLC

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Volatile Organic Compounds Remedial Action Options Report

Distribution

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Volatile Organic Compounds Remedial Action Options Report

Executive Summary

The *Volatile Organic Compounds Remedial Action Options Report* (RAOR) documents the evaluation of remedial action options for volatile organic compounds (VOCs) present at the Wisconsin Chrome Corporation (WCC) Site (Project Site) to provide the basis for selection of a remedial action for VOCs at the Project Site.

This Report provides the third of three deliverables identified in Attachment 2 of the *State Funded Response Design, Oversight, and Evaluation Services Scope of Work for the Former Wisconsin Chrome Corporation* (hereafter referred to as the SOW). Authorization to proceed with this work was provided by the signing of the project contract by the state of Wisconsin on October 2, 2013. This Report provides documentation of the technology screening, detailed analysis of remedial options, and a description of the selected remedial action for VOCs at the Project Site.

Appropriate technologies to be considered for remediation have been identified. The list of technologies was derived from the Remediation Technologies Screening Matrix table (United States Environmental Protection Agency [USEPA], 2002). Technologies whose target contaminants of concern (COCs) are halogenated volatile organics detected at the Project Site above NR 140 Enforcement Standards were considered. Technologies were screened using the following criteria: effectiveness, implementability, and relative cost.

The detailed analysis is a multi-step process of evaluating options to allow comparison of the options and to identify the key trade-offs among them. Options evaluated in this RAOR included monitored natural attenuation (MNA), enhanced bioremediation, Vacuum Enhanced Recovery (VER), and a combination of VER and enhanced bioremediation. During the detailed analysis, each option was assessed against the evaluation criteria including overall effectiveness, compliance with applicable or relevant and appropriate requirements (ARARs), short-term and long-term effectiveness, implementability, and cost. The results of the detailed analysis provided relevant information needed to allow selection of the most appropriate remedy.

The selected Remedial Action Option for the Project Site is Option 4, a combination of the Enhanced Bioremediation with VER. The VER would be implemented first through three existing wells in the MW-7 cluster. Recovered groundwater would be pumped using a high-vacuum extraction pump, air/water knockout tank, and water transfer pump to the existing treatment system prior to discharge to the sanitary sewer under the existing permits and authorizations. This initial flushing would remove significant VOC mass from the center of the impacted groundwater area. Additional investigation locations utilizing direct-push and MIP technology would verify the source area location. Additional injection wells would be installed in the source area for subsequent injection of sodium dithionite-ferrous sulfate solution followed by groundwater monitoring to evaluate the performance of the enhanced bioremediation. This approach would be compatible with the chromium remedy and better develop the conditions for biodegradation in the area of VOC-impact.

List of Abbreviations, Acronyms, and Symbols

%	percent
1,1,1-TCA	1,1,1-trichloroethane
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
ARARs	applicable or relevant and appropriate requirements
AUL	activity use limitation
Building	former WCC building
COCs	contaminants of concern
cy	cubic yard
DNAPL	dense nonaqueous phase liquid
DO	dissolved oxygen
EC	electrical conductivity
ECD	electron capture detector
ES	Enforcement Standards
ESTCP	Environmental Security Technology Certification Program
FID	flame ionization detector
Foth	Foth Infrastructure & Environment, LLC
ft	feet
gal	gallon
gpm	gallons per minute
LIF	laser induced fluorescence
M	molar
MCL	maximum contaminant level
MIP	Membrane Interface Probe
MNA	monitored natural attenuation
O&M	operation and maintenance
ORP	oxidation-reduction potential
PID	photoionization detector
PPE	personal protective equipment
PRB	permeable reactive barrier
Project Site	Wisconsin Chrome Corporation Site
POTW	Publically Owned Treatment Works
RAD	Full-Scale Residual Chromium Remedial Action Documentation
RAOR	*Volatile Organic Compounds Remedial Action Options Report*
RAOs	remedial action objectives
ROST	Rapid Optical Screening Tools
SOW	scope of work
SVE	soil vapor extraction
TANN Corp.	TANN Corporation/Langbein Engelbracht America
TCE	trichloroethene
USEPA	United States Environmental Protection Agency
VER	Vacuum Enhanced Recovery
VOCs	volatile organic compounds
WAC	Wisconsin Admin. Code
WCC	Wisconsin Chrome Corporation
WDNR	Wisconsin Department of Natural Resources

1 Introduction

The former Wisconsin Chrome Corporation (WCC) Site (Project Site) is located at 2101 Hyland Avenue in the Kaukauna Industrial Park, in the N1/2 of the S1/2 of Private Claim 10, T21N, R18E, city of Kaukauna, Outagamie County, Wisconsin, as shown on Figure 1. WCC formerly operated an electroplating shop at the Project Site.

The Wisconsin Department of Natural Resources (WDNR), the client, requested that Foth Infrastructure & Environment, LLC (Foth) provide an evaluation of the remedial options for volatile organic compounds (VOCs) at the Project Site. This *Remedial Action Options Report* (RAOR) documents the evaluation, so as to provide options for remedial action for VOCs at the site.

1.1 Purpose

This Report summarizes the site history and chromium remediation actions, summarizes the historical VOC data, evaluates potential remedial actions at the Project Site and provides additional information regarding the best remedial action option for consideration by the WDNR.

This Report provides the third of three deliverables identified in Attachment 2 of the *State Funded Response Design, Oversight, and Evaluation Services Scope of Work for the Former Wisconsin Chrome Corporation* (hereafter referred to as the SOW).

1.2 Scope of Work

The evaluation of remedial options for VOCs included the following tasks:

1. Installation of a deep piezometer at the MW-6R/P-6A/P-6B well nest which was named P-6C.

2. Containerizing and testing of the drill spoils.

3. Additional groundwater monitoring for VOCs for the months of November of 2013, January, March, July and September of 2014 at MW-10, MW-2, P-2A, P-2B, MW-4, P-4A, MW-7R, P-7A, P-7B, P-7C, MW-6R, P-6A, P-6B, P-6C (new), MW-20, MW-21(new) and MW-22(new).

4. Preparation of the RAOR which would include the following:

    - Review of historical VOC data and the VOC data collected in Item 3 above;

    - Analysis of VOC data;

    - Isoconcentration maps and groundwater contour maps;

    - Evaluation of the selected remedial options per NR 722.07 Wisconsin Administration Code (WAC);

- Recommendation for a remedial action per NR 722.09 WAC; and
- Inclusion of all of the above information in the RAOR prepared in accordance with NR 722.13 WAC.

1.3 Contractual Requirements

This Report provides the final of three deliverables identified in Attachment 2 of the SOW. Authorization to proceed with this work was provided by the signing of the project contract by the State of Wisconsin on October 2, 2013.

2 Background Information

The following section provides the Project Site history and summarizes the remediation history.

2.1 Project Site Information

The Project Site had been used for chromium electroplating since 1976. Plating activities ceased in 1986 and the property was subsequently acquired by Outagamie County under delinquent tax proceedings. Currently the property is still owned by Outagamie County. Outagamie County currently leases the former WCC building (Building) to TANN Corporation/Langbein Engelbracht America (TANN Corp.). TANN Corp. subleases the south gravel lot to the adjacent business, V&S Midwest Carriers Corporation.

2.2 Remediation History

Results of previous site investigations revealed that the Project Site is contaminated with chromium. VOCs, including 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and trichloroethene (TCE), are also present.

The history of the soil and groundwater contamination at the Project Site is contained in reports documenting the results of investigations starting in 1980. The suspected sources of chromium and VOCs contamination are identified in the report, *Remedial Investigation and Remedial Options Evaluation Wisconsin Chrome Corporation Site, Outagamie County, Wisconsin*, prepared by HSI GeoTrans (HSI GeoTrans, 1997). HSI GeoTrans listed the following as the suspected contamination sources:

- Slow, steady leak of chromic acid and plating rinsate through the cracks in the concrete lined collection trenches inside the Building;

- Wastewater spills from the WCC facility that migrated outside the plant, contaminating on-site soils and possibly the wetland formerly located southwest of the Building; and

- Possible overflow from a plastic lined earthen structure used to contain the contaminated soil excavated from the wastewater spills at the WCC facility. Note that this contaminated soil pile was later removed and disposed of.

In spring 2001, GeoTrans, Inc. implemented a remediation plan at the Project Site as approved by the WDNR. Two groundwater collection trenches (Trench A and Trench B), four angle injection wells (currently inactive), and an aboveground treatment facility were constructed from March 2001 through August 2001. VOCs from groundwater in Trench A are treated by carbon drums, and chromium from groundwater in Trenches A and B is treated through an ion exchange system.

On August 13, 2001, 330 gallons (gal) of 10 percent (%) ferric chloride were gravity injected into the four angle wells as a method to stabilize the hexavalent chromium below the Building. An injection of 10% ferrous chloride was intended. An evaluation of the injection and its impacts on groundwater is contained in the report, *Supplemental Site Investigation Evaluation of Ferric*

Chloride Injection at the Former Wisconsin Chrome Corporation Site at 101 Hyland Avenue Kaukauna, Outagamie County, Wisconsin (GeoTrans, 2004).

On October 30, 2006, Foth successfully completed gravity injection of 300 gal of 11.8% sodium bisulfite solution under an approval from the WDNR. The groundwater injection and monitoring activities completed pre-injection, during injection, and post-injection were reported in the Foth report, *Groundwater Injection Documentation and Monitoring* (Foth, 2007). This report concluded that due to the poor hydraulic connection between the injection points and the groundwater monitoring well locations, there was no measurable response in groundwater quality from the sodium bisulfite solution injection.

In December 2007, the WDNR approved Change Order No. 9, which included a one-year extension of the monitoring, operation, and maintenance for the Project Site. In addition, Foth was authorized to complete five new soil borings; install an additional groundwater monitoring well (MW-19); collect soil and groundwater samples; perform a bench scale treatability test; perform field hydraulic conductivity testing on selected wells; perform a small scale pilot reductant injection near existing MW-7R; abandon designated groundwater monitoring wells; and prepare a report which discusses the remedial options for a full-scale reductant injection in the source area(s).

2.2.1 Pilot Injection Study

The full-scale residual chromium remedial action groundwater injection executed at the Project Site and documented in the Report was based on previously completed work involving bench scale testing of reductant solutions and a pilot scale site injection of sodium dithionite-ferrous sulfate solution. A detailed summary of the bench scale testing and pilot scale injection is provided in the *Full-Scale Residual Chromium Remedial Design Report* (Foth, 2014a), and complete descriptions are provided in the *Small Scale Pilot Injection Work Plan* (Foth, 2009a) and the *Small Scale Pilot Design and Injection Documentation and Remedial Options for Full-Scale Injection Report* (Foth, 2009b). The following provides a brief summary of the pilot injection study.

The pilot scale injection study conducted at the Project Site was completed by Foth in 2009. As was the case with the bench scale study, the injection solution was 0.2 molar (M) in both sodium dithionite and ferrous sulfate.

The pilot scale injection included constructing a single 4-inch diameter groundwater injection well to a depth of 27 feet (ft) with a screen interval of 7 ft to 27 ft. The pilot scale injection well was constructed approximately 7.5 ft from MW-7R and 10 ft from MW-20. Pre- and post-injection monitoring was completed on both groundwater and vapor at critical locations around the Building. Two rounds of pre-injection groundwater data and four rounds of post-injection groundwater data were collected.

A total of 500 gal of a 0.2 M sodium dithionite-ferrous sulfate solution was injected into the single groundwater injection well. Following the injection of the 500 gal of solution, approximately 40 gal of tap water was injected to flush the remaining solution out of the injection well. Significant changes in most parameters were observed in MW-7R and MW-20 during the injection. The depth to groundwater, temperature, oxidation-reduction potential (ORP), and dissolved oxygen (DO) all decreased, and the pH and specific conductivity increased in both wells. The ORP values turned negative in both wells, and the specific conductivity increased approximately one order of magnitude. Following injection activities, all parameters returned to their pre-injection levels except ORP and specific conductivity. During subsequent weeks, the specific conductivity continued to drop to close to the levels observed prior to the injection, but the ORP levels remained negative and well below the pre-injection levels. A three to four order of magnitude reduction in hexavalent chromium concentrations in MW-7R, MW-20, and the injection well occurred, which indicates that the ferrous sulfate in the injection solution was effective in reducing the hexavalent chromium to trivalent chromium. As described in the *Full-Scale Residual Chromium Remedial Action Documentation* (RAD) (Foth 2015), chromium concentrations have remained roughly 75% lower than pre-injection levels more than four years after the pilot treatment.

2.2.2 Full Scale Injection Study

The *RAD* was prepared to describe the following:

- Installation of two monitoring wells and one piezometer (MW-21, MW-22, P-6C).
- Results of pre-remedial design groundwater sampling.
- Design of full-scale injection remedy.
- Plans for site health and safety, waste handling, and remediation monitoring.

The *RAD* described and provided the documentation for the installation of two groundwater monitoring wells (MW-21 and MW-22) and one piezometer (P-6C), and the sampling methodology and analytical results associated with two rounds of pre-injection and five rounds of post-injection groundwater sampling.

Pre-remedial design groundwater sampling indicated groundwater chromium concentrations continue to persist at the project site above the WAC Chapter NR 140 enforcement standard. However, chromium concentrations at MW-7R continued to remain roughly 75% lower than pre-injection levels more than four years after the pilot treatment. Consistent with previous project site groundwater monitoring activities, the highest chromium concentrations continue to be observed under the former Building and to the southwest of the Building around MW-2.

The full-scale remedial design chosen for the project site consisted of the installation of 18, 4-inch diameter injection wells with 16 being installed underneath and immediately downgradient of the Building, and two being installed southwest of the Building near MW-2. The injection procedures recommended injection of 250 to 400 gal of a 0.2 M sodium dithionite-ferrous sulfate solution under pressure into each of the injection wells. Groundwater and vapor monitoring was completed pre-, post-, and during the injection of sodium dithionite-ferrous sulfate.

The full-scale chromium reduction remediation was completed in July of 2014 and the RAD was submitted to the Department in February 2015 (Foth, 2015). Pre- and post-injection groundwater monitoring data indicate the injection of sodium dithionite ferrous sulfate decreased total chromium concentrations in MW-6R, MW-7R, MW-21, and MW-22, with sustained decrease in MW-21, which is located in the primary injection target area under the Building. The total chromium concentrations at MW-7R and MW-22 continue to remain below the pre-injection concentration levels; however, data indicates total chromium concentration is rebounding at both locations. A sustained increase in total chromium concentration has been observed in MW-2, which is located next to the secondary injection target area. Based on the results observed, it is recommended that additional groundwater monitoring be conducted to determine the long-term efficacy of the full-scale residual chromium remedial action.

2.3 Project Site Characteristics

The existing site layout is presented on Figure 1. The water table elevations for October 2014 are presented on Figure 2. The plan view depicting VOC analytical data and projected extent of VOCs above NR 140 Enforcement Standards (ES) are presented on Figure 3. Project Site cross sections are provided on Figures 4 and 5. These cross sections show the vertical positions of the groundwater surface monitoring screens, piezometer well screen, higher permeability soil strata, groundwater surface monitoring well screens, piezometer well screens, higher permeability soil strata, groundwater collection trenches, utility trenches and the approximate location of the VOC plumes that exceed WAC Chapter NR 140 public health groundwater quality enforcement standard. MW-21, MW-22, and P-6C, installed in the fall of 2013 were documented in the *Full-Scale Residual Chromium Remedial Design Report* (Foth, 2014) and have been added to cross-section A-A' (Figure 4). Soils in the new wells were consistent with previous investigations.

2.4 Groundwater Data Summary

The historical VOC groundwater quality analyses by Terracon and VOC time-concentration graphs are presented in Appendix A. Wells with no or isolated detections of VOCs were not plotted. The VOCs identified as contaminants of concern (COCs) are identified in Table 1 along with a listing of their physical and chemical properties.

VOCs with Recent VOC data and groundwater quality analyses are presented in Tables 2 and 3. These data were evaluated as required by the Scope of Work for the RAOR and to evaluate groundwater data conclusions relative to the evaluation of remedial action options. Key conclusions include:

1. The location and magnitude of VOC impacts suggest that there is a source area in and around the MW-7 well nest.

2. 1,1,1-TCA and 1,1-DCE are primary VOCs in terms of concentration.

3. Data regarding chemical properties, presented in Table 1, and biodegradability of these VOCs suggest that the 1,1,1-TCA will be the most difficult to remediate.

4. Evidence exists of monitored natural attenuation (MNA) and enhanced bioremediation of 1,1,1-TCA and TCE based on the presence of daughter products 1,1-DCA and DCE/VC, respectively.

5. Despite some evidence of MNA, the rate of biodegradation based upon trend graphs is not sufficiently high to support rapid, short-term VOC mass-removal or seasonal

fluctuations in groundwater create excessive “static” such that statistically significant trends are not apparent.

6. Operation of the historic groundwater treatment and recovery programs have reduced VOCs preferentially within a higher permeability “middle zone” leaving two lower-permeability clay zones with much higher residual VOC-impacted groundwater concentrations.

Trends with respect to groundwater chemistry are less conclusive, but useful:

1. pH levels are relatively neutral, typically between 6.0 and 8.0, and temperatures are reasonable (between 10 and 18 degrees Centigrade), conducive to biological activity.

2. Negative ORP levels were generally restricted to MW-6A, MW-7B, and MW-7C, but very low DO levels associated with the low ORP were not consistent

3. The water levels at MW-7A, MW-7B, and MW-7C showed wide fluctuations presumably as a result of a combination of groundwater pumping and chemical injections.

4. Sulfate levels also increased in a number of wells presumably as a result of the ferrous sulfate injections.

Notably, although the chemical injections have resulted in chromium reduction and evidence of stabilization at MW-21, the enhancement of bioremediation is not as evident, despite the lower ORP and oxygen levels in some wells.

2.5 Remedial Action Objectives

The Remedial Action Objectives (RAOs) include both long-term objectives and short-term objectives:

1. Containment (short-term objective);
2. Source reduction (short-term objective); and
3. Groundwater restoration (long-term objective).

The selected remedial option will remove a target of 90% of the total VOC mass in soil and groundwater in the source area and will control the spread of the dissolved-phase groundwater contamination, thus removing source material from the aquifer and reducing the ongoing process of dissolution to groundwater. As a result, the selected remedial action will facilitate restoring groundwater to meet the NR 140 ES in the long-term.

With respect to the third objective, it is important to note that the dissolution rate that regulates the contaminant mass release from soil to groundwater is exceedingly slow. This process has chemical-specific half-lives ranging from years to decades. Since the release kinetics are considerably slower than the rate of dissolved-phase contaminants being removed from the system by enhanced groundwater extraction systems, the groundwater recovery is mass-transfer limited. Stated differently, any remaining VOCs adsorbed to soil in the subsurface will act as an ongoing source of dissolved-phase contamination to groundwater. This fact yields an important conclusion with respect to enhanced groundwater extraction and in-situ remediation in general.

- The rate at which VOC-impacted soils that provide a source of impacts to groundwater can be remediated is not limited by the ability to remove contaminants from the aqueous phase. Rather, it is limited by the rate at which these constituents are released to groundwater. Due to this fact, the time scales for remediation of source materials via in-situ processes that address contaminants in the aqueous phase (e.g., enhanced groundwater extraction) are exceedingly long.

In addition to the limiting factor of mass release from soil to groundwater, the rate of attenuation of the COCs within the aquifer is a key element. Plume stability analysis for the VOC-impacted groundwater plume can be evaluated. The data from the current well network may indicate that the concentration and areal extent of COCs in all three hydraulic zones of interest in the VOC-impacted aquifer are decreasing.

- The rate of degradation of COCs through natural attenuation may be sufficiently high to negate the slow rate at which COCs will partition from soil to groundwater. This will be monitored through the groundwater monitoring program.

3 Remedial Technologies Selection

This section describes the process used to identify and screen prospective remedial technologies. The initial technology screening is explained in Section 3.1. Technologies that are considered appropriate for the Project Site are explained in the remaining sections. Section 3.2 discusses appropriate technologies that address impacted groundwater and associated soil. Section 3.3 summarizes the technology screening presented in this section.

Several Remedial Options were immediately eliminated due to the on-going remediation of hexavalent chromium at the Project Site. Air sparging and in-situ chemical oxidation would create conditions that would be detrimental to the current in-situ chemical reduction of chromium and the hydraulic containment remedy for chromium control at the Project Site.

Appropriate technologies to be considered for remediation have been identified using methodology described by the United States Environmental Protection Agency (USEPA) and Environmental Security Technology Certification Program (ESTCP) Order and NR 722 WAC. Tables 4 and 5 list the technologies that were considered and the screening criteria. The list of technologies included in Tables 4 and 5 was derived from the Remediation Technologies Screening Matrix table (USEPA, 2002). Technologies whose target COCs are halogenated volatile organics were considered. Technologies were screened using the following criteria: technical feasibility, including effectiveness and implementability, and economic feasibility, including capital costs, initial costs, and annual operation costs.

3.1 List of Possible Technologies

Based on USEPA and WAC regulatory guidance, soil and groundwater remedies for hexavalent chromium and VOCs include:

- **Removal & *Ex situ* Treatment**
  - Excavation (above and/or below water table)
  - Pump-and-treat
  - Vacuum Enhanced Recovery (VER)[1]
  - Soil vapor extraction (SVE)[1]
  - Air sparging/SVE[1]
- **Containment**
  - Impermeable barrier (e.g., slurry wall)
  - Pump-and-treat
- ***In situ* Treatment**
  - Chemical reduction (chemical fixation)[2]
  - Permeable reactive barriers (PRBs)
  - Enhanced bioremediation/MNA[1]
  - Chemical oxidation[1]
  - Thermal desorption/SVE[1]
  - Electrical resistance heating/SVE[1]
- **Activity Use Limitations (AUL)**
  - Site controls

- Land-use restrictions
- Restrictions on groundwater usage

Notes:
[1] Technology applicable to VOCs remediation only
[2] Technology applicable to hexavalent chromium remediation only

Explanations of each of the technologies that were retained after initial screening are provided in Section 3.2.

3.2 Screening Considerations

The following list of considerations was used as a reference during consideration for soil and groundwater remediation technologies. The Frequently Asked Questions Regarding Management of Chlorinated Solvents in Soils and Groundwater developed by ESTCP (July 2008) is a key reference to this approach. http://www.estcp.org/viewfile.cfm?Doc=ER-0530-FAQ.pdf

3.2.1 General

- Solvents sorbed in solids, present as dense non-aqueous phase liquid (DNAPL), and stored in low permeability zones can sustain groundwater concentrations in transmissive zones for long periods. *Although no DNAPL has been observed, VOC sorption to soils is a critical concern which is actively addressed using VER technology and in-situ biodegradation which are more suited to low-permeability soils containing sorbed VOCs compared to groundwater pumping and treatment.*

- Attaining maximum contaminant levels (MCLs) throughout source zones has been very rare. But, significant mass depletion has been achieved and technologies continue to improve. *The short-term remedial action goals for the site will focus on achieving significant mass depletion in the source area.*

- Vapor intrusion is a pathway of concern of the same order as groundwater. *The vapor intrusion pathway is less of a concern for the low permeability clay soil and associated groundwater. The focused VOC mass removal will further reduce vapor intrusion concerns at adjacent structures.*

3.2.2 Investigation

- New site characterization technologies: instrumented direct push devices using electrical conductivity (EC), laser induced fluorescence (LIF), Rapid Optical Screening Tools (ROST), Membrane Interface Probe (MIP), photoionization detector (PID), electron capture detector (ECD), flame ionization detector (FID), etc., improve site characterization programs. *The selected remedial action will include a limited site investigation to further define the source area limits combining direct-push technology (DPT) with EC/MIP/PID/ECD/FID instrumentation. LIF/ROST is not applicable to this site.*

- Obtain site-specific hydraulic conductivity data early in the investigation stage. Pneumatic testing allows fast and economical collection of data from many wells.

Further site-specific hydraulic conductivity testing will be accomplished using a short-term, one-day VER test.

- Analyze several groundwater samples for a wide range of chemical and physical properties early. *A wide range of chemical and physical properties were analyzed during earlier investigations. These data will be supplemented by additional biological assays to verify the appropriate VOC-degrading microorganisms are present at the Project Site.*

3.2.3 Remediation Goals

Consider short-term functional objectives for chlorinated solvent sites that are not long-term absolute objectives such as MCLs in groundwater including such functional objectives as:

- Stabilize the extent of plumes and reduce source longevity and reduce long-term management requirements. *This is an important goal to remove the need for long-term pumping and treatment of groundwater from the existing on-site trenches for containment.*

- Reduce mass flux and deplete the source zones. *A primary short-term remediation goal for the site is to achieve significant, but focused VOC mass reduction by removing an estimated 90% of the VOC mass from the source area.*

- Reduce life-cycle costs. *The proposed short-term, focused remedial action approach will reduce life-cycle costs as demonstrated in the cost evaluation provided in Appendix C and further described elsewhere in this RAOR.*

- Meet public expectations and comply with regulatory requirements. *The primary short-term driver with respect to regulatory requirements is VOC plume stabilization and mass removal which will meet public expectations.*

- Advance new technology. *This RAOR evaluates new technology which is a combination of VER and enhanced bioremediation, which in the end, are proposed as part of the selected remedial action.*

- Site closure. *The primary long-term driver with respect to regulatory requirements is compliance with NR 726 closure requirements with continuing obligations to allow transfer of the property. The property is currently owned by the County. The City and Tenant of the building are expecting AULs to be implemented at the Site and are willing to proceed with property acquisition under these conditions.*

3.2.4 Source Remediation

- Given the rate of contaminant mass removed by typical groundwater extraction wells, and the likely original mass in place, the time required to significantly deplete released solvents by groundwater pumping has proven to be long (i.e., decades). However, it is a proven, robust technology for controlling the migration of groundwater plumes. *This situation is true of the existing groundwater recovery system at the site suggesting the system should be shut down so long as the plume is stable to decreasing in size and VOC* *mass. The determination for shut down of the system will be made in separate documentation regarding the chromium remedy.*

- Source zone remediation should be considered, but is not always a necessary component of corrective action. Enhanced bioremediation, chemical oxidation, and thermal treatment can reduce source area mass by an average of about 90%. Costs to employ these technologies vary widely from $2/cubic yard (cy) to $5500/cy; average costs are in the $50 to $200/cy range. Excavation followed by treatment and/or disposal of source soil may also be appropriate. *With a focus on source area remediation, these technologies, among a few others, have been evaluated in this RAOR.*

- Long term management, containment, and MNA may be adequate and more cost-effective strategies at some sites. *As determined by review of the historical groundwater data, passive long-term technologies including containment and MNA will not effectively remove significant VOC mass from subsurface soil and groundwater in a short period of time resulting in excessive long-term cost for continued monitoring and system maintenance.*

- An order of magnitude reduction in source area mass will not result in an order of magnitude reduction in cleanup time, but may result in as little as 20% less cleanup time long-term due to the tailing effect, back-diffusion, and rebound. Actual reductions in cleanup times are site-specific.

3.2.5 Dissolved Plume Containment

- Given near-perfect depletion and/or containment of sources, downgradient plumes may still persist for extended periods (i.e., decades) due to matrix storage effects in the plume. *This could affect the time to reach the NR 140 Enforcement Standards, but is less applicable to achieving short-term remedial action objectives, including VOC plume stabilization and site closure under NR 726 with continuing obligations for groundwater monitoring and AULs. Mass stabilization and reduction may reach a long-term goal under NR 726 to allow AULs and existing engineered surface caps to allow a property transfer to proceed.*

3.3 Groundwater Remediation

VOC concentrations in groundwater are present at the Project Site which exceed the NR 140 enforcement standards. Remedial action for groundwater will be necessary to mitigate the impact and achieve site short-term and long-term RAOs. Remedial Options retained for groundwater remediation at the Project Site are described below.

3.3.1 Monitored Natural Attenuation

Natural attenuation relies on natural processes to clean up impacted groundwater. These processes include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of COCs in groundwater. This approach requires monitoring of concentration trends with time and distance, geochemical conditions, and other site-specific factors to determine if natural processes are containing the migration of impacted groundwater.

3.3.2 Enhanced Bioremediation

Enhanced bioremediation is a technology that utilizes injection of a natural or synthetic compound to enhance in-situ biodegradation rates of chlorinated hydrocarbons by fueling anaerobic reductive dechlorination processes. Lactate and molasses are commonly used as microbiological energy sources, but other chemicals may also be effective as observed during the chromium remediation program. These materials are metabolized by naturally occurring microorganisms, resulting in the creation of anaerobic aquifer conditions and the production of hydrogen. Microorganisms capable of reductive dechlorination, which may be naturally occurring or added, use hydrogen to progressively remove chlorine atoms from chlorinated hydrocarbons.

Treatment compounds are injected using direct push equipment or injection wells. Direct push technology (DPT) can advance injection rods to the required depths for this Site. A bottom-up injection approach pushes the injection tool to the bottom of the contaminated saturated zone with compounds injected as the rods are withdrawn. Compounds can also be injected using temporary injection wells or existing groundwater monitoring wells. Wells are advantageous when multiple injections are likely.

3.3.3 Vacuum Enhanced Recovery

Vacuum enhancement technology has been used to recover groundwater in low-permeability aquifers. It utilizes the vacuum enhanced pumping of groundwater that would be treated prior to discharge, usually either by means of an air stripper or by a granular activated carbon system. Discharge is generally either to a municipal sewer system or to a nearby surface water course, each requiring an applicable discharge permit. Currently at this Site, a groundwater collection trench and conveyance system are in place. Water is pre-treated and discharged to the local sewer district with a wastewater discharge permit.

3.3.4 Activity Use Limitations

AULs are generally noted on the property deed and used to reduce the risk of chemical exposure to receptors by providing legal notice and/or restricting access or use of property containing impacted media. Such controls may be applied to address both soil and groundwater impacts. AULs are commonly developed to address issues at sites owned by a particular individual or business. When this is impractical, such as when impacted groundwater extends beneath a residential area, AULs may be developed by state or municipal governments and recorded in the WDNR GIS Registry.

For this Site, expectations for an AUL include recording soil and groundwater impacts in the WDNR GIS Registry and development of a cap maintenance plan to maintain and protect the existing building and asphalt as an impermeable cap over the existing impacts. These AULs will restrict access to impacted soil and groundwater usage as well as prevent future uses of the Site which may be incompatible with Site conditions (i.e. residential use). The property owner and tenant are expecting and accepting of these continuing obligations under NR 292.12.

3.4 Summary

Prospective remedial technologies potentially applicable for the Project Site were identified utilizing USEPA's Remediation Technologies Screening Matrix table. Technologies were screened using the following criteria: effectiveness, implementability (including compatibility with the existing chromium remedy), and relative cost. Explanations of each technology retained after the initial screening are provided in this section. These technologies will be utilized to create remedial options for VOC remediation at the Project Site, as discussed in the following sections.

After the initial screening summarized in Table 4, MNA, enhanced bioremediation, VER, and a combination of these technologies were retained for further consideration for groundwater remediation. These technologies were discussed in Section 3.2. Although not a remedial technology, AULs are also anticipated to be a viable approach to reducing the risk of exposure to impacted groundwater at the site.

4 Remedial Options

This section includes a detailed evaluation of the options to be considered. Section 4.1 presents the rationale behind the detailed analysis, defines the nine criteria used to evaluate each remedial option, and presents the assembly of technologies that were retained as options for further consideration. Sections 4.5 through 4.10 provide detailed descriptions of the five options and present an evaluation of the remedial options with respect to the evaluation criteria.

The detailed analysis is a multi-step process of evaluating options to allow comparison of the options and to identify the key trade-offs among them. During the detailed analysis, each option is assessed against the evaluation criteria described in the subsections that follow. The results of the detailed analysis provide relevant information needed to allow selection of the most appropriate remedy.

4.1 Definition of Evaluation Criteria

For a remedial action to meet the requirements addressed in NR 722.07 of the WAC, it must include the following requirements:

- Technical feasibility, including:
    - Long-term effectiveness (NR 722.07(4)(a)1);
    - Short-term effectiveness (NR 722.07(4)(a)2);
    - Implementability (NR 722.07(4)(a)3); and
    - Restoration time frame (NR 722.07(4)(a)4);
- Economic feasibility (NR 722.07(4)b); and
- Additional requirements, such as engineering controls or continuing obligations (NR 722.07(5)).

These six criteria are described in the following subsections.

4.1.1 Technical Feasibility: Long-term Effectiveness

The evaluation of remedial options for long-term effectiveness addresses the results of a remedial action in terms of the risk remaining at the Project Site after remedial action has been implemented. This assessment includes an analysis of the magnitude of residual risk and the adequacy and reliability of engineering controls or AULs. The magnitude of residual risk analysis takes into account the following:

- Residual risk, expressed in cancer risk levels, volumes, or concentrations, remaining from untreated waste or treatment residuals at the conclusion of remedial activities; and
- The volume, toxicity, and mobility of residuals remaining after remedial activities.

The adequacy and reliability of engineering controls or AULs is evaluated in terms of the long-term reliability of controls used to manage treatment residuals or untreated waste remaining at the Project Site, and considers the following:

- The likelihood that the technology would meet required process efficiencies or performance specifications;
- The type and degree of long-term management and monitoring;
- Operation and maintenance (O&M) functions required to maintain process efficiencies or performance specifications; and
- Difficulties of long-term maintenance, including the potential need for replacement of technical components and the degree of confidence that controls can adequately handle potential problems.

4.1.2 Technical Feasibility: Short-Term Effectiveness

Short-term effectiveness addresses the effects of the remedial option during the construction and implementation phases until remedial action objectives are met, and considers the following:

- The risks to Project Site remediation workers and building occupants and the methods used to mitigate the risks, which could not be readily controlled during remedial actions;
- The risks to the community during the remedial action, and how the risks would be mitigated;
- Environmental impacts which can be expected during construction and implementation, the mitigation measures and their reliability, and the impacts which cannot be avoided or controlled; and
- The duration of time until remedial objectives are met.

4.1.3 Technical Feasibility: Implementability

This criterion addresses the technical and administrative feasibility of implementing a remedial option and the availability of various services and materials required during its implementation. Assessment of this criterion relies heavily on previous evaluations of technologies described in Section 3. Specific considerations include the following:

- The ability to construct and operate the remedial option, the difficulties and uncertainties which may be encountered during construction, and the likelihood of technical problems which may lead to schedule delays;
- The ease of undertaking additional remedial action, and what those additional actions may be;

- The coordination required between agencies over the long term, and the ability to obtain permits for the remedial activities;
- The availability of capacity at treatment, storage, and/or disposal services, and the measures required to ensure that capacity is available;
- The availability of necessary equipment and specialists, and whether a lack of equipment and specialists prevents implementation; and
- The degree to which technologies are available and sufficiently demonstrated for the specific full-scale application.

4.1.4 Technical Feasibility: Restoration Time Frame

Restoration time frames are estimated for each remedial action option based on COC concentrations, aquifer hydrogeology, analytical data trends and state of the science estimates and experience for similar projects. Other criteria being equal, a remedial action options that would require less time to implement and attain the closure criteria in a shorter amount of time would be preferred over longer time frame options.

4.1.5 Economic Feasibility: Cost

Cost analysis includes estimates of capital costs (both direct and indirect initial costs) and annual O&M costs associated with each component of a remedial option. The target level of accuracy is +50% to -30%.

The cost may play a significant role in comparing remedial options which are similar in long-term effectiveness, or in which the treatment methods provide a similar performance. The remedial options with costs that are high when compared to the overall effectiveness of the remedial option will not be selected as the final remedy. Similarly, non-treatment options that have low initial capital costs may be more costly overall than a treatment option when long-term O&M costs are considered. An improved performance or greater long-term risk reduction may justify higher costs. The preferred remedial option is generally the one that satisfies the criteria at the most reasonable cost.

4.1.6 Additional Requirements

Additional requirements may include engineering controls, continuing obligations or other requirements as deemed necessary on a Site-specific basis as described in NR 722.07(5)(c). For the Site a Cap Maintenance Plan will be required for monitoring and maintaining the existing building and asphalt areas as an engineered impervious cap along with continuing obligations for groundwater monitoring and WDNR GIS Registry.

4.2 Assembly of Remedial Options

The technologies retained from Section 3 were selectively combined into remedial options that most effectively address VOC impacts to groundwater at the Project Site. The criteria for assembling and combining technologies into remedial options include the following:

- Utilizing existing infrastructure, facilities and technologies to the extent applicable;
- Enhanced effectiveness of technologies operating as part of a treatment train, utilizing a series of technologies or treatments;
- Similarity in complexity; and
- Ability to address all impacted media.

The technologies retained from Section 3 are assembled into remedial options in Table 5.

4.2.1 Option 1 –Monitored Natural Attenuation and Activity Use Limitations

Option 1 involves the use of MNA of impacted soil and groundwater in the VOC-impacted area. MNA will consist of routine monitoring of the monitoring well network to evaluate the impacted groundwater attenuation process over time. Monitoring will include sampling and analysis for parameters such as COCs, pH, specific conductance, ORP, DO, and VOCs at an appropriate frequency to evaluate site conditions over time. The recommended monitoring frequency would no more than semi-annually for an anticipated period of forty years. Time and frequency can be adjusted, but generally eight sampling events would be sufficient to establish statistical evidence of plume stability. Monitoring frequency would be reduced to annually upon establishment of a contracting or stable groundwater plume. Monitored natural attenuation is discussed in Section 3.3.1.

AULs would also be implemented throughout the Project Site, including both source and near-source impacted areas. The AULs to be implemented are discussed further in Section 3.3.4.

4.2.2 Option 2 – Enhanced Bioremediation, Monitored Natural Attenuation, and Activity Use Limitations

Option 2 consists of utilizing enhanced bioremediation at the VOC-impacted source area. Injection points would be installed across the VOC-impacted source area using the chosen chromium remedy solution (Foth, 2014; Foth, 2015). Bioremediation implementation is discussed in Section 3.3.2.

MNA will consist of routine monitoring of the monitoring well network to evaluate the impacted groundwater attenuation process over time. Monitoring will include sampling and analysis for parameters such as COCs, pH, specific conductance, ORP, DO, and VOCs at an appropriate frequency to evaluate site conditions over time. The recommended monitoring frequency would be no more than quarterly for an anticipated period of two years after completion of the remedial activities which is estimated at ten years to achieve closure. Time and frequency can be adjusted, but generally eight sampling events would be sufficient to establish statistical evidence of plume stability. Monitoring frequency would be reduced to annually upon establishment of a contracting or stable groundwater plume. Monitored natural attenuation is discussed in Section 3.3.1.

AULs would also be implemented throughout the Project Site, including both source and near-source VOC-impacted areas. The AULs to be implemented are discussed in Section 3.3.4.

4.2.3 Option 3 – Vacuum Enhanced Recovery, Monitored Natural Attenuation, and Activity Use Limitations

Option 3 consists of VER at the VOC-impacted source area. This option includes the construction of a VER system consisting of three pumping wells at three discrete depths at the center of the source area. Groundwater treatment will be accomplished at the existing treatment system. The system currently operates between 0.5 and 1 gallon per minutes (gpm) of its designed capacity of 6.5 gpm. This remedial option is anticipated to operate within the current system parameters. Treated groundwater would be discharged to the publically owned treatment works (POTW). The current sewer discharge permit would be continued. No additional active remedial actions would be implemented in the source area. VER implementation is discussed in Section 3.3.3.

MNA will consist of routine monitoring of the monitoring well network to evaluate the impacted groundwater attenuation process over time. Monitoring will include sampling and analysis for parameters such as COCs, pH, specific conductance, ORP, DO, and VOCs at an appropriate frequency to evaluate site conditions over time. The recommended monitoring frequency would be no more than quarterly for an anticipated period of two years after completion of the remedial activities which is estimated at ten years to achieve closure. Time and frequency can be adjusted, but generally eight sampling events would be sufficient to establish statistical evidence of plume stability. Monitoring frequency would be reduced to annually upon establishment of a contracting or stable groundwater plume. Monitored natural attenuation is discussed in Section 3.3.1.

AULs would also be implemented throughout the Project Site, including both source and near-source VOC-impacted areas. The AULs to be implemented are discussed further in Section 3.3.4.

4.2.4 Option 4 – Vacuum Enhanced Recovery, Enhanced Bioremediation, Monitored Natural Attenuation, and Activity Use Limitations

Option 4 consists of a combination of Options 2 and 3, utilizing VER at the VOC-impacted source area followed by enhancement of the natural biodegradation. This option includes the construction of a VER system consisting of three pumping wells at three discrete depths at the center of the source area. Groundwater treatment will be accomplished at the existing treatment system. The system currently operates between 0.5 and 1 gpm of its designed capacity of 6.5 gpm. This remedial option is anticipated to operate within the current system parameters. Treated groundwater would be discharged to the POTW. The current sewer discharge permit would be continued. No additional active remedial actions would be implemented in the source area. VER implementation is discussed in Section 3.3.3.

Option 2 consists of utilizing enhanced bioremediation at the VOC-impacted source area. Injection points would be installed across the VOC-impacted source area using the chosen chromium remedy solution (Foth, 2014; Foth, 2015). Bioremediation implementation is discussed in Section 3.3.2.

MNA will consist of routine monitoring of the monitoring well network to evaluate the impacted groundwater attenuation process over time. Monitoring will include sampling and analysis for parameters such as COCs, pH, specific conductance, ORP, DO, and VOCs at an appropriate frequency to evaluate site conditions over time. The recommended monitoring frequency would be no more than quarterly for an anticipated period of two years after completion of the remedial activities which is estimated at two years to achieve closure. Time and frequency can be adjusted, but generally eight sampling events would be sufficient to establish statistical evidence of plume stability. Monitoring frequency would be reduced to annually upon establishment of a contracting or stable groundwater plume. Monitored natural attenuation is discussed in Section 3.3.1.

AULs would also be implemented throughout the Project Site, including both source and near-source VOC-impacted areas. The AULs to be implemented are discussed further in Section 3.3 .4.

4.3 Common Elements of Each Remedial Option

The description and evaluation of the remedial options with respect to the criteria in NR 722.07(4) are presented in the following subsections includes considerations common to several or all remedial options. Common elements will be described fully in the first remedial option to which the element applies and will be referenced in subsequent remedial option descriptions. Several elements are common to all of the remedial options and include the following:

- Implementation considerations;
- Chromium Remediation Program
- Groundwater monitoring program; and
- AULs in both the source area and areas of impacted groundwater near the source area.

4.3.1 Implementation Considerations

Several implementation considerations are common to all remedial options presented in this RAOR. Drilling into the subsurface for a Pre-Design Investigation to determine the extent of the more highly impacted aquifer material is associated with all of the proposed remedial options. Therefore, potential exposure to site workers by impacted material exists. However, based upon previous investigation and interim remedial actions at the site, Level D personal protective equipment (PPE) will be utilized.

A utility clearance will be performed at each drilling and trenching location prior to initiation of work in order to prevent encountering subsurface utilities during implementation of the remedial action.

Soil cuttings from drilling of any remediation and/or observation wells will also be generated during each remedial option. Soil cuttings will be containerized and labeled appropriately and sampled to determine an appropriate off-Site disposal option.

All work would be conducted in accordance with applicable environmental laws and standards, including but not limited to NR 720 and NR 140, as well as proper handling of all investigation derived waste. A Waste Handling Plan would be developed as part of the selected remedy.

4.3.2 Chromium Remediation Program

A full-scale remedial action was chosen for chromium at the Project Site, consisting of the installation of eighteen 4-inch diameter injection wells with 16 being installed underneath and immediately downgradient of the Building, and two being installed southwest of the Building near MW-2. The injection procedures recommended injection of 250 to 400 gal of a 0.2 M sodium dithionite-ferrous sulfate solution under pressure into each of the injection wells. This work was completed in July 2014. Groundwater monitoring continues as part of the remedial action.

Data collected from the pilot study for the chromium remedy indicate that reducing conditions conducive to biodegradation of the VOC COCs are present in the soil and groundwater at the Project Site. VOC impacts are primarily co-located with the observed chromium impacts at the Project Site, but may require a more targeted approach to promote proper aquifer conditions in the areas of greatest VOC-impact. Modifying and continuing the existing chromium remedy can be an effective remedial action to address VOC impacts to the groundwater. Compatibility with the existing chromium remedy was a requirement for technologies to pass the initial screening.

4.3.3 Groundwater Monitoring Program

A groundwater monitoring program is considered to be part of all remedial options. The groundwater monitoring program will be tailored to the selected remedy and will consist of selected wells in the existing monitoring well network. For the purposes of this RAOR, it is assumed that the groundwater monitoring program will extend two years beyond the time estimated (two to ten years) for each of the remedial action options to attain remedial action objectives in order to demonstrate the effectiveness of the remedy. Time and frequency can be adjusted, but generally eight sampling events would be sufficient to establish statistical evidence of plume stability. The short-term goals will be considered met when statistical analysis of the monitoring data indicates the plume is stable or shrinking, allowing the property transfer to proceed.

4.3.4 Activity Use Limitations

AULs will be implemented as necessary. It is anticipated that AULs will be applied to the chromium and VOC-impacted property to control or prevent future excavation and groundwater use in that area. The existing building and asphalt surfaces will be monitored and maintained by a Cap Maintenance Plan to preserve the impervious cap above the impacted areas. The Site will also be included on the WDNR GIS Registry citing the conditions which dictate the presence of the AULs.

4.4 Organization of Detailed Evaluation

Each remedial option presented in Section 4.2 is evaluated in one of the next four subsections (Sections 4.5 through 4.8). These subsections are organized into two parts: a description of the remedial option, including implementation requirements; and an evaluation of the remedial option against the NR 722.07(4) and (5) criteria.

4.5 Option 1 - Monitored Natural Attenuation and Activity Use Limitations

MNA is presented as the presumptive remedy to address dissolved-phase groundwater impacts near, but distinct from, the source area. MNA has been widely used at other sites to achieve clean-up goals. For this strategy, naturally occurring processes are relied upon to reduce COC concentrations to levels that meet Project Site clean-up goals. The progress of natural attenuation is carefully monitored to ensure that the processes continue to reduce concentrations within an acceptable time frame and that further human or environmental impact does not result from the implementation of MNA. Existing Project Site wells would be utilized to monitor the area of VOC-impacted groundwater. Impacts to the operation of the existing water treatment system due to the activities associated with this remedial action option are not anticipated.

COC concentrations in groundwater have begun to attenuate since corrective actions in the source area were implemented. Based upon current data available and the proposed options for source area treatment, it is anticipated that the application of MNA is not appropriate at this Project Site as a stand-alone remedy. MNA could, however, remain an integral portion of another viable remedial action option.

4.6 Option 2 – Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations

Option 2 consists of utilizing enhanced bioremediation near the source area. This technology consists of injection of a substrate into the subsurface to enhance anaerobic conditions in order to promote the natural degradation of VOCs.

Two groundwater collection trenches are located on the Project Site. One is upgradient of the VOC impacts, but the second trench is located downgradient and within the observed groundwater impacts.

This remedial action option would require the installation of several new injection wells to augment the current eighteen injection wells on the Project Site. The new wells would be screened from 20 to 35 feet below ground surface to target VOC-impacted groundwater below the current extent of hexavalent chromium impacts on the Project Site.

A key site-specific advantage would be associated with utilizing enhanced bioremediation. The injection of the substrate would address not only impact within the influence of the injection points, but near-source VOC impacts in groundwater as well since the injected substrate is anticipated to migrate more conservatively (i.e., more quickly) than the dissolved VOCs.

The injection substrate and related design criteria, such as injection spacing and number of injections, would be determined during the Pre-Design Investigation and Remedial Action Design in order to ascertain the most effective application to treat VOC-impacted media.

It is assumed that the enhanced bioremediation injection technology would attain short-term RAOs in a period of 10 years in the source area based upon expected biodegradation rates. However, VOCs would remain in the source area for a much longer period of time assumed to be as much as 40 years or more. The time required to obtain RAOs is largely dependent on the effectiveness of injection substrate determined during the Pre-Design Investigation.

As discussed in Section 4.2.2, MNA for groundwater, and a groundwater monitoring program and AULs would also be a part of Option 2.

Enhanced bioremediation injections would be an effective method to remediate the subsurface impacts in a safe and reliable manner. Since all degradation takes place in the subsurface in this enhanced option, no contact with VOCs would occur. Contractors would encounter little or no impact when installing the systems. The enhanced bioremediation process requires no O&M, which in turn eliminates the need to dispose of operational wastes. Impacts to the operation of the existing water treatment system due to the activities associated with this remedial action option are not anticipated.

4.6.1 Long-Term Effectiveness

It is projected that RAOs will be met in the source area utilizing enhanced bioremediation technology proposed in this option. However, attainment of RAOs is dependent on selection of an effective bioremediation-enhancing substrate for injection. As discussed above, the selection of the bioremediation-enhancing substrate was determined during the chromium remediation program. Because enhanced bioremediation would not meet all of the NR 140 enforcement standards, long-term effectiveness will be dependent on institutional controls and the effectiveness of the treatment in significantly reducing or eliminating off-site VOC migration. As discussed in Section 2.5, the remediation goal for the source area and near-source VOC-impacted groundwater remediation is to reduce VOCs to levels below WDNR enforcement standard levels summarized in Table 2, which correspond with USEPA Drinking Water MCLs. However, the short-term RAO is significant reduction of VOC mass in soil and groundwater with a target of 90% removal. This option has been proven effective in reducing chlorinated solvent concentrations below drinking water standards at other sites.

The substrate injections would directly reduce source area concentrations, but will not directly address the majority of the total mass located outside the source area. Source area groundwater would meet remediation goals in a short period of time estimated to be 10 years. Groundwater monitoring will continue for a period of 2 years beyond the operation of the remedial action in order to demonstrate longer-term compliance with RAOs.

4.6.2 Short-Term Effectiveness

This remedial option is expected to immediately begin to enhance subsurface degradation of COCs. The selected substrate injections will create an anaerobic groundwater environment and supply needed nutrients and growth substrate, promoting biological degradation of COCs. Groundwater monitoring will be utilized to determine to what extent degradation is taking place.

VOCs in groundwater are naturally degraded through chemical transformation under anaerobic conditions. The injection of a substrate to promote anaerobic conditions will further promote subsurface COC reduction. According to mass balance calculations presented in Section 2.3.3.5, the majority of the mass is located in the saturated zone within the source area. While treatment of the source area will be performed, the remedial effort will also have some secondary benefit to the area outside the source area if anaerobic conditions are propagated outside the source area.

The actual reduction of toxicity and volume is dependent on the substrate selected for injection. As discussed above, the chromium remediation program was used to determine the most effective material to enhance subsurface conditions for the degradation of COCs at the site.

4.6.3 Implementability

The injection of a substrate to enhance bioremediation processes involves the installation of multiple, temporary direct push technology (DPT) injection points, injection of the treatment chemicals, and provision for time to allow for biodegradation to occur. This technology will be applied to the source area.

No active O&M (pumping, water treatment, equipment maintenance) is expected to implement an enhanced injection system. However, groundwater monitoring is necessary to demonstrate successful reduction in COC concentrations. Re-injection of substrate may also be necessary to maintain effectiveness of the biotreatment area.

Waste generation and discharge are not significant factors in this option since all substrate is injected into the ground and no drilling spoils are generated with the DPT. Impacted water remains in the subsurface while it comes in contact with the bioremediation enhancing substrate.

4.6.4 Restoration Time Frame

The estimated time to restore the Site to meet remedial action objectives is 10 years. This allows for injection implementation, biological acclimation should a bioaugmentation be required, and first order decay rates for COCs targeted by the augmented biomass.

4.6.5 Cost

The costs for Option 2 are summarized in Appendix C. Enhanced bioremediation injection technology is an enhanced treatment technology. The cost of this option involves the substrate material to be injected and the labor and equipment needed for installation. O&M costs are not associated with either the source area treatment system. Groundwater monitoring is included in the cost. As shown in Appendix C, the cost to implement enhanced bioremediation injections is $535,000.

4.7 Option 3 – Vacuum Enhanced Recovery, Monitored Natural Attenuation and Activity Use Limitations

Option 3 consists solely of VER at the VOC-impacted source area.

The VER system would recover and treat groundwater. The VER system will be designed based on the results of a short-term, one-day, pilot test. VER would be accomplished at three existing groundwater monitoring wells that have been installed at three discreet depths in the source area. Impacted groundwater would be piped to the existing groundwater treatment system. This work would be accomplished during warm weather such that burial of piping to prevent freezing would not be required.

Several key site-specific advantages are associated with utilizing VER. Groundwater removed from the subsurface will effectively eliminate potential migration of the COC-impacted groundwater. The VER system would also extract impacted groundwater and soil vapor directly from the source area.

It is estimated that VER would achieve RAOs in a period of 10 years.

As discussed in Section 4.2.3, MNA for long-term treatment of groundwater and a groundwater monitoring program and AULs would also be a part of Option 3.

The VER system will be an effective method to remediate the subsurface impacts in a safe and reliable manner. VER collects impacted groundwater from the subsurface and prevents further migration of groundwater to outside the source area. Groundwater containing dissolved COCs is removed from the subsurface in a manner that is efficient and safe for both workers and nearby residents. Waste generation is insignificant due to the relatively small volume of water pumped from the subsurface (~10 gpm) and the low mass of VOC in air emissions. However, management of the waste water would be automated and discharged directly to the on-site treatment system and then to the sanitary sewer. Impacts to the operation of the existing water treatment system due to the activities associated with this remedial action option are not anticipated. Handling and disposal of spent carbon may be necessary. Project Site workers will need to follow a health and safety plan for O&M activities.

4.7.1 Long-Term Effectiveness

The VER system will be implemented for the short term goal of reducing VOCs in soil and groundwater by 90% in about 10 years. It is projected that this option will meet the long-term goal only after a longer period of time. The technology utilized in this remedial option has been proven effective in removing VOCs from saturated soil and groundwater at other sites. The VER system will also address the COC mass, which could migrate from the source area.

4.7.2 Short-Term Effectiveness

The technology utilized in this remedial option is expected to immediately begin to remove COC mass from the subsurface. Furthermore, the VER system will prevent off-site migration of impacted groundwater. Removal of the majority of subsurface impact will occur over about a 10 year period of time due to the low permeability of the clay soil. Groundwater monitoring will be utilized to determine to what extent COC removal is taking place.

This remedial option is expected to immediately begin to enhance subsurface degradation of COCs. The selected substrate injections will create an anaerobic groundwater environment, promoting biological degradation of COCs. Groundwater monitoring will be utilized to determine to what extent degradation is taking place.

The implementation of this remedy will require about a 10 year commitment to system operation, maintenance, and monitoring. The reason for this relatively long period is that VER will become much less efficient at removing VOC mass as the VOC concentration reaches low levels near the NR 140 enforcement standard

The VER system will act to reduce toxicity, mobility and volume of COCs at the source area of impacted groundwater. This system will operate to effectively prevent potential migration of COCs. Extraction of COC-impacted groundwater will also act to effectively remove COCs from the groundwater system as the water may be treated in the existing groundwater treatment system prior to discharge.

4.7.3 Implementability

The VER system involves the installation of the wells, connection to the existing treatment system, and system monitoring and maintenance. O&M and wastewater and soil vapor generation and discharge are also elements of this option.

4.7.4 Restoration Time Frame

The VER system would quickly remove dissolved mass of VOCs in the groundwater. However, significant mass could remain in lower permeability zones within the aquifer. This mass of VOCs would slowly diffuse over time back into the aquifer where it would be available for continued recovery. The estimated restoration time frame for VER is 10 years.

4.7.5 Cost

The costs for Option 3 are summarized in Appendix C. The cost of Option 3 includes the labor and equipment needed for installation of the VER system, piping from the pumping wells to the treatment system, and O&M costs and groundwater monitoring costs for the duration of the project (estimated to be 10 years). Cost of O&M for the VER system includes maintaining and rebuilding pumps, operational labor, electricity, fees for discharge of treated water, and replacement or consumable treatment materials.

As summarized in Appendix C, the cost to implement the VER system in the source area is $426,000.

4.8 Option 4 – Vacuum Enhanced Recovery and Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations

Option 4 consists of a combination of VER and enhanced bioremediation at the VOC-impacted source area.

The VER system would first recover and treat the most impacted groundwater, that which is the first pore volume within the source area (see Appendix B, the Mass Balance). The VER system will be designed based on the results of a short-term, one-day, pilot test. VER would be accomplished at three existing groundwater monitoring wells that have been installed at three discreet depths in the source area. Impacted groundwater would be piped to the existing groundwater treatment system. This work would be accomplished during warm weather such that burial of piping to prevent freezing would not be required.

Several key site-specific advantages are associated with utilizing VER. Groundwater removed from the subsurface will effectively eliminate potential migration of the COC-impacted groundwater. The short-term VER system operation would also extract impacted groundwater and a minimum of soil vapor directly from the source area. It is estimated that VER would achieve significant mass reduction in the source area in a period of one to two months.

This remedial action option would require the installation of several new injection wells to augment the current eighteen injection wells on the Project Site. The new wells would be screened from 20 to 35 feet below ground surface to target VOC-impacted groundwater below the current extent of chromium impacts on the Project Site.

A further key site-specific advantage would be associated with utilizing enhanced bioremediation following short-term VER. The injection of the substrate to enhance bioremediation would more effectively address the low-concentrations of VOCs remaining after the initial VER operational period.

The injection substrate and related design criteria, such as injection spacing and number of injections were determined during the chromium remediation program.

It is estimated that the enhanced bioremediation injection following short-term VER would attain short-term RAOs in a period of 2 years based upon reported enhanced bioremediation degradation rates. However, VOCs would remain in the source area above enforcement standards for a much longer period of time. The time required to obtain long-term RAOs (enforcement standards) is largely dependent on the effectiveness of injection substrate in maintaining low ORP conditions and the subsequent effectiveness of MNA. Reinjection with substrate would be determined by aquifer conditions and observed degradation rates.

As discussed in Section 4.2.4, MNA for long-term treatment of groundwater and a groundwater monitoring program and AULs would also be a part of Option 4.

The VER system will be an effective method to remediate the subsurface impacts in a safe and reliable manner. VER collects impacted groundwater from the subsurface and prevents further migration of groundwater to outside the source area. Groundwater containing dissolved COCs is removed from the subsurface in a manner that is efficient and safe for both workers and nearby residents. Waste generation is insignificant due to the relatively small volume of water pumped from the subsurface (~10 gpm) and the low mass of VOC in air emissions. However, management of the waste water would be automated and discharged directly to the on-site treatment system and then to the sanitary sewer. Handling and disposal of groundwater treatment residuals may be necessary. Impacts to the operation of the existing water treatment system due to the activities associated with this remedial action option are not anticipated. Project Site workers will need to follow a health and safety plan for O&M activities.

Enhanced bioremediation injections would be an effective method to remediate the subsurface impacts in a safe and reliable manner. Since all degradation takes place in the subsurface in this enhanced option, no contact with VOCs would occur. Contractors would encounter little or no impact when installing the systems. The enhanced bioremediation process requires no O&M, which in turn eliminates the need to dispose of operational wastes.

4.8.1 Long-Term Effectiveness

The VER system will be implemented for the short term goal of reducing VOCs in source area soil and groundwater by 30% in about one to two months. The technology utilized in this remedial option has been proven effective in removing VOCs from saturated soil and groundwater at other sites. The VER system will also address the COC mass, which could migrate from the source area.

It is projected that short-term RAOs will be met in the source area utilizing enhanced bioremediation technology proposed in this option. However, attainment of RAOs is dependent on selection of an effective bioremediation-enhancing substrate for injection. As discussed above, the selection of the bioremediation-enhancing substrate was determined during the chromium remediation program. Because enhanced bioremediation would not meet all of the NR 140 enforcement standards, long-term effectiveness will be dependent on institutional controls and the effectiveness of the treatment in significantly reducing or eliminating off-site VOC migration. As discussed in Section 2.5, the remediation goal for the source area and surrounding groundwater remediation is to reduce VOCs to levels below WDNR enforcement standard levels summarized in Table 2, which correspond with USEPA Drinking Water MCLs. However, the short-term RAO is significant reduction of VOC mass in soil and groundwater with a target of 90% removal. This option has been proven effective in reducing chlorinated solvent concentrations below drinking water standards at other sites.

The substrate injections would directly reduce source area concentrations, but will not directly address the majority of the total mass located outside the source area. Source area groundwater would meet remediation goals in a short period of time estimated to be about 2 years. Groundwater monitoring will continue for a period of 2 years beyond the operation of the remedial action in order to demonstrate significant rebound in groundwater concentrations does not occur following treatment.

4.8.2 Short-Term Effectiveness

The technology utilized in this remedial option is expected to immediately begin to remove COC mass from the subsurface. Furthermore, the VER system will prevent off-site migration of impacted groundwater. Removal of the majority of subsurface impact using VER will occur over a one to two month period.

The implementation of the enhanced bioremediation remedy following VER will require about a 2 year commitment to system operation, maintenance, and monitoring. The reason for this longer period following short-term VER is the low biodegradation rate for 1,1,1-TCA, but use of enhanced bioremediation rather than longer-term use of VER is considered more effective.

The VER system will act to reduce toxicity, mobility and volume of COCs at the source area of impacted groundwater. This system will operate to effectively prevent potential migration of COCs. Extraction of COC-impacted groundwater will also act to effectively remove COCs from the groundwater system as the water may be treated in the existing groundwater treatment system prior to discharge.

VOCs in groundwater are naturally degraded through chemical transformation under anaerobic conditions. The injection of a substrate following short-term VER to promote anaerobic conditions will further promote subsurface COC reduction. According to mass balance calculations presented in Appendix B, the majority of the mass is located in the saturated zone within the source area. While treatment of the source area will be performed, the remedial effort will also have some secondary benefit to the area outside the source area if anaerobic conditions are propagated outside the source area.

The actual reduction of toxicity and volume is dependent on the substrate selected for injection. As discussed above, the chromium remediation program was used to determine the most effective material to enhance subsurface conditions for the degradation of COCs at the site.

4.8.3 Implementability

The VER system involves the installation of the wells, connection to the existing treatment system, and system monitoring and maintenance. O&M and wastewater and soil vapor generation and discharge are also elements of this option.

The injection of a substrate to enhance bioremediation processes involves the installation of multiple, temporary direct push technology (DPT) injection points, injection of the treatment chemicals, and provision for time to allow for biodegradation to occur. This technology will be applied to the source area.

No active O&M (pumping, water treatment, equipment maintenance) is expected to implement an enhanced injection system following short-term VER. However, groundwater monitoring is necessary to demonstrate successful reduction in COC concentrations. Re-injection of substrate may also be necessary to maintain effectiveness of the biotreatment area.

Waste generation and discharge are not significant factors with enhanced bioremediation since all substrate is injected into the ground and no drilling spoils are generated with the DPT. Impacted water remains in the subsurface while it comes in contact with the bioremediation enhancing substrate.

4.8.4 Restoration Time Frame

The VER operation would remove significant dissolved mass of VOCs in a very short time. Subsequent bioenhancement injections would provide a ready means to degrade the expected back diffusion of VOC mass from the less permeable zones of the aquifer. The estimated time to reach a stable to shrinking plume condition is 2 years after the initial VER performance.

4.8.5 Cost

The costs for Option 4 are summarized in Appendix C. The cost of Option 4 includes the labor and equipment needed for installation of the VER system, piping from the pumping wells to the treatment system, and O&M costs and groundwater monitoring costs for the duration of the project (estimated to be one to two months). Cost of O&M for the VER system includes maintaining and rebuilding pumps, operational labor, electricity, fees for discharge of treated water, and replacement or consumable treatment materials.

The costs for Option 4 also include enhanced bioremediation injection technology is an enhanced treatment technology. The cost of this technology involves the substrate material to be injected and the labor and equipment needed for installation. O&M costs for pumps, water treatment, or water discharge are not applicable. Groundwater monitoring is included in the cost. As shown in Appendix C, the cost to implement enhanced bioremediation injections with the VER system in the source area is $334,000.

4.9 Comparative Analysis

The four remedial options have been described and individually assessed against the six overall protection criteria identified in Section 4.1.

In this section, a comparative analysis of the remedial options addresses each option's ability to meet the six evaluation criteria. The purpose of this analysis is to identify the relative advantages and disadvantages of each remedial option. For this reason, the analysis focuses primarily on the differences between the remedial options. This approach allows for an evaluation of the unique advantages/disadvantages of each remedial option rather than emphasizing elements that do not affect the final selection of a preferred remedial option.

Table 5 provides a summary of the evaluation of each remedial option based on the six criteria. The threshold criteria are presented in Sections 4.9.1 through 4.10.6 and compare individual criteria. Section 4.9.7 presents a summary of the comparative analysis of the six criteria.

Overall protection of human health and the environment will be accomplished using all three of the proposed remedial options that include remedial action through a combination of technologies. These options also address impacted groundwater in the source area. Two of the three options have the added secondary benefit of actively addressing COCs in the vadose zone soils in the source area. As discussed in Section 2.5, RAOs were developed to protect human health and the environment. The long-term remediation goal is to reduce to concentration of the COCs in groundwater below ES and to prevent the migration pathway to groundwater from impacted soils.

The groundwater remediation options evaluated included:

- Option 1 – Monitored Natural Attenuation and Activity Use Limitations;
- Option 2 – Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations;

- Option 3 – Vacum Enhanced Recovery, Monitored Natural Attenuation and Activity Use Limitations; and

- Option 4 – Vacuum Enhanced Recovery with Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations.

Each of these options provides overall protection to human health and the environment and is considered equal when measured against the overall protection criterion.

4.9.1 Long-Term Effectiveness

Physical risks are reduced in all remedial options by physically or biologically removing the chemical impact, or by containing the impacted COCs on-site. All of the options greatly reduce the chemical concentrations over time, and none of the options leave residual risk following remediation, although the remediation times for some of the options differ significantly.

Other long-term considerations include O&M. All of the options include continued monitoring of the groundwater as a key component. Option 1 has a disadvantage in predicting long-term effectiveness in that no active remedy is performed to initially reduce the VOC mass.

4.9.2 Short-Term Effectiveness

In the source area, the short-term effectiveness of Option 4 would be the greatest with the combination of treatment technologies. Options 3 and 4 also would be relatively effective in the short term with immediate recovery of impacted groundwater. However, Options 1 and 2 do not provide short term effectiveness in the source area with the containment systems proposed.

Short-term effectiveness in the source area is greatest with the combination of the enhanced bioremediation and VER components proposed in Option 4.

4.9.3 Implementability

Actions similar to those proposed in each remedial option have been implemented at other sites. However, the level of complexity of installation and O&M vary with the options.

Successful implementation of any biological or chemical treatment technologies (Options 2 and 4) would utilize the results of the full-scale chromium remedy as a presumptive remedy. Further treatability testing may require bioaugmentation or more than one application of chemicals to the subsurface, in contrast to the assumptions in this RAOR.

Permits will be required for all of the remedial options. Underground injection permits would be needed for Options 2 and 4. The current water treatment discharge permit and construction permits would be sufficient for Options 3 and 4 for discharge of treated groundwater generated during VER. Options 2, 3, and 4 would also require drilling and monitoring well installation permits. Characterization and approval for disposal of impacted waste material from groundwater treatment will be required from the receiving landfill prior to shipment. This will require submittal and review of a waste profile.

4.9.4 Restoration Time Frame

Option 4 with its combination of rapid removal of VOC mass and application of enhanced mechanisms to degrade residual VOC mass as it diffuses from less permeable aquifer materials offers the shortest restoration time frame with an estimated time of 2 years.

4.9.5 Cost

The estimated costs for implementation of the remedial options evaluated are summarized in Appendix C and listed below.

Remedial Option 1	Monitored Natural Attenuation and Activity Use Limitations	$1,210,000
Remedial Option 2	Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations	$535,000
Remedial Option 3	Vacuum Enhanced Recovery, Monitored Natural Attenuation and Activity Use Limitations	$426,000
Remedial Option 4	Vacuum Enhanced Recovery and Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations	$334,000

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Option 4 provides the lowest estimated cost remedial action option due to a significantly shorter monitoring period.

4.9.6 Summary of Comparative Analysis

Four options have been considered in this RAOR as listed above.

In Sections 5.1 through 5.6, a comparative analysis of the four remedial options addressed each option's ability to meet the six evaluation criteria. The analysis demonstrated that all of the remedial options would satisfactorily meet the following:

- Long-term effectiveness;
- Implementability; and
- Additional Requirements, namely Activity Use Limitations and WDNR GIS Registry.

The criteria which were not met equally by each of the remedial options were short-term effectiveness, restoration time frame and cost. These criteria are used to determine the best overall option.

Considering all criteria, Foth believes that the best option, based upon data available at the time of this report, is Option 4, Vacuum Enhanced Recovery and Enhanced Bioremediation, Monitored Natural Attenuation and Activity Use Limitations.

The other options are eliminated as follows:

- Options 1 focuses on long-term containment, does not rapidly reduce the mass of source area COCs and has significantly longer timeframe and higher cost.

- Options 2 and 3 are 40% to 85% more expensive than Option 4 and have significantly longer timeframes.

Overall, the remedial components of Option 4 are anticipated to work together to reach short-term RAOs in an estimated period of 2 years of active remediation, 2 years of continued monitoring and 1 year of administrative approval of the remedy for a total of 5 years.

5 Selected Remedial Action Option

The selected Remedial Action Option for the Project Site is Option 4, a combination of the VER with Enhanced Bioremediation.

5.1 Summary of Selected Option

The VER would be implemented first through three existing wells in the MW-7 cluster. Recovered groundwater would be pumped to the existing treatment system prior to discharge to the sanitary sewer under the existing permits and authorizations. This initial flushing would remove significant VOC mass from the center of the impacted groundwater area. Recovery rates would be field adjusted to provide the best removal efficiency. Wells could be pumped dry if the aquifer did not yield sufficient water, allowed to recover and then have the vacuum recovery reapplied. Additional investigation locations utilizing direct-push and MIP technology would verify the target location. Additional injection wells would be installed in the target area as shown on Figure 6.

5.2 Proposed Schedule

Design completion and implementation of the VER will be completed within six months of approval to proceed with this remedial action option. Additional well installation and bioremediation enhancement injections would be completed within one year. Verification monitoring would continue no more frequently than quarterly, likely a continuation of the current semi-annual VOC sampling regimen at the Site, upon completion of the active remedy.

5.3 Cost Estimate

The cost estimate for the selected option is presented in Appendix C. The estimated cost for the remedy is $334,000. The scope of work included in this cost estimate includes:

- Pre-Design Investigation, including collection of microbial specific samples of saturated media and VER pilot test;
- Construction of VER infrastructure and rental/operation of VER specific equipment;
- Installation of injection wells and injection of biodegradation enhancement media, in-line filter cartridges in the treatment system should be replaced after disposal of drilling and development water;
- Continuation of the current VOC groundwater monitoring program with addition of MNA parameters for a period of four years; and
- WDNR administration costs for the VOC remedy plus an additional year of closure documentation.

Although use of the current groundwater treatment is anticipated for this remedy, costs are not included as the VER is anticipated to be designed to utilize only the available capacity between current operation and the design capacity of the system.

5.4 Timeframe for Compliance

AULs would be required for the Project Site. However, active remediation and verification monitoring could be completed in a short time including 2 years of active remediation followed by 2 years of verification monitoring. Administrative approval of the remedial actions may require up to an additional year for a total project duration of 5 years.

5.5 Performance Measurements

Quarterly groundwater monitoring for the VOCs and groundwater conditions would be performed upon approval of this remedial option. The remedy would be considered successful upon demonstration that the mass of VOC-impacted media has been reduced and VOC-impacted groundwater is stable and no longer poses risks to off-site receptors. On-site exposures will be mitigated through the on-going AULs.

5.6 Treatment of Residuals

Residuals include investigation derived waste and recovered groundwater. Soil cuttings will be handled and disposed appropriately according to Project Site protocols. Recovered groundwater will be treated in the existing system and discharged to the sanitary sewer in accordance with current permits and authorizations. Waste handling is minimized in the Pre-Design Investigation through use of direct push and in-situ techniques. Remedial construction may generate waste through the installation of additional injection wells. This activity is estimated to generate up to three drums of solid waste (soil) per well. WDNR will be responsible for direct waste disposal costs.

5.7 Sustainability

The selected remedial option consisting of VER of VOC-impacted groundwater, enhanced bioremediation through injection of additional sodium dithionite-ferrous sulfate, or other appropriate substrate and enhancements, and MNA has been evaluated for the NR 140 criteria pertaining to the sustainability of the remedy and the Green & Sustainable Remediation Manual (WDNR, 2012). Due to the size of the Project Site, assessments were generally qualitative in nature. Following is a summary of those findings as referenced in the ASTM E2893-13 Standard Guide for Greener Cleanups Table X3.1 for Best Management Practices (BMPs).

- Energy use for the remedy would consist of the fuel for investigation and drilling equipment, installation of piping and operation of the existing groundwater treatment system for two to six months. These fuel and electrical consumption estimates are significantly less than the fuel consumed by excavation or haul truck operation and the electrical demand of operating the existing system for years into the future.

- The proposed remedial option would generate minor air releases through the on-site groundwater treatment system. Again, these releases to the atmosphere would be reduced versus the base case of continued long-term operation of the system.

- Impacts to water resources would be minimized through the in-situ approach of the enhanced bioremediation. Some groundwater would be removed from the aquifer through the VER. However, this water is already removed from the potential resources by the existing Project Site environment use controls. VER removal can be designed to operate during non-peak electrical hours and uses more efficient vacuum pumps versus

- The use of existing wells where feasible and in-situ approach will minimize disturbance of soil and economic impacts. Trenching, if needed, will restrict vehicle traffic while the soil is removed and backfilled, however, long-term effects are minimized as site operations may return to normal upon completion of the surface cover. Furthermore, operation of the VER system using above-ground piping during warmer months could eliminate the need for trenching.

- The use of permanent injection wells will eliminate the need for repeated use of DPT equipment for subsequent injections if required. The use of the same chemical as the chromium remedy provides a lower environmental burden by avoiding chemical compatibility issues. Additional carbon for bioremediation food sources, if required, can easily be procurred from readily available local sources.

- Reuse and repurposing of existing site infrastructure and equipment will reduce waste. Use of DPT and EC/MIP will greatly reduce or eliminate soil cuttings from the investigation and enhanced bioremediation remedy. Use of existing wells for the VER will eliminate the need for additional well materials and waste handling and disposal. Planning the switch from a more energy intense remedy (pump and treat) to a less energy demanding remedy (biodegradation) in advance allows for a smoother and earlier transition thus saving resources and project time to closure.

- Planning to surgically address the highest area of VOC-impact with a quick response remedy like VER followed by a more general and longer lasting remedy like biodegradation avoids wasted resources on pumping high volumes of water with little contamination and allows aquifer recovery to proceed more quickly.

Overall, this remedial option will reduce the duration of operation required for the existing groundwater treatment system by about thirty six years, saving additional energy and waste.

6 References

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Tables

Table 1
Physical and Chemical Properties of Volatile Organic Chemicals of Concern
Former Wisconsin Chrome Corporation Site
Kaukauna, Wisconsin

Chemical Name	Wisconsin Code NR 140 Enforcement Standard	Unit	Range of Detections	Molecular Weight	Boiling Point °C	Henry's Law Constant (atm·m^3/mol)	Log K (oc)	K_d	R	Log K (ow)	Solubility in Organics	Solubility in Water (mg/L at 20 °C)	Specific Gravity (at 20/4 °C)
1,1,1-Trichloroethane	200	ug/l	<1 - 30,700	133.4	74.1	0.072	2.04	1.10	6.81	2.49	Soluble in ethanol, chloroform, and ether	1,290	1.4397
1,1-Dichloroethane	850	ug/l	<1 - 13,200	98.96	57.3	0.0043	1.48	0.30	2.60	1.78	Miscible with ethanol	5,500	1.1757
Trichloroethene	5	ug/l	<1 - 48.2	131.39	87.2	0.0091	1.81	0.65	4.42	2.53	Soluble in acetone, ethanol, chloroform, and ether	1,100	1.4642
1,1-Dichlorothene	7	ug/l	<1 - 2,590	96.94	37	0.021	1.81	0.65	4.42	2.13	Slightly soluble in ethanol, ether, acetone, benzene, and chloroform	400	1.218
Vinyl Chloride	0.2	ug/l	<0.1 - 10	62.5	-13.4	2.78	0.39[a]	0.02	1.13	0.6	Soluble in ethanol, carbon tetrachloride, and ether	1,100 mg/L at 25 °C	0.9106

Notes:

Fraction organic carbon	1.0%	
Soil Bulk Density	1.59	g/cc
Soil Porosity	0.3	

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Table 2

Recent VOC Groundwater Monitoring Analytical Summary

Former Wisconsin Chrome Corporation Site

Kaukauna, Wisconsin

		Parameter	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Chloroethane	cis-1,2-Dichloroethene	Methylene Chloride	Trichloroethene	Vinyl Chloride
		Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
		NR 140 Enforcement Standard (ES)	200	5	850	7	5	400	70	5	5	0.2
		NR 140 Preventive Action Limit (PAL)	40	0.5	85	0.7	0.5	80	7	0.5	0.5	0.02
Location	**Sample Name**	**Date**										
MW-2	MW-2_20131120	11/20/2013	*98.7*	< 0.39 U	30.2	***12.3***	< 0.48 U	1.2	< 0.42 U	*0.53 J*	< 0.36 U	< 0.18 U
MW-2	MW-2_20140120	1/20/2014	22.9	< 0.39 U	10.3	*3.5*	< 0.48 U	< 0.44 U	< 0.42 U	0.40 J	< 0.36 U	< 0.18 U
MW-2	MW-2_20140310	3/10/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-2	MW-2-201407	7/29/2014	*78.9*	< 0.16 U	18.8	***10.0***	< 0.17 U	0.65 J	< 0.26 U	0.34 J	< 0.33 U	< 0.18 U
MW-2	MW-2_20140919	9/19/2014	*82.4*	0.26 J	26.7	***12.5***	< 0.17 U	< 0.37 U	< 0.26 U	0.47 J	< 0.33 U	< 0.18 U
MW-2	MW-2_201409	9/24/2014	*81.9*	< 0.16 U	23.4	***11.8***	< 0.17 U	< 0.37 U	< 0.26 U	0.37 J	< 0.33 U	< 0.18 U
P-2A	P-2A_20131120	11/20/2013	0.96 J	< 0.39 U	0.37 J	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-2A	P-2A-201407	7/29/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-2A	P-2A_201409	9/24/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-2B	P-2B_20131120	11/20/2013	0.67 J	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-2B	P-2B_20140120	1/20/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-2B	P-2B_20140310	3/10/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-2B	P-2B-201407	7/29/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-2B	P-2B_201409	9/24/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-4	MW-4_20131118	11/18/2013	*69.3*	< 0.39 U	14.3	***9***	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-4	MW-4_20140121	1/21/2014	*55.3*	< 0.39 U	11.9	***8.2***	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-4	MW-4_20140310	3/10/2014	39.4	< 0.39 U	9.0	*6.4*	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-4	MW-4-201407	7/28/2014	*97.0*	0.22 J	22.7	***15.2***	< 0.17 U	0.58 J	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-4	MW-4_20140919	9/19/2014	*47.6*	< 0.16 U	13.8	***10.2***	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-4	MW-4_201409	9/23/2014	*40.9*	< 0.16 U	11.3	***8.1***	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-4A	P-4A_20131118	11/18/2013	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-4A	P-4A_20140121	1/21/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-4A	P-4A_20140310	3/10/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-4A	P-4A-201407	7/28/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-4A	P-4A_201409	9/23/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-6R	MW-6R_20131118	11/18/2013	*56.1*	< 0.39 U	6.4	*4.5*	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	*0.71 J*	< 0.18 U
MW-6R	MW-6R_20140121	1/21/2014	*47.6*	< 0.39 U	10.2	*5.3*	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	*0.68 J*	< 0.18 U
MW-6R	MW-6R_20140515	5/15/2014	32.1	< 0.16 U	7.9	*3.9*	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	0.49 J	< 0.18 U
MW-6R	MW-6R-201407	7/28/2014	*40.9*	< 0.16 U	3.6	*2.4*	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	*0.64 J*	< 0.18 U
MW-6R	MW-6R_20140919	9/19/2014	*54.4*	< 0.16 U	11.0	***7.9***	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	*0.82 J*	< 0.18 U
P-6A	P-6A_20131118	11/18/2013	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6A	P-6A_20140121	1/21/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6A	P-6A_20140310	3/10/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6A	P-6A-201407	7/28/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-6A	P-6A_201409	9/23/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-6B	P-6B_20131118	11/18/2013	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6B	P-6B_20140121	1/21/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6B	P-6B_20140310	3/10/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6B	P-6B-201407	7/28/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-6B	P-6B_201409	9/23/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-6C	P-6C_20140121	1/21/2014	0.45 J	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6C	P-6C_20140310	3/10/2014	< 0.44 U	< 0.39 U	< 0.28 U	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-6C	P-6C-201407	7/28/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-6C	P-6C_201409	9/23/2014	< 0.50 U	< 0.16 U	< 0.24 U	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-7R	MW-7R_20131120	11/20/2013	***10,100***	< 78.0 U	***1,210***	***1,450***	< 95.3 U	*121 J*	< 83.8 U	< 71.7 U	< 72.8 U	< 37.0 U
MW-7R	MW-7R_20140120	1/20/2014	***17,700***	< 78.0 U	***1,580***	***2,590***	< 95.3 U	*154 J*	< 83.8 U	< 71.7 U	< 72.8 U	< 37.0 U
MW-7R	MW-7R_20140515	5/15/2014	***6,280***	< 7.8 U	*300*	***562***	< 8.4 U	33.4 J	< 12.8 U	< 11.6 U	***19.9 J***	< 8.8 U
MW-7R	MW-7R-201407	7/28/2014	***1,140***	*2.6 J*	*190*	***204***	< 1.7 U	25.2	< 2.6 U	< 2.3 U	***8.3 J***	< 1.8 U
MW-7R	MW-7R_20140918	9/18/2014	***14,100***	< 7.8 U	***1,320***	***2,200***	< 8.4 U	*144*	< 12.8 U	***64.6***	***48.2 J***	***9.6 J***
P-7A	P-7A_20131120	11/20/2013	***30,700***	< 78.0 U	***13,100***	***709***	< 95.3 U	< 88.7 U	< 83.8 U	< 71.7 U	< 72.8 U	< 37.0 U
P-7A	P-7A_20140120	1/20/2014	*114*	< 19.5 U	***5,010***	***1,030***	***28.3 J***	< 22.2 U	< 21.0 U	< 17.9 U	< 18.2 U	< 9.2 U
P-7A	P-7A_20140515	5/15/2014	*104*	***8.1 J***	***3,680***	***741***	***21.8 J***	< 18.7 U	< 12.8 U	< 11.6 U	< 16.5 U	< 8.8 U
P-7A	P-7A-201407	7/28/2014	*53.8*	***5.4 J***	***2,010***	***463***	***12.9 J***	< 7.5 U	< 5.1 U	***7.0 J***	< 6.6 U	< 3.5 U
P-7A	P-7A_20140918	9/18/2014	6.2	< 0.31 U	*193*	***63.2***	*0.87 J*	< 0.75 U	< 0.51 U	*0.65 J*	< 0.66 U	< 0.35 U

Table 2

Recent VOC Groundwater Monitoring Analytical Summary

Former Wisconsin Chrome Corporation Site

Kaukauna, Wisconsin

		Parameter	**1,1,1-Trichloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**	**1,1-Dichloroethene**	**1,2-Dichloroethane**	**Chloroethane**	**cis-1,2-Dichloroethene**	**Methylene Chloride**	**Trichloroethene**	**Vinyl Chloride**
		Units	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
		NR 140 Enforcement Standard (ES)	**200**	**5**	**850**	**7**	**5**	**400**	**70**	**5**	**5**	**0.2**
		NR 140 Preventive Action Limit (PAL)	**40**	**0.5**	**85**	**0.7**	**0.5**	**80**	**7**	**0.5**	**0.5**	**0.02**
Location	**Sample Name**	**Date**										
P-7B	P-7B_20131119	11/19/2013	*50.0 J*	< 19.5 U	***3,430***	***581***	< 23.8 U	< 22.2 U	< 21.0 U	< 17.9 U	< 18.2 U	< 9.2 U
P-7B	P-7B_20140120	1/20/2014	***24,200***	< 78.0 U	***11,500***	***595***	< 95.3 U	< 88.7 U	< 83.8 U	< 71.7 U	< 72.8 U	< 37.0 U
P-7B	P-7B_20140515	5/15/2014	***19,800***	***66.7 J***	***9,540***	***503***	***42.3 J***	< 37.5 U	< 25.6 U	< 23.3 U	< 33.1 U	< 17.6 U
P-7B	P-7B-201407	7/28/2014	***28,400***	***78.4 J***	***13,200***	***776***	***58.8 J***	< 74.9 U	< 51.2 U	< 46.5 U	< 66.1 U	< 35.1 U
P-7B	P-7B_20140918	9/18/2014	***16,600***	< 31.1 U	***8,860***	***573***	< 33.5 U	< 74.9 U	< 51.2 U	< 46.5 U	< 66.1 U	< 35.1 U
P-7C	P-7C_20131120	11/20/2013	6.6	< 0.39 U	2.9	*2.1*	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-7C	P-7C_20140121	1/21/2014	0.87 J	< 0.39 U	2.6	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-7C	P-7C_20140310	3/10/2014	0.86 J	< 0.39 U	2.4	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
P-7C	P-7C-201407	7/28/2014	*41.0*	0.19 J	29.0	*1.0*	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
P-7C	P-7C_201409	9/23/2014	1.3	< 0.16 U	0.44 J	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-10	MW-10_20131120	11/20/2013	5.9	< 0.39 U	2.1	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-10	MW-10_20140120	1/20/2014	4.0	< 0.39 U	1.8	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-10	MW-10_20140310	3/10/2014	3.9	< 0.39 U	1.9	< 0.43 U	< 0.48 U	< 0.44 U	< 0.42 U	< 0.36 U	< 0.36 U	< 0.18 U
MW-10	MW-10-201407	7/29/2014	5.7	< 0.16 U	2.2	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-10	MW-10_20140919	9/19/2014	5.6	< 0.16 U	2.6	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-10	MW-10_201409	9/24/2014	4.5	< 0.16 U	2.1	< 0.41 U	< 0.17 U	< 0.37 U	< 0.26 U	< 0.23 U	< 0.33 U	< 0.18 U
MW-20	MW-20_20131120	11/20/2013	***444***	< 1.9 U	56.2	***41.3***	< 2.4 U	7.5	< 2.1 U	< 1.8 U	*2.0 J*	***1.8 J***
MW-20	MW-20_20140121	1/21/2014	***3,120***	< 19.5 U	*376*	***238***	< 23.8 U	41.3 J	< 21.0 U	< 17.9 U	< 18.2 U	< 9.2 U
MW-20	MW-20_20140310	3/10/2014	***2,900***	< 15.6 U	*380*	***251***	< 19.1 U	48.4	< 16.8 U	< 14.3 U	< 14.6 U	< 7.4 U
MW-20	MW-20-201407	7/28/2014	***1,970***	*2.4 J*	*244*	***188***	< 1.7 U	34.2	< 2.6 U	*3.9 J*	***5.5 J***	***10 J***
MW-20	MW-20_20140918	9/18/2014	***1,260***	< 3.1 U	*162*	***123***	< 3.4 U	19.8 J	< 5.1 U	***15.7 J***	< 6.6 U	< 3.5 U
MW-20	MW-20_201409	9/23/2014	***1,440***	< 1.6 U	*182*	***142***	< 1.7 U	19.2	< 2.6 U	*4.9 J*	***5.0 J***	***4.4 J***
MW-21	MW-21_20131119	11/19/2013	***572***	*2.0*	*120*	***156***	*3.3*	73.1	3.0	< 0.36 U	***6.8***	***9.3***
MW-21	MW-21_20140121	1/21/2014	***496***	< 3.9 U	*124*	***140***	< 4.8 U	65.6	< 4.2 U	< 3.6 U	***6.5 J***	***7.1 J***
MW-21	MW-21_20140311	3/11/2014	***467***	< 3.9 U	*119*	***137***	< 4.8 U	50.5	< 4.2 U	< 3.6 U	***5.5 J***	***4.1 J***
MW-21	MW-21-201407	7/28/2014	***513***	< 1.6 U	*122*	***144***	*3.4 J*	52.5	3.9 J	< 2.3 U	***7.0 J***	***5.3 J***
MW-21	MW-21_201409	9/23/2014	***318***	*1.0 J*	72.9	***32.1***	*1.9 J*	25.3	2.5 J	*1.5 J*	*3.9*	< 0.44 U
MW-22	MW-22_20131119	11/19/2013	***364***	< 0.39 U	22.2	***64.3***	*0.90 J*	0.80 J	< 0.42 U	*3.2*	***10.0***	< 0.18 U
MW-22	MW-22_20140121	1/21/2014	***341***	< 1.6 U	24.2	***56.7***	< 1.9 U	< 1.8 U	< 1.7 U	***21.4***	***8.2***	< 0.74 U
MW-22	MW-22_20140311	3/11/2014	***376***	< 1.6 U	22.9	***77.2***	< 1.9 U	< 1.8 U	< 1.7 U	*4.7*	***10.0***	< 0.74 U
MW-22	MW-22-201407	7/31/2014	***584***	< 0.62 U	34.8	***28.4***	*1.5 J*	< 1.5 U	< 1.0 U	***8.0***	***10.6***	< 0.70 U
MW-22	MW-22_201409	9/24/2014	***397***	< 0.62 U	28.9	***18.2***	< 0.67 U	< 1.5 U	< 1.0 U	***7.1***	***9.5***	< 0.70 U

Notes:

< = Concentration of the analyte is below the method detection limit.
B = Analyte was detected in the associated method blank.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
deg C = degrees Celsius
EB = equipment blank
FD = field duplicate sample
ft = feet
H1 = Analysis conducted outside the recognized method holding time.
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
N = normal sample
P4 = Sample field preservation does not meet EPA or method recommendations for this analysis.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
T = total
U = The analyte was not detected at or above the method detection limit.
ug/L = micrograms per liter
- = not applicable
Bold font indicates value exceeds NR 140 ES, Italicized font indicates value exceeds NR 140 PAL.

Prepared by: MGM
Checked by: BDS1

Table 3
Recent Groundwater Monitoring Analytical Summary
Former Wisconsin Chrome Corporation Site
Kaukauna, Wisconsin

			Parameter	**Depth to Water**	**Dissolved Oxygen**	**Nitrogen, Nitrate**	**pH**	**Phosphorus**	**Redox Potential**	**Specific Conductance**	**Sulfate**	**Temperature**
			Units	**ft**	**mg/L**	**mg/L**	**s.u.**	**mg/L**	**mV**	**uS/cm @25 C**	**mg/L**	**deg c**
			Fraction		**T**	**D**	**T**	**D**	**T**	**T**	**D**	**T**
			NR 140 Enforcement Standard (ES)	**-**	**-**	**10**	**-**	**-**	**-**	**-**	**250**	**-**
			NR 140 Preventive Action Limit (PAL)	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**125**	**-**
Location	**Sample Name**	**Date**	**Sample Type**									
MW-2	MW-2_20131120	11/20/2013	N	3.42	0.31	0.34 JD3	7.17	< 0.088 U	32	1,470.0	*213*	12.78
MW-2	MW-2_20131219	12/19/2013	N	6.23	0.05	0.15 J	7.00	< 0.088 U	42	1,733.0	*205*	9.92
MW-2	MW-2-201407	7/29/2014	N	3.93	0.15	0.37	7.19	< 0.052 U	79	2,129.0	*205*	13.17
MW-2	MW-2_201408	8/20/2014	N	3.90	0.09	< 3.0 UD3	7.15	< 0.052 U	107	1,879.0	*193*	14.32
MW-2	MW-2_201409	9/24/2014	N	3.84	3.33	0.16 J	6.83	< 0.052 U	139.7	1,742.0	*197*	15.43
MW-2	MW-2_201410	10/20/2014	N	3.62	1.26	< 0.15 U	6.87	< 0.052 U	154	1,657.0	*199*	14.60
MW-3	MW-3_20131120	11/20/2013	N	4.56	0.36	< 0.15 U	7.52	< 0.088 U	29	513.4	23.7	13.44
MW-3	MW-3_20131219	12/19/2013	N	6.86	0.24	0.18 J	7.52	< 0.088 U	-4	596.5	25.2	11.89
MW-3	MW-3-201407	7/28/2014	N	6.05	2.31	0.62	7.83	< 0.052 U	77	434.6	21.0	13.02
MW-3	MW-3_201408	8/20/2014	N	4.52	0.69	0.16 J	7.65	< 0.052 U	139	466.3	21.6	13.48
MW-3	MW-3_201409	9/24/2014	N	5.52	0.26	0.75 JD3, M0	7.28	< 0.052 U	82.9	422.0	29.2	14.44
MW-3	MW-3_201410	10/20/2014	N	5.04	2.91	< 0.15 U	7.13	0.11 JM0	157	603.0	33.8	13.90
MW-6R	MW-6R_20131118	11/18/2013	N	3.52	2.10	1.3	6.92	< 0.088 U	80	827.4	43.4 M0	12.30
MW-6R	MW-6R_20131218	12/18/2013	N	8.30	1.07	1.4	6.92	< 0.088 U	37	837.4	40.4	10.59
MW-6R	MW-6R-201407	7/28/2014	N	7.31	0.46	1.2	7.32	< 0.052 U	82	872.5	45.4	12.11
MW-6R	MW-6R_201408	8/19/2014	N	7.20	0.27	< 0.15 U	7.23	< 0.052 U	6	843.3	41.6	12.07
MW-6R	MW-6R_201409	9/23/2014	N	7.08	0.48	0.26 J	6.85	< 0.052 U	64.1	925.0	46.3	12.98
MW-6R	MW-6R_201410	10/20/2014	N	6.07	4.63	1.5	6.91	< 0.052 U	187	890.0	41.8	12.80
P-6A	P-6A_20131118	11/18/2013	N	23.03	0.14	0.29 J	7.82	< 0.088 U	99	313.8	14.4	9.83
P-6A	P-6A_20131219	12/19/2013		28.83								
P-6A	P-6A-201407	7/28/2014	N	6.28	0.59	< 0.15 U	7.33	0.28 J	-135	361.0	7.3	12.34
P-6A	P-6A_201408	8/19/2014	N	15.00	0.02	< 0.15 U	6.85	0.26 J	-118	330.9	9.2	12.12
P-6A	P-6A_201409	9/23/2014	N	24.63	0.41	< 0.75 UD3	6.80	0.094 J	-39.3	472.0	58.4	11.95
P-6A	P-6A_201410	10/20/2014	N	27.48	2.35	1.8	6.74	0.059 J	-17.6	624.0	33.1	10.60
MW-7R	MW-7R_20131120	11/20/2013	N	5.29	0.72	< 0.75 UD3	7.16	< 0.088 U	257	1,547.0	*239*	13.46
MW-7R	MW-7R_20131218	12/18/2013	N	7.21	0.53	< 3.0 UD3	6.97	< 0.088 U	81	1,645.0	*231*	11.96
MW-7R	MW-7R-201407	7/28/2014	N	5.33	0.35	0.21 J	7.28	< 0.052 U	129	690.0	115	15.19
MW-7R	MW-7R_201408	8/19/2014	N	6.14	1.68	< 0.75 UD3	7.22	< 0.10 UD3	163	1,090.0	*155*	15.27
MW-7R	MW-7R_201409	9/23/2014	N	6.04	5.82	0.75 JD3	6.89	< 0.052 U	92	418.0	80.2	16.29
MW-7R	MW-7R_201410	10/20/2014	N	5.93	3.68	< 0.75 UD3	6.95	< 0.052 U	169	1,203.0	*160*	15.00
P-7A	P-7A_20131120	11/20/2013	N	28.51	0.14	< 0.15 U	7.43	0.20 J	-28	2,522.0	***869***	11.15
P-7A	P-7A_20131219	12/19/2013	N	28.54	3.45	0.19 J	7.28	0.13 J	3	1,207.0	***760***	10.35
P-7A	P-7A-201407	7/28/2014	N	7.62	3.08	0.27 J	7.65	< 0.052 U	126	1,134.0	*173*	12.22
P-7A	P-7A_201408	8/19/2014	N	13.37	0.45	< 0.15 U	7.49	< 0.052 U	73	1,649.0	***432***	12.92
P-7A	P-7A_201409	9/23/2014	N	2.59	4.35	0.39	7.14	< 0.052 U	44.8	220.0	30.0	13.86
P-7A	P-7A_201410	10/20/2014	N	2.42	0.69	0.47	6.78	0.63	18.6	320.0	19.6	12.90
P-7B	P-7B_20131119	11/19/2013	N	9.53	0.74	0.17 J	7.60	< 0.088 U	30	1,201.0	*216*	12.01
P-7B	P-7B_20131219	12/19/2013	N	12.63	2.38	0.35	7.44	< 0.088 U	45	1,147.0	*180*	11.62
P-7B	P-7B-201407	7/28/2014	N	28.83	1.31	< 0.15 U	7.44	< 0.052 U	-30	2,481.0	***863***	14.95
P-7B	P-7B_201408	8/19/2014	N	33.34	4.22	0.16 J	7.26	< 0.052 U	27	1,201.0	***305***	12.89
P-7B	P-7B_201409	9/23/2014	N	28.95	1.82	< 0.15 U	7.07	< 0.052 U	-24.4	2,470.0	***741***	13.14
P-7B	P-7B_201410	10/20/2014	N	28.75	0.56	< 0.15 U	6.94	0.069 J	-5.2	2,388.0	***759***	11.80
P-7C	P-7C_20131120	11/20/2013	N	40.42	1.25	1.3	8.66	< 0.088 U	172	229.5	26.0 M0	10.41
P-7C	P-7C_20131218	12/18/2013	N	41.36	2.30	1.3	7.26	0.13 J	1	232.6	25.5	10.16
P-7C	P-7C-201407	7/28/2014	N	34.80	0.41	0.38	7.82	< 0.052 U	-86	128.9	9.1	12.98
P-7C	P-7C_201408	8/19/2014	N	0.07	0.20	< 0.15 U	7.08	< 0.052 U	2	80.9	4.2	13.68
P-7C	P-7C_201409	9/23/2014	N	7.36	0.12	0.33	6.81	< 0.052 U	-39	72.0	3.9 J	13.10
P-7C	P-7C_201410	10/20/2014	N	14.73	0.79	0.82	6.98	< 0.052 U	-61.1	101.0	5.8	11.70

Table 3
Recent Groundwater Monitoring Analytical Summary
Former Wisconsin Chrome Corporation Site
Kaukauna, Wisconsin

			Parameter	Depth to Water	Dissolved Oxygen	Nitrogen, Nitrate	pH	Phosphorus	Redox Potential	Specific Conductance	Sulfate	Temperature
			Units	ft	mg/L	mg/L	s.u.	mg/L	mV	uS/cm @25 C	mg/L	deg c
			Fraction		T	D	T	D	T	T	D	T
			NR 140 Enforcement Standard (ES)	-	-	10	-	-	-	-	250	-
			NR 140 Preventive Action Limit (PAL)	-	-	2	-	-	-	-	125	-
Location	**Sample Name**	**Date**	**Sample Type**									
MW-20	MW-20_20131120	11/20/2013	N	5.45	0.13	< 0.15 U	6.01	0.11 J	71	622.3	***329***	12.16
MW-20	MW-20_20131218	12/18/2013	N	7.17	0.14	< 0.15 U	6.71	< 0.088 U	-45	1,028.0	*201*	9.80
MW-20	MW-20-201407	7/28/2014	N	5.29	0.11	< 0.15 U	7.00	< 0.052 U	-38	1,110.0	*191*	15.81
MW-20	MW-20_201408	8/19/2014	N	6.36	0.02	0.65	6.18	< 0.052 U	-4	1,011.0	120	15.77
MW-20	MW-20_201409	9/23/2014	N	6.48	0.29	0.22 J	6.99	< 0.052 U	-34.8	372.0	87.8	16.99
MW-20	MW-20_201410	10/21/2014	N	6.55	0.48	1.0 J1q, D3	6.98	< 0.052 U	-25.3	705.0	*125*	14.30
MW-21	MW-21_20131119	11/19/2013	N	4.74	1.58	< 0.75 UD3	6.75	< 0.088 U	168	1,131.0	66.6	16.45
MW-21	MW-21_20131219	12/19/2013	N	7.54	0.21	< 1.5 UD3	7.00	< 0.088 U	77	1,306.0	71.1	16.79
MW-21	MW-21-201407	7/28/2014	N	6.50	0.38	0.66	7.04	< 0.069 UD3	124	1,661.0	94.3	15.98
MW-21	MW-21_201408	8/19/2014	N	5.43	0.00	< 0.75 UD3	5.92	< 0.10 UD3	249	1,926.0	***381***	16.33
MW-21	MW-21_201409	9/23/2014	N	5.97	0.24	< 0.15 U	6.60	< 0.052 U	66.9	1,964.0	***409***	16.59
MW-21	MW-21_201410	10/21/2014	N	6.15	1.02	< 0.15 U	6.73	0.073 J	12.7	1,668.0	***290***	16.30
MW-22	MW-22_20131119	11/19/2013	N	4.28	0.48	1.1	7.56	< 0.088 U	117	663.2	118	16.81
MW-22	MW-22_20131219	12/19/2013	N	5.38	0.58	1.3	7.70	< 0.088 U	118	770.8	113	16.21
MW-22	MW-22-201407	7/31/2014	N	3.78	0.87	0.54	6.72	< 0.052 U	153	1,365.0	***346***	18.12
MW-22	MW-22_201408	8/19/2014	N	3.75	0.45	< 1.5 U2q, D3	7.07	< 0.052 U	143	1,528.0	***466***	17.38
MW-22	MW-22_201409	9/24/2014	N	4.00	0.61	1.7	7.04	< 0.052 U	116.1	1,526.0	***377***	17.65
MW-22	MW-22_201410	10/21/2014	N	4.01	0.94	1.7 D3	6.63	0.062 J	138	1,525.0	***376***	16.70
SUMP A	SUMP A_20131119	11/19/2013	N			< 0.15 U		< 0.088 U			*154*	
SUMP A	SUMP A_20131219	12/19/2013	N			0.15 J		< 0.088 U			*139*	
SUMP A	SUMP-A-201407	7/29/2014	N	6.06	2.77	0.24 J	7.25	< 0.052 U	120	1,147.0	*170*	16.55
SUMP A	SUMP-A_201408	8/19/2014	N	9.50	0.80	0.48	7.18	< 0.052 U	62	1,154.0	*152*	13.44
SUMP A	SUMP-A_201409	9/24/2014	N	9.36	6.58	< 0.15 U	7.24	< 0.052 U	107.1	1,156.0	*140*	14.84
SUMP A	SUMP A_201410	10/21/2014	N	9.65	1.39	0.15 J1q	6.94	1.2	51.9	1,136.0	*132*	12.40
SUMP B	SUMP B_20131119	11/19/2013	N			*2.2*		< 0.088 U			101	
SUMP B	SUMP B_20131219	12/19/2013	N			0.16 J		< 0.088 U			*175*	
SUMP B	SUMP-B-201407	7/29/2014	N	3.90	2.09	0.88	6.91	< 0.052 U	66	1,481.0	121	19.83
SUMP B	SUMP-B_201408	8/20/2014	N	6.42	0.87	< 0.15 U	7.02	< 0.052 U	128	1,520.0	121	16.60
SUMP B	SUMP-B_201409	9/24/2014	N	7.11	2.00	0.17 J	6.68	< 0.052 U	116.9	1,489.0	120	15.88
SUMP B	SUMP B_201410	10/21/2014	N	4.57	4.45	0.39	6.88	< 0.052 U	137.8	1,319.0	*210*	15.40
MW-7R	MW-7RDUP_20131120	11/20/2013	FD			< 0.75 UD3		< 0.088 U			*234*	
	EQ_BLANK_20131219	12/19/2013	EB			0.21 J		< 0.088 U			4.8 B	
MW-7R	MW DUP_20131218	12/18/2013	FD			< 3.0 UD3		< 0.088 U			*224*	
MW-2	MW-DUP-201407	7/29/2014	FD			0.24 JM0		< 0.052 U			*209*	
MW-2	MW-DUP_201408	8/20/2014	FD			< 0.15 U		< 0.052 U			*195*	
MW-2	MW-DUP_201409	9/24/2014	FD			0.16 J		< 0.052 U			*194*	
MW-2	MW-2DUP_201410	10/20/2014	FD			0.35		< 0.052 U			*199*	

Notes:
< = Concentration of the analyte is below the method detection limit.
1q = Dissolved analyte or filtered analyte greater than total analyte: analysis failed QC based on precision criteria.
2q = Dissolved analyte or filtered analyte greater than total analyte: analysis passed QC based on precision criteria.
B = Analyte was detected in the associated method blank.
D = dissolved
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
deg C = degrees Celsius
EB = equipment blank
FD = field duplicate sample
ft = feet
H1 = Analysis conducted outside the recognized method holding time.
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
mg/L = milligrams per liter
mV = millivolt
N = normal sample
P4 = Sample field preservation does not meet EPA or method recommendations for this analysis.
P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
s.u. = standard units
T = total
U = The analyte was not detected at or above the method detection limit.
ug/L = micrograms per liter
uS/cm @ 25 C = microSiemens/centimeter at 25 degrees Celsius
\- = not applicable
Bold font indicates value exceeds NR 140 ES, Italicized font indicates value exceeds NR 140 PAL.

Prepared by: MGM
Checked by: BDS1

Table 4
Remedial Technologies Screening Matrix
Former Wisconsin Chrome Corporation Site, Kaukauna, Wisconsin

Treatment Technology	Status	Effectiveness	Implementability	Cost
Air Sparging	Eliminate	**Effectiveness limited for groundwater treatment because sparging would need to be performed in a trench. Deeper impacts would be challenging to reach.**	Underground injection permit required.	Moderate
Enhanced Bioremediation	Retain	Enhances anaerobic reduction process. However, biodegradation rate of 1,1,1-TCA is relatively low.	Feasible injection by wells/points. Little maintenance required.	Moderate
		May require repeat applications.	Underground injection permits required.	
Vacuum Enhanced Recovery (VER)	Retain	Removes high concentration groundwater from central plume area relatively quickly by both soil venting and groundwater removal.	Vacuum lines can be installed in existing wells.	Low
			Equipment and on-site treatment system are available.	
Chemical Oxidation	Eliminate	May be effective in degrading high concentrations of chlorinated VOCs in source areas, high removal in many porous medias with the exception of bedrock. Effectiveness is less reliable for clay soils, but this can be overcome by multiple injections at higher pressures.	Little maintenance required. Underground injection permits required. **Oxidation is not compatible with the existing chromium remedy.**	Moderate
Pump-and-Treat	Eliminate	**Longer cleanup times of as much as 40 years due to low clay permeability and VOC sorption to soil. Containment may no longer be needed.**	Pump and treat will remove some VOC from groundwater and prevent migration. Relatively easily constructed. Extensive utilities may complicate installation. Water discharge approval/permits required.	**High**
Zero-Valent Iron Passive Reactive Barrier (PRB)	Eliminate	Proven an effective method of preventing plume migration and degrading CVOCs on many government sites. **Lifespan of barrier is 10 to 15 years, but treatment period is 40 years or more.**	Underground injection permit required.	**High**
Monitored Natural Attenuation (MNA)	Retain	Small risk of exposure. Rate of MNA alone may be sufficient to prevent plume migration. **Treatment period is 40 years or more due to very slow natural attenuation rate.**	No complex system necessary.	**High**
Activity Use Limitations (AUL)	Retain	Effective at decreasing exposure to shallow impacted groundwater. **High VOCs remain for 40 years or more due to very slow natural attenuation rate.**	Relatively easy to implement, but not a stand alone technology.	Low

Notes:
O&M - operation and maintanence
Technologies to consider come from the Remediation Technologies Screening Matrix developed by the EPA.
Only Technologies with a target contaminant of halgenated volatile organic compounds were considered.
Bold indicates reason for elimination of technology from further consideration.

Prepared by: MGM
Checked by: BDS1

Table 5

Detailed Remedial Action Options Screening Matrix

Former Wisconsin Chrome Corporation, Kaukauna, Wisconsin

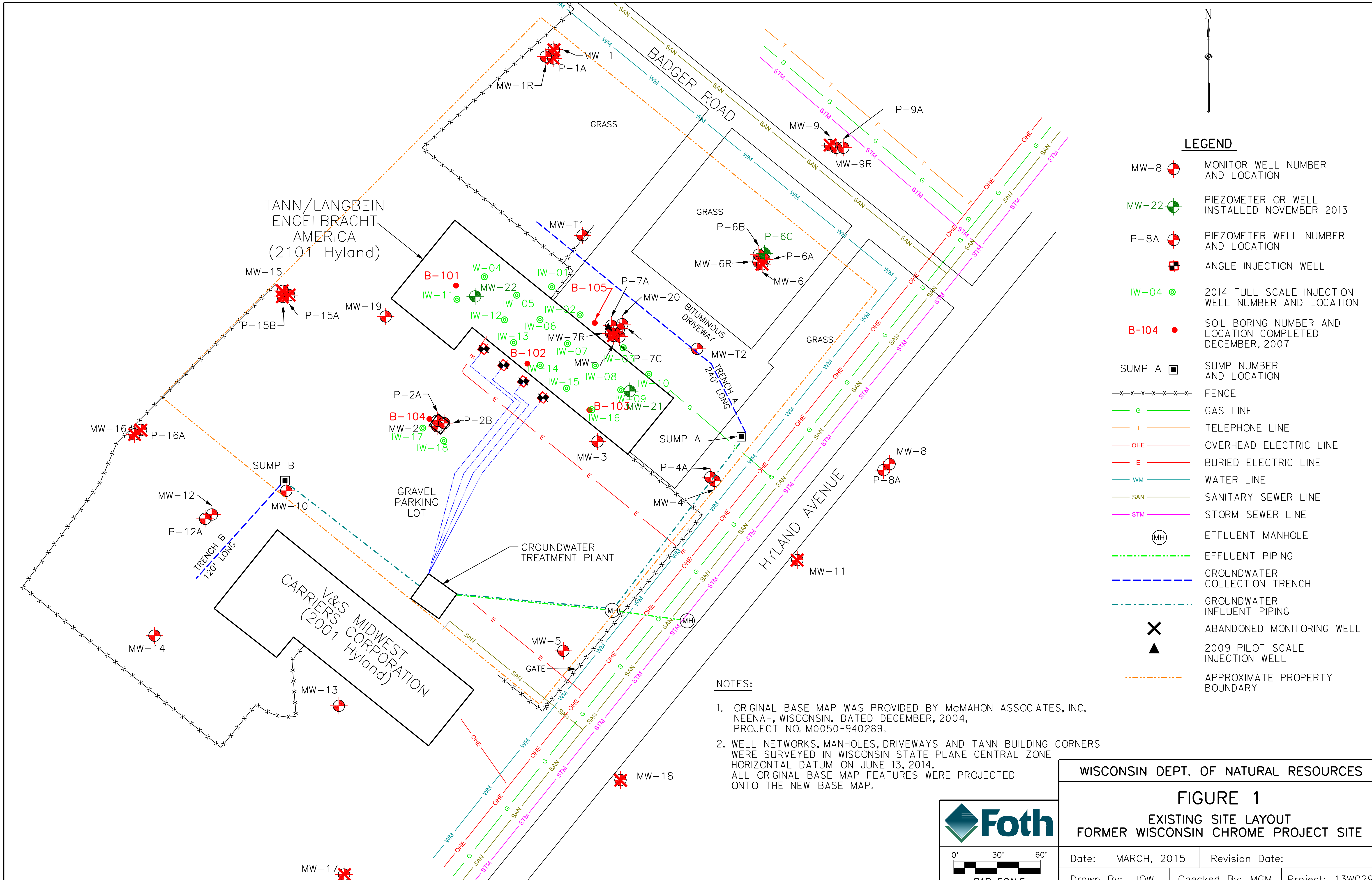
Evaluation Criteria Description	Remedial Action Option 1 Monitored Natural Attenuation Activity Use Limitations	Remedial Action Option 2 Enhanced Bioremediation Monitored Natural Attenuation Activity Use Limitations	Remedial Action Option 3 Vacuum Enhanced Recovery Monitored Natural Attenuation Activity Use Limitations	Remedial Action Option 4 Vacuum Enhanced Recovery Enhanced Bioremediation Monitored Natural Attenuation Activity Use Limitations
1. Long-Term Effectiveness and Permanence				
- Magnitude of Residual Risk	Very slow biodegradation rate leaving 75% of mass after 10 years.	Short term active remedy could result in 10% or less of VOCs remaining after 10 years.	Short term active remedy could result in 10% or less of VOCs remaining after 10 years.	Short term active remedy could result in 10% or less of VOCs remaining after as little as 2 years.
- Adequacy and Reliability of Controls	Requires groundwater monitoring to determine effectiveness.	Requires groundwater monitoring to determine effectiveness.	Requires groundwater monitoring to determine effectiveness. System monitoring and maintenance required.	Requires groundwater monitoring to determine effectiveness. System monitoring and maintenance required.
-Active source area remediation	**Does not actively address source area impacts.**	Active, but addresses source area saturated zone soils and groundwater only.	Addresses source area saturated zone soils and groundwater. Secondary benefit of actively addressing vadose zone soil impact.	Addresses source area saturated zone soils and groundwater. Secondary benefit of actively addressing vadose zone soil impact.
2. Short-Term Effectiveness				
- Protection of site remediation workers during remedial action.	Implementation would require ongoing handling of impacted groundwater.	Implementation would require limited handling of impacted material and treatment chemicals.	Implementation would require limited handling of impacted material and treatment chemicals.	Implementation would require limited handling of impacted material and exposure to high temperature equipment.
- Protection of community during remedial action.	Risk to community not increased by implementation.	Risk to community not increased by implementation.	Risk to community not increased by implementation.	Risk to community not increased by implementation.
- Protection of environment during remedial action.	Impact reduced through compliance with water discharge permit.	Impact reduced through compliance with injection permit.	Impact reduced through compliance with injection permit.	Impact reduced through compliance with air and water discharge permit.

Table 5
Detailed Remedial Action Options Screening Matrix
Former Wisconsin Chrome Corporation, Kaukauna, Wisconsin

Evaluation Criteria **Description**	**Remedial Action Option 1** **Monitored Natural Attenuation** **Activity Use Limitations**	**Remedial Action Option 2** **Enhanced Bioremediation** **Monitored Natural Attenuation** **Activity Use Limitations**	**Remedial Action Option 3** **Vacuum Enhanced Recovery** **Monitored Natural Attenuation** **Activity Use Limitations**	**Remedial Action Option 4** **Vacuum Enhanced Recovery** **Enhanced Bioremediation** **Monitored Natural Attenuation** **Activity Use Limitations**
3. Implementability				
- Technical	Common technology. Equipment and materials are readily available. Requires field aquifer pumping test to determine well spacing and design.	Bench-scale or pilot-scale treatability tests to determine treatment efficiencies and rates. A number of biological enhancement chemicals and bioaugmentation products are available.	Vacuum easily applied to existing wells screens. Captures volatile compounds from multiple media phases.	Bench-scale or pilot-scale treatability tests to determine treatment efficiencies and rates. A number of biological enhancement chemicals and bioaugmentation products are available. Vacuum easily applied to existing wells screens. Captures volatile compounds from multiple media phases.
- Permits	None.	Injection permits required.	Continued use of current discharge permitting. Air emissions notification may be required.	Continued use of current discharge permitting. Injection permits required. Air emissions notification may be required.
4. Restoration Time Frame				
- Time for active be implementation of remedy.	40 years	10 years	10 years	2 years
- Time to achieve remedial action objectives.	**40 years**	**12 years**	**12 years**	4 years
5. Cost	**$1,210,000**	$535,000	$426,000	$334,000
6. Additional Requirements				
- Engineering Controls	A Cap Maintenance Plan will be required to monitor and maintain the existing building and asphalt as an impervious cap.	A Cap Maintenance Plan will be required to monitor and maintain the existing building and asphalt as an impervious cap.	A Cap Maintenance Plan will be required to monitor and maintain the existing building and asphalt as an impervious cap.	A Cap Maintenance Plan will be required to monitor and maintain the existing building and asphalt as an impervious cap.
- Continuing Obligations	Site registration on the WDNR GIS Registry. Continued groundwater monitoring until RAOs are met.	Site registration on the WDNR GIS Registry. Continued groundwater monitoring until RAOs are met.	Site registration on the WDNR GIS Registry. Continued groundwater monitoring until RAOs are met.	Site registration on the WDNR GIS Registry. Continued groundwater monitoring until RAOs are met.

Prepared by: MGM
Checked by: BDS1

Figures



NOTES:

1. ORIGINAL BASE MAP WAS PROVIDED BY McMAHON ASSOCIATES, INC. NEENAH, WISCONSIN. DATED DECEMBER, 2004, PROJECT NO. M0050-940289.
2. WELL NETWORKS, MANHOLES, DRIVEWAYS AND TANN BUILDING CORNERS WERE SURVEYED IN WISCONSIN STATE PLANE CENTRAL ZONE HORIZONTAL DATUM ON JUNE 13, 2014. ALL ORIGINAL BASE MAP FEATURES WERE PROJECTED ONTO THE NEW BASE MAP.

Foth

WISCONSIN DEPT. OF NATURAL RESOURCES

FIGURE 1

EXISTING SITE LAYOUT
FORMER WISCONSIN CHROME PROJECT SITE

Date: MARCH, 2015	Revision Date:	
Drawn By: JOW	Checked By: MGM	Project: 13W029

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3/2/2015 3:04:07 PM jow

Notes:

1. Basemap from esri and its data suppliers.
2. Coordinate system is NAD 1983 Wisconsin State Plane Central (feet).
3. Vertical datum is NAVD88.
4. Groundwater contours generated with ArcGIS Geostatistical Analyst, using a Local Polynomial Interpolation method.

Legend

- Groundwater Monitoring Well with October 2014 Groundwater Elevation
- Sump Location with October 2014 Water Elevation
- Groundwater Contour (1' Contour Interval)
- Trench Location
- Influent Piping
- Effluent Piping
- Approximate Property Boundary

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

Foth

N

0 25 50 Feet

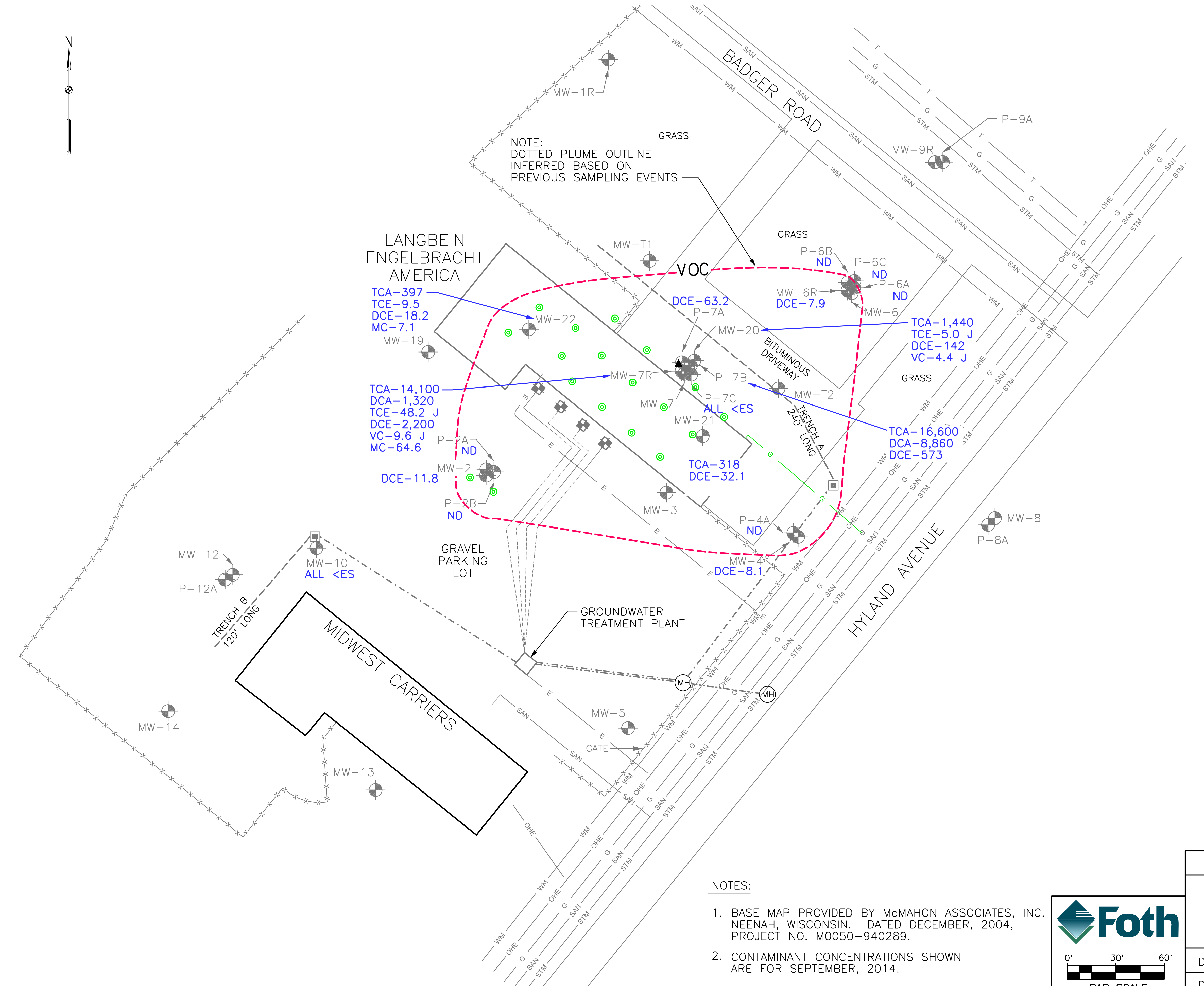
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FIGURE 2

OCTOBER 2014 GROUNDWATER ELEVATIONS
FORMER WISCONSIN CHROME PROJECT SITE
KAUKAUNA, WISCONSIN

Date: MARCH 2015		Revision Date:
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029\GIS\mxd\DocReport_Oct2014\wi_chrome_site_oct14_GW_contours_11x17.mxd Date: 3/2/2015



LEGEND

- FENCE
- GAS LINE
- TELEPHONE LINE
- OVERHEAD ELECTRIC LINE
- BURIED ELECTRIC LINE
- WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- EFFLUENT PIPING
- GROUNDWATER COLLECTION TRENCH
- GROUNDWATER INFLUENT PIPING
- VOC — ESTIMATED HORIZONTAL EXTENT OF VOC IN THE SHALLOW GROUNDWATER ABOVE THE CHAPTER NR 140.10 ENFORCEMENT STANDARD (PPB) (SEPTEMBER, 2014)
- P-8A — PIEZOMETER WELL NUMBER AND LOCATION
- ANGLE INJECTION WELL
- MW-6R 309 — MONITOR WELL NUMBER, LOCATION AND VOC CONCENTRATION (ug/L) IN THE GROUNDWATER DURING SEPTEMBER, 2014 (BLANK IF WELL NOT SAMPLED)
- SUMP NUMBER AND LOCATION
- MH — EFFLUENT MANHOLE
- 2014 FULL SCALE INJECTION WELL NUMBER AND LOCATION

TCA = 1,1,1 – TRICHLOROETHANE (200 ug/L)

DCA = 1,1 – DICHLOROETHANE (850 ug/L)

TCE = TRICHLOROETHENE (5 ug/L)

DCE = 1,1 – DICHLOROETHENE (7 ug/L)

VC = VINYL CHLORIDE (0.2 ug/L)

MC = METHYLENE CHLORIDE (5.0 ug/L)

ALL <ES = ALL VOC CONCENTRATION BELOW THE ENFORCEMENT STANDARD

ND = VOC's NOT DETECTED

J = ESTIMATED CONCENTRATION VALUE

NOTES:

1. BASE MAP PROVIDED BY McMAHON ASSOCIATES, INC. NEENAH, WISCONSIN. DATED DECEMBER, 2004, PROJECT NO. M0050-940289.
2. CONTAMINANT CONCENTRATIONS SHOWN ARE FOR SEPTEMBER, 2014.

Foth

0' 30' 60'
BAR SCALE

WISCONSIN DEPT. OF NATURAL RESOURCES

FIGURE 3

VOC CONCENTRATIONS IN GROUNDWATER
FORMER WISCONSIN CHROME PROJECT SITE

Date: MARCH, 2015		Revision Date:
Drawn By: JOW	Checked By: MGM	Project: 13W029

X:\GB\IE\2013\13W029\CAD\figures\13w029 Fig 3 full scale injection well locations_VOC'S.dgn
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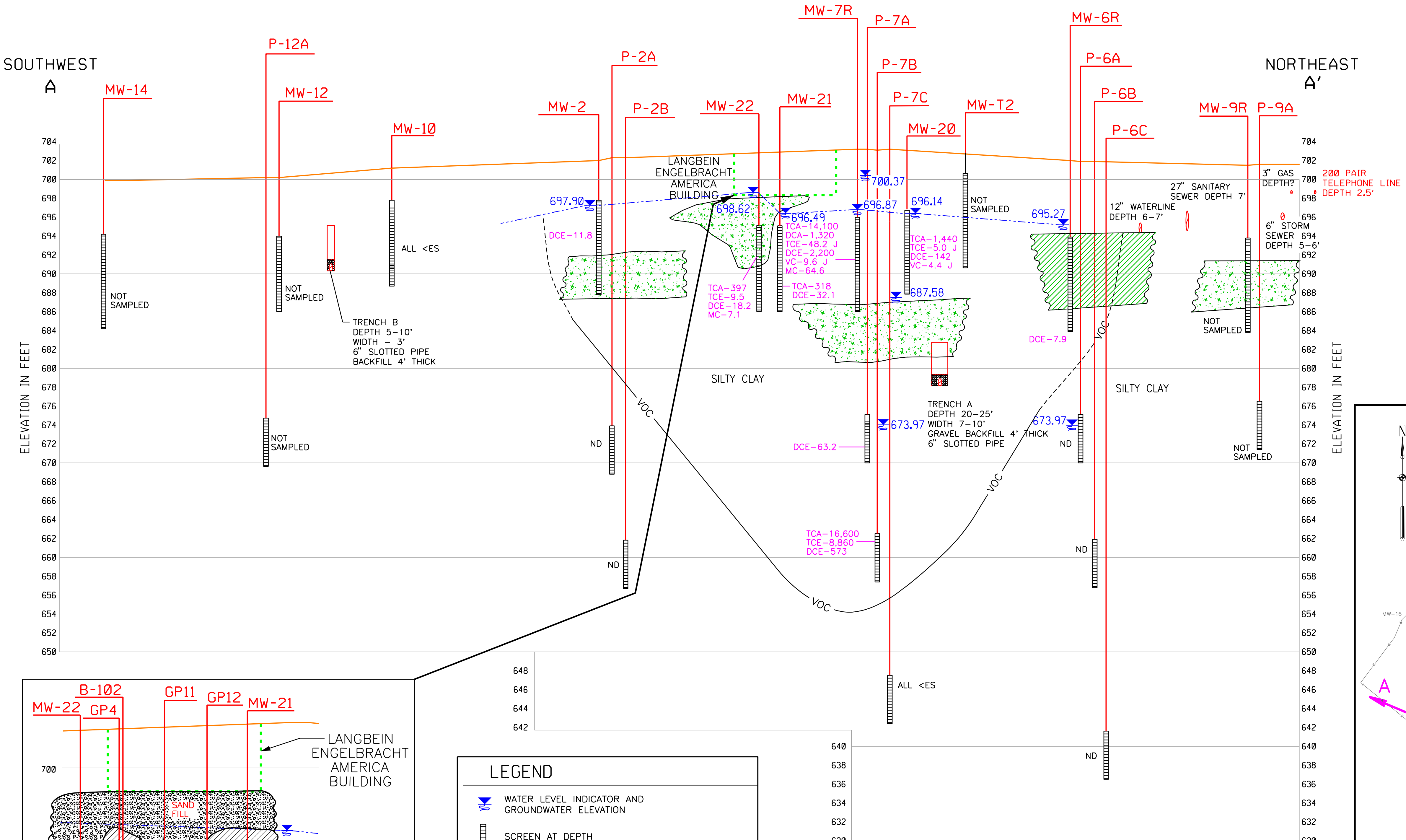
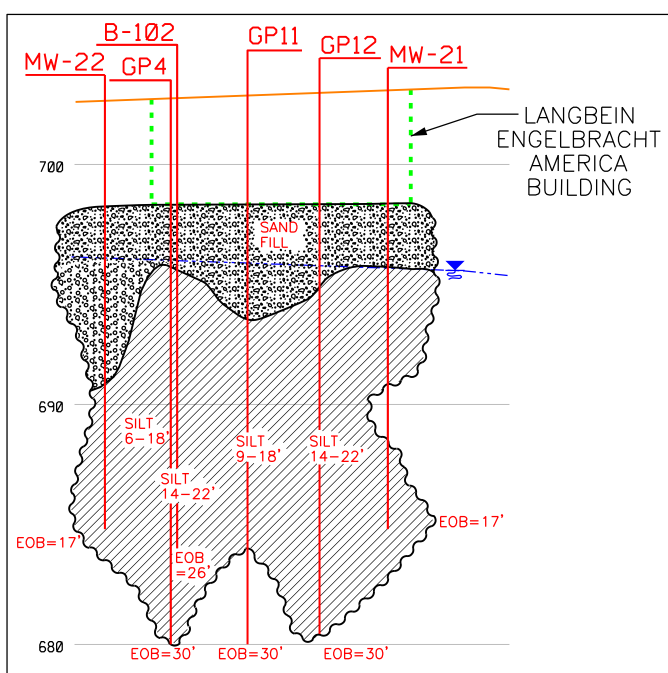
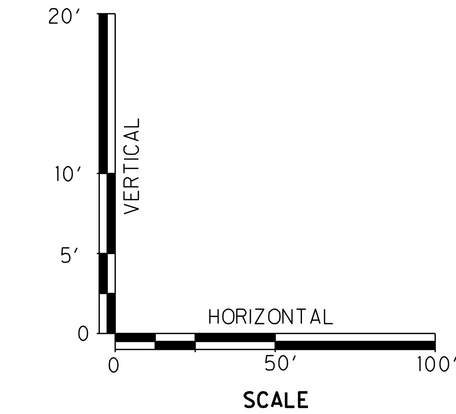




SECTION DETAIL

NOT TO SCALE



LEGEND

- WATER LEVEL INDICATOR AND GROUNDWATER ELEVATION
- SCREEN AT DEPTH
- WATER TABLE LEVEL
- SILT
- CLAY
- SILTY SAND
- VOC — ESTIMATED EXTENT OF VOC'S ABOVE THE CHAPTER NR140 ES.

TCA = 1,1,1 – TRICHLOROETHANE (200 ug/L)

DCA = 1,1 – DICHLOROETHANE (850 ug/L)

TCE = TRICHLOROETHENE (5 ug/L)

DCE = 1,1 – DICHLOROETHENE (7 ug/L)

VC = VINYL CHLORIDE (0.2 ug/L)

MC = METHYLENE CHLORIDE (5.0 ug/L)

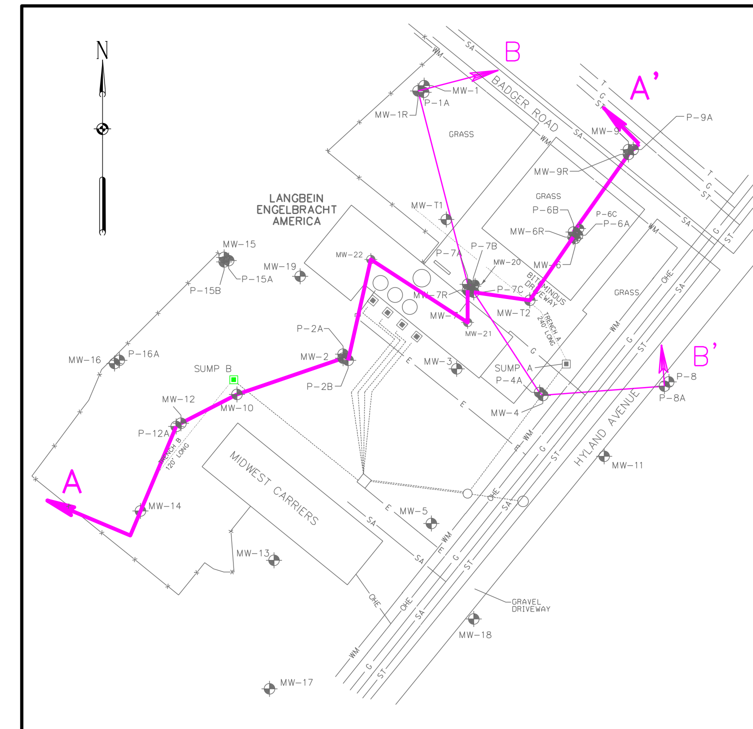
ALL <ES = ALL VOC CONCENTRATION BELOW THE ENFORCEMENT STANDARD

ND = VOC's NOT DETECTED

J = ESTIMATED CONCENTRATION VALUE

NOTES:

1. BASE MAP PROVIDED BY McMAHON ASSOCIATES, INC. NEENAH, WISCONSIN. DATED DECEMBER, 2004, PROJECT NO. M0050-940289.
2. THE AREAS ON THE CROSS SECTION OTHER THAN SILTY SAND AND SILT ARE EITHER SILTY CLAY OR CLAYEY SILT BASED ON SOIL BORING LOGS FROM SOME (BUT NOT ALL) MONITORING WELLS AND A CONVERSATION WITH JENNIFER BORSKI OF THE WDNR.
3. GROUNDWATER ELEVATIONS SHOWN ARE FOR OCTOBER, 2014
4. GEOPROBE BORINGS GP4, GP11, GP12 INSTALLED BY GEOTRANS, INC. 12/03-1/04.
5. CONTAMINANT CONCENTRATIONS SHOWN ARE FOR SEPTEMBER, 2014.



CROSS SECTION LOCATION MAP

Foth

SCALE: AS SHOWN

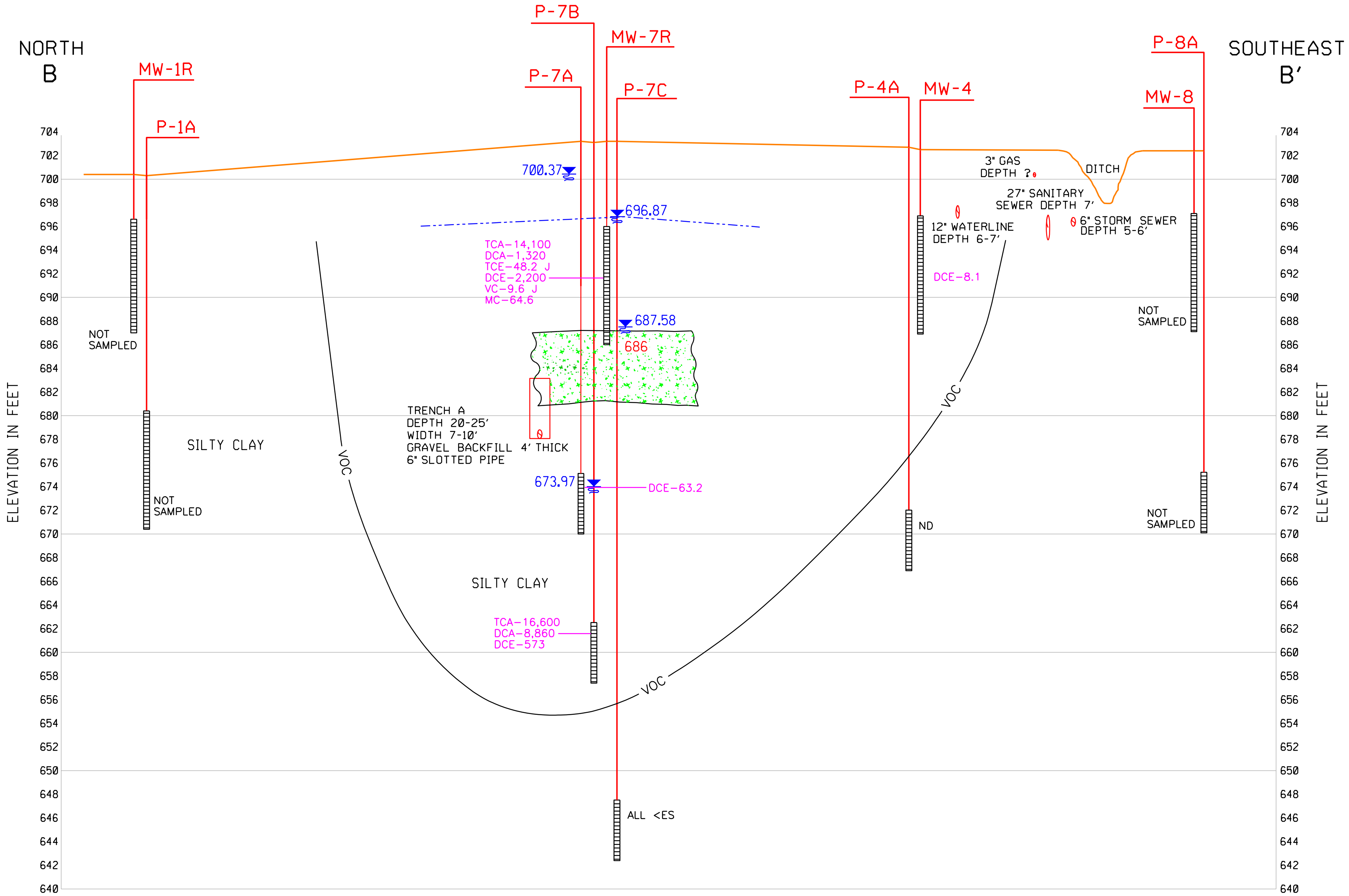
WISCONSIN DEPT. OF NATURAL RESOURCES

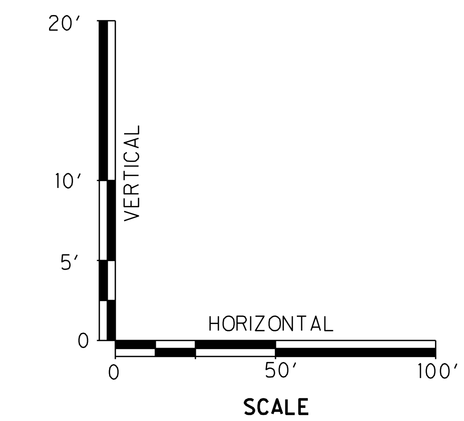
FIGURE 4

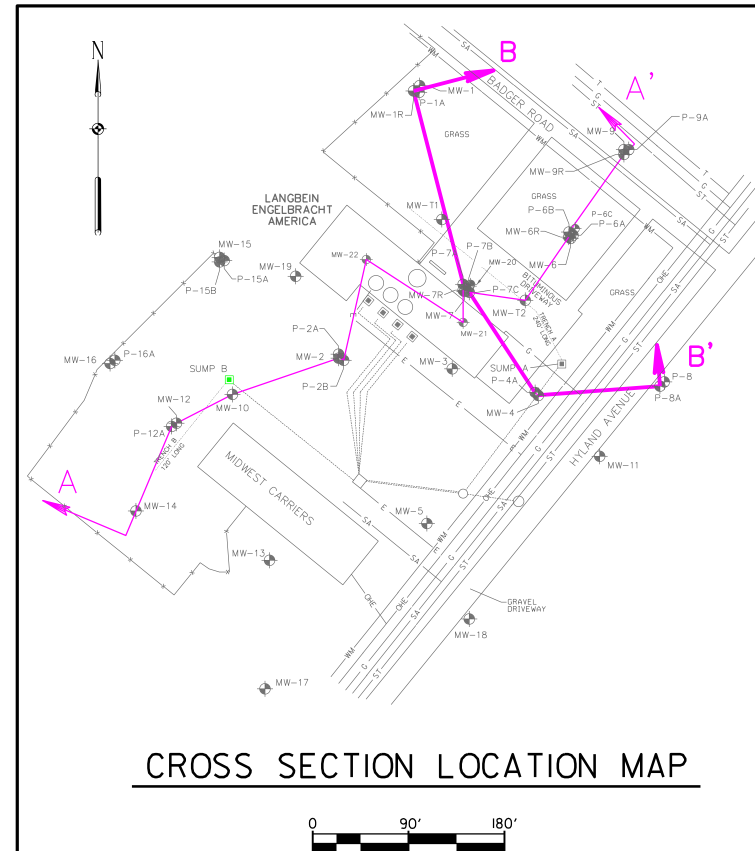
CROSS SECTION A – A'
FORMER WISCONSIN CHROME PROJECT SITE

Date: MARCH, 2015		Revision Date:	
Drawn By: JOW	Checked By: MGM	Project: 13W029	

X:\GB\IE\2013\13W029\CAD\figures\13w029 Fig 4 cross section A-A'_VOC's.dgn
3/2/2015 3:13:31 PM jow







LEGEND

- WATER LEVEL INDICATOR AND GROUNDWATER ELEVATION
- SCREEN AT DEPTH
- WATER TABLE LEVEL
- SILT
- CLAY
- SILTY SAND
- VOC — ESTIMATED EXTENT OF VOC'S ABOVE THE CHAPTER NR140 ES.

TCA = 1,1,1 – TRICHLOROETHANE (200 ug/L)
DCA = 1,1 – DICHLOROETHANE (850 ug/L)
TCE = TRICHLOROETHENE (5 ug/L)
DCE = 1,1 – DICHLOROETHENE (7 ug/L)
VC = VINYL CHLORIDE (0.2 ug/L)
MC = METHYLENE CHLORIDE (5.0 ug/L)
ALL <ES = ALL VOC CONCENTRATION BELOW THE ENFORCEMENT STANDARD
ND = VOC's NOT DETECTED
J = ESTIMATED CONCENTRATION VALUE

NOTES:

1. BASE MAP PROVIDED BY McMAHON ASSOCIATES, INC. NEENAH, WISCONSIN. DATED DECEMBER, 2004. PROJECT NO. M0050-940289.
2. THE AREAS ON THE CROSS SECTION OTHER THAN SILTY SAND AND SILT ARE EITHER SILTY CLAY OR CLAYEY SILT BASED ON SOIL BORING LOGS FROM SOME (BUT NOT ALL) MONITORING WELLS AND A CONVERSATION WITH JENNIFER BORSKI OF THE WDNR.
3. GROUNDWATER ELEVATIONS SHOWN ARE FOR OCTOBER, 2014.
4. CONTAMINANT CONCENTRATIONS SHOWN ARE FOR SEPTEMBER, 2014.

WISCONSIN DEPT. OF NATURAL RESOURCES

FIGURE 5

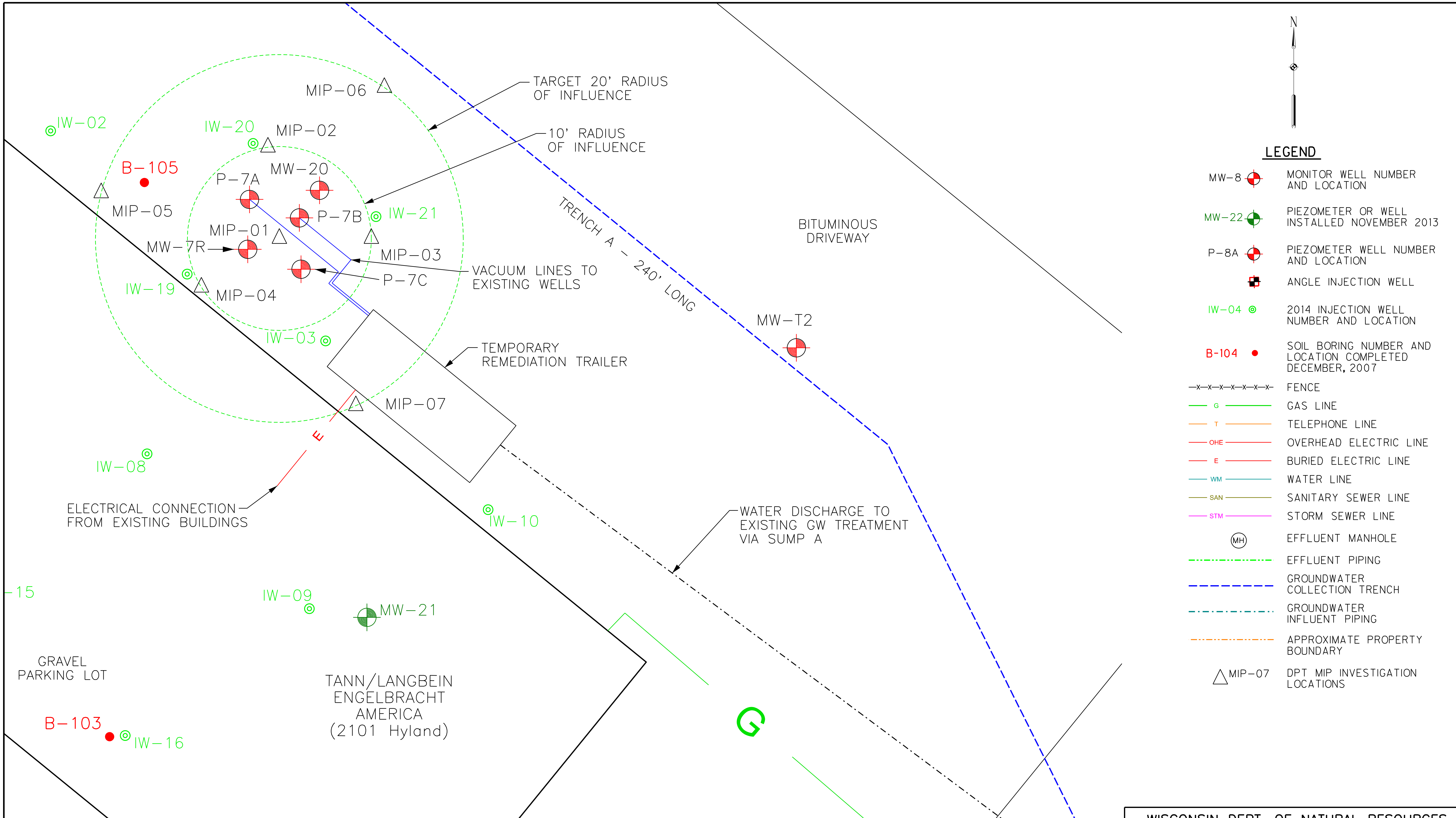
CROSS SECTION B – B'
FORMER WISCONSIN CHROME PROJECT SITE

Foth

SCALE: AS SHOWN

Date: MARCH, 2015	Revision Date:	
Drawn By: JOW	Checked By: MGM	Project: 13W029

X:\GB\IE\2013\13W029\CAD\figures\13w029 Fig 5 cross section B-B'_VOC's.dgn
3/2/2015 3:17:28 PM jow



NOTES:

1. ORIGINAL BASE MAP WAS PROVIDED BY McMAHON ASSOCIATES, INC. NEENAH, WISCONSIN. DATED DECEMBER, 2004, PROJECT NO. M0050-940289.
2. WELL NETWORKS, MANHOLES, DRIVEWAYS AND TANN BUILDING CORNERS WERE SURVEYED IN WISCONSIN STATE PLANE CENTRAL ZONE HORIZONTAL DATUM ON JUNE 13, 2014. ALL ORIGINAL BASE MAP FEATURES WERE PROJECTED ONTO THE NEW BASE MAP.
3. WELL SYMBOLS AND SPACING NOT TO SCALE FOR CLARITY.

Foth

0' 5' 10'
BAR SCALE

WISCONSIN DEPT. OF NATURAL RESOURCES

FIGURE 6

REMEDIAL OPTION PLAN
FORMER WISCONSIN CHROME PROJECT SITE

Date: MARCH, 2015	Revision Date:

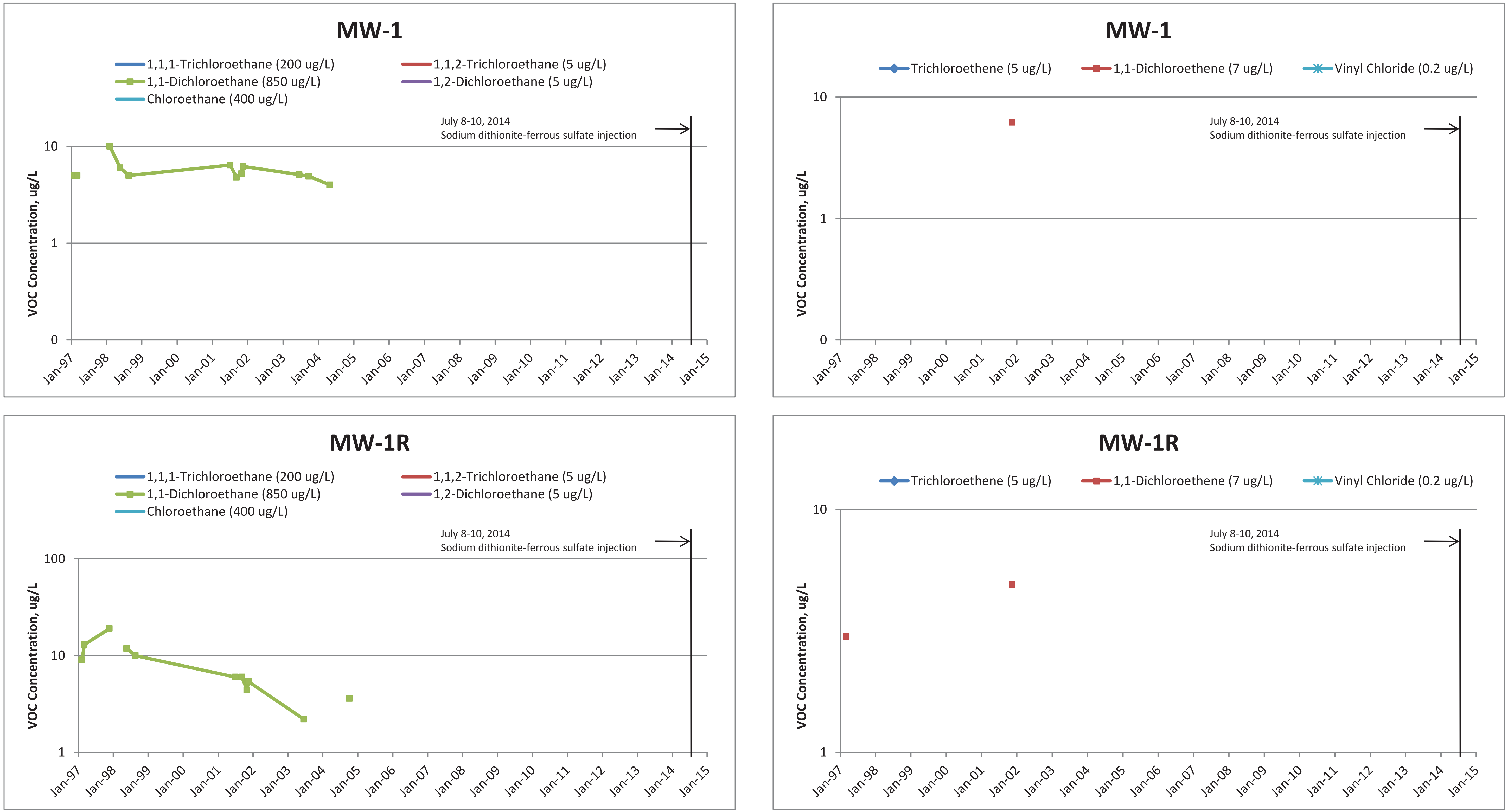
Drawn By: JOW	Checked By: MGM	Project: 13W029

X:\GB\IE\2013\13W029\CAD\figures\13w029 Fig 6 exist site layout_foth_VOC'S.dgn
3/2/2015 3:43:38 PM jow

Appendix A

Time Concentration Graphs and

Historical Groundwater Analytical Summary



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FIGURE A-1

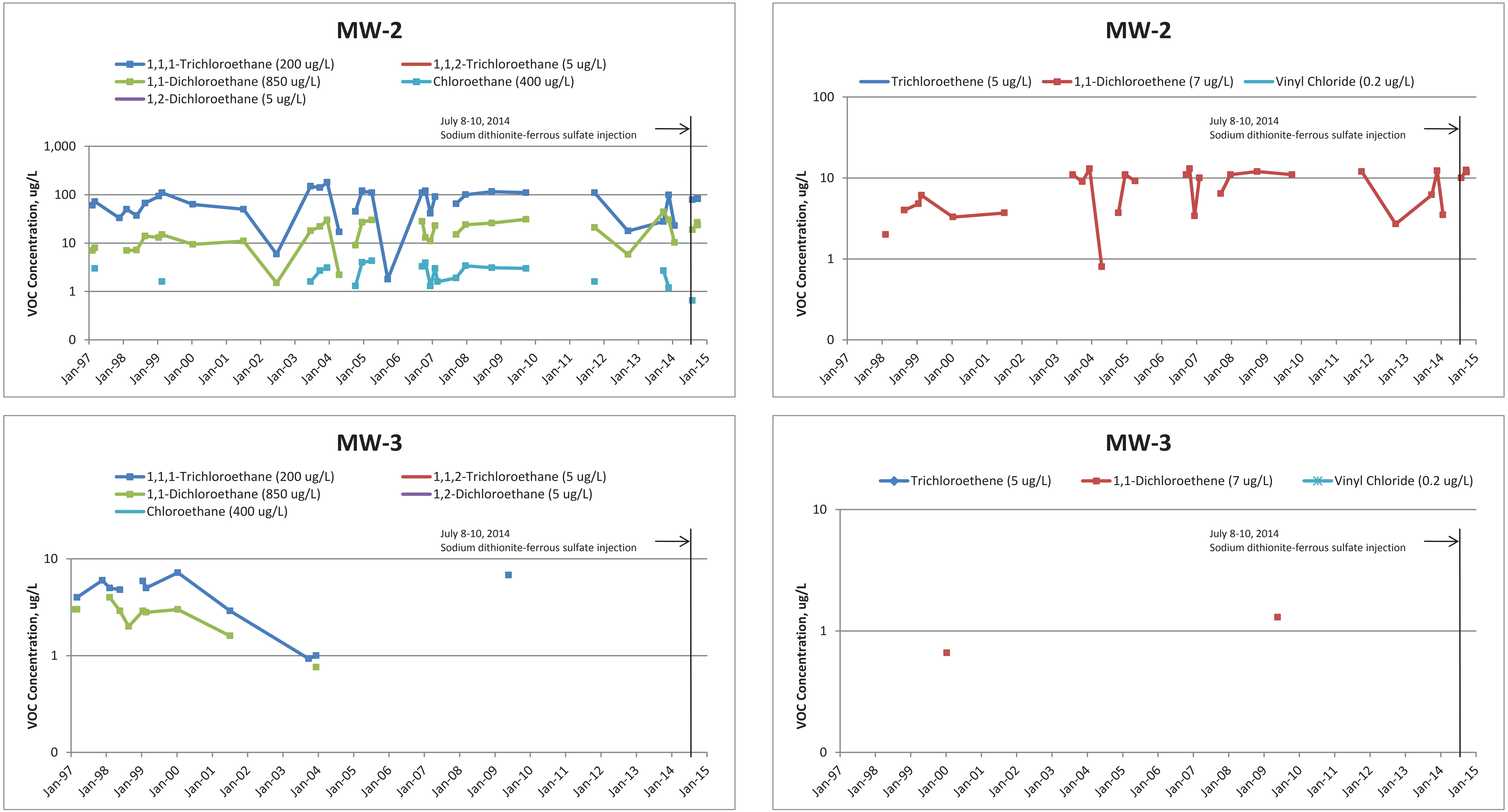
MW-1 AND MW-1R GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

Foth

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

NOT TO SCALE

Date: DECEMBER 2014	Revision Date:	
Drawn By: BJW1	Checked By: MGM	Scope: 13W029



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FIGURE A-2

MW-2 AND MW-3 GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

Foth

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

NOT TO SCALE

Date: DECEMBER 2014	Revision Date:

Drawn By: BJW1	Checked By: MGM	Scope: 13W029

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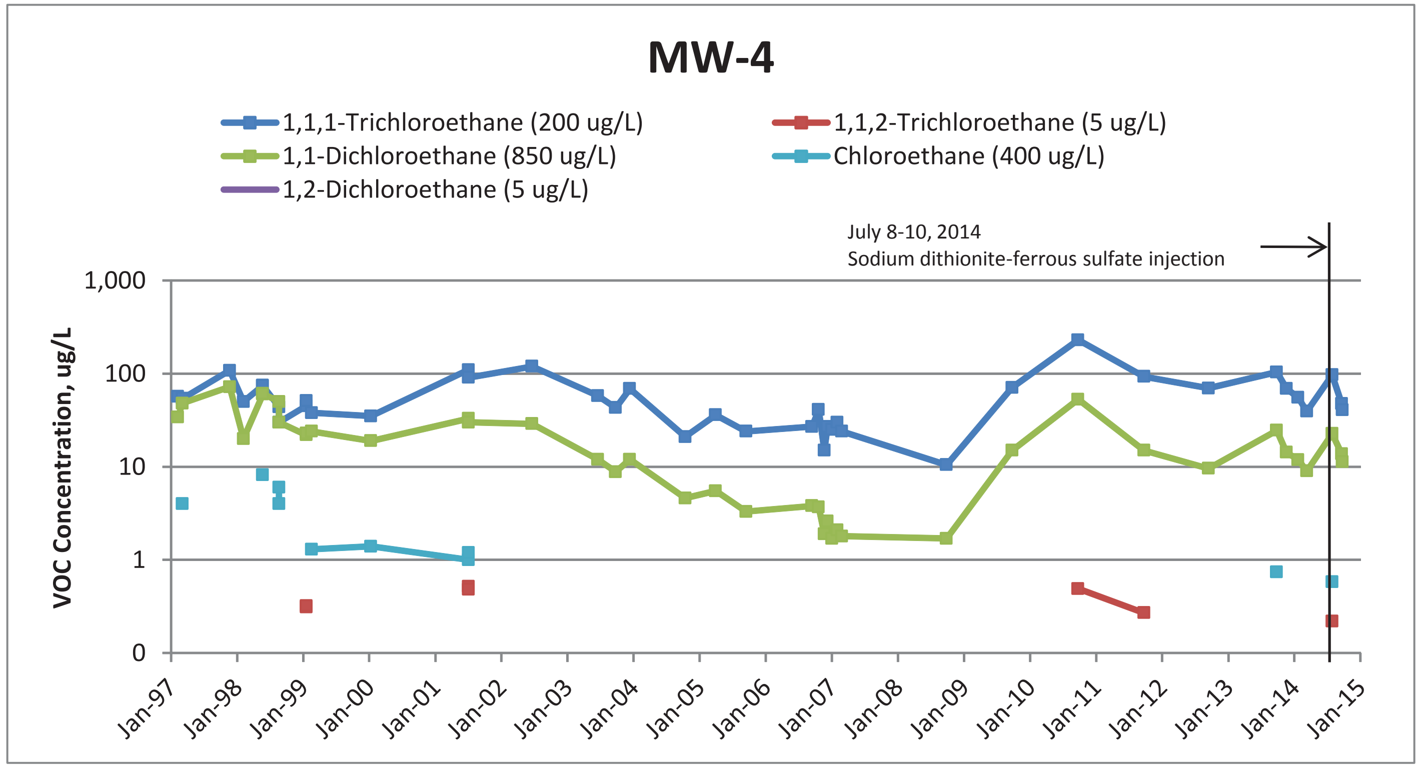

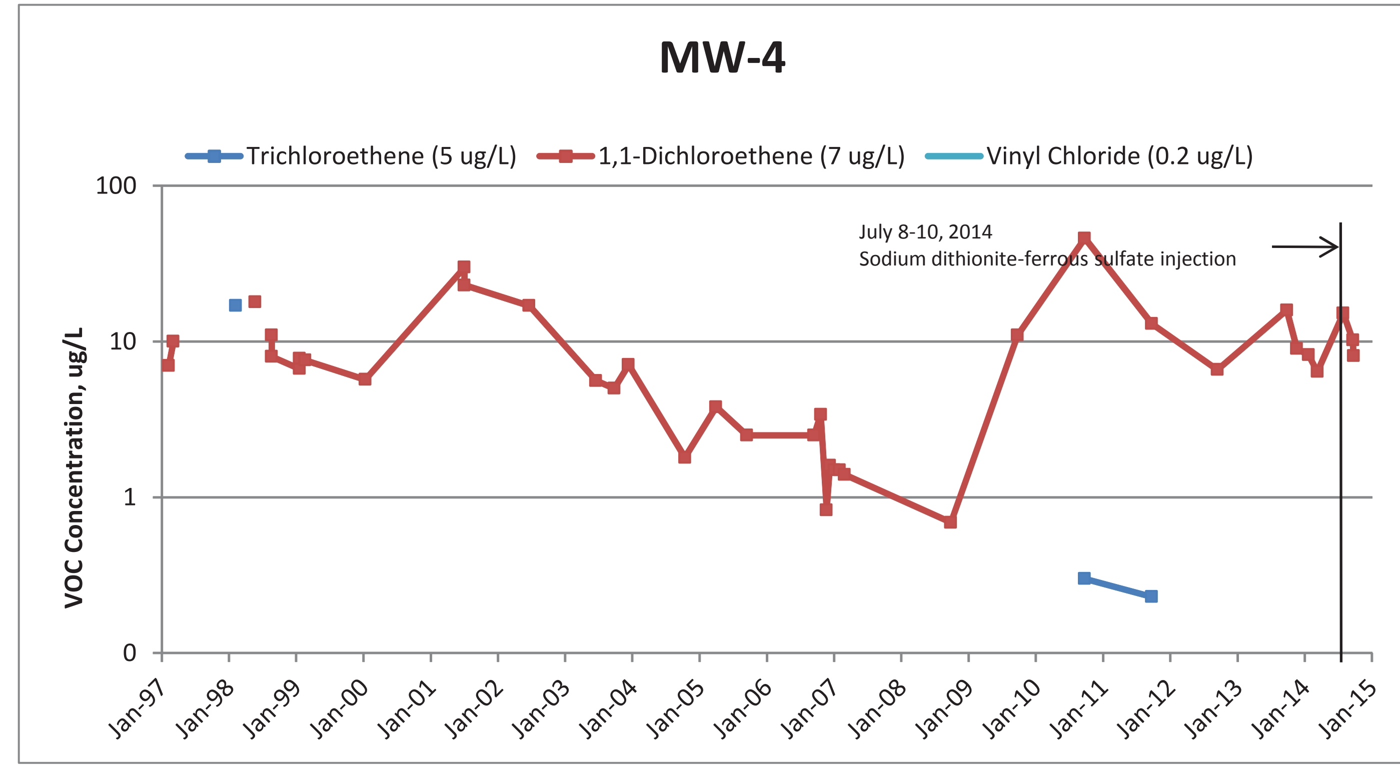

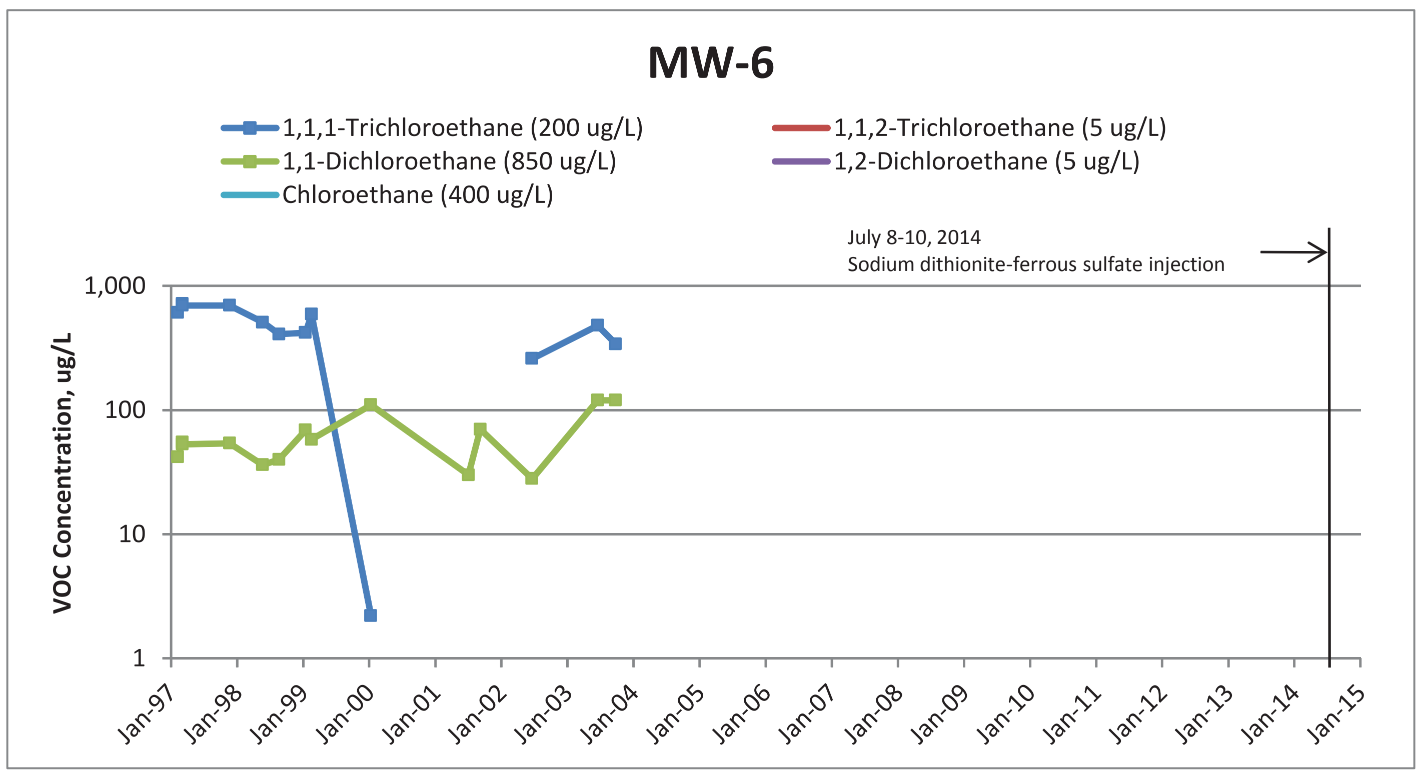

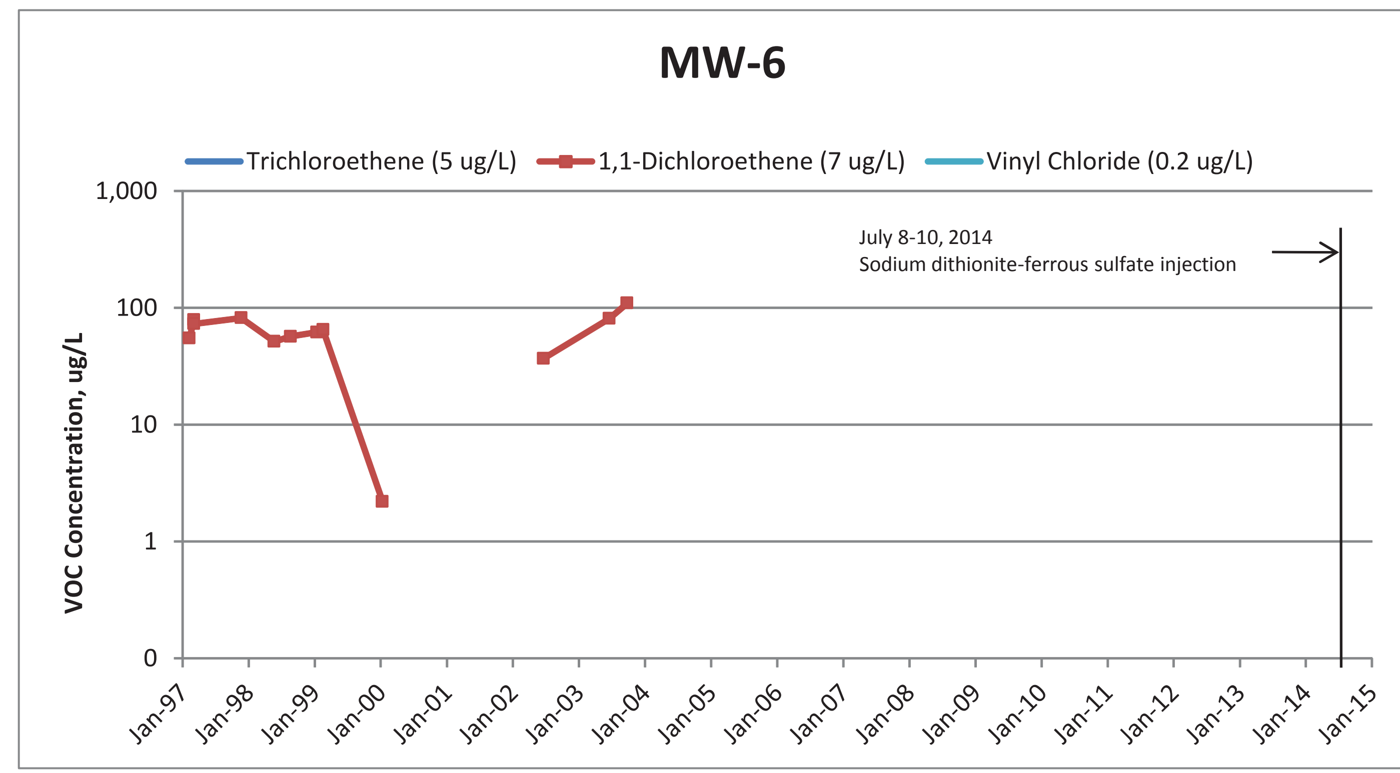

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NOT TO SCALE

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FIGURE A-3

MW-4 AND MW-6 GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

Date: DECEMBER 2014	Revision Date:

Drawn By: BJW1	Checked By: MGM	Scope: 13W029

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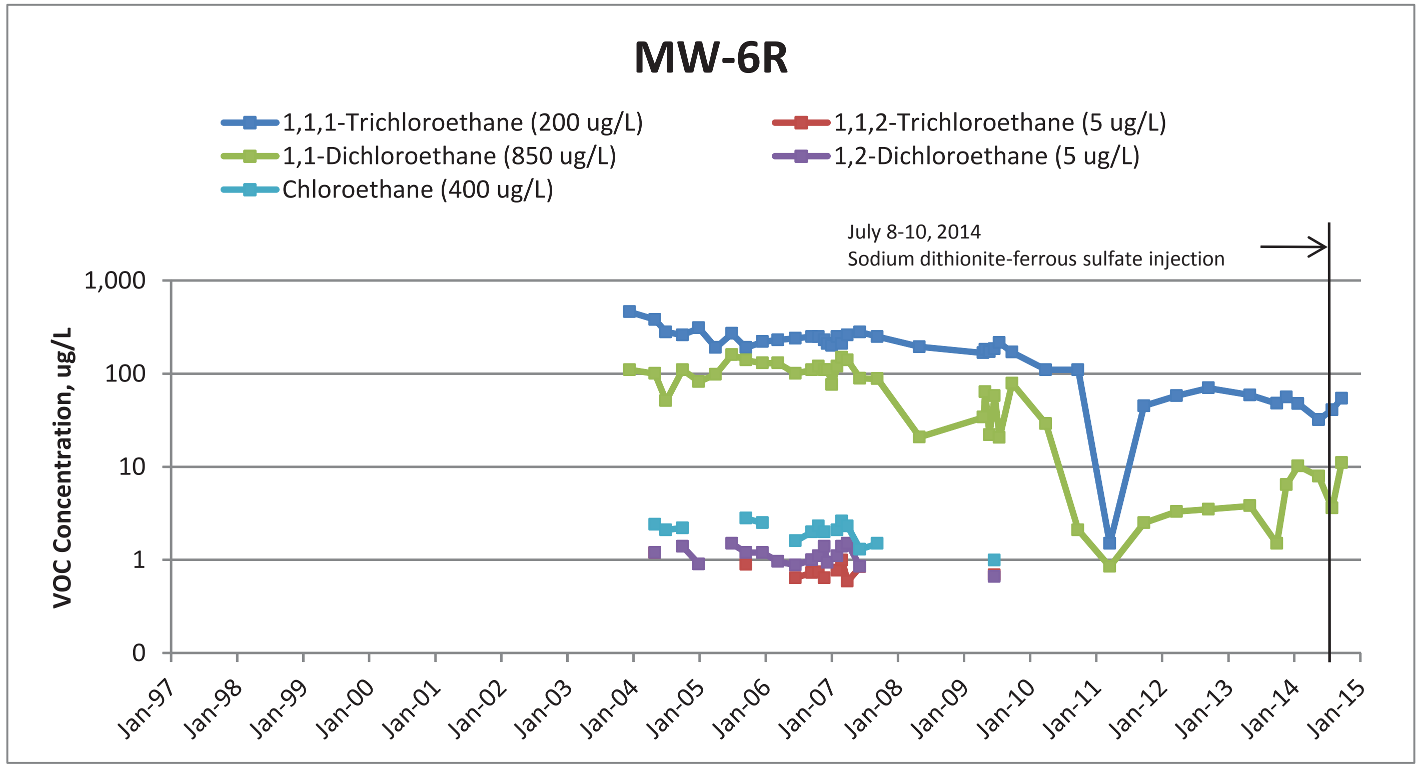
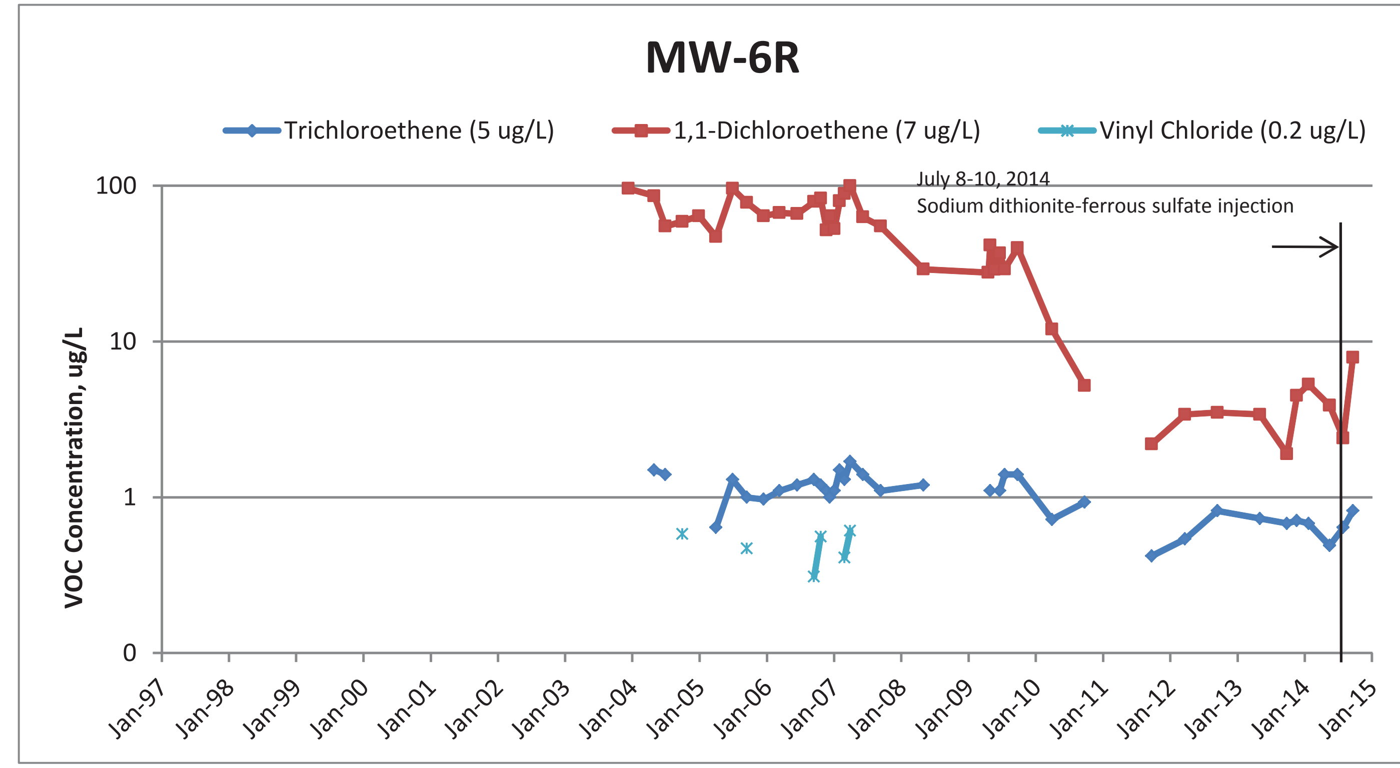
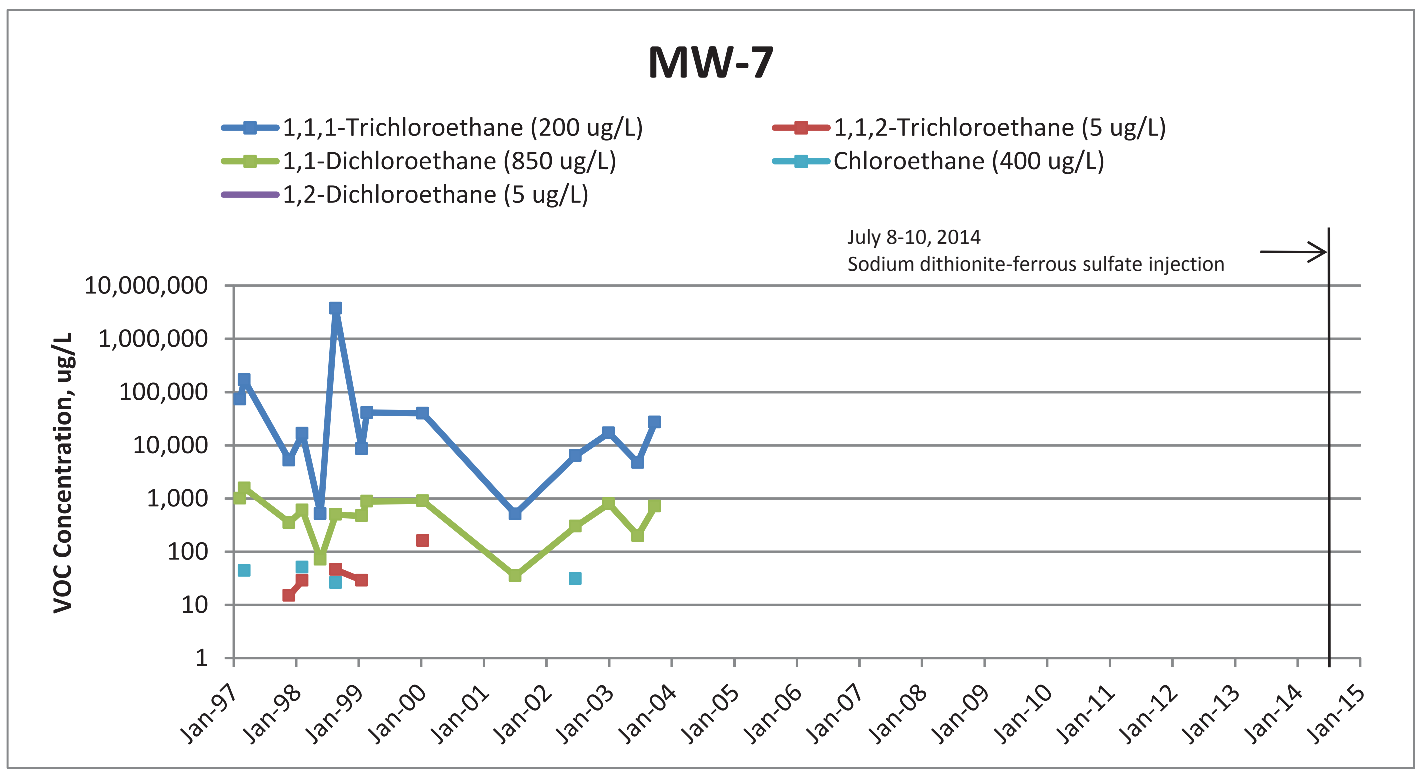
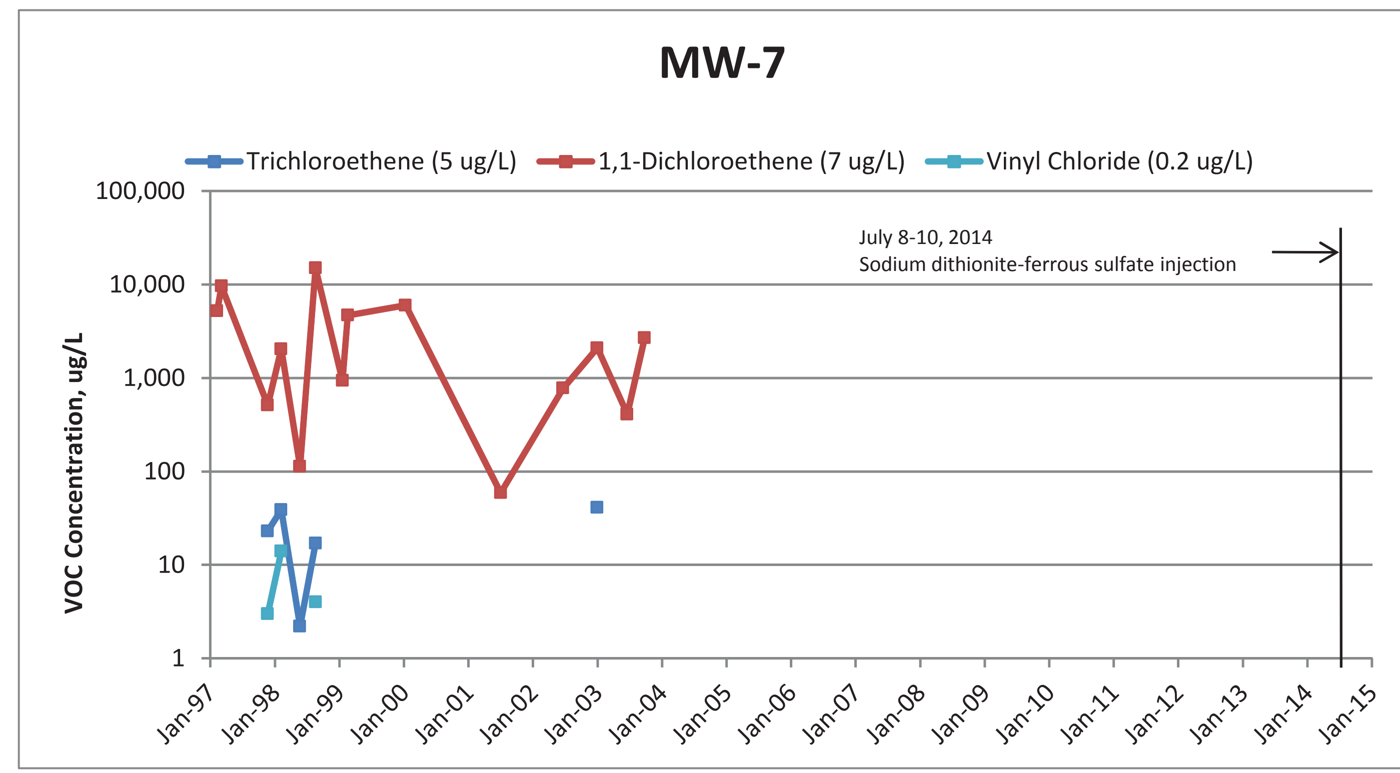








Foth

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

NOT TO SCALE

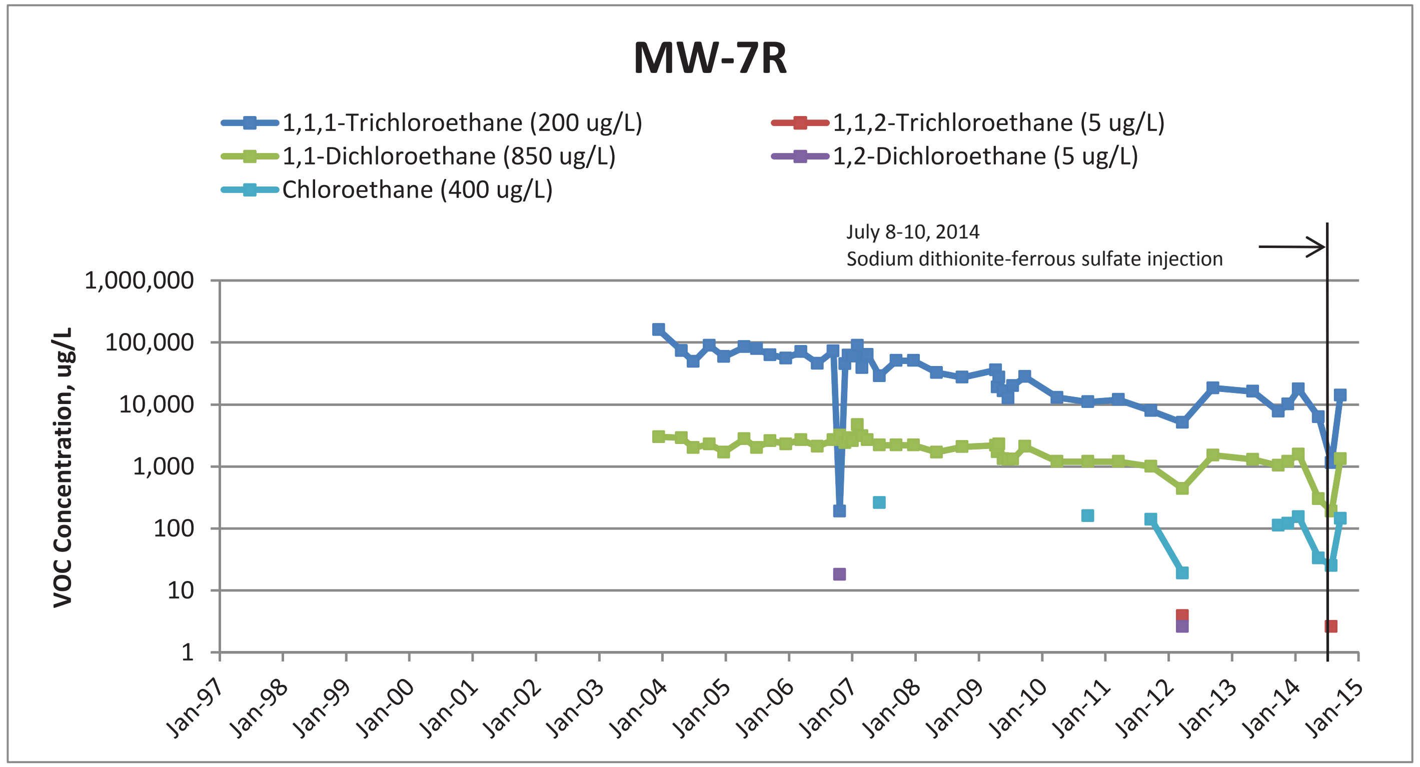
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

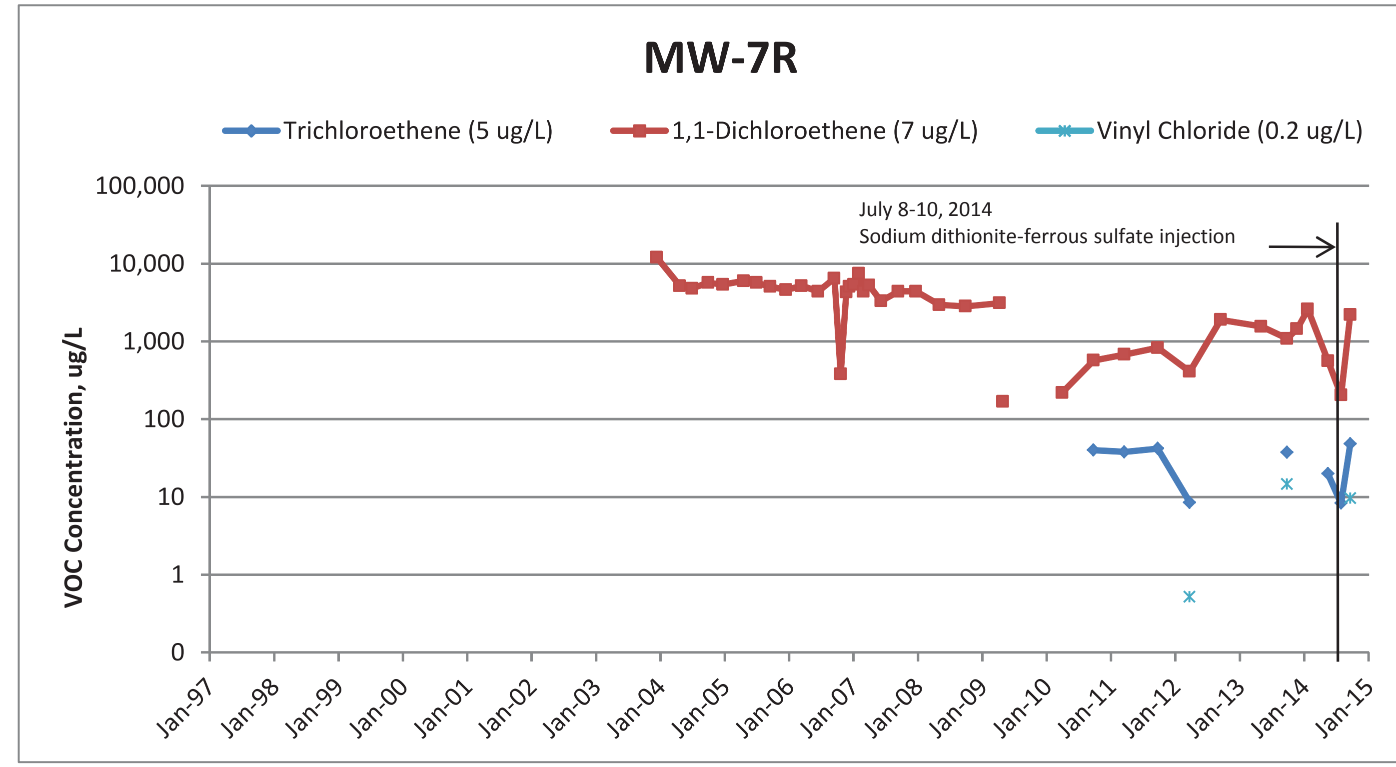
FIGURE A-4

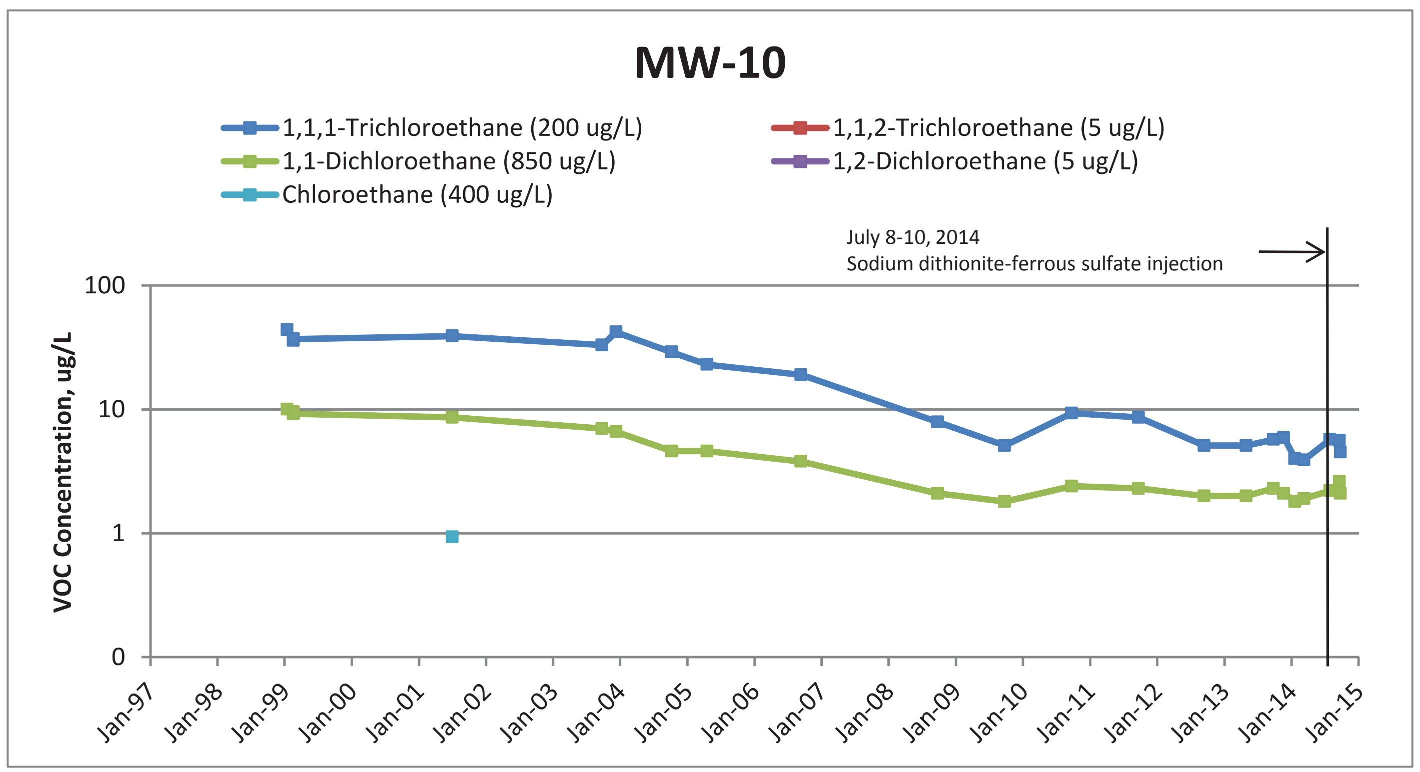
MW-6R AND MW-7 GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

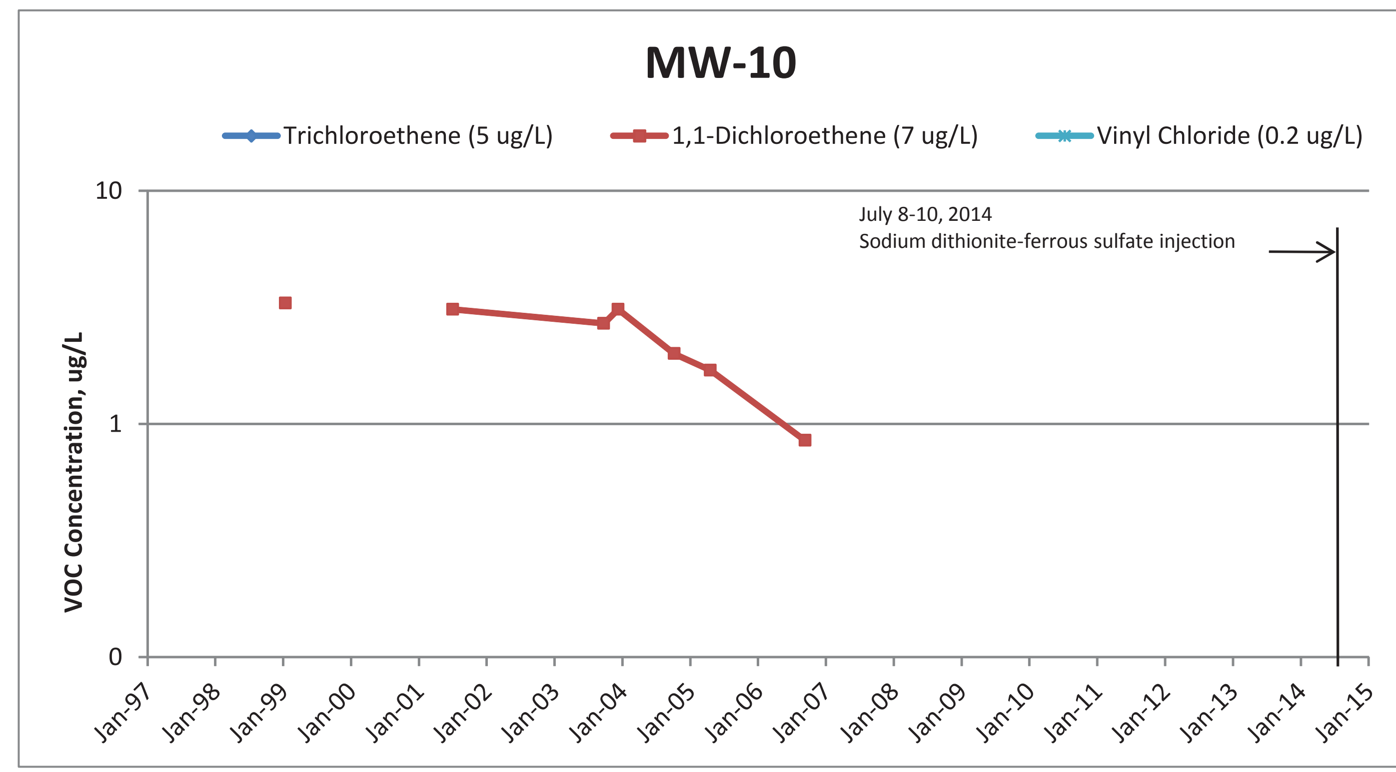
Date: DECEMBER 2014	Revision Date:	
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029-00\GIS\mxd\DocReport_Oct2014\wi_chrome_trend_graph_A-4_11x17.mxd Date: 12/15/2014









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WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FIGURE A-5

MW-7R AND MW-10 GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

NOT TO SCALE

Date: DECEMBER 2014	Revision Date:	
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

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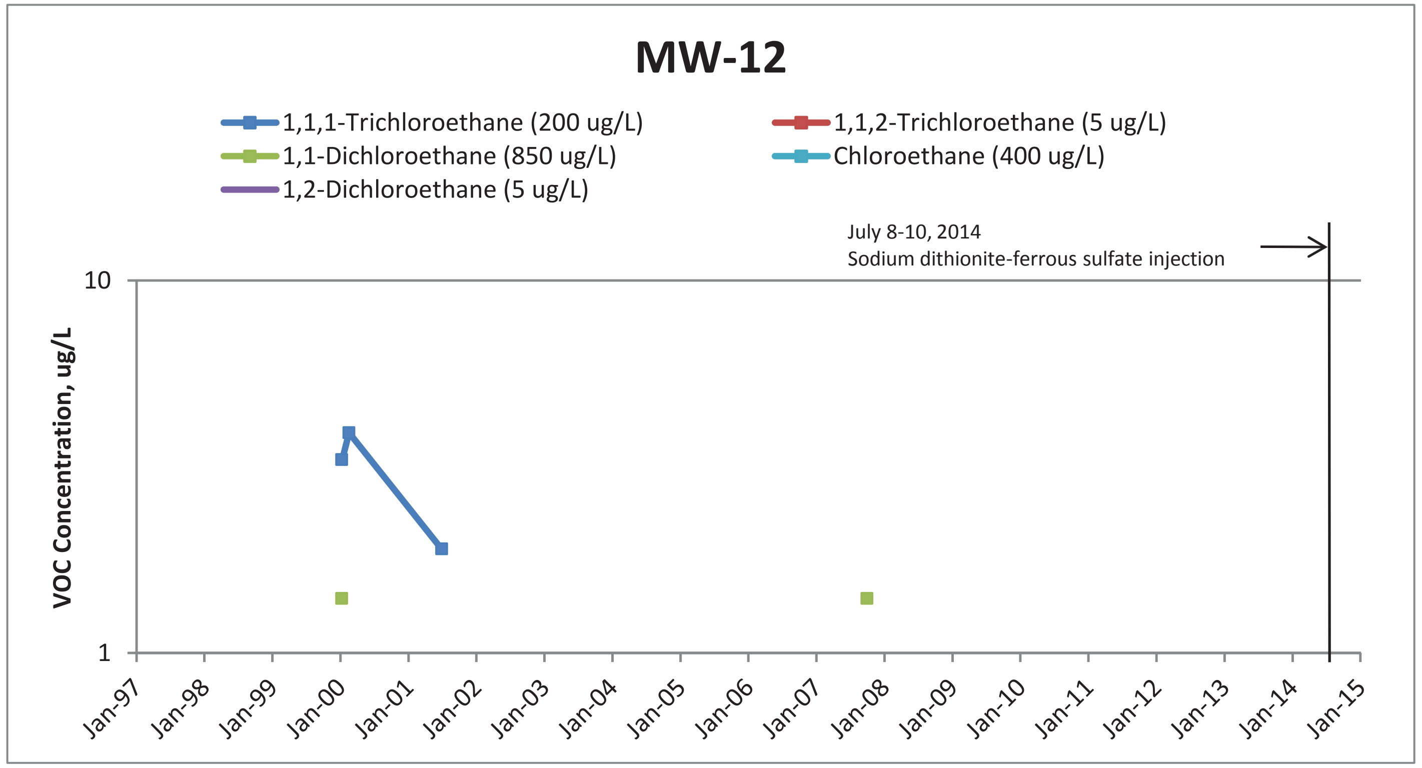
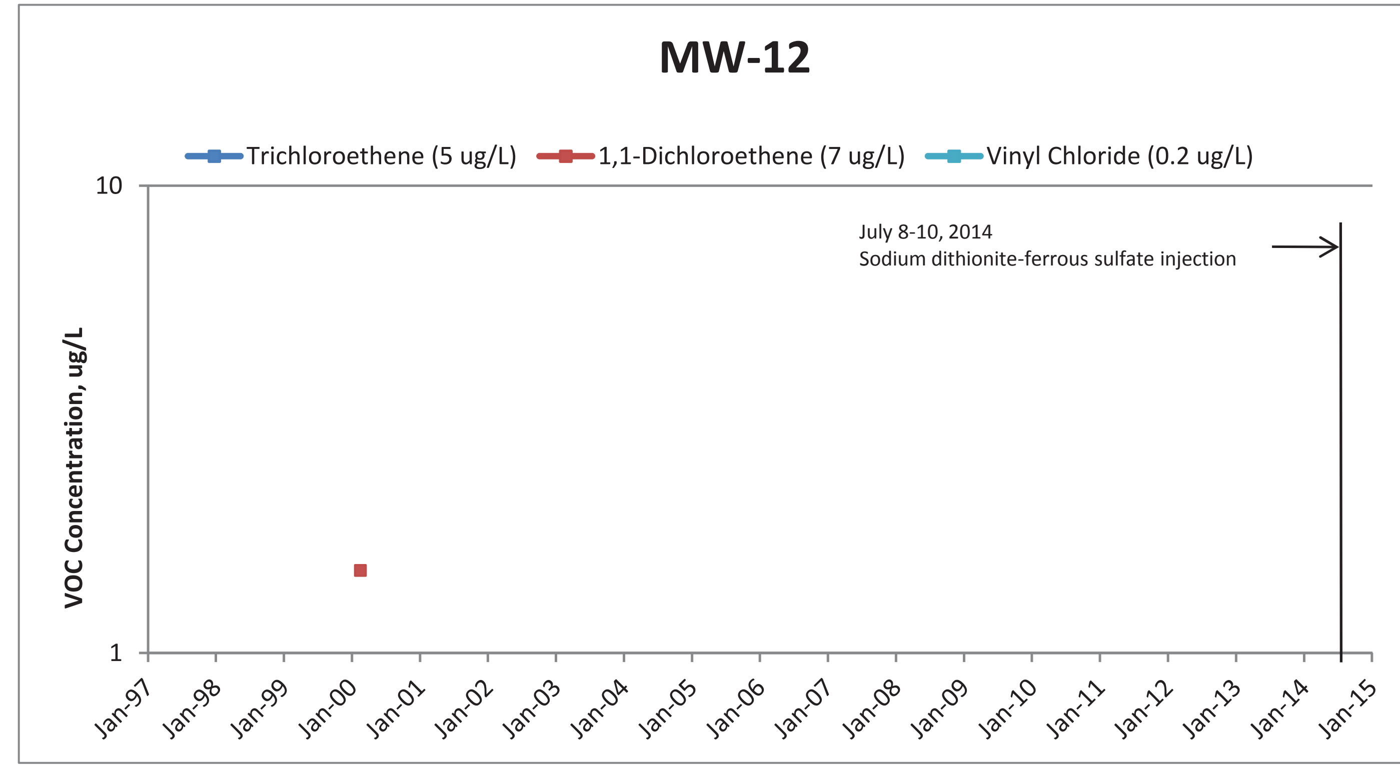
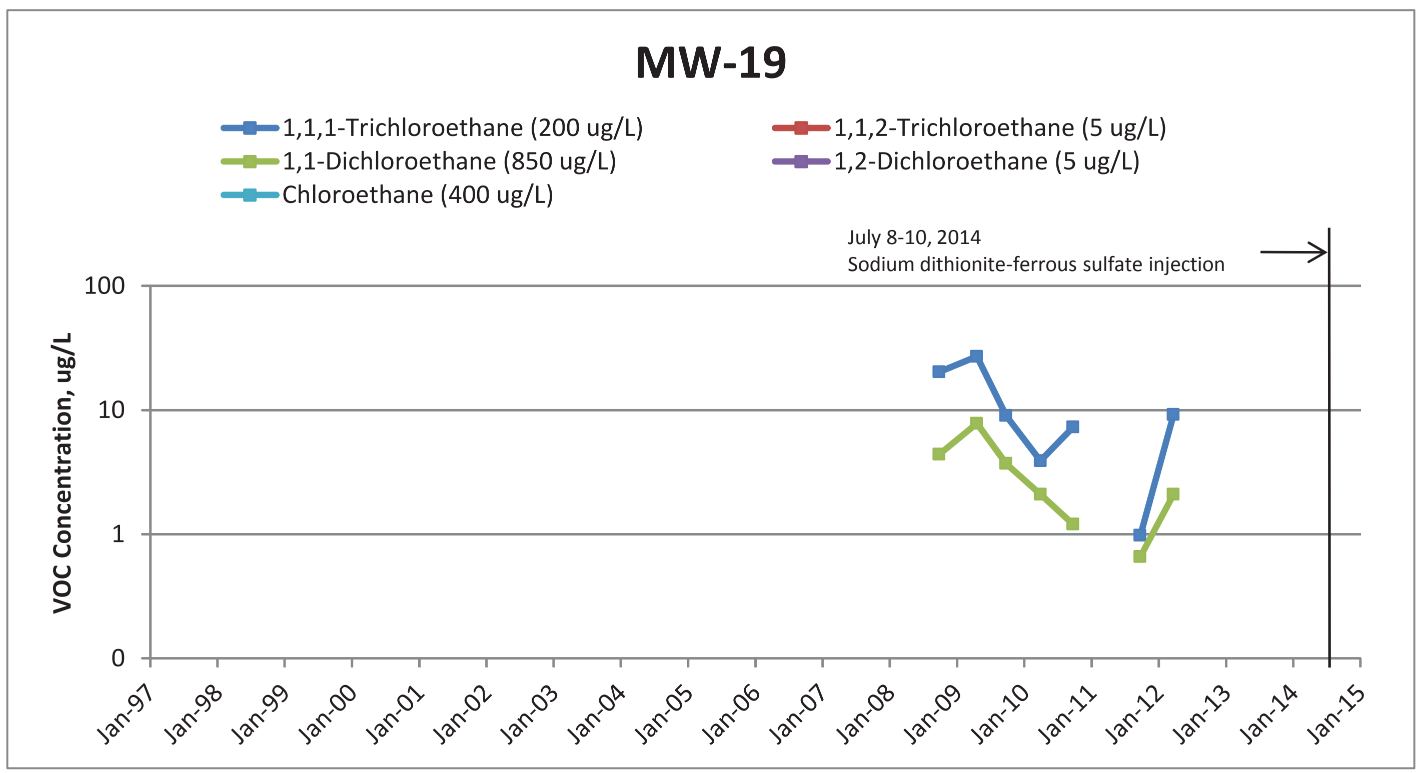
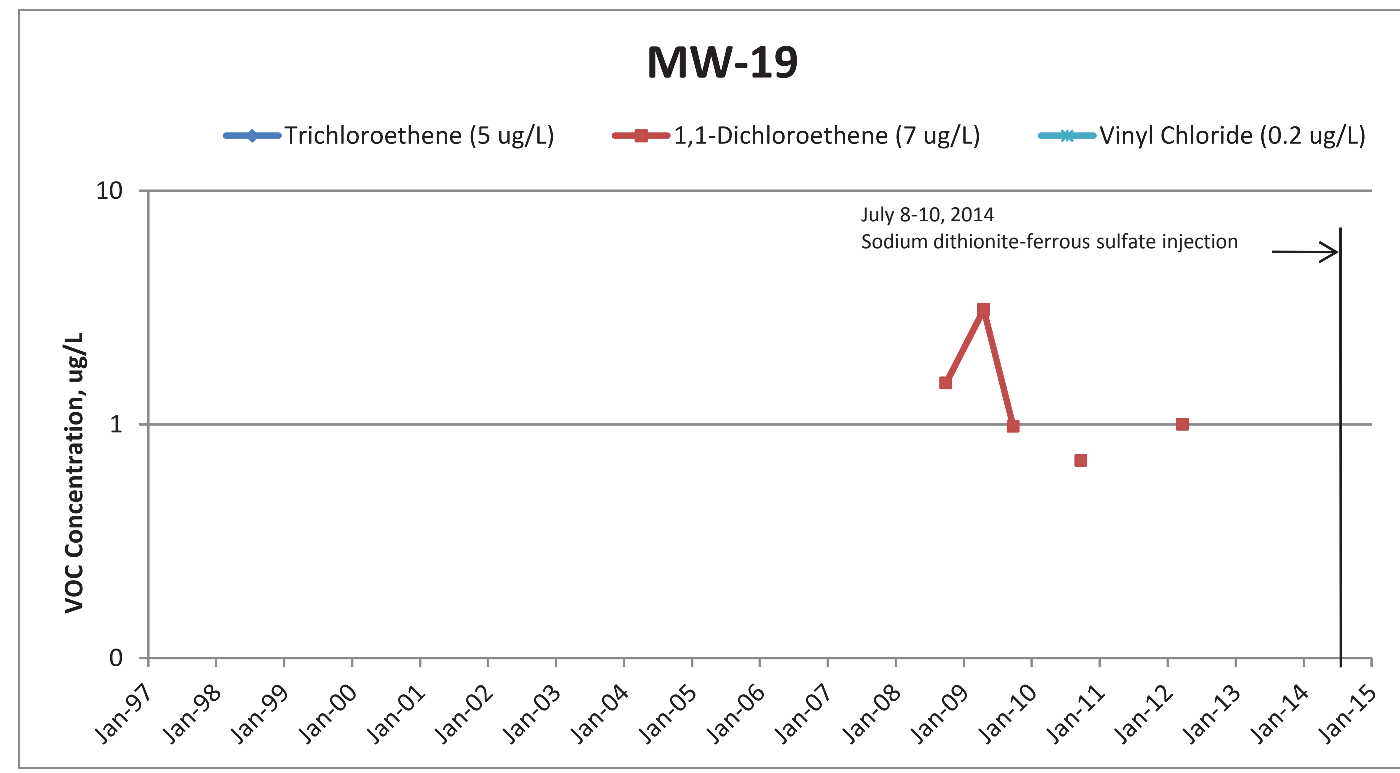








This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

Foth

NOT TO SCALE

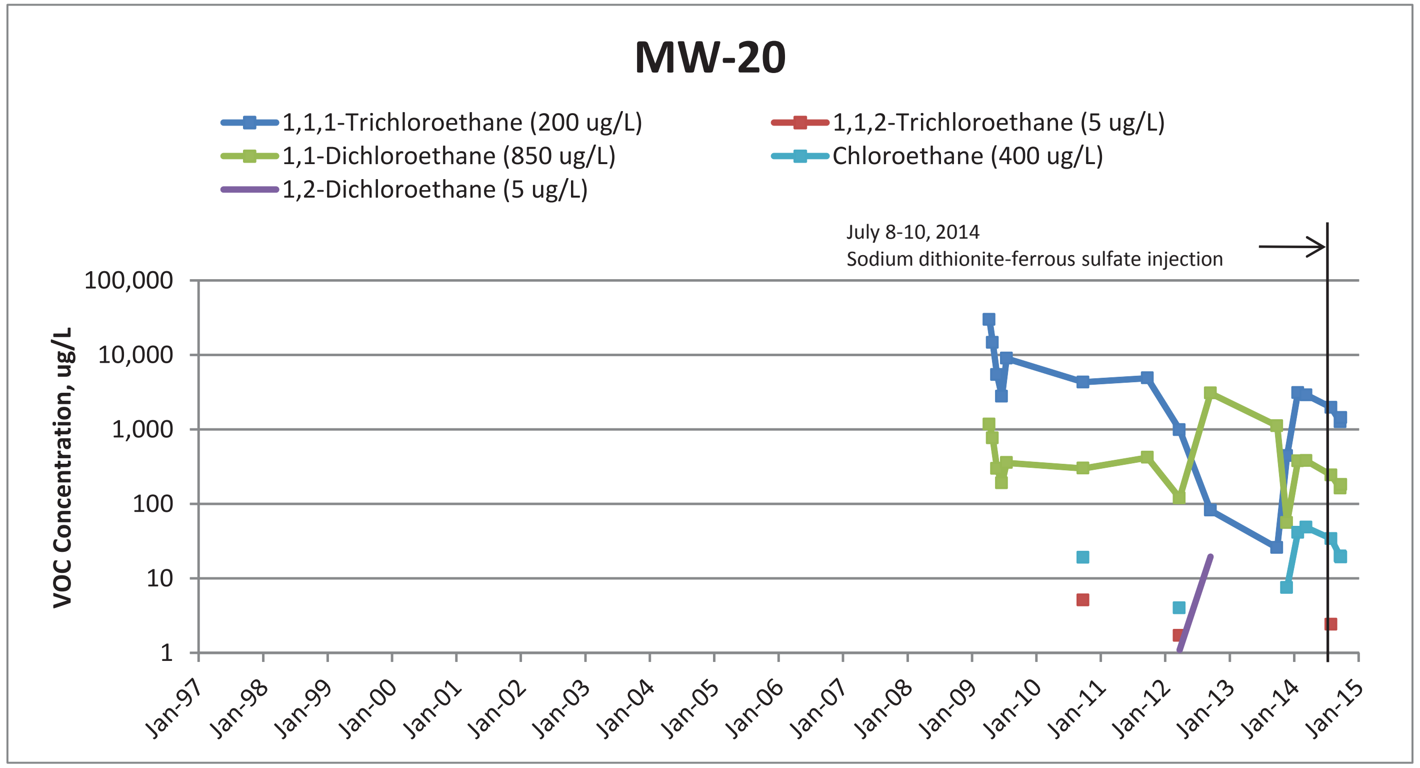
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

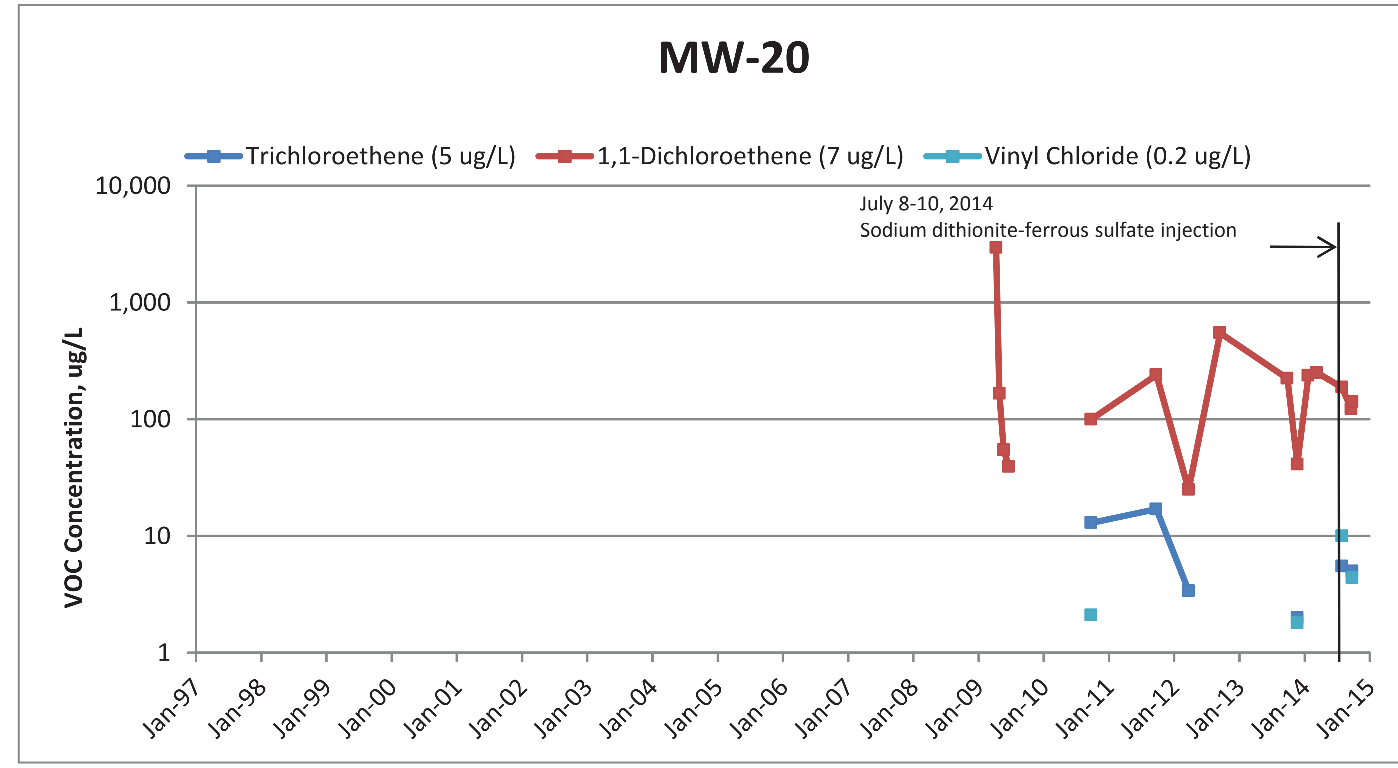
FIGURE A-6

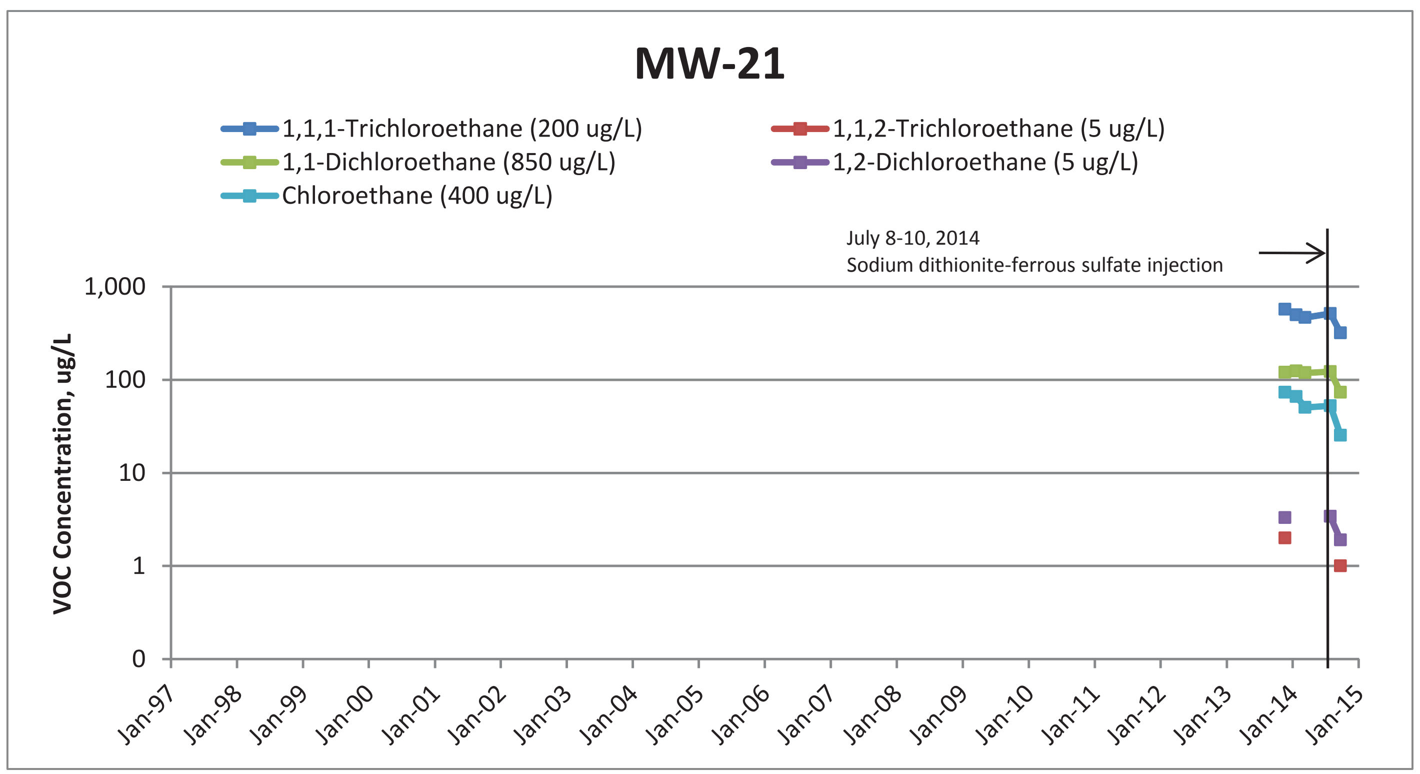
MW-12 AND MW-19 GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

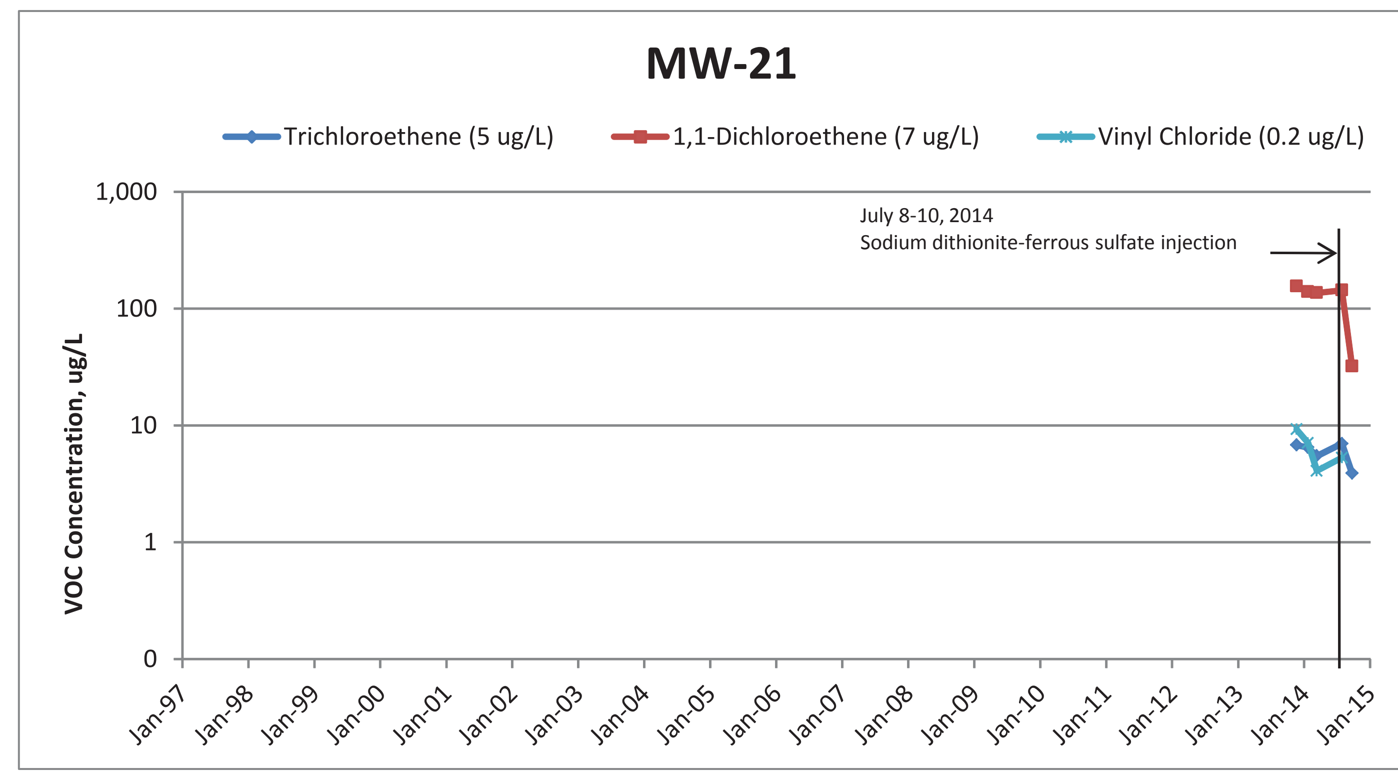
Date: DECEMBER 2014	Revision Date:	
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029-00\GIS\mxd\DocReport_Oct2014\wi_chrome_trend_graph_A-6_11x17.mxd Date: 12/15/2014









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NOT TO SCALE

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

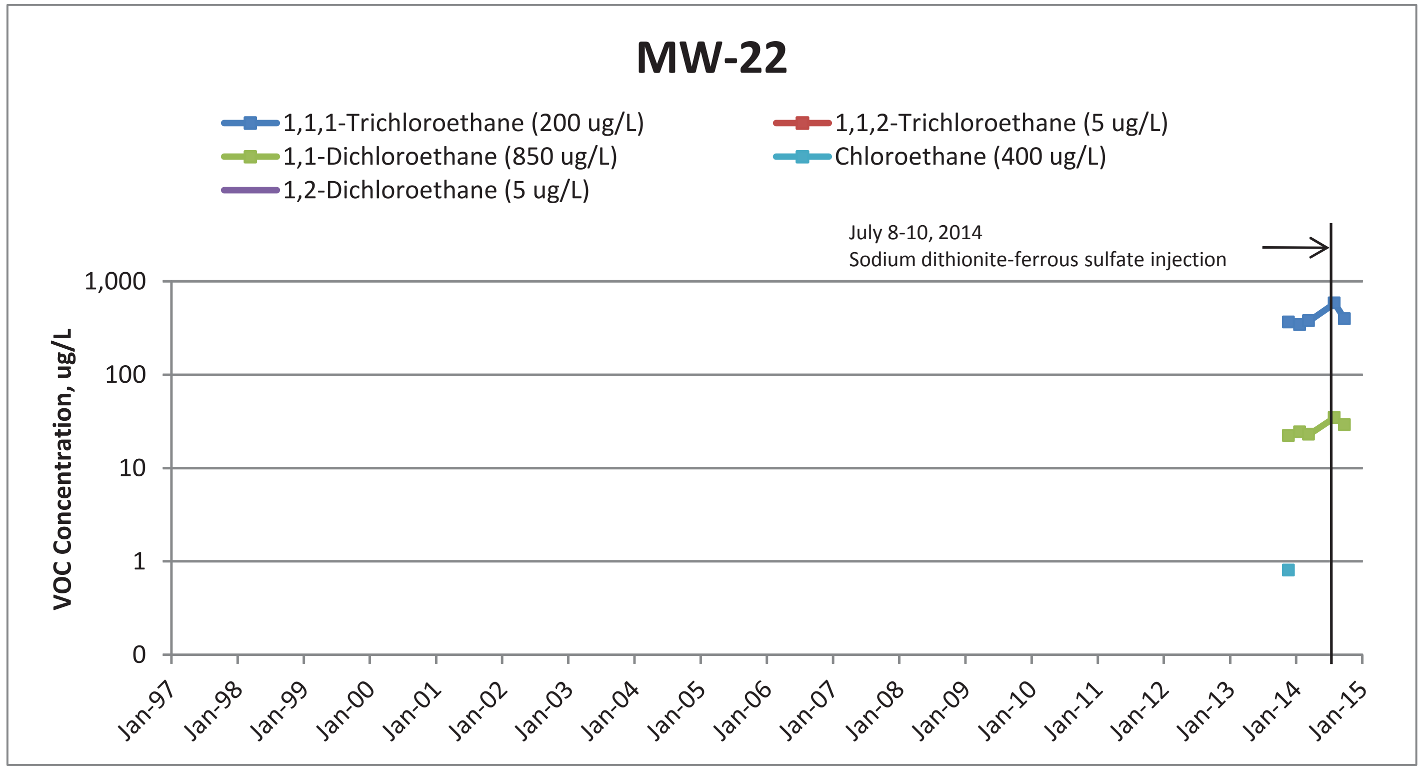
FIGURE A-7

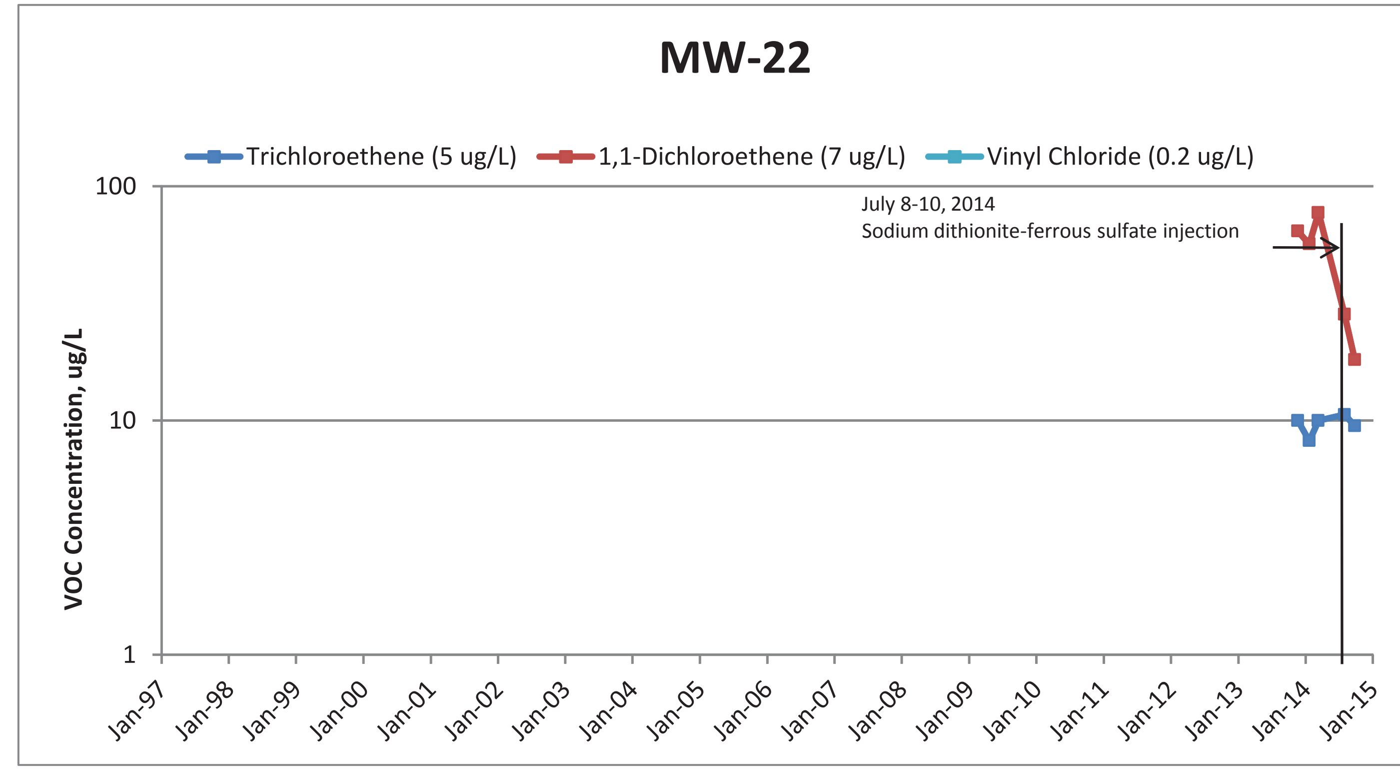
MW-20 AND MW-21 GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

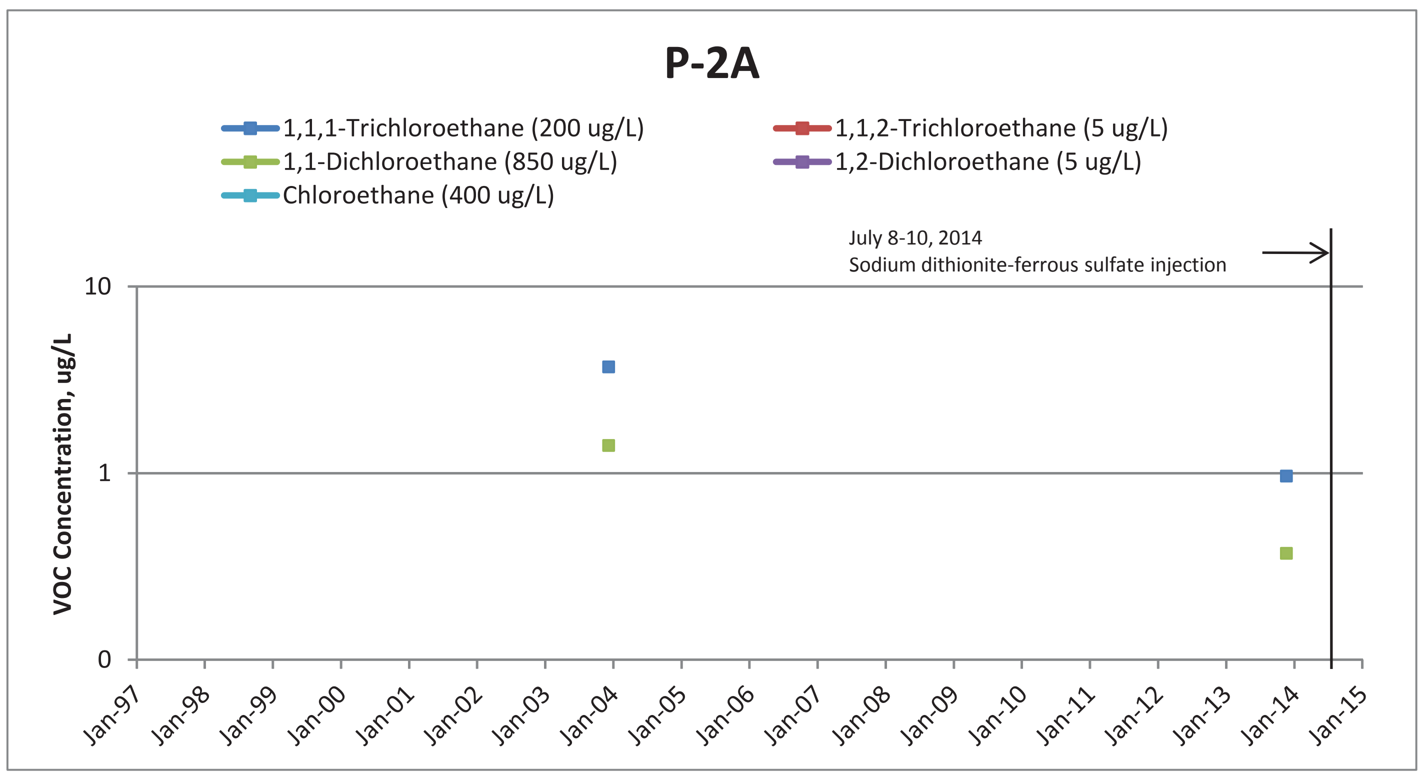
Date: DECEMBER 2014	Revision Date:

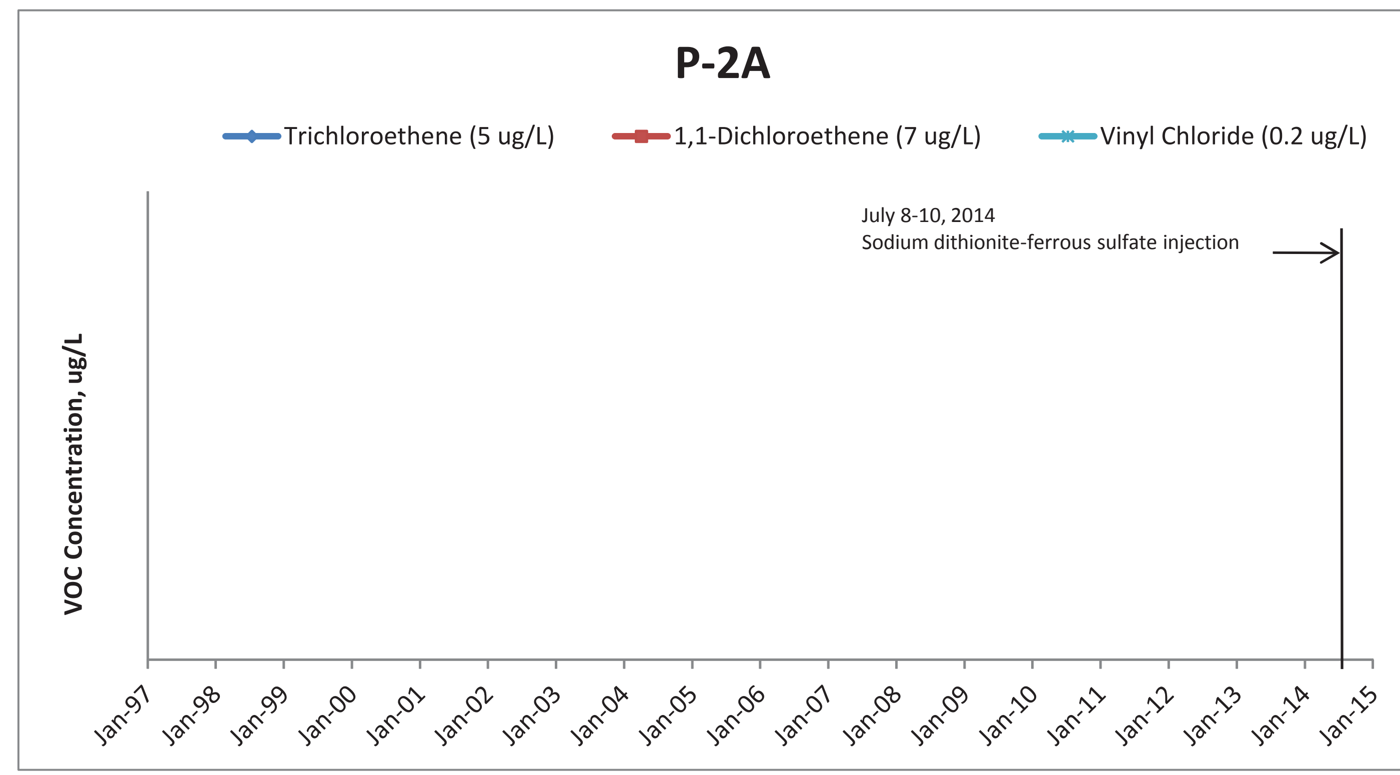
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029-00\GIS\mxd\DocReport_Oct2014\wi_chrome_trend_graph_A-7_11x17.mxd Date: 12/15/2014









Foth

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NOT TO SCALE

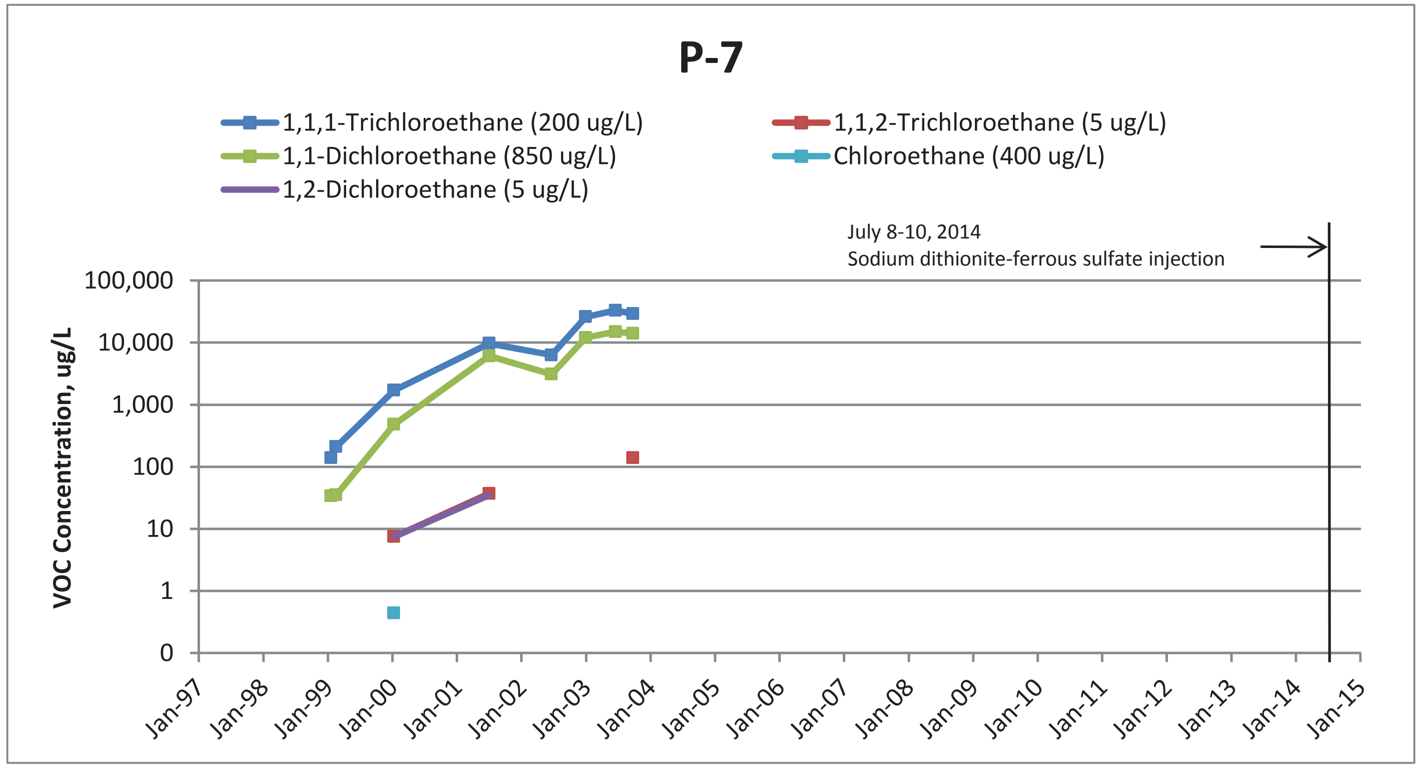
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

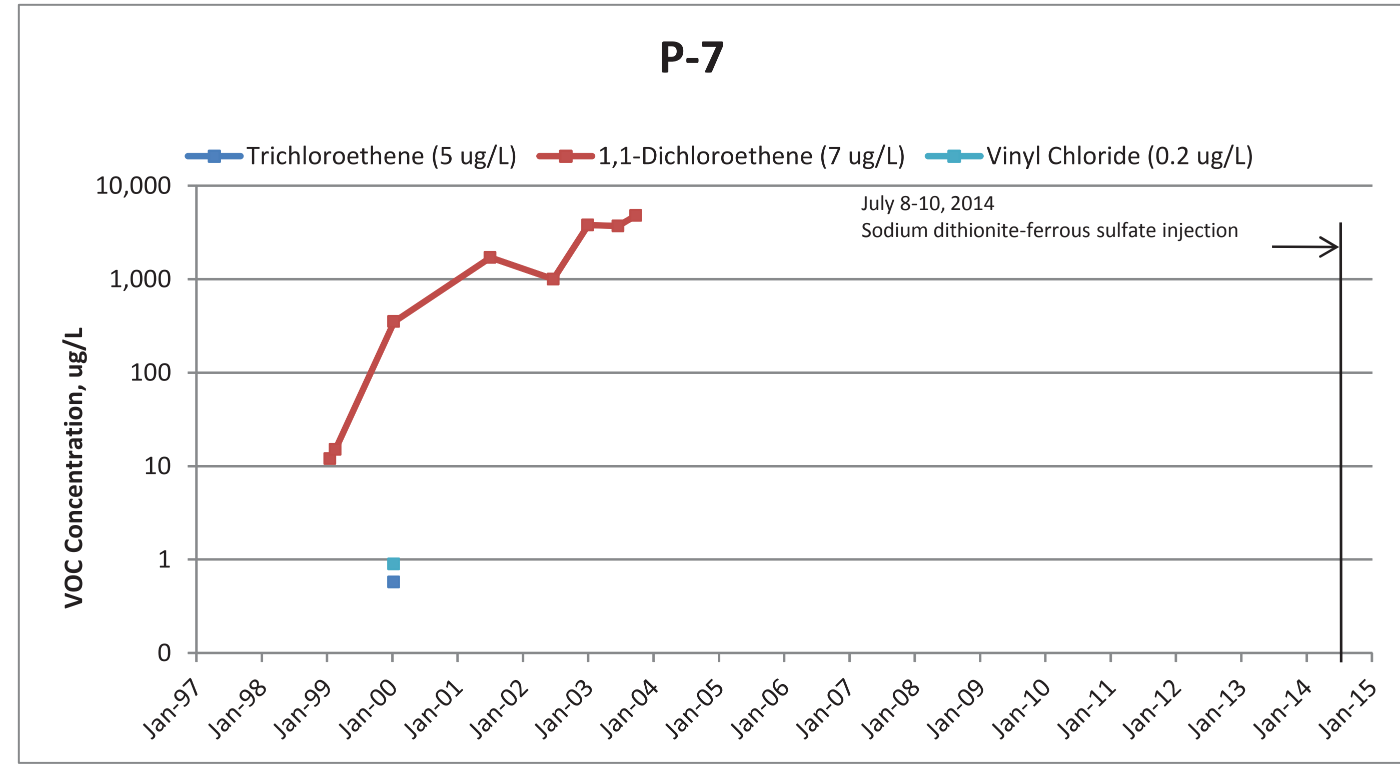
FIGURE A-8

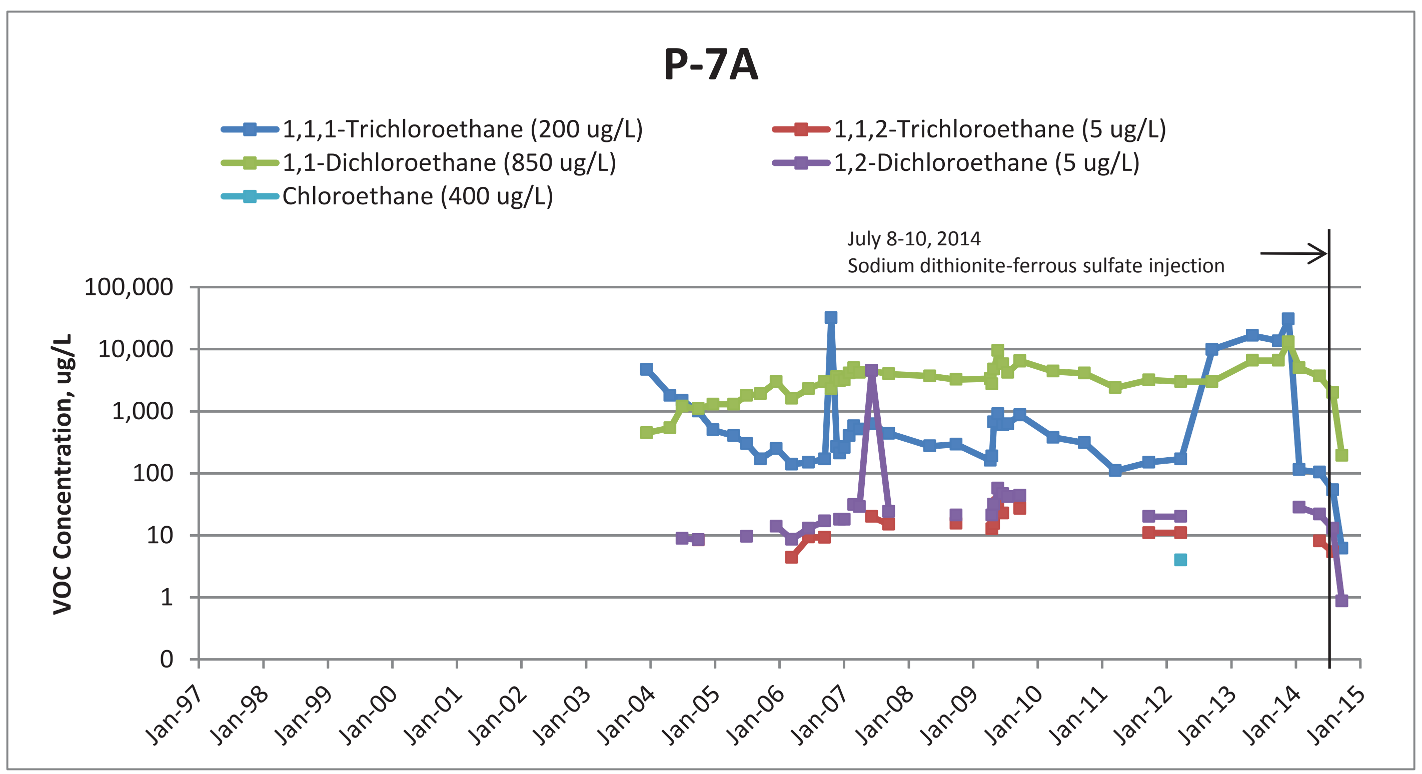
MW-22 AND P-2A GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

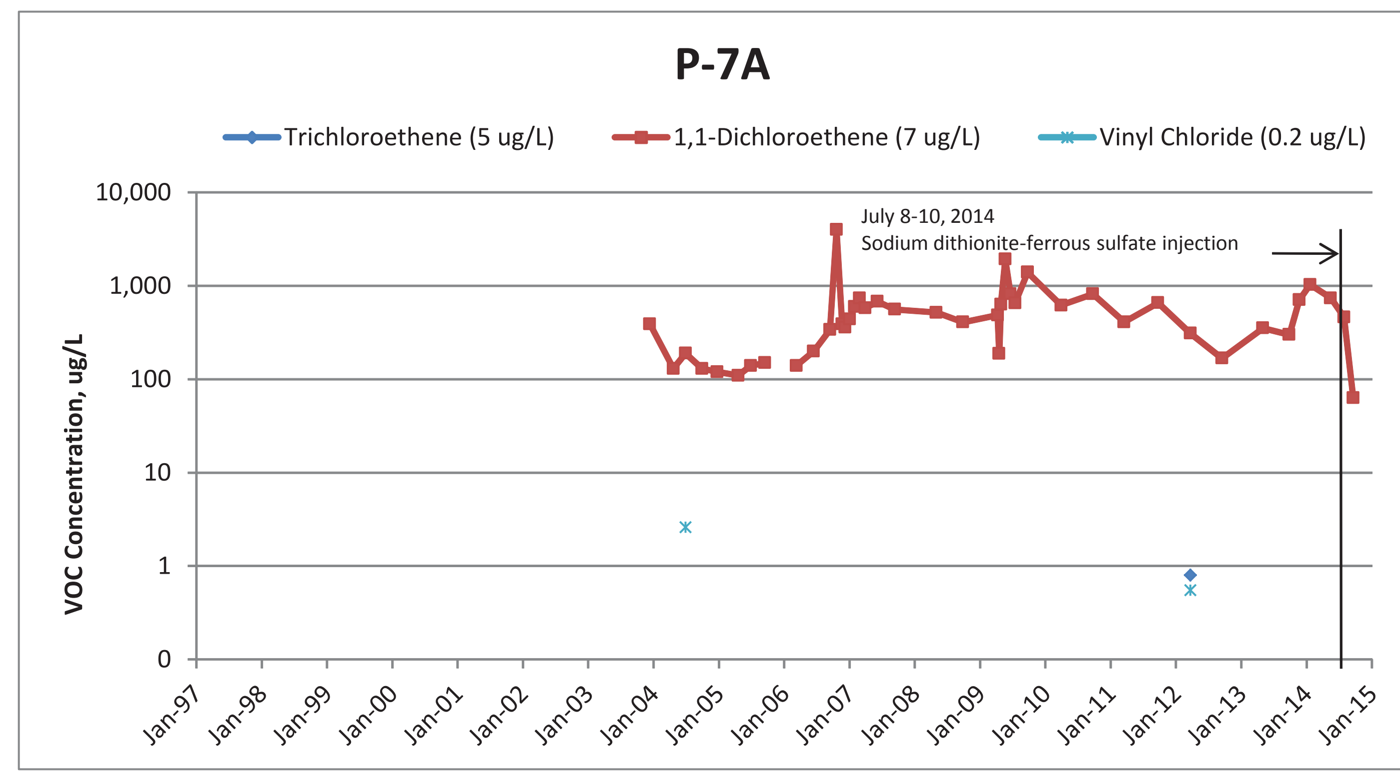
Date: DECEMBER 2014	Revision Date:	
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029-00\GIS\mxd\DocReport_Oct2014\wi_chrome_trend_graph_A-8_11x17.mxd Date: 12/15/2014









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This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

NOT TO SCALE

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

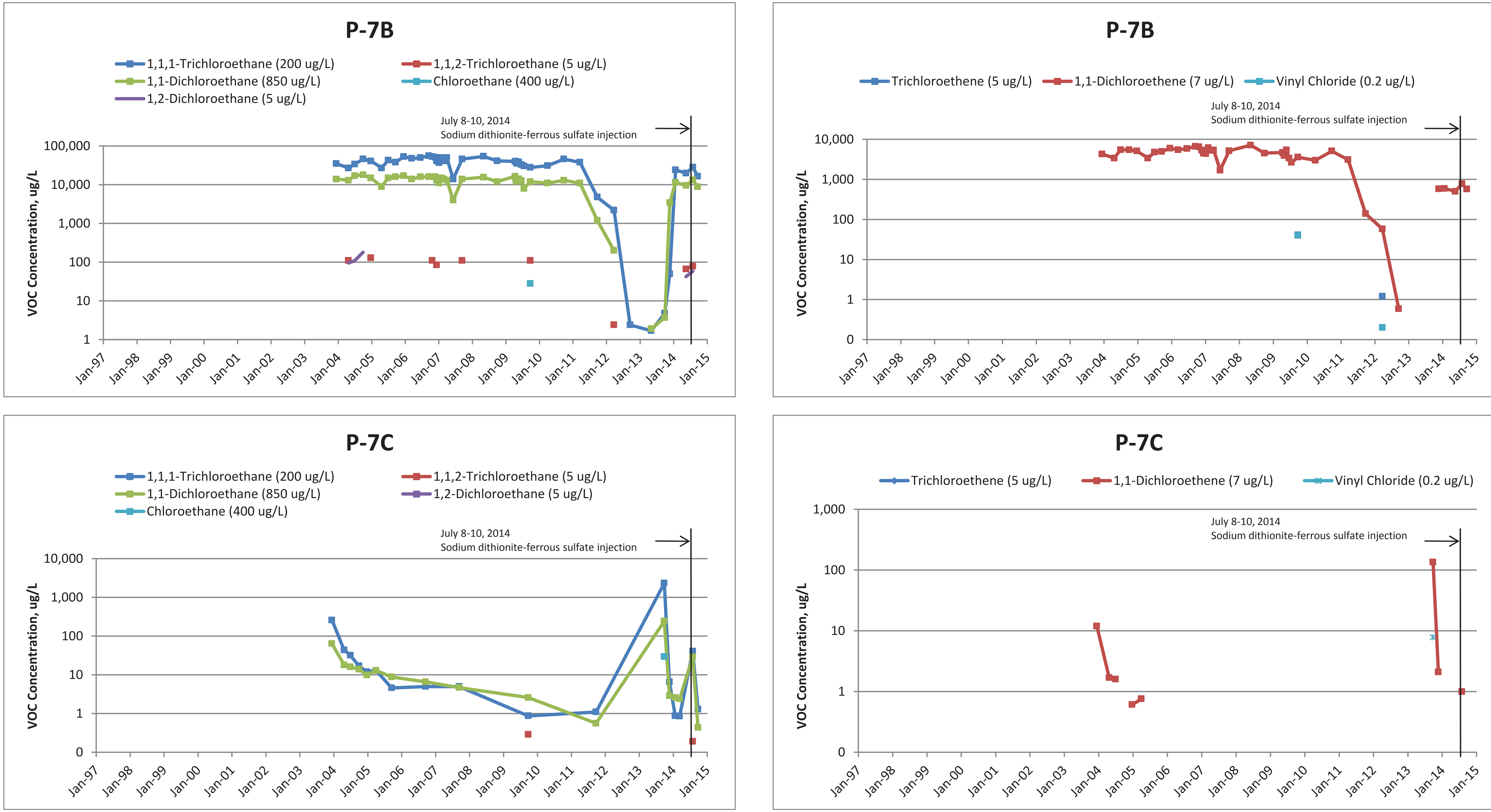
FIGURE A-9

P-7 AND P-7A GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

Date: DECEMBER 2014	Revision Date:

Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029-00\GIS\mxd\DocReport_Oct2014\wi_chrome_trend_graph_A-9_11x17.mxd Date: 12/15/2014



WISCONSIN DEPARTMENT OF NATURAL RESOURCES

FIGURE A-10

P-7B AND P-7C GROUNDWATER CONCENTRATIONS OVER TIME FOR VOC COCs
FORMER WISCONSIN CHROME PROJECT SITE

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

NOT TO SCALE

Date: DECEMBER 2014	Revision Date:	
Drawn By: BJW1	Checked By: MGM	Scope: 13W029

Path: X:\GB\IE\2013\13W029-00\GIS\mxd\DocReport_Oct2014\wi_chrome_trend_graph_A-10_11x17.mxd Date: 12/15/2014

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	**Sample Date**																																									
B-103	12/20/07	-	-	130	29,000	33,000	-	<50	600	-	-	-	-	-	<1.0	-	5	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<17	-	-	-	-	330	0.43	5.60	6.20
B-102	12/20/07	-	-	340	18	25	-	<50	660	-	-	-	-	-	<1.0	-	5	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<17	-	-	-	-	460	0.64	15.00	14.00
B-101	12/20/07	-	-	71	2,300	2,700	-	136	180	-	-	-	-	-	<1.0	-	5	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	<17	-	-	-	-	380	1.90	20.00	20.00
MW-1	2/7/97	-	-	-	21	-	-	-	-	-	-	-	-	-	<1.0	-	5	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	25	-	-	-	-	-	-	-	-	-	<1.0	-	5	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/15/98	-	-	-	<10	<10	-	-	-	-	-	-	-	-	<5	<5	<5	<5	<5	<5	<5	-	<5	<5.0	<5	<5	<5	-	<5	<5.0	0	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	<5.0	34	-	-	-	-	-	-	-	-	<1.0	<0.5	10	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	10	-	-	-	-	-	-	-	-	-	-	-
	5/23/98	-	-	-	12	11	-	-	-	-	-	-	-	-	<0.5	<0.5	6	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	6	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<0.5	<0.5	5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	5	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	30	2.9	<4.2	-	1,600	-	-	-	-	-	-	<0.25	<0.25	6.4	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	6	-	-	-	-	-	-	-	-	-	-	-
	9/6/01	-	-	35	0.64	<4.2	-	5,800	-	-	-	-	-	-	<0.25	<0.25	4.8	<0.25	<0.25	<0.25	0.27	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	5	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	33	0.25	<4.2	-	15,000	-	-	-	-	-	-	<0.25	<0.25	5.2	<0.25	<0.25	<0.25	0.61	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	6	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	37	9.8	<4.2	-	62,000	-	-	-	-	-	-	<0.25	<0.25	6.2	<0.25	6.2	<0.25	0.93	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	13	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	34	21	<20	-	23,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	35	35	<2.6	-	10,000	-	-	-	-	-	-	<0.97	<0.37	5.1	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	5	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	31	18	<2.6	-	31,000	-	-	-	-	-	-	<0.97	<0.37	4.9	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	5	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	30	2.8	<2.7	-	340	-	-	-	-	-	-	<0.97	<0.37	4.0	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	4	-	-	-	-	-	-	-	-	-	-	-
MW-1R	2/7/97	-	-	-	410	-	-	-	-	-	-	-	-	-	<1.0	-	9	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	21	-	-	-	-	-	-	-	-	-	<1.0	-	13	-	3	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	<5.0	<10	-	-	-	-	-	-	-	-	<2	<2	19	<2	<2	<2	<2	<10	<2	<2.0	<2	<2	<2	<2	<2	<2.0	19	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	5/23/98	-	-	-	10	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	11.8	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	12	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	10	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<0.1	7	<0.5	<0.5	<1.0	<0.2	<1.0	17	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	25	0.97	<4.2	-	2,000	-	-	-	-	-	-	<0.25	<0.25	6	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	6	-	-	-	-	-	-	-	-	-	-	-
	9/6/01	-	-	29	1	<4.2	-	470	-	-	-	-	-	-	<0.25	<0.25	6	<0.25	<0.25	<0.25	0.37	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	6	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	28	0.94	<4.2	-	43,000	-	-	-	-	-	-	<0.25	<0.25	4.4	<0.25	<0.25	<0.25	0.36	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	5	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	33	<0.52	<4.3	-	110,000	-	-	-	-	-	-	<0.26	<0.25	5.4	<0.26	4.9	<0.25	0.29	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	11	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	31	12	<20	-	11,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	34	17	<2.6	-	13,000	-	-	-	-	-	-	<0.97	<0.37	2.2	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	2	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	29	270	<2.6	-	200,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	12/11/03	-	-	27	52	<2.6	-	38,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	6/29/04	-	-	25	1.5	<2.7	-	<17	-	--	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/04	-	-	27	<0.52	<2.7	-	<17	-	-	-	-	-	-	<0.97	<0.37	3.6	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	3.6	-	-	-	-	-	-	-	-	-	-	-
	12/27/04	-	-	24	0.71	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
	3/29/05	-	-	23	0.88	<2.7	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.11	-	-	-	-	-
	9/14/05	-	-	-	0.73	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/13/06	-	-	-	<1.9	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.78	-	-	-	-	-	-	-	-	-	-	-
	9/11/07	-	-	-	<0.43	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.01	1,046	-	-	-	-
MW-2	2/7/97	-	-	-	3,750	-	-	-	-	-	-	-	-	-	<1.0	-	7	-	<0.5	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	1,200	-	-	-	-	-	-	-	-	-	3	-	8	-	<0.5	-	-	-	-	-	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	469	560	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2.0	33	<2	4	<2	<2	<2.0	37	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	459	770	-	-	-	-	-	-	-	-	<1.0	<0.5	7	<0.5	2	<1.0	<0.5	<5.0	<0.5	<1.0	50	<0.5	<0.5	<1.0	<0.2	<1.0	59	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	746	724	-	-	-	-	-	-	-	-	<1.0	<0.5	7.2	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	36.9	<0.5	<0.5	<1.0	<0.2	<1.0	44	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	8,080	8,080	-	-	-	-	-	-	-	-	<1.0	<0.5	14	<0.5	4	<1.0	<0.5	<5.0	<0.5	<1.0	67	<0.5	<0.5	<1.0	<0.2	<1.0	85	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	5,000	5,800	-	-	-	-	-	-	-	-	<0.25	<0.25	13	<0.25	4.8	<0.25	<0.25	<0.25	<0.25	<0.1	93	<0.25	<0.25	<0.10	<0.25	<2.5	111	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	6,400	8,000	-	-	-	-	-	-	-	-	1.6	<0.18	15	<0.20	6.1	<0.38	<0.87	<0.14	<0.63	<0.39	110	<0.15	<0.49	<0.33	<0.46	<1.1	133	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	2,900	3,300	-	-	-	-	-	-	-	-	<0.5	<0.5	9.4	<0.5	3.3	<0.5	3.2	<0.5	<0.5	<0.2	63	<0.5	<0.5	<0.2	<0.5	<0.5	79	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	2,600	3,000	-	-	-	-	-	-	-	-	<1	<1	11	<1	3.7	<1	4.6	<1	<1	<0.4	50	<1	<1	<0.4	<1	<1.0	69	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	13	3,200	620	-	62,000	-	-	-	-	-	-	<0.57	<0.75	1.5	<0.47	<0.85	<0.43	<0.85	-	<0.57	<0.47	5.9	<0.72	<0.89	<0.52	<0.18	<1.94	7	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	11,000	8,500	-	59,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/16/03	-	-	17	11,000	12,000	-	16,000	-	-	-	-	-	-	1.6	<0.37	18	<0.36	11	<0.54	<0.43	-	<0.45	<0.67	150	<0.42	<0.48	<0.83	<0.18	<2.63	181	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	19	16,000	13,000	-	20,000	-	-	-	-	-	-	2.7	<0.37	22	<0.36	9.0	<0.54	1.5	-	<0.45	<0.67	140	<0.42	<0.48	<0.83	<0.18	<2.63	175	-	-	-	-	-	7.00	-	-	-	-	-
	12/9/03	-		28	22,000	26,000	-	18,000	-	-	-	-	-	-	3.1	<0.37	30	<0.36	13	<0.54	1.4		<0.45	<0.67	180	<0.42	<0.48	<0.83	<0.18	<2.63	228	-	-	-	-	-	7.00	-	-	-	-	-
	4/15/04	-	-	46	1,900	1,900	-	130	-	-	-	-	-	-	<0.97	<0.37	2.2	<0.36	0.8	<0.54	<0.43	-	<0.45	<0.67	17	<0.42	<0.48	<0.83	<0.18	<2.63	20	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	27	17	14	-	70	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	10/5/04	-	-	29	2,700	3,600	-	<17	-	-	-	-	-	-	1.3	<0.37	9.0	<0.36	3.7	<0.54	<0.43	-	<0.45	<0.67	45	<0.42	<0.48	<0.83	<0.18	<2.63	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/04[D]	-	-	28	4,200	4,000	-	<17	-	-	-	-	-	-	<0.92	<0.37	7.6	<0.36	2.4	<0.54	<0.43	-	<0.45	<0.67	29	<0.42	<0.48	<0.83	<0.18	<2.63	39	-	-	-	-	-	-	-	-	-	-	-
	12/15/04	-	-	29	17,000	19,000	-	<17	-	-	-	-	-	-	4.0	<0.37	27	<0.36	11	<0.54	2.3	-	<0.45	<0.67	120	0.48	<0.48	<0.83	<0.18	<2.63	164.78	-	-	-	-	-	-	-	-	-	-	-
	12/15/04[D]	-	-	28	18,000	18,000	-	<17	-	-	-	-	-	-	3.8	<0.37	29	<0.36	12	<0.54	2.0	-	<0.45	<0.67	130	0.49	<0.48	<0.83	<0.18	<2.63	177.29	-	-	-	-	-	-	-	-	-	-	-
	12/15/04UF	-	-	-	19,000	19,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	39	16,000	16,000	-	<17	-	-	-	-	-	-	4.3	<0.37	30	0.37	9.2	<0.54	<0.43	-	<0.45	<0.67	110	<0.42	<0.48	<0.83	<0.18	<2.63	153.87	-	-	-	-	-	6.87	-	-	-	-	-
	6/28/05	-	-	-	9,300	10,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.05	-	-	-	-	-
	9/14/05	-	-	-	96	98	-	-	-	-	-	-	-	-	-	-	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	11	1.8	<0.42	<0.48	<0.83	<0.18	<2.63	12.8	-	-	-	-	-	6.87	-	-	-	-	-
	12/22/05	-	-	-	1,600	1,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.99	-	-	-	-	-
	4/7/06	-	-	-	8,300	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.87	844	-	-	-	-
	6/14/06	-	-	-	4,100	4,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.89	1,484	-	-	-	-
	9/14/06	-	-	-	4,900	-	-	-	-	-	-	-	-	-	3.3	<0.37	28	<0.36	11	<0.54	1	-	<0.45	<0.67	110	<0.42	<0.48	<0.83	<0.18	<2.63	153.3	-	-	-	-	-	7.18	1,217	-	-	-	-
	10/20/06	-	-	23	7,200	8,000	-	<50	160	<2.5	-	-	-	-	3.9	<0.37	13	<0.36	13	<0.54	1.2	-	<0.45	<0.67	120	<0.42	<0.48	<0.83	<0.18	<2.63	151.1	-	-	-	-	-	7.49	1,333	-	-	-	-
down August 5, 2010. Transfer pump failed a		-	-	22	2,300	2,900	-	<50	120	<2.5	-	-	-	-	2.2	<0.37	25	<0.36	9.3	<0.54	<0.43	-	<0.45	<0.67	120	<0.42	<0.48	<0.83	<0.18	<2.63	156.5	-	-	-	-	-	7.33	1,300	-	-	-	-
	12/11/06	-	-	-	2,700	3,000	-	<50	130	<2.5	-	-	-	-	1.3	<0.37	11	<0.36	3.4	<0.54	<0.43	-	<0.45	<0.67	41	<0.42	<0.48	<0.83	<0.18	<2.63	56.7	-	-	-	-	-	-	-	-	-	-	-
	1/2/07	-	-	-	7,700	7,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.15	1,264	-	-	-	-
	1/30/07	-	-	-	4,500	4,900	-	<50	160	<2.5	-	-	-	-	3.0	<0.37	23	<0.36	10	<0.54	<0.43	-	<0.45	<0.67	91	<0.42	<0.48	<0.83	<0.18	<2.63	127	-	-	-	-	-	-	-	-	-	-	-
	2/26/07	-	-	52	3,300	3,800	-	<50	180	<2.5	1.6	-	-	-	1.6	20	<0.36	6.3	<0.54	0.52	<0.45	-	<0.67	52	<0.42	<0.48	<0.83	<0.18	<2.63	<1.8	80.42	-	-	-	-	-	6.94	1,575	-	-	-	-
	3/29/07	-	-	-	4,200	4,400	-	<50	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.35	1,193	-	-	-	-
	6/15/07	-	-	-	4,300	5,400	-	<50	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/11/07	-	-	-	5,400	110	-	-	-	-	-	-	-	-	1.9	<0.37	15	<0.36	6.4	<0.54	0.52	-	<0.45	<0.67	65	<0.42	<0.48	<0.83	<0.18	<0.83	88.82	-	-	-	-	-	6.99	1,039	-	-	-	-
	09/11/07[D]	-	-	-	8,200	170	-	-	-	-	-	-	-	-	3.4	<0.37	24	<0.36	11	<0.54	0.9	-	<0.45	<0.67	100	<0.42	<0.48	<0.83	<0.18	<0.83	139.3	-	-	-	-	-	6.99	1,039	-	-	-	-
	12/21/07	-	-	25	2,200	2,500	-	<50	170	-	-	-	-	-	3.4	<0.37	24	<0.36	11	<0.54	0.9	-	<0.45	<0.67	100	<0.42	<0.48	<0.83	<0.18	<0.83	139.3	-	-	< 0.17	-	-	6.99	1,039	170	< 0.085	5.000	3.600
	4/30/08	-	-	-	9,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/26/08	-	-	-	8,970	-	-	-	-	-	-	-	-	-	3.1	<1.3	25.9	<0.36	12	<0.54	1	-	<0.45	<0.67	116	<0.42	<0.48	<0.83	<0.18	<2.63	158	-	-	-	-	-	7.08	1467	-	-	-	-
	12/15/08	-	-	18.3	8,130	6,300	-	32.7	-	169.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.68	-	-	-	-	64	< 0.085	5.20	8.50

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
MW-2 (cont.)	4/17/09	-	-	-	8,640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/24/09 [HJ]	-	-	-	3,200	-	-	-	-	-	-	-	-	-	3.0	<0.20	31	<0.50	11	<0.50	<1.0	-	<0.50	<0.50	110	0.35	<0.20	<0.20	<0.20	<0.50	155.35	-	-	-	-	-	7.10	1,310	-	-	-	-
	3/29/10	-	-	-	3,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	1,215	-	-	-	-
	9/23/10	-	-	-	<10	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	6.89	1,170	-	-	-	-
	3/17/2011 [FF]	-	-	-	3,470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.47	1,460	-	-	-	-
	9/22/2011 [NN]	-	-	-	3,200	-	-	-	-	-	-	-	-	-	1.6	<0.20	21	<0.50	12	<0.50	<1.0	-	<0.50	<0.50	110	0.50	<0.20	<0.20	<0.20	<0.50	145.10	-	-	-	-	-	7.32	1,250	-	-	-	-
	3/21/12	-	-	-	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.75	1,280	-	-	-	-
	9/13/12	-	-	-	229	-	-	-	-	-	-	-	-	-	<0.97	<1.3	5.8	<0.36	2.7	<0.54	<0.43	-	<0.45	<0.67	17.8	<0.42	<0.48	<0.83	<0.18	<2.63	26.30	-	-	-	-	-	7.75	1,280	-	-	-	-
	4/30/13	-	-	-	485	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.61	1,070	-	-	-	-
	9/24/13	-	-	-	64.0	-	-	-	-	-	-	-	-	-	2.7	<0.69	44.1	<0.48	6.2	<0.50	<0.36	-	<0.47	<0.44	27.9	<0.39	<0.36	<0.50	<0.18	<1.32	144.9	-	-	-	-	-	7.61	1,070	-	-	-	-
	5/14/14	-	-	-	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.59	3,660	-	-	-	-
	9/19/14	-	-	-	1,240	-	-	-	-	-	-	-	-	-	<0.37	<2.5	26.7	<0.17	12.5	<0.50	0.47	-	<0.50	<0.50	82.4	0.26	<0.33	<0.50	<0.18	<1.5	122.3	-	-	-	-	-	6.26	1,360	-	-	-	-
MW-3	2/7/97	-	-	-	2,740	-	-	-	-	-	-	-	-	-	<1.0		3	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	409	-	-	-	-	-	-	-	-	-	<1.0	-	3	-	<0.5	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	81	68	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2.0	6	<2	<2	<2	<2	<2.0	6	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	82	80	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2.0	6	<2	<2	<2	<2	<2.0	6	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	223	198	-	-	-	-	-	-	-	-	<1.0	<0.5	4	<0.5	<0.5	<1.0	<0.5	<5.0	4	<1.0	5	<0.5	<0.5	<1.0	<0.2	<1.0	13	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	510	242	-	-	-	-	-	-	-	-	<1.0	<0.5	2.9	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	4.8	<0.5	<0.5	<1.0	<0.2	<1.0	8	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	94	92	-	-	-	-	-	-	-	-	<1.0	<0.5	2	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	2	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	530	440	-	-	-	-	-	-	-	-	<0.25	<0.25	2.9	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	5.9	<0.25	<0.25	<0.10	<0.25	<0.25	9	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	190	240	-	-	-	-	-	-	-	-	<1.2	<0.18	2.8	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	5	<0.15	<0.49	<0.33	<0.46	<1.1	8	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	170	220	-	-	-	-	-	-	-	-	<0.25	<0.25	3	<0.25	0.66	<0.25	<0.25	<0.25	<0.25	<0.1	7.2	<0.25	<0.25	<0.1	<0.25	<0.25	11	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	170	150	-	-	-	-	-	-	-	-	<0.25	<0.25	1.6	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	2.9	<0.25	<0.25	<0.1	<0.25	<0.25	4.5	-	-	-	-	-	-	-	-	-	-	-
	9/20/01	-	-	<5	54	53	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	<5	66	63	-	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	<5	160	53	-	1,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/29/01	-	-	6	7,500	71	-	190,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	<5	14,000	85	-	350,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	3.8	13,000	55	-	400,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/30/02	-	-	-	15,000	<20	-	390,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	8.1	4,500	<2.6	-	120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	10	1,300	<2.6	-	56,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	0.93	<0.42	<0.48	<0.83	<0.18	<2.63	1	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03	-	-	5.5	3,100	<2.6	-	94,000	-	-	-	-	-	-	<0.97	<0.37	0.76	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	1.0	<0.42	<0.48	<0.83	<0.18	<2.63	1.76	-	-	-	-	-	7.00	-	-	-	-	-
	4/15/04	-	-	5.8	9.7	4	-	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	3.2	36	35	-	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/04	-	-	11	6.9	4	-	<17	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.81	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	12/15/04	-	-	3.9	18	18	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/15/04UF	-	-	-	44	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	22	83	96	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.26	-	-	-	-	-
	6/28/05	-	-	-	2.5	<5.0	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.40	-	-	-	-	-
	9/14/05	-	-	-	1.1	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.77	-	-	-	-	-
	12/14/05	-	-	-	2	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.34	-	-	-	-	-
	3/10/06	-	-	-	<1.3	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.42	829	-	-	-	-
	6/14/06	-	-	-	0.88	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.43	804	-	-	-	-
	9/12/06	-	-	-	1.7	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.35	770	-	-	-	-
	10/20/06	-	-	1.6	7.2	<6.8	-	<50	54	<2.5	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	6.25	655	-	-	-	-
	11/20/06	-	-	4.5	3.6	<6.8	-	<50	75	<2.5	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.36	750	-	-	-	-
	12/8/06	-	-	-	<1.9	<6.8	-	<50	78	<2.5	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.75	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.21	896	-	-	-	-
	1/2/07	-	-	-	2.9	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.56	830	-	-	-	-
	1/30/07	-	-	-	2.1	<6.8	-	<50	79	<2.5	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.75	<0.54	<0.43		<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	3/29/07	-	-	-	31	26	-	<50	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.28	570	-	-	-	-
	6/6/07	-	-	-	20	14	-	<50	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/11/07	-	-	-	8.8	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.24	665	-	-	-	-
	9/26/08	-	-	-	36.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.17	577	-	-	-	-
	12/12/08	-	-	4.2	21.8	11	-	442.0	-	58.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.17	-	-	-	-	61.80	0.160	-	3.60
	4/8/09	-	-	3.1	38.1	<38	-	12.3	34.8	<2.3	-	-	-	-	<0.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<1.8	0	-	-	<.17	-	-	-	-	0.97	0.78	-	<1.4
	4/27/09	-	-	3.6	43.6	49	-	43.4	31.0	<2.3	-	-	-	-	<0.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<1.8	0	-	-	<.17	-	-	-	-	32.10	1.4	2.5	<1.4
	5/21/09	-	-	3.3	53.3	55	-	36.2	30.3	<1.7	-	-	-	-	<0.97	<1.3	<0.75	<0.36	1.3	<0.54	<0.43	-	<0.45	<0.67	6.8	<0.42	<0.48	<0.83	<0.18	<1.8	8.1	-	-	<0.25	-	-	-	-	15.4	1.7	<1.4	<1.4
	6/18/09	-	-	3.1	65.3	56	-	7.9	26.6	<1.7	-	-	-	-	<0.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<1.8	0	-	-	<0.25	-	-		-	0.53	1.8	<1.4	<1.4
	7/15/09	-	-	3.2	74.1	86	-	5.5	29.4	<1.7	-	-	-	-	<0.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<1.8	0	-	-	<0.25	-	-	-	-	0.29	1.7	<1.4	<1.4
	9/23/09	-	-	-	88	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	6.8	495	-	-	-	-
	9/22/11	-	-	-	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.67	410	-	-	-	-
	9/13/12	-	-	-	17.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.67	410	-	-	-	-
	9/24/13	-	-	-	45.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.67	410	-	-	-	-
	9/19/14	-	-	-	29.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.48	439	-	-	-	-
MW-4	2/7/97	-	-	-	5,390	-	-	-	-	-	-	-	-	-	<1.0	-	34	-	7	-	-	-	-	-	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	6,030	-	-	-	-	-	-	-	-	-	4	-	48	-	10	-	-	-	-	-	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	8,400	10,900	-	-	-	-	-	-	-	-	<2	<2	72	<2	<2	<2	<2	<10	<2	<2.0	108	<2	<2	<2	<2	<2.0	180	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	2,340	2,570	-	-	-	-	-	-	-	-	<10.0	<5.0	20	<5.0	<5.0	<10.0	<5.0	<50.0	110	<10	50	<5.0	17	<10.0	<2.0	<10	197	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	9,040	8,230	-	-	-	-	-	-	-	-	8.2	<0.5	60.2	<0.5	17.9	<1.0	<0.5	<5.0	<0.5	<1.0	74.9	<0.5	<0.5	<1.0	<0.2	<1.0	161	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	9,140	8,680	-	-	-	-	-	-	-	-	<1.0	<0.5	61	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	74.1	<0.5	<0.5	<1.0	<0.2	<1.0	135	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	8,900	8,900	-	-	-	-	-	-	-	-	6	<0.5	50	<0.5	11	<1.0	<0.5	<5.0	<0.5	<1.0	44	<0.5	<0.5	<1.0	<0.2	<1.0	111	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	8,380	8,380	-	-	-	-	-	-	-	-	4	<0.5	30	<0.5	8	<1.0	<0.5	<5.0	<0.5	<1.0	30	<0.5	<0.5	<1.0	<0.2	<1.0	72	-	-	-	-	-	-	-	-	-	-	-
	1/18/99	-	-	-	1,900	2,300	-	-	-	-	-	-	-	-	<0.25	<0.25	22	<0.25	6.7	<0.25	<0.25	<0.25	<0.25	<0.1	45	0.31	<0.25	<0.1	<0.25	<0.25	74	-	-	-	-	-	-	-	-	-	-	-
	1/18/99	-	-	-	1,700	1,900	-	-	-		-	-	-	-	<0.25	<0.25	23	<0.25	7.8	<0.25	<0.25	<0.25	<0.25	<0.1	51	0.32	<0.25	<0.1	<0.25	<0.25	82	-	-	-	-	-	-	-	-	-	-	-
	2/17/99	-	-	64	3,000	3,500	-	<24	-	-	-	-	-	-	1.3	<0.25	24	<0.25	7.6	<0.25	<0.25	<0.25	<0.25	<0.1	38	<0.25	<0.25	<0.1	<0.25	<0.25	71	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	2,000	1,900	-	-	-	-	-	-	-	-	1.4	<0.25	19	<0.25	5.7	<0.25	<0.25	<0.25	<0.25	<0.1	35	<0.25	<0.25	<0.1	<0.25	<0.25	61	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	920	1,800	-	-	-	-	-	-	-	-	1	<0.25	33	0.34	30	<0.25	<0.25	<0.25	<0.25	<0.1	110	0.52	<0.25	<0.1	<0.25	<0.25	175	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	1,000	1,700	-	-	-	-	-	-	-	-	1.2	<0.25	30	0.37	23	<0.25	<0.25	<0.25	<0.25	<0.1	91	0.48	<0.25	<0.1	<0.25	<0.25	146	-	-	-	-	-	-	-	-	-	-	-
	9/19/01	-	-	37	3,700	4,700	-	3,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	52	2,500	3,000	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	32	3,000	3,600	-	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/29/01	-	-	27	3,700	2,400	-	59,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	28	5,200	2,000	-	130,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01 [D]	-	-	29	3,800	2,000	-	73,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	38	1,700	530	-	74,000	-	-	-	-	-	-	<0.57	<0.75	29	<0.47	17	<0.43	<0.85	-	<0.57	<0.47	120	<0.72	<0.89	<0.52	<0.18	<1.94	166	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	1,600	230	-	50,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	31	520	100	-	31,000	-	-	-	-	-	-	<0.97	<0.37	12	<0.36	5.6	<0.54	<0.43	-	<0.45	<0.67	58	<0.42	<0.48	<0.83	<0.18	<2.63	76	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	23	940	92	-	57,000	-	-	-	-	-	-	<0.97	<0.37	8.8	<0.36	5.0	<0.54	<0.43	-	<0.45	<0.67	43	<0.42	<0.48	<0.83	<0.18	<2.63	57	-	-	-	-	-	7.00	-	-	-	-	-
	12/11/03	-	-	26	330	110	-	25,000	-	-	-	-	-	-	<0.97	<0.37	12	<0.36	7.1	<0.54	<0.43	-	<0.45	<0.67	69	<0.42	<0.48	<0.83	<0.18	<2.63	88	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	26	73	9	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	23	56	52	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	25	36	38	-	<17	-	-	-	-	-	-	<0.24	<0.37	4.6	<0.36	1.8	<0.54	<0.43	-	<0.45	<0.67	21	<0.42	<0.48	<0.83	<0.18	<2.63	27.4	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
							Metals								Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
MW-4 (cont.)	12/28/04	-	-	21	66	73	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.8	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	22	83	96	-	<17	-	-	-	-	-	-	<0.97	<0.37	5.5	<0.36	3.8	<0.54	<0.43	-	<0.45	<0.67	36	<0.42	<0.48	<0.83	<0.18	<2.63	45.3	-	-	-	-	-	6.90	-	-	-	-	-
	6/28/05	-	-	-	85	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.75	-	-	-	-	-
	9/14/05	-	-	-	80	76	-	-	-	-	-	-	-	-	<0.97	<0.37	3.3	<0.36	2.5	<0.54	<0.43	-	<0.45	<0.67	24	<0.42	<0.48	<0.83	<0.18	<2.63	29.8	-	-	-	-	-	7.06	-	-	-	-	-
	12/14/05	-	-	-	68	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.26	-	-	-	-	-
	3/10/06	-	-	-	64	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.18	1,142	-	-	-	-
	6/14/06	-	-	-	40	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.91	793	-	-	-	-
	9/13/06	-	-	-	39	35	-	-	-	-	-	-	-	-	<0.97	<0.37	3.8	<0.36	2.5	<0.54	<0.43	-	<0.45	<0.67	27	<0.42	<0.48	<0.83	<0.18	<2.63	33.3	-	-	-	-	-	7.58	1,114	-	-	-	-
	10/20/06	-	-	19	60	67	-	<50	110	<2.5	-	-	-	-	<0.97	<0.37	3.7	<0.56	3.4	<0.54	<0.43		<0.45	<0.67	41	<0.42	<0.48	<0.83	<0.18	<2.63	48.10	-	-	-	-	-	6.74	1,003	-	-	-	-
	11/20/06	-	-	23	28	29	-	<50	100	<2.5	-	-	-	-	<0.97	<0.37	1.9	<0.36	0.83	<0.54	<0.43		<0.45	<0.67	15	<0.42	<0.48	<0.83	<0.18	<2.63	17.73	-	-	-	-	-	7.12	660	-	-	-	-
	12/8/06	-	-	-	52	48	-	<50	110	<2.5	-	-	-	-	<0.97	<0.37	2.6	<0.56	1.6	<0.54	<0.43	-	<0.45	<0.67	27	<0.42	<0.48	<0.83	<0.18	<2.63	31.2	-	-	-	-	-	7.12	1,159	-	-	-	-
	1/2/07	-	-	-	63	62	-	-	-	-	-	-	-	-	<0.97	<0.37	1.7	<0.36	1.5	<0.54	<0.43	-	<0.54	<0.67	25	<0.42	<0.48	<0.83	<0.18	<2.63	28.2	-	-	-	-	-	6.93	1,045	-	-	-	-
	1/30/07	-	-	-	63	68	-	<50	140	<2.5	-	-	-	-	<0.97	<0.37	2.1	<0.36	1.5	<0.54	<0.43	-	<0.54	<0.67	30	<0.42	<0.48	<0.83	<0.18	<2.63	33.6	-	-	-	-	-	-	-	-	-	-	-
	2/26/07	-	-	2.7	70	67	-	<50	130	<2.5	-	-	-	-	<0.97	<0.37	1.8	<0.36	1.4	<0.54	<0.43		<0.45	<0.67	24	<0.42	<0.48	<0.83	<0.18	<2.83	27.2	-	-	-	-	-	7.04	-	-	-	-	-
	3/29/07	-	-	-	57	53	-	<50	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.17	1,047	-	-	-	-
	6/6/07	-	-	-	53	51	-	<50	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/10/07	-	-	-	47	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.64	991	-	-	-	-
	9/26/08	-	-	-	47	-	-	-	-	-	-	-	-	-	<0.97	<1.3	1.7	<0.36	0.69	<0.54	<0.43	-	<0.45	<0.67	10.5	<0.42	<0.48	<0.83	<0.18	<2.63	12.89	-	-	-	-	-	6.91	1353	-	-	-	-
	12/12/08	-	-	34	35	32	-	39.1	-	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.17	-	-	-	-	4.70	< 0.085	-	1.50
	9/23/09	-	-	-	380	-	-	-	-	-	-	-	-	-	<1.0	<0.20	15	<0.50	11	<0.50	<1.0	-	<0.50	<0.50	71	<0.25	<0.20	<0.20	<0.20	<0.50	97	-	-	-	-	-	7.1	1,150	-	-	-	-
	9/23/10[X]	-	-	-	160	-	-	-	-	-	-	-	-	-	<1.0	0.22	53	<0.50	46	<0.50	<1.0	-	<0.50	<0.50	230	0.49	0.30	<0.20	<0.20	<0.50	330	-	-	-	-	-	7.58	1,110	-	-	-	-
	9/22/2011[OO]	-	-	-	240	-	-	-	-	-	-	-	-	-	<1.0	<0.20	15	<0.50	13	<0.50	<1.0	-	<0.50	<0.50	93	0.27	0.23	<0.20	<0.20	<0.50	122	-	-	-	-	-	7.25	890	-	-	-	-
	9/13/2012[OO]	-	-	-	246	-	-	-	-	-	-	-	-	-	<0.97	<1.3	9.6	<0.36	6.6	<0.54	<0.43	-	<0.45	<0.67	69.8	<0.42	<0.48	<0.83	<0.18	<2.63	76	-	-	-	-	-	7.25	890	-	-	-	-
	9/25/2013[OO]	-	-	-	186	-	-	-	-	-	-	-	-	-	0.74	<0.69	24.6	<0.48	15.9	<0.50	<0.36	-	<0.47	<0.44	104	<0.39	<0.36	<0.50	<0.18	<1.0	145.24	-	-	-	-	-	7.25	890	-	-	-	-
	9/19/14	-	-	-	64.3	-	-	-	-	-	-	-	-	-	<0.37	<2.5	13.8	<0.17	10.2	<0.50	<0.23	-	<0.50	<0.50	47.6	<0.16	<0.33	<0.50	<0.18	<1..5	71.6	-	-	-	-	-	11.14	820	-	-	-	-
MW-5	2/7/97	-	-	-	410	-	-	-	-	-	-	-	-	-	<1.0	-	<1.0	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	14	-	-	-	-	-	-	-	-	-	<1.0	-	<1.0	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	<5.0	<10	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2.0	<2	<2	<2	<2	<2	<2.0	0	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	8/19/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	1.6	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	12	110	<20	-	110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	9.7	250	<2.6	-	170,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	10	120	3.5	-	100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03	-	-	10	210	<2.6	-	170,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03[D]	-	-	12	160	<2.6	-	130,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/15/04	-	-	11	4.8	<2.7	-	310,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	11	3.5	<2.7	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/04	-	-	11	1.4	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/15/04	-	-	11	1.8	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/15/04UF	-	-	-	13	<2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	11	0.86	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.90	-	-	-	-	-
	9/14/04	-	-	-	0.98	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.60	-	-	-	-	-
	9/12/06	-	-	-	1.5	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.89	-	-	-	-	-
	9/10/07	-	-	-	1.6	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.10	1,083	-	-	-	-
MW-6	2/7/97	-	-	-	4,370	-	-	-	-	-	-	-	-	-	<1.0	-	42	-	55	-	-	-	-	-	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	5,420	-	-	-	-	-	-	-	-	-	<1.0	-	55	-	79	-	-	-	-	-	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	5,570	-	-	-	-	-	-	-	-	-	<1.0	-	53	-	73	-	-	-	-	-	697	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	3,910	4,660	-	-	-	-	-	-	-	-	<2	<2	54	<2	82	<2	<2	<10	<2	<2.0	697	<2	2	<2	<2	<2.0	835	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	3,000	2,890	-	-	-	-	-	-	-	-	<1.0	<0.5	36.2	<0.5	51.5	<1.0	<0.5	<5.0	<0.5	<1.0	509	<0.5	<0.5	<1.0	<0.2	<1.0	597	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	4,200	498	-	-	-	-	-	-	-	-	2.1	<0.5	40	28	57	<1.0	<0.5	<5.0	<0.5	<1.0	409	<0.5	<0.5	<1.0	<0.2	<1.0	536	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	1,900	5,300	-	-	-	-	-	-	-	-	<2.5	<2.5	69	<2.5	62	<2.5	<2.5	<2.5	<2.5	<1.0	420	<2.5	<2.5	<1.0	<2.5	<2.5	551	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	3,600	4,700	-	-	-	-	-	-	-	-	<12	<1.8	58	<2.0	65	<3.8	<8.7	<1.4	<6.3	<0.39	590	<1.5	<4.9	<3.3	<4.6	<11	713	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	8,400	6,200	-	-	-	-	-	-	-	-	5.2	<0.25	110	2.2	2.2	<0.25	3.3	<0.25	<0.25	1	2.2	2.2	1.7	<0.1	0.69	<0.25	1,130	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	17	1,300	1,800	-	1,200	-	-	-	-	-	-	<2.5	<2.5	30	<2.5	<2.5	<2.5	11	<2.5	<2.5	<1.0	<2.5	<2.5	<2.5	<1	<2.5	<2.5	41	-	-	-	-	-	-	-	-	-	-	-
	9/6/01	-	-	31	6,800	7,700	-	3,300	-	-	-	-	-	-	<6.2	<6.2	70	<6.2	<6.2	<6.2	78	<6.2	<6.2	<2.5	<6.2	<6.2	<6.2	<2.5	<6.2	<6.2	148	-	-	-	-	-	-	-	-	-	-	-
	9/20/01	-	-	32	54	53	-	2,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	48	9,100	10,000	-	450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	17	1,900	2,300	-	27,000	-	-	-	-	-	-	<1.1	<1.5	28	<0.94	37	<0.86	<1.7	-	<1.1	<0.94	260	<1.4	<1.8	<1.0	<0.36	<3.9	325	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	9,200	-	-	350,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	41	4,700	4,900	-	18,000	-	-	-	-	-	-	<4.8	<1.8	120	<1.8	81	<2.7	<2.2	-	<2.2	<3.4	480	<2.1	<2.4	<4.2	<0.90	<13.2	681	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	39	5,100	5,200	-	8,700	-	-	-	-	-	-	3.0	<0.37	120	1.5	110	<0.54	1.5	-	<0.45	<0.67	340	1.7	1.9	<0.83	<0.18	<2.63	580	-	-	-	-	-	7.00	-	-	-	-	-
MW-6R	12/11/03	-	-	44	2,200	2,100	-	63,000	-	-	-	-	-	-	<4.8	<1.8	110	<1.8	96	<2.7	<2.2	-	<2.2	<3.4	460	<2.1	<2.4	<4.1	<0.90	<13.1	666	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	39	3,600	3,400	-	310	-	-	-	-	-	-	2.4	<0.74	100	1.2	86	<1.1	1.4	-	<0.90	<1.3	380	1.2	1.5	<1.7	<0.36	<5.3	573.7	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	1.8	1,100	1,700	-	200	-	-	-	-	-	-	2.1	<0.74	51	<0.72	55	<1.1	0.99	-	<0.90	<1.3	280	<1.8	1.4	<1.7	<0.36	<5.3	390.49	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	46	810	840	-	<18	-	-	-	-	-	-	2.2	<0.74	110	1.4	59	<1.1	<0.86	-	<0.90	<1.3	260	<0.84	<0.96	<1.7	0.58	<1.7	432.6	-	-	-	-	-	-	-	-	-	-	-
	12/27/04	-	-	37	1,300	1,500	-	18	-	-	-	-	-	-	<2.4	<0.92	82	0.90	64	<1.4	<1.1	-	<1.1	<1.7	310	<1.0	<1.2	<2.1	<0.45	<6.6	456.9	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	49	670	860	-	<17	-	-	-	-	-	-	-	<0.37	98	<0.36	47	<0.54	0.43	-	<0.45	<0.67	190	<0.42	0.64	<0.83	<0.18	<2.63	337.14	-	-	-	-	-	6.88	-	-	-	-	-
	6/28/05	-	-	-	750	680	-	-	-	-	-	-	-	-	<2.4	<0.92	160	1.50	96	<1.4	<1.1	-	<1.1	<1.7	270	<1.0	1.30	<2.1	<0.45	<4.5	528.80	-	-	-	-	-	-	-	-	-	-	-
	9/14/05	-	-	-	760	660	-	-	-	-	-	-	-	-	2.8	<0.37	140	1.2	78	<0.54	<0.43	-	<0.45	<0.67	190	0.89	1.00	<0.83	0.47	<2.63	419.8	-	-	-	-	-	7.20	-	-	-	-	-
	12/14/05	-	-	-	730	970	-	-	-	-	-	-	-	-	2.5	<0.74	130	1.2	64	<1.1	<0.86	-	<0.90	<1.3	220	<0.84	0.97	<1.7	<0.36	<5.3	418.47	-	-	-	-	-	6.51	-	-	-	-	-
	3/10/06	-	-	-	870	1,100	-	-	-	-	-	-	-	-	<1.9	<0.74	130	1.0	67	<1.1	<0.86	-	<0.90	<1.3	230	<0.84	1.10	<1.7	<0.36	<5.3	429.06	-	-	-	-	-	7.10	1,312	-	-	-	-
	6/14/06	-	-	-	1,500	1,400	-	-	-	-	-	-	-	-	1.6	<0.37	100	0.88	66	<0.54	<0.43	-	<0.45	<0.67	240	0.6	1.20	<0.83	<0.18	<2.63	410.30	-	-	-	-	-	6.91	1,259	-	-	-	-
	9/13/06	-	-	-	1,100	1,000	-	-	-	-	-	-	-	-	2.0	<0.37	110	1.00	79	<0.54	<0.43	-	<0.45	<0.67	250	0.7	1.30	<0.83	0.31	<2.63	444.00	-	-	-	-	-	7.21	1,257	-	-	-	-
	10/20/06	-	-	38	590	680	-	<50	140	<2.5	-	-	-	-	2.3	<0.37	120	1.10	83	<0.54	<0.43	-	<0.45	<0.67	250	0.7	1.20	<0.83	0.56	<2.63	459.00	-	-	-	-	-	7.57	1,221	-	-	-	-
	11/20/06	-	-	37	380	390	-	<50	140	<2.5	-	-	-	-	2.0	<0.37	110	1.40	52	<0.54	<0.43	-	<0.45	<0.67	230	0.64	1.10	<0.83	<0.18	<2.63	397.00	-	-	-	-	-	-	-	-	-	-	-
	12/8/06	-	-	-	440	450	-	<50	150	<2.5	-	-	-	-	<1.9	<0.74	110	0.94	64	<1.1	<0.86	-	<0.90	<1.3	210	<0.84	1.00	<1.7	<0.36	<5.3	386.00	-	-	-	-	-	-	-	-	-	-	-
	1/2/07	-	-	-	970	1,000	-	-	-	-	-	-	-	-	<1.9	<0.74	76	<0.72	53	<1.1	<0.86	-	<0.90	<1.3	200	<0.84	1.10	<1.7	<0.36	<5.3	330.10	-	-	-	-	-	6.98	1,211	-	-	-	-
	1/31/07	-	-	-	960	970	-	<50	140	<2.5	-	-	-	-	2.1	<0.37	120	1.10	80	<0.54	<0.43	-	<0.45	<0.67	250	0.8	1.50	<0.83	<0.18	<0.83	455.47	-	-	-	-	-	-	-	-	-	-	-
	2/26/07	-	-	38	900	970	-	<50	150	<2.5	-	-	-	-	2.6	<0.74	150	1.40	89	<1.1	<0.86	-	<0.9	<1.3	210	0.99	1.30	<1.7	0.41	<5.3	454.30	-	-	-	-	-	6.95	1,316	-	-	-	-
	3/29/07	-	-	-	1,100	1,100	-	<50	150	-	-	-	-	-	2.3	<0.37	140	1.50	100	<0.54	<0.43	-	<0.45	<0.67	260	0.59	1.70	<0.83	0.61	<2.63	507.00	-	-	-	-	-	6.99	1,257	-	-	-	-
	6/6/07	-	-	-	1,600	1,500	-	<50	140	-	-	-	-	-	1.3	<0.37	89	0.85	63	<0.54	<0.43	-	<0.45	<0.67	280	0.84	1.40	<0.83	<0.18	<2.63	436.00	-	-	-	-	-	-	-	-	-	-	-
	9/10/07	-	-	-	850	880	-	-	-	-	-	-	-	-	1.5	<0.37	88	<0.36	55	<0.54	<0.43	-	<0.45	<0.67	250	<0.42	1.10	<0.83	<0.18	<2.63	395.60	-	-	-	-	-	6.97	1,113	-	-	-	-
	4/30/08	-	-	-	1,180	-	-	-	-	-	-	-	-	-	<0.97	<0.37	21	<0.36	29	<0.54	<0.43	-	<0.45	<0.67	194	<0.42	1.20	<0.83	<0.18	<1.8	245.10	-	-	-	-	-	-	-	-	-	-	-
	4/17/09	-	-	-	1,060	-	-	-	-	-	-	-	-	-	<1.9	<2.6	34	<0.72	28	<1.1	<0.86	-	<0.9	<1.3	167	<0.84	<0.96	<1.7	<0.36	<3.6	228.80	-	-	-	-	-	-	-	-	-	-	-
	4/27/09		-	12.7	1,260	1,500	-	<4.0	134	<2.3	-	-	-	-	<1.9	<2.6	63.5	<0.72	41.5	<1.1	<0.86	-	<0.9	<1.3	181	<0.84	1.10	<1.7	<0.36	<1.7	287.1	-	-	<0.17	-	-	-	-		0.21	3.2	2.4
	5/21/09		-	9.4	1,270	1,500	-	4.4	158	<1.7	-	-	-	-	<1.9	<2.6	22.1	<0.72	29	<1.1	<0.86	-	<0.9	<1.3	172	<0.84	<0.96	<1.7	<0.36	<3.6	223.1	-	-	<0.25	-	-	-	-	2.7	0.34	1.8	2.7
	6/18/09		-	8.6	1,310	1,200	-	4.0	149	<1.7	-	-	-	-	0.99	<1.3	57.6	0.66	36.9	<0.54	<0.43	-	<0.45	<0.67	184	0.69	1.10	<0.83	<0.18	<1.8	281.9	-	-	<0.25	-	-	-	-	2.2	4.8	2.3	1.7
	7/15/09		-	13.1	1,110	640	-	90.6	199	<1.7	-	-	-	-	<0.97	<1.3	20.7	<0.36	29.2	<0.54	<0.43	-	<0.45	<0.67	215	<0.42	1.40	<0.83	<0.18	<1.8	266.3	-	-	<0.25	-	-	-	-	16.2	2.8	4.2	5.4

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
MW-6R (cont.)	9/23/09[J]	-	-	-	980	-	-	-	-	-	-	-	-	-	<5.0	<1.0	79	<2.5	40	<2.5	<5.0	-	<2.5	<2.5	170	<1.2	1.4	<1.0	<1.0	<2.5	290.40	-	-	-	-	-	7.1	925	-	-	-	-
	3/29/10[J]	-	-	-	1,200	-	-	-	-	-	-	-	-	-	<2.0	<0.40	29	<1.0	12	<1.0	<2.0	-	<1.0	<1.0	110	<0.50	0.72	<0.40	<0.40	<1.0	151.72	-	-	-	-	-	7.2	1,075	-	-	-	-
	9/23/10[J]	-	-	-	360	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.1	<0.50	5.2	<0.50	<1.0	-	<0.50	<0.50	110	<0.25	0.93	<0.20	<0.20	<0.50	118.23	-	-	-	-	-	7.12	900	-	-	-	-
	3/17/11[EE]	-	-	-	<1.81	-	-	-	-	-	-	-	-	-	<1.0	<0.20	0.85	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	1.5	<0.25	<0.20	<0.20	<0.20	<0.50	2.35	-	-	-	-	-	8.4	280	-	-	-	-
	9/22/11[PP]	-	-	-	<1.5	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.5	<0.50	2.2	<0.50	<1.0	-	<0.50	<0.50	45	<0.25	0.42	<0.20	<0.20	<0.50	50.12	-	-	-	-	-	7.32	750	-	-	-	-
	3/21/12[PP]	-	-	-	180	-	-	-	-	-	-	-	-	-	<1.0	<0.20	3.3	<0.50	3.4	<0.50	<1.0	-	<0.50	<0.50	58	<0.25	0.54	<0.20	<0.20	<0.50	65.24	-	-	-	-	-	7.73	770	-	-	-	-
	9/13/12[PP]	-	-	-	244	-	-	-	-	-	-	-	-	-	<0.97	<1.3	3.5	<0.36	3.5	<0.54	<0.43	-	<0.45	<0.67	70.2	<0.42	0.82	<0.83	<0.18	<2.63	78.02	-	-	-	-	-	7.73	770	-	-	-	-
	5/1/13[PP]	-	-	-	371	-	-	-	-	-	-	-	-	-	<0.44	<0.69	3.8	<0.48	3.4	<0.50	<0.36	-	<0.47	<0.44	58.9	<0.39	0.73	<2.5	<0.18	<1.32	78.02	-	-	-	-	-	7.12	930	-	-	-	-
	9/26/13[PP]	-	-	-	270	-	-	-	-	-	-	-	-	-	<0.44	<0.69	1.5	<0.48	1.9	<0.50	<0.36	-	<0.47	<0.44	47.9	<0.39	0.68	<0.50	<0.18	<1.0	51.98	-	-	-	-	-	7.12	930	-	-	-	-
	5/15/14	-	-	-	28.5	-	-	-	-	-	-	-	-	-	<0.37	<2.5	7.9	<0.17	3.9	<0.50	<0.23	-	<0.50	<0.50	32.1	<0.16	0.49 [AO]	<0.50	<0.18	<1.5	43.90	-	-	-	-	-	5.97	472	-	-	-	-
	9/19/14	-	-	-	281	-	-	-	-	-	-	-	-	-	<0.37	<2.5	11.0	<0.17	7.9	<0.50	<0.23	-	<0.50	<0.50	54.4	<0.16	0.82	<0.50	<0.18	<1.5	74.12	-	-	-	-	-	5.97	472	-	-	-	-
MW-7	2/7/97	-	-	-	253,000	-	-	-	-	-	-	-	-	-	<100	-	1,000	-	5,200	-	-	-	-	-	73,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	352,000	-	-	-	-	-	-	-	-	-	44	-	1,570	-	9,640	-	-	-	-	-	168,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	30,400	40,500	-	-	-	-	-	-	-	-	<2	<2	353	<2	512	<2	<2	<10	<2	<2.0	5,230	15	23	<2	3	<2.0	6,136	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	167,000	96,000	-	-	-		-	-	-	-	51	4	600	<0.5	2,050	3	19	<5.0	<0.5	<11.0	16,600	29	39	<1.0	14	<13	19,409	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	1,320	1,280	-	-	-	-	-	-	-	-	<1.0	<0.5	71.2	<0.5	113	<1.0	<0.5	<5.0	<0.5	<1.0	512	<0.5	2.2	<1.0	<0.2	<1.0	698	-	-	-	-	-	-	-	-	-	-	-
	8/19/98	-	-	-	93,500	151,000	-	-	-	-	-	-	-	-	26	5	500	22	15,000	<1.0	<0.5	<5.0	<0.5	<1.0	3,750,000	46	17	<1.0	4	<1.0	3,765,620	-	-	-	-	-	-	-	-	-	-	-
	1/18/99	-	-	-	150,000	140,000	-	-	-	-	-	-	-	-	<20	<20	470	<20	940	<20	220	<20	<20	<80	8,600	29	<20	<8.0	<20	<20	10,259	-	-	-	-	-	-	-	-	-	-	-
	2/17/99	-	-	100	170,000	180,000	-	<24	-	-	-	-	-	-	<250	<250	880	<250	4,700	<250	<250	<250	<250	<100	41,000	<250	<250	<100	<250	<250	46,580	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	140,000	160,000	-	-	-	-	-	-	-	-	<120	<120	900	<120	6,000	<120	<120	<120	<120	<50	40,000	160	<120	<50	<120	<120	47,060	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	380	650	-	-	-	-	-	-	-	-	<2.5	<2.5	35	<2.5	59	<2.5	11	<2.5	<2.5	<1.0	510	<2.5	<2.5	<1	<2.5	<2.5	615	-	-	-	-	-	-	-	-	-	-	-
	9/19/01	-	-	28	8,100	20,000	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	80	32,000	34,000	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	84	56,000	54,000	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/29/01	-	-	77	69,000	57,000	-	8,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	100	64,000	59,000	-	61,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	37	20,000	16,000	-	24,000	-	-	-	-	-	-	31	<38	300	<23	780	<22	<42	-	<28	<23	6,400	<36	<44	<26	<9	<97	7,511	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	69,000	58,000	-	6,300	-	-	-	-	-	-	<84	<45	790	<55	2,100	<53	<47	-	<63	<84	17,000	<50	41	<64	<11	<183	19,931	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	19	4,000	4,000	-	3,200	-	-	-	-	-	-	<48	<18	200	<18	410	<27	<22	-	<22	<34	4,700	<21	<24	<42	<9.0	<132	5,310	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	64	51,000	48,000		3,300	-	-	-	-	-	-	<240	<92	710	<90	2,700	<140	<110	-	<110	<170	27,000	<100	<120	<210	<45	<660	30,410	-	-	-	-	-	7.00	-	-	-	-	-
MW-7R	12/11/03	-	-	240	150,000	150,000	-	27,000	-	-	-	-	-	-	<1900	<740	3,000	<720	12,000	<1100	<860	-	<900	<1300	160,000	<840	<960	<1700	<360	<5300	175,000	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	170	130,000	140,000	-	<64	-	-	-	-	-	-	<970	<370	2,900	<360	5,200	<540	<430		<450	<670	74,000	<420	<480	<830	<180	<2630	82,100	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	20	30,000	87,000	-	2,600	-	-	-	-	-	-	<480	<180	2,000	<180	4,800	<270	<220	-	<220	<340	49,000	<210	<240	<420	<90	<1320	55,800	-	-	-	-	-	-	-	-	-	-	-
	06/28/04[D]	-	-	100	88,000	91,000	-	200	-	-	-	-	-	-	<480	<180	2,200	<180	4,600	<270	<220		<220	<340	49,000	<460	<240	<420	<90	<1320	55,800	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	150	130,000	120,000	-	<920	-	-	-	-	-	-	<970	<370	2,300	<360	5,700	<540	<430	-	<450	<670	89,000	<420	<480	<830	<180	<2630	97,000	-	-	-	-	-	-	-	-	-	-	-
	09/28/04[D]	-	-	160	130,000	130,000	-	<920	-	-	-	-	-	-	<970	<370	2,500	<360	8,000	<540	<430	-	<450	<670	120,000	<420	<480	<830	<180	<2630	130,500	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	130	120,000	130,000	-	<17	-	-	-	-	-	-	<480	<180	1,700	<180	5,400	<270	<220	-	<220	<340	59,000	<210	<240	<420	<90	<1320	66,100	-	-	-	-	-	-	-	-	-	-	-
	12/21/04[D]	-	-	130	120,000	130,000	-	<17	-	-	-	-	-	-	<480	<180	1,600	<180	4,500	<270	<220	-	<220	<340	50,000	<210	<240	<420	<90	<1320	56,100	-	-	-	-	-	-	-	-	-	-	-
	12/21/05 UF	-	-	-	130,000	120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	170	150,000	150,000	-	18	-	-	-	-	-	-	<970	<370	2,800	<360	6,000	<540	<430	-	<450	<670	85,000	<420	<480	<830	<180	<2630	93,800	-	-	-	-	-	7.07	-	-	-	-	-
	6/28/05	-	-	-	150,000	140,000	-	-	-	-	-	-	-	-	<480	<180	2,000	<180	5,700	<270	<220	-	<220	<340	79,000	<210	<240	<420	<90	<1320	86,700	-	-	-	-	-	6.71	-	-	-	-	-
	9/14/05	-	-	-	140,000	150,000	-	-	-	-	-	-	-	-	<610	<230	2,600	<220	5,100	<340	<270	-	<280	<420	63,000	<260	<300	<520	<110	<1620	70,700	-	-	-	-	-	6.61	-	-	-	-	-
	12/14/05	-	-	-	130,000	130,000	-	-	-	-	-	-	-	-	<480	<180	2,300	<180	4,600	<270	<220	-	<220	<340	56,000	<210	<240	<420	<90	<1,320	58,900	-	-	-	-	-	6.51	-	-	-	-	-
	12/14/05[D]	-	-	-	140,000	120,000	-	-	-	-	-	-	-	-	<480	<180	2,400	<280	4,900	<270	<220	-	<220	<340	61,000	<210	<240	<420	<90	<1,320	68,300	-	-	-	-	-	6.50	-	-	-	-	-
	3/10/06	-	-	-	130,000	140,000	-	-	-	-	-	-	-	-	<480	<180	2,700	<180	5,200	<270	<220	-	<220	<340	71,000	<210	<240	<420	<90	<1320	78,900	-	-	-	-	-	6.98	2,137	-	-	-	-
	3/10/06[D]	-	-	-	120,000	140,000	-	-	-	-	-	-	-	-	<480	<180	2,600	<180	4,700	<270	<220	-	<220	<340	64,000	<210	<240	<420	<90	<1320	71,300	-	-	-	-	-	6.99	2,140	-	-	-	-
	6/14/06	-	-	-	120,000	140,000	-	-	-	-	-	-	-	-	<240	<92	2,100	<90	4,400	<140	<110	-	<110	<170	46,000	<100	<120	<210	<45	<660	52,500	-	-	-	-	-	6.92	1,979	-	-	-	-
	6/14/06[D]	-	-	-	120,000	140,000	-	-	-	-	-	-	-	-	<190	<74	2,100	<72	4,000	<110	<86	-	<90	<130	41,000	<84	<96	<170	<36	<530	47,100	-	-	-	-	-	6.92	1,981	-	-	-	-
	9/13/06	-	-	-	160,000	50,000	-	-	-	-	-	-	-	-	<480	<180	2,700	<180	6,500	<270	<220	-	<220	<340	73,000	<210	<240	<420	<90	<1320	82,200	-	-	-	-	-	7.16	1,538	-	-	-	-
	09/13/06[D]	-	-	-	170,000	45,000	-	-	-	-	-	-	-	-	<480	<180	2,700	<180	6,600	<270	<220	-	<220	<340	73,000	<210	<240	<420	<90	<1320	82,300	-	-	-	-	-	7.18	1,544	-	-	-	-
	10/20/06	-	-	150	120,000	140,000	-	<50	-	-	-	-	-	-	<24	<9.2	3,200	18	380	<14	16	-	<11	<17	190	<10	<12	<21	<4.5	<66	3,804	-	-	-	-	-	7.17	1,780	-	-	-	-
	10/20/06[D]	-	-	180	130,000	170,000	-	<50	<1.2	<2.5	-	-	-	-	250	<92	2,400	<90	4,300	<140	<110	-	<110	<170	34,000	<100	<120	<210	<45	<660	40,950	-	-	-	-	-	-	-	-	-	-	-
	11/20/06	-	-	160	140,000	190,000	-	<50	220		-	-	-	-	<240	<92	2,400	<90	4,300	<140	<110	-	<110	<170	45,000	<100	<120	<210	<45	<660	51,700	-	-	-	-	-	7.07	1,642	-	-	-	-
	11/20/06[D]	-	-	160	160,000	180,000	-	<50	220	<2.5	-	-	-	-	<390	<150	2,300	<140	4,200	<220	380	-	<180	<270	42,000	<170	<190	<330	<72	<1050	48,800	-	-	-	-	-	7.02	1,637	-	-	-	-
	12/8/06	-	-	-	140,000	160,000	-	<50	11	-	-	-	-	-	<480	<180	2,900	<180	5,100	<270	<220	-	<220	<340	62,000	<210	<240	<420	<90	<1320	70,000	-	-	-	-	-	7.20	2,106	-	-	-	-
	12/08/06[D]	-	-	-	150,000	160,000	-	<50	11	<2.5	-	-	-	-	<480	<180	2,100	<180	4,100	<270	<220	-	<220	<340	49,000	<210	<240	<420	<90	<1320	55,200	-	-	-	-	-	-	-	-	-	-	-
	1/2/07	-	-	-	140,000	150,000	-	-	-	-	-	-	-	-	<480	<180	2,600	<180	5,400	<270	<220	-	<220	<340	60,000	<210	<240	<420	<90	<1320	68,000	-	-	-	-	-	6.46	2,078	-	-	-	-
	1/2/07[D]	-	-	-	140,000	150,000	-	-	-	-	-	-	-	-	<480	<180	2,500	<180	5,300	<270	<220	-	<220	<340	58,000	<210	<240	<420	<90	<1320	65,800	-	-	-	-	-	6.45	2,081	-	-	-	-
	1/30/07	-	-	-	120,000	140,000	-	<50	220	<2.5	-	-	-	-	<390	<150	4,700	<140	7,500	<220	<170	-	<180	<270	90,000	<170	<190	<330	<72	<1050	102,200	-	-	-	-	-	-	-	-	-	-	-
	1/30/07[D]	-	-	-	130,000	150,000	-	<50	220	<2.5	-	-	-	-	<92	<60	2,500	<90	3,900	<140	<110	-	<110	<170	33,000	<100	<120	<210	<45	<450	39,400	-	-	-	-	-	-	-	-	-	-	-
	2/26/07	-	-	130	110,000	140,000	-	<50	200	<2.5	-	-	-	-	<480	<180	3,100	<180	4,400	<270	<220	-	<220	<340	39,000	<210	<240	<420	<90	<1320	46,500	-	-	-	-	-	6.85	2,081	-	-	-	-
	2/26/07[D]	-	-	140	110,000	140,000	-	<50	200	<2.5	-	-	-	-	<480	<180	3,500	<180	5,300	<270	<220	-	<220	<340	50,000	<210	<240	<420	<90	<1320	58,800	-	-	-	-	-	7.10	1,795	-	-	-	-
	3/29/07	-	-	-	140,000	150,000	-	<50	-	-	-	-	-	-	<480	<180	2,700	<180	5,300	<270	<220	-	<220	<340	64,000	<210	<240	<420	<90	<1320	72,000	-	-	-	-	-	7.10	1,775	-	-	-	-
	3/29/07[D]	-	-	-	140,000	150,000	-	<50	-	-	-	-	-	-	<480	<180	2,600	<180	5,300	<270	<220	-	<220	<340	64,000	<210	<240	<420	<90	<1320	71,900	-	-	-	-	-	-	-	-	-	-	-
	6/6/07	-	-	-	120,000	140,000	-	<50	-	-	-	-	-	-	260	<74	2,200	<72	3,300	<110	<86	-	<90	<130	29,000	<84	<96	<170	<36	<530	34,760	-	-	-	-	-	-	-	-	-	-	-
	6/6/07[D]	-	-	-	130,000	130,000	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/11/07	-	-	-	170,000	280	-	-	-	-	-	-	-	-	<240	<92	2,200	<90	4,400	<140	<110	-	<110	<170	51,000	<100	<120	<210	<45	<660	57,600	-	-	-	-	-	6.91	1,733	-	-	-	-
	12/21/07	-	-	140	140,000	140,000	-	<50	240	-	-	-	-	-	<240	<92	2,200	<90	4,400	<140	<110	-	<110	<170	51,000	<100	<120	<210	<45	<660	59,800	-	-	<0.17	-	-	6.91	1,733	32	< 0.085	6.70	6.00
	5/1/08	-	-	-	93,300	-	-	-	-	-	-	-	-	-	<388	<148	1,700	<143	2,960	<216	<172	-	<180	<268	32,600	<168	<192	<332	<72	<720	37,260	-	-	-	-	-	-	-	-	-	-	-
	5/1/08[D]	-	-	-	95,600	-	-	-	-	-	-	-	-	-	<388	<148	2,270	<144	4,400	<216	<172	-	<180	<268	47,700	<168	<192	<332	<72	<720	54,370	-	-	-	-	-	-	-	-	-	-	-
	9/26/08	-	-	-	128,000	-	-	-	-	-	-	-	-	-	<242	<325	2,070	<90	2,830	<135	<108	-	<112	<168	27,400	<105	<120	<208	<45	<658	32,200	-	-	-	-	-	6.96	1,924	-	-	-	-
	12/12/08	-	-	139	106,000	127	-	132.0	-	181.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.68	-	-	-	-	36	< 0.085	-	7.50
	12/12/08[D]	-	-	152	111,000	140	-	<7.2	-	192.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.68	-	-	-	-	30	< 0.085	-	7.50
	4/8/09	-	-	116	89,800	110,000	-	<6.9	143	<2.3	-	-	-	-	<242	<325	2,190	<90	3,120	<135	<108	-	<112	<168	36,100	<105	<120	<208	<45	<450	41,410	-	-	<0.68	-	-	-	-	23.5	<4.2	5.5	4.3
	4/8/09[D]	-	-	115	86,900	104,000	-	<6.9	142	-	-	-	-	-	<242	<325	2,210	<90	3,230	<135	<108	-	<112	<168	36,500	<105	<120	<208	<45	<450	41,940	-	-	<0.68	-	-	-	-	18.6	<4.2	4.9	4.5
	4/17/09	-	-	-	3,460	-	-	-	-	-	-	-	-	-	<242	<325	1,720	<90	<142	<135	<108	-	<112	<168	19,000	<105	<120	<208	<45	<450	20,720	-	-	-	-	-	-	-	-	-	-	-
	04/17/09[D]	-	-	-	3,750	-	-	-	-	-	-	-	-	-	<242	<325	1,850	<90	<142	<135	<108	-	<112	<168	23,700	<105	<120	<208	<45	<450	25,550	-	-	-	-	-	-	-	-	-	-	-
	4/27/09	-	-	76.7	159	<17	-	114,000	2,060	7.8	-	-	-	-	<242	<325	2,300	<90	168	<135	<108	-	<112	<168	27,600	<105	<120	<208	<45	<450	30,068	-	-	<0.17	-	-	-	-	4,500	<0.085	54.2	24.5
	4/27/09[D]	-	-	83.3	196	<17	-	144,000	2,260	7.4	-	-	-	-	<242	<325	2,020	<90	176	<135	<108	-	<112	<168	24,500	<105	<120	<208	<45	<450	26,696	-	-	<0.17	-	-	-	-	5,540	<0.085	24.4	22.1
	5/21/09	-	-	83.6	964	<17	-	378,000	1,610	4.8	-	-	-	-	<242	<325	1,330	<90	<142	<135	<108	-	<112	<168	16,400	<105	<120	<208	<45	<450	17,730	-	-	<0.25	-	-	-	-	12,200	0.160	13.0	12.9
	5/21/09[D]	-	-	80.8	580	<17	-	278,000	1,550	4.8	-	-	-	-	<242	<325	1,240	<90	<142	<135	<108	-	<112	<168	15,600	<105	<120	<208	<45	<450	16,840	-	-	<0.25	-	-	-	-	10,600	0.160	13.9	13.2
	6/18/09	-	-	63.8	350	<20	-	66,000	1,100	1.8	-	-	-	-	<194	<260	1,290	<72	<114	<108	<86	-	<90	<134	12,600	<84	<96	<166	<36	<360	13,890	-	-	<0.25	-	-	-	-	4,090	<0.25	7.2	4.8
	6/18/09[D]	-	-	64.4	504	<20	-	77,200	1,120	<1.7	-	-	-	-	<194	<260	1,500	<72	<114	<108	<86	-	<90	<134	18,900	<84	<96	<166	<36	<360	20,400	-	-	<0.25	-	-	-	-	4,520	<0.25	4.5	4.4
	7/15/09	-	-	77.1	13.4	<3.9	-	18,000	900	<1.7	-	-	-	-	<194	<260	1,310	<72	<114	<108	<86	-	<90	<134	20,000	<84	<96	<166	<36	<360	21,310	-	-	<0.25	-	-	-	-	2,560	<0.25	4.5	4.4
	7/15/09[D]	-	-	77.2	11.7	<3.9	-	16,000	897	<1.7	-	-	-	-	<194	<260	1,200	<72	<114	<108	<86	-	<90	<134	17,300	<84	<96	<166	<36	<360	18,500	-	-	<0.25	-	-	-	-	2,510	<0.25	8.3	7.9
	9/23/09	-	-	-	11	-	-	-	-	-	-	-	-	-	<400	<80	2,100	<200	<200	<200	<400	-	<200	<200	28,000	<100	<80	<80	<80	<200	30,100	-	-	-	-	-	6.90	1,731	-	-	-	-
	3/29/10[O]	-	-	-	1,900	-	-	-	-	-	-	-	-	-	<250	<50	1,200	<120	220	<120	<250	-	<120	<120	13,000	<62	<50	<50	<50	<120	14,420	-	-	-	-	-	-	-	-	-	-	-
	3/29/10[D,O]	-	-	-	-	-	-	-	-	-	-	-	-	-	<250	<50	1,300	<120	230	<120	<250	-	<120	<120	14,000	<62	<50	<50	<50	<120	15,530	-	-	-	-	-	7.10	1,510	-	-	-	-
	9/23/10[Y]	-	-	-	480	-	-	-	-	-	-	-	-	-	160	<32	1,200	<80	570	<80	<160	-	<80	<80	11,000	<40	40	<32	<32	<80	12,970	-	-	-	-	-	6.98	1,630	-	-	-	-
	3/17/11	-	-	-	6,380	-	-	-	-	-	-	-	-	-	<160	<32	1,200	<80	680	<80	<160	-	<80	<80	12,000	<40	38	<32	<32	<80	13,918	-	-	-	-	-	7.63	1,570	-	-	-	-
	9/22/11[QQ]	-	-	-	10,000	-	-	-	-	-	-	-	-	-	140	<20	1,000	<50	830	<50	<100	-	<50	<50	7,900	<25	42	<20	<20	<50	9,912	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
MW-7R (cont.)	9/22/11[D,RR]	-	-	-	-	-	-	-	-	-	-	-	-	-	130	<20	1,000	<50	800	<50	<100	-	<50	<50	7,800	<25	38	<20	<20	<50	9,768	-	-	-	-	-	7.25	1,320	-	-	-	-
	3/21/12[AB]	-	-	-	4,500	-	-	-	-	-	-	-	-	-	19	0.47	440	2.6	410	<0.50	1.6	-	<0.50	<0.50	5,100	3.9	8.5	<0.20	0.52	<0.50	5,987	-	-	-	-	-	7.84	540	-	-	-	-
	9/13/12[AB]	-	-	-	32,700	-	-	-	-	-	-	-	-	-	<194	<260	1,520	<72.0	1,900	<108	<86.0	-	<90.0	<134	18,400	<84.0	<96	<166	<36	<526	21,820	-	-	-	-	-	7.84	540	-	-	-	-
	5/1/13[AB]	-	-	-	24,100	-	-	-	-	-	-	-	-	-	<88.7	<138	1,300	<95.3	1,560	<100	<71.7	-	<94.4	<87.7	16,200	<78.0	<85.5	<500	<37.0	<263	19,060	-	-	-	-	-	7.27	301	-	-	-	-
	9/25/13[AB]	-	-	-	14,700	-	-	-	-	-	-	-	-	-	112	<34.4	1,040	<23.8	1,090	<25.0	<17.9	-	<23.6	<21.6	7,710	<19.5	37.3	<25.0	14.6	<65.9	10,004	-	-	-	-	-	7.27	301	-	-	-	-
	5/15/14	-	-	-	3,810	-	-	-	-	-	-	-	-	-	33.4[AO]	<125	300	<8.4	562	<25.0	<11.6	-	<25.0	<25.0	6,280	<7.8	19.9[AO]	<25.0	<8.8	<75.0	7,142	-	-	-	-	-	6.65	312	-	-	-	-
	9/18/14	-	-	-	36,300	-	-	-	-	-	-	-	-	-	144	<125	1,320	<8.4	2,200	<25.0	64.6	-	<25.0	<25.0	14,100	<7.8	48.2	<25.0	9.6	<75.0	17,886	-	-	-	-	-	6.65	312	-	-	-	-
MW-8	11/21/97	-	-	-	<5.0	<10	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2.0	0	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	18	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	4	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.10	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	6	<4.2	-	-	-	-	-	-	-	-	<1.2	<0.18	<0.25	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	<0.28	<0.15	<0.49	<0.33	<0.46	<1.1	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	690	8	<4.2	-	250	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	9/6/01	-	-	420	12	10	-	8,200	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.52	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	1	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	310	6	6	-	18,000	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	290	<0.52	<4.2	-	79,000	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.48	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	590	17	<20	-	13,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/16/03	-	-	810	19	4	-	9,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	550	30	<2.6	-	20,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	12/15/03	-	-	710	59	<2.6	-	40,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	450	3	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/30/04	-	-	440	3	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/14/04	-	-	380	3	<2.7	-	71	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.56	<0.75	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	12/28/04	-	-	430	2	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	520	7	<2.7	-	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.22	-	-	-	-	-
MW-9	11/21/97	-	-	-	<5.0	<10	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2	<2	<2	<2	<2	<2	<2.0	0	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<10.0	<5.0	<10.0	<5.0	<5.0	<10.0	<5.0	<50.0	<5.0	<10	<5.0	<5.0	<5.0	<10.0	<2.0	<10	0	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	8/19/98	-	-	-	10	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	5	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.10	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	3	<4.2	-	-	-	-	-	-	-	-	<1.2	<0.18	<0.25	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	<0.28	<0.15	<0.49	<0.33	<0.46	<1.1	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	2	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	330	10	<20	-	7,900	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	250	8	<2.6	-	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	310	17	<2.6	-	12,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
MW-9R	12/11/03	-	-	320	3	<2.6	-	650	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	320	3	<2.7	-	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	260	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/04	-	-	240	<0.52	<2.7	-	18	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	14	<0.65	<5	-	<18	-	-	-	-	-	-	<0.97	<0.37	0.98	<0.36	<0.57	<0.54	0.53	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	1.51	-	-	-	-	-	-	-	-	-	-	-
	9/14/05	-	-	-	2	<5.0	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	6.96	-	-	-	-	-
	9/13/06	-	-	-	<1.9	<6.8	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.97	<0.18	<2.63	0	-	-	-	-	-	7.45	-	-	-	-	-
	9/10/07	-	-	-	1	<3.4	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	6.99	1,581	-	-	-	-
MW-10	1/14/99	-	-	-	2,100	2,600	-	-	-	-	-	-	-	-	<0.25	<0.25	10	<0.25	3.3	<0.25	1.8	<0.25	<0.25	<0.1	44	<0.25	<0.25	<0.10	<0.25	<0.72	59	-	-	-	-	-	-	-	-	-	-	-
	2/17/99	-	-	-	26,000	29,000	-	-	-	-	-	-	-	-	<1.2	<1.2	9.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<0.5	36	<1.2	<1.2	<0.50	<1.2	<1.2	46	-	-	-	-	-	-	-	-	-	-	-
	2/17/99	-	-	-	26,000	25,000	-	-	-	-	-	-	-	-	<1.2	<1.2	9.2	<1.2	<1.2	<1.2	3.6	<1.2	<1.2	<0.5	37	<1.2	<1.2	<0.50	<1.2	<1.2	50	-	-	-	-	-	-	-	-	-	-	-
	3/22/00	-	-	-	14,000	15,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	12,000	13,000	-	-	-	-	-	-	-	-	0.93	<0.25	8.6	<0.25	3.1	<0.25	0.82	<0.25	<0.25	<0.1	39	<0.25	<0.25	<0.1	<0.25	<0.25	52	-	-	-	-	-	-	-	-	-	-	-
	9/20/01	-	-	34	5,300	6,400	-	2,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	42	7,400	10,000	-	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	30	8,000	9,600	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	29	9,400	12,000	-	77,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	33	11,000	11,000	-	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	28	8,800	5,500	-	150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/30/02	-	-	-	7,500	3,900	-	180,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	31	4,900	4,400	-	50,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	24	2,700	2,600	-	60,000	-	-	-	-	-	-	<0.97	<0.37	7.0	<0.36	2.7	<0.54	<0.43	-	<0.45	<0.67	33	<0.42	<0.48	<0.83	<0.18	<2.63	43	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03	-	-	25	3,800	3,100	-	100,000	-	-	-	-	-	-	<0.97	<0.37	6.6	<0.36	3.1	<0.54	<0.43	-	<0.45	<0.67	42	<0.42	<0.48	<0.83	<0.18	<2.63	52	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03[D]	-	-	24	3,900	3,200	-	120,000	-	-	-	-	-	-	<0.97	<0.37	6.8	<0.36	3.1	<0.54	<0.43	-	<0.45	<0.67	43	<0.42	<0.48	<0.83	<0.18	<2.63	53	-	-	-	-	-	-	-	-	-	-	-
	4/15/04	-	-	25	2,400	2,600	-	430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	34	2,100	2,000	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	06/29/04[D]	-	-	32	2,200	2,100	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/04	-	-	24	1,300	1,400	-	<17	-	-	-	-	-	-	<0.97	<0.37	4.6	<0.36	2.0	<0.54	<0.43	-	<0.45	<0.67	29	<0.42	<0.48	<0.83	<0.18	<2.63	35.6	-	-	-	-	-	-	-	-	-	-	-
	10/07/04[D]	-	-	23	1,300	1,400	-	<17	-	-	-	-	-	-	<0.97	<0.37	4.1	<0.36	1.6	<0.54	<0.43	-	<0.45	<0.67	26	<0.42	<0.48	<0.83	<0.18	<2.63	31.7	-	-	-	-	-	-	-	-	-	-	-
	12/30/04	-	-	52	1,300	1,300	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/30/04[D]	-	-	51	1,300	1,300	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/19/05	-	-	22	1,400	1,300	-	22	-	-	-	-	-	-	<0.97	<0.37	4.6	<0.36	1.7	<0.54	0.53	-	<0.45	<0.67	23	<0.42	<0.48	<0.83	<0.18	<2.63	29.3	-	-	-	-	-	7.27	-	-	-	-	-
	6/28/05	-	-	-	1,200	1,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.04	-	-	-	-	-
	9/14/05	-	-	-	790	910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.84	-	-	-	-	-
	12/14/05	-	-	-	1,000	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.78	-	-	-	-	-
	3/10/06	-	-	-	650	770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.30	-	-	-	-	-
	6/14/06	-	-	-	510	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/12/06	-	-	-	380	420	-	-	-	-	-	-	-	-	<0.97	<0.37	3.8	<0.36	0.85	<0.54	<0.43	-	<0.45	<0.67	19	<0.42	<0.48	<0.83	<0.18	<2.63	23.65	-	-	-	-	-	7.10	-	-	-	-	-
	1/2/07	-	-	-	470	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	3/29/07	-	-	-	420	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.14	-	-	-	-	-
	6/6/07	-	-	-	360	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/10/07	-	-	-	240	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.78	1,602	-	-	-	-
	4/30/08	-	-	-	297	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/08	-	-	-	109	-	-	-	-	-	-	-	-	-	<0.97	<1.3	2.1	<0.36	<.57	<0.54	<0.43	-	<0.45	<0.67	7.9	<0.42	<0.48	<0.83	<0.18	<2.63	10	-	-	-	-	-	6.99	1,791	-	-	-	-
	4/17/09	-	-	-	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/09	-	-	-	160	-	-	-	-	-	-	-	-	-	<1.0	<0.20	1.8	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	5.1	<0.25	<0.20	<0.20	<0.20	<0.50	6.9	-	-	-	-	-	-	-	-	-	-	-
	9/23/09[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	1.8	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	4.3	<0.25	<0.20	<0.20	<0.20	<0.50	6.1	-	-	-	-	-	6.8	1,250	-	-	-	-
	3/29/10	-	-	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	1,050	-	-	-	-
MW-10 (cont.)	9/23/10	-	-	-	130	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.4	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	9.3	<0.25	<0.20	<0.20	<0.20	<0.50	11.7	-	-	-	-	-	7.22	1,650	-	-	-	-
	3/17/11	-	-	-	97.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	1,270	-	-	-	-
	9/22/11	-	-	-	43	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.3	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	8.6	<0.25	<0.20	<0.20	<0.20	<0.50	10.9	-	-	-	-	-	7.09	700	-	-	-	-
	3/21/12	-	-	-	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.47	1,470	-	-	-	-
	9/13/12	-	-	-	<2.0	-	-	-	-	-	-	-	-	-	<0.97	<1.3	2	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	5.1	<0.42	<0.48	<0.83	<0.18	<2.63	7.1	-	-	-	-	-	7.47	1,470	-	-	-	-
	4/30/13	-	-	-	7.8	-	-	-	-	-	-	-	-	-	<0.97	<1.3	2	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	5.1	<0.42	<0.48	<0.83	<0.18	<2.63	7.1	-	-	-	-	-	7.34	1,820	-	-	-	-
	9/25/13	-	-	-	24.3	-	-	-	-	-	-	-	-	-	<.44	<0.69	2.3	<0.48	<.043	<0.54	<0.36	-	<0.47	<0.44	5.7	<0.39	<0.36	<0.50	<0.18	<1.32	8.0	-	-	-	-	-	7.34	1,820	-	-	-	-
	5/14/14	-	-	-	56.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	'-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.55	1,150	-	-	-	-
	9/19/14	-	-	-	34.8	-	-	-	-	-	-	-	-	-	<0.37	<2.5	2.6	<0.17	<0.41	<0.50	<0.23	'-	<0.50	<0.50	5.6	<0.16	<0.33	<0.50	<0.18	<1.50	8.2	-	-	-	-	-	5.55	1,150	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	**Sample Date**																																									
MW-11	1/14/99	-	-	-	3.4	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	0.23	<0.25	<2.1	0	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	3.7	<4.2	-	-	-	-	-	-	-	-	<1.2	<0.18	<0.25	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	<0.28	<0.15	<0.49	<0.33	<0.46	<1.1	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	9.8	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	**490**	62	<20	-	**58,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/16/03	-	-	**690**	62	<2.6	-	**50,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	**790**	81	9	-	**69,000**	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	12/15/03	-	-	**850**	54	<2.6	-	**43,000**	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	12/15/03D	-	-	**690**	59	<2.6	-	**46,000**	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	4/20/04	-	-	**260**	1.1	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/30/04	-	-	230	2.5	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/28/04	-	-	**320**	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	**460**	2	<2.7	--	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.31	1,510	-	-	-	-
MW-12	1/10/00	-	-	-	**24,000**	**27,000**	-	-	-	-	-	-	-	-	<0.25	<0.25	1.4	<0.25	<0.25	<0.25	0.88	<0.25	<0.25	<0.1	3.3	<0.25	<0.25	<0.1	<0.25	<0.25	6	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	**27,000**	**40,000**	-	-	-	-	-	-	-	-	<0.25	<0.25	1.6	<0.25	<0.25	<0.25	0.88	<0.25	<0.25	<0.1	3.6	<0.25	<0.25	<0.1	<0.25	<0.25	6	-	-	-	-	-	-	-	-	-	-	-
	2/17/00	-	-	-	**48,000**	**42,000**	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	1.5	<0.25	<0.25	<0.25	<0.25	<0.1	3.9	<0.25	<0.25	<0.1	<0.25	<0.25	5	-	-	-	-	-	-	-	-	-	-	-
	6/29/01	-	-	28	**35,000**	**40,000**	-	**1,500**	-	-	-	-	-	-	<1	<1	<1	<1	<1	<1	**5.3**	<1	<1	<0.4	1.9	<1	<1	<0.4	<1	<1.0	7	-	-	-	-	-	-	-	-	-	-	-
	9/20/01	-	-	28	**35,000**	**37,000**	-	**1,500**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	36	**31,000**	**31,000**	-	**500**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	28	**34,000**	**32,000**	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	30	**32,000**	**28,000**	-	**62,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	34	**34,000**	**29,000**	-	**92,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	26	**21,000**	**15,000**	-	**61,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	**20,000**	**21,000**	-	**120,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	39	**16,000**	**19,000**	-	**12,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	43	**7,500**	**7,000**	-	**37,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03	-	-	39	**6,600**	**7,400**	-	**38,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/15/04	-	-	47	**3,100**	**3,200**	-	**560**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	48	**2,400**	**2,500**	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/11/04	-	-	46	**4,300**	**4,100**	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	55	**1,400**	**1,400**	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	54	**1,200**	**1,400**	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	50	**1,400**	**2,300**	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.79	-	-	-	-	-
	6/28/05	-	-	-	<0.52	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.22	-	-	-	-	-
	9/14/05	-	-	-	**290**	**290**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.69	-	-	-	-	-
	12/14/05	-	-	-	**110**	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.91	-	-	-	-	-
	3/10/06	-	-	-	**480**	**570**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.03	-	-	-	-	-
	6/14/06	-	-	-	**190**	**130**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.67	-	-	-	-	-
	9/12/06	-	-	-	**240**	**220**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.80	-	-	-	-	-
	1/2/07	-	-	-	43	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.66	-	-	-	-	-
	3/29/07	-	-	-	74	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.79	-	-	-	-	-
	6/6/07	-	-	-	37	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/10/07	-	-	-	41	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.44	1,392	-	-	-	-
	10/1/07	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	1.4	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	1.4	-	-	-	-	-	6.86	1,480	-	-	-	-
	10/01/07[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	1.5	<0.56	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	1.5	-	-	-	-	-	6.86	1,480	-	-	-	-
	4/30/08	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/26/08	-	-	-	17.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.59	1576	-	-	-	-
	4/17/09	-	-	-	7.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/09	-	-	-	7.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	1350	-	-	-	-
	3/29/10	-	-	-	**110**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	1,200	-	-	-	-
	9/23/10	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.62	2,000	-	-	-	-
	3/17/11	-	-	-	<1.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.14	2,910	-	-	-	-
	9/22/11[UU]	-	-	-	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.95	1,410	-	-	-	-
	3/21/12	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.29	1,210	-	-	-	-
	9/13/12	-	-	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.29	1,210	-	-	-	-
	4/30/13	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.27	2,340	-	-	-	-
	9/24/13	-	-	-	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.27	2,340	-	-	-	-
	5/14/14	-	-	-	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.83	930	-	-	-	-
	9/19/14	-	-	-	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.81	1,280	-	-	-	-
MW-13	1/10/00	-	-	-	1	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	2/17/00	-	-	-	4	7	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	6/29/01	-	-	-	10	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	230	**110**	<20	-	**100,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	**660**	65	<2.6	-	**490,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	**250**	61	7	-	**48,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03	-	-	**250**	**110**	<2.6	-	**81,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	**600**	<1.1	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	**500**	3	<2.7	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	160	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	**270**	<0.52	<2.7	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	**460**	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.79	-	-	-	-	-
MW-14	3/22/00	-	-	-	1	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/22/00	-	-	-	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/29/01	-	-	-	12	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	43	49	<20	-	**36,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	50	64	<2.6	-	**41,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	55	**170**	5	-	**120,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03	-	-	59	**200**	<2.6	-	**140,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	76	<1.1	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	81	4	<2.7	-	**350**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	100	3	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	**130**	1	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	**150**	1	<2.7	-	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.45	-	-	-	-	-
MW-15	**12/10/03[C]**	-	-	41	33	<2.6	-	**13,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/14/04	-	-	110	2	<2.7	-	**230**	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	95	2	<2.7	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/11/04	-	-	99	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	75	1	<2.7	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/19/05	-	-	90	1	<5	-	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.19	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
							Metals															Volatile Organic Compounds (VOC)										Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
MW-16	12/9/03[C]	-	-	34	<0.93	<2.6	-	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/14/04	-	-	49	4	<2.7	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	25	2	<2.7	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	30	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	32	1	<2.7	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/19/05	-	-	59	1	<5	-	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.23	-	-	-	-	-
MW-17	12/9/03	-	-	140	51	<2.6	-	39,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	160	<1.1	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	150	48	<2.7	-	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	130	<0.52	<2.7	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/28/04	-	-	160	<0.52	<2.7	-	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/19/05	-	-	160	<0.52	<2.7	-	730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.62	-	-	-	-	-
MW-18	12/15/03	-	-	1,100	15	<2.6	-	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	660	1.3	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	780	1.6	<2.7	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/28/04	-	-	780	1.7	<2.7	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	680	5.3	<2.7	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-19	9/26/08	-	-	-	64	-	-	-	-	-	-	-	-	-	<0.97	<1.3	4.40	<0.36	1.50	<0.54	<0.43	-	<0.45	<0.67	20.3	<0.42	<0.48	<0.83	<0.18	<2.63	26.2	-	-	-	-	-	7.11	789	-	-	-	-
	12/12/08	-	-	9.2	<1.1	<0.0034	-	25.5	-	45.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.17	-	-	-	-	692	< 0.085	-	2.40
	4/17/09	-	-	-	78	-	-	-	-	-	-	-	-	-	<0.97	<1.3	7.8	<0.36	3.1	<0.54	<0.43	-	<0.45	<0.67	27	<0.42	<0.48	<0.83	<0.18	<1.8	37.9	-	-	-	-	-	-	-	-	-	-	-
	9/23/09[O]	-	-	-	20	-	-	-	-	-	-	-	-	-	<1.0	<0.20	3.7	<0.50	0.98	<0.50	<1.0	-	<0.50	<0.50	9.0	<0.25	<0.20	<0.20	<0.20	<0.50	13.7	-	-	-	-	-	-	-	-	-	-	-
	3/29/10	-	-	-	41	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.1	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	3.9	<0.25	<0.20	<0.20	<0.20	<0.50	6.0	-	-	-	-	-	7.0	775	-	-	-	-
	9/23/10[Z]	-	-	-	<10	-	-	-	-	-	-	-	-	-	<1.0	<0.20	1.2	<0.50	0.70	<0.50	<1.0	-	<0.50	<0.50	7.3	<0.25	<0.20	<0.20	<0.20	<0.50	9.2	-	-	-	-	-	7.21	620	-	-	-	-
	3/17/11	-	-	-	<1.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.20	250	-	-	-	-
	9/22/2011[TT,UU]	-	-	-	2.4	-	-	-	-	-	-	-	-	-	<1.0	<0.20	0.66	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	0.98	<0.25	<0.20	<0.20	<0.20	<0.50	1.6	-	-	-	-	-	7.03	610	-	-	-	-
	3/21/12[AD]	-	-	-	5.7	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.1	<0.50	1.0	<0.50	<1.0	-	<0.50	<0.50	9.2	<0.25	<0.50	<0.20	<0.20	<0.50	12.3	-	-	-	-	-	7.47	450	-	-	-	-
	3/21/12[D,AE]	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.5	<0.50	0.71	<0.50	<1.0	-	<0.50	<0.50	8.3	<0.25	<0.20	<0.20	<0.20	<0.50	11.5	-	-	-	-	-	-	-	-	-	-	-
	9/13/12[D,AE]	-	-	-	<2.0	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.5	<0.50	0.71	<0.50	<1.0	-	<0.50	<0.50	8.3	<0.25	<0.20	<0.20	<0.20	<0.50	11.5	-	-	-	-	-	-	-	-	-	-	-
	9/24/13[D,AE]	-	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.83	780	-	-	-	-
	9/19/14	-	-	-	10.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-20	4/8/09	-	-	94.6	78,300	94.2	-	<6.9	153	<2.3	-	-	-	-	<242	<325	1170	<90	2,960	<135	<108	-	<112	<168	29,800	<105	<120	<208	<45	<450	33,930	-	-	<0.68	-	-	-	-	102,000	188	<4.2	4.9
	4/27/09	-	-	64.7	411	<17	-	799,000	6,990	15.0	-	-	-	-	<97	<130	766	<36	167	<54	89.2	-	<45	<67	14,600	<42	<48	<83	<18	<180	15,622	-	-	1.0	-	-	-	-	2,460,000	10,900	0.30	33.7
	5/21/09	-	-	35.3	58.8	<17	-	169,000	1,250	1.8	-	-	-	-	<48.5	<65	298	<18	54.6	<27	<21.5	-	<22.5	<33.5	5,410	<21	<24	<41.5	<9	<90	5,763	-	-	0.35	-	-	-	-	449,000	8,220	0.16	10.6
	6/18/09	-	-	13.7	8.9	<20	-	33,200	488	<1.7	-	-	-	-	<48.5	<65	190	<18	39.4	<27	<21.5	-	<22.5	<33.5	2,780	<21	<24	<41.5	<9	<90	3,009	-	-	<0.25	-	-	-	-	102,000	2,030	<0.25	5.8
	7/15/09	-	-	26.8	44.6	<3.9	-	180,000	761	8.6	-	-	-	-	<48.5	<65	358	<18	<28.5	<27	<21.5	-	<22.5	<33.5	8,970	<21	<24	<41.5	<9	<90	9,328	-	-	0.25	-	-	-	-	440,000	8,350	<0.25	12.0
	9/23/10[AA]	-	-	-	<10	-	-	-	-	-	-	-	-	-	19.0	0.89	300	3.1	100	<0.50	6.5	-	<0.50	<0.50	4,300	5.1	13	<0.20	2.1	<0.50	4,750	-	-	-	-	-	6.93	1,550	-	-	-	-
	3/17/11	-	-	-	<1.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.40	1,660	-	-	-	-
	9/22/11[VV]	-	-	-	-	-	-	-	-	-	-	-	-	-	<50	<10	420	<25	240	<25	<50	-	<25	<25	4,900	<13	17	<10	<10	<25	5,577	-	-	-	-	-	6.95	675	-	-	-	-
	3/21/12[AF, AI]	-	-	-	1.5	-	-	-	-	-	-	-	-	-	4.0	0.28	120	1.1	25	<0.50	1.6	-	<0.50	<0.50	990	1.7	3.4	<0.20	<0.20	<0.50	1,147	-	-	-	-	-	7.58	880	-	-	-	-
	9/13/12[AF, AI]	-	-	-	<2.0	-	-	-	-	-	-	-	-	-	<38.8	<52.0	3,070	19.5	550	<21.6	<17.2	-	<18.0	<26.8	82	<16.8	<19.2	<33.2	<7.2	<105.2	3,702	-	-	-	-	-	7.58	880	-	-	-	-
	9/25/13[AF, AI]	-	-	-	<1.2	-	-	-	-	-	-	-	-	-	<9.7	<17.2	1,120	<11.9	224	<12.5	<9.0	-	<11.8	<11.0	26	<9.7	<9.1	<12.5	<4.6	<32.9	1,370	-	-	-	-	-	7.58	880	-	-	-	-
	9/18/14	-	-	-	<2.1	-	-	-	-	-	-	-	-	-	19.8	<50.0	162	<3.4	123	<10.0	15.7 J	-	<10.0	<10.0	1,260	<3.1	<6.6	<10.0	<3.5	<30.0	1,565	-	-	-	-	-	11.34	1,130	-	-	-	-
Injection Well	4/8/09	-	-	195	123,000	144	-	<6.9	296	-	-	-	-	-	<485	<650	3,760	<180	10,900	<270	<215	-	<225	<335	81,700	<210	<240	<415	<90	<900	96,360	-	-	<0.68	-	-	-	-	218	<4.2	9.0	8.3
	4/27/09	-	-	16.5	36.2	<17	-	546,000	5,540	8.4	-	-	-	-	<24.2	<32.5	159	<9.0	24	<13.5	33.9	-	<11.2	<16.8	3,140	<10.5	<12.0	<20.8	<4.5	<45.0	3,357	-	-	0.36	-	-	-	-	9,810	0.24	35.9	33.7
	5/21/09	-	-	14.0	22.7	<17	-	256,000	1,260	5.6	-	-	-	-	<24.2	<32.5	249	<9.0	31.2	<13.5	<10.8	-	<11.2	<16.8	4,990	<10.5	<12	<20.8	<4.5	<45	5,270	-	-	<0.25	-	-	-	-	7,040	0.17	13.8	11.9
	6/18/09	-	-	36.3	32.4	<20	-	242,000	2,150	5.6	-	-	-	-	<38.8	<52.0	423	<14.4	31	<21.6	<17.2	-	<18	<26.8	7,240	<16.8	<19.2	<33.2	<7.2	<72	7,694	-	-	0.25	-	-	-	-	7,960	<0.25	10.0	9.8
	7/15/09	-	-	10.3	2.3	<3.9	-	215,000	1,080	7.2	-	-	-	-	<19.4	<26	110	<7.2	24.5	<10.8	<8.6	-	<9	<13.4	1,330	<8.4	<9.6	<16.6	<3.6	<36	1,465	-	-	0.25	-	-	-	-	7,570	<0.25	14.2	8.3
P-1A	12/11/03[C]	-	-	21	3	<2.6	-	1,400	-	-	-	-	-	-	<0.24	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43		<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	19	2	<2.7	-	110	-	-	-	-	-	-	<0.97	<0.37	2.3	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	2.3	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	27	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/04	-	-	25	<0.52	<2.7	-	<17	-	-	-	-	-	-	<0.97	<0.37	2.2	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0.0	-	-	-	-	-	-	-	-	-	-	-
	12/27/04	-	-	22	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	25	1	<2.7	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.44	-	-	-	-	-
P-2A	12/9/03[C]	-	-	15	380	400	-	4,100	-	-	-	-	-	-	<0.97	<0.37	1.4	<0.36	<0.57	<0.54	<0.43		<0.45	<0.67	3.7	<0.42	<0.48	<0.83	<0.18	<2.63	5	-	-	-	-	-	7.00	-	-	-	-	-
	4/29/04[E]	-	-	25	<1.1	<2.7	-	<32	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	6.5	2	<2.7	-	<8	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	10/7/04	-	-	3.3	0.91	<2.7	-	<17	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	12/15/04	-	-	6.2	1.1	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	5.7	3	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.51	-	-	-	-	-
	9/14/05	-	-	-	0.81	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.39	-	-	-	-	-
	9/14/06	-	-	-	<1.3	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.88	-	-	-	-	-
	9/11/07	-	-	-	<0.43	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.64	545	-	-	-	-
P-2B	12/10/03	-	-	3.5	410	88	-	74,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/10/03[D]	-	-	3.5	350	340	-	48,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/15/04	-	-	12	1.6	<2.7	-	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	3.6	0.53	4	-	<8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/04	-	-	3.3	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/15/04	-	-	3.2	3.9	<2.7	-	290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	3.3	0.74	<2.7	-	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.33	-	-	-	-	-
	10/1/07	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	8.73	219	-	-	-	-
P-4	2/7/97	-	-	-	183	-	-	-	-	-	-	-	-	-	<1.0	-	<1.0	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/4/97	-	-	-	141	-	-	-	-	-	-	-	-	-	<1.0	-	<1.0	-	<0.5	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/97	-	-	-	<5.0	33	-	-	-	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	<10	<2	<2.0	<2	<2	<2	<2	<2	<2.0	0	-	-	-	-	-	-	-	-	-	-	-
	2/5/98	-	-	-	42	<10.0	-	-	-	-	-	-	-	-	<10.0	<5.0	<10.0	<5.0	<5.0	<10.0	<5.0	<50.0	10	<10	<5.0	<5.0	10	<10.0	<2.0	<10	20	-	-	-	-	-	-	-	-	-	-	-
	5/22/98	-	-	-	22	18	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	12	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	1/18/99	-	-	-	17	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	0.94	<0.25	<0.25	<0.1	<0.25	<0.25	1	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	1	<4.2	-	-	-	-	-	-	-	-	<1.2	<0.18	<0.25	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	<0.28	<0.15	<0.49	<0.33	<0.46	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	25	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.3	<0.25	<0.25	<0.10	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	9/20/01	-	-	11	0.93	<4.2	-	19,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	<5	16	<4.2	-	2,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	<5	2	<4.2	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/29/01	-	-	5.5	49	15	-	7,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	<5	130	9	-	38,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	3.7	220	<12	-	94,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	42	<20	-	16,000	-	-	-	-	-	-	<0.84	<0.45	<0.87	<0.55	<0.56	<0.53	<0.47	-	<0.63	<0.84	<0.65	<0.50	<0.39	<0.64	<0.11	<1.83	0	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	3.7	19	<2.6	-	8,300	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	3.4	27	<2.6	-	13,000	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/l)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
							Metals															Volatile Organic Compounds (VOC)										Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200								Total Toxic Organics (TTO) < 2,130										NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
P-4A*	12/11/03	-	-	4.1	12	<2.6	-	6,200	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	4/20/04	-	-	4.0	<1.1	6.3*	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	3.7	0.96	<2.7	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	5.1	0.73	<2.7	-	<17	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	5.1	<0.52	<2.7	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	5.3	<0.52	<2.7	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.92	-	-	-	-	-
	9/14/05	-	-	-	<0.62	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.28	-	-	-	-	-
	9/13/06	-	-	-	<1.9	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.99	-	-	-	-	-
	9/10/07	-	-	-	1.2	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.16	257	-	-	-	-
	9/23/09	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	350	-	-	-	-
	9/22/11	-	-	-	<1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.84	290	-	-	-	-
	9/25/13	-	-	-	<1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.84	290	-	-	-	-
P-6A	12/15/03[B]	-	-	-	11	-	-	2,300	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	6.9	0.95	<2.7	-	56	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	4.2	4.6	<2.7	-	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	3.8	1.2	<2.7	-	27	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	12/27/04	-	-	3.6	0.77	<2.7	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	4.2	<0.52	<2.7	-	<17	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.97	-	-	-	-	-
	9/14/05	-	-	-	<0.62	<5.0	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.11	-	-	-	-	-
	9/13/06	-	-	-	<1.9	<6.8	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.86	-	-	-	-	-
	9/10/07	-	-	-	0.44	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.99	323	-	-	-	-
	4/8/09	-	-	2.3	1.0	<3.4	-	<6.9	36.4	<2.3	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<1.8	0	-	-	<0.17	-	-	-	-	0.59	0.79	<1.4	<1.4
	9/23/09	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.70	410	-	-	-	-
	9/23/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.39	1,050	-	-	-	-
	9/22/11	-	-	-	-	<1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.60	310	-	-	-	-
	9/25/13	-	-	-	-	<1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.60	310	-	-	-	-
P-6B	12/11/03[C]	-	-	5.8	4.8	<2.6	-	2,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	2.2	0.56	<2.7	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	2.5	1.2	<2.7	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	2.7	0.87	<2.7	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/27/04	-	-	2.8	<0.52	<2.7	-	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/1/07	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	8.31	167	-	-	-	-
	3/30/05	-	-	3.6	<0.65	<2.7	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.38	-	-	-	-	-
	9/14/05	-	-	-	<0.62	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.51	-	-	-	-	-
	9/13/06	-	-	-	<1.9	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.38	-	-	-	-	-
	9/10/07	-	-	-	48	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.40	223	-	-	-	-
	9/23/09	-	-	-	<2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.60	395	-	-	-	-
	9/23/10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.95	1,110	-	-	-	-
	9/22/11	-	-	-	<1.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.72	180	-	-	-	-
	9/25/13	-	-	-	<1.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.72	180	-	-	-	-
P-7A	12/11/03[C]	-	-	120	7,600	7,300	-	3,600	-	-	-	-	-	-	<39	<15	450	<14	390	<22	<17	-	<18	<27	4,700	<17	<19	<33	<7.2	<105	5,540	-	-	-	-	-	7.00	-	-	-	-	-
	4/21/04	-	-	100	74	64	-	<32	-	-	-	-	-	-	<19	<7.4	540	<7.2	130	<11	<8.6	-	<9.0	<13	1,800	<8.4	<9.6	<17	<3.6	<53	2,470	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	140	20	4	-	78	-	-	-	-	-	-	<9.7	<3.7	1,200	8.9	190	<5.4	8.0	-	<4.5	<6.7	1,500	<9.2	<4.8	<8.3	2.6	<26.3	2910	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	120	4.9	<2.7	-	<18	-	-	-	-	-	-	<9.7	<3.7	1,100	8.5	130	<5.4	<4.3	-	<4.5	<6.7	1,000	8.4	<4.8	<8.3	<1.8	<2.63	2247	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	130	9.9	<2.7	-	19	-	-	-	-	-	-	<19	<7.4	1,300	<7.2	120	<11	<8.6	-	13	<13	500	<8.4	<9.6	<17	<3.6	<53	1,933	-	-	-	-	-	-	-	-	-	-	-
	12/21/04UF	-	-	-	7.6	<2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	110	2.4	<5	-	<18	-	-	-	-	-	-	<9.7	<3.7	1,300	<5.6	110	<5.4	6.3	-	<4.5	<6.7	400	<4.2	<4.8	<8.3	<1.8	<26.3	1816	-	-	-	-	-	7.99	-	-	-	-	-
	6/28/05	-	-	-	8.5	<5	-	-	-	-	-	-	-	-	<19	<7.4	1,800	9.6	140	<11	<8.6	-	<9	<13	300	<8.4	<9.6	<17	<3.6	<53	2249	-	-	-	-	-	6.89	-	-	-	-	-
	9/14/05	-	-	-	20	12	-	-	-	-	-	-	-	-	<19	<7.4	1,900	<7.2	150	<11	11	-	<9.0	<13	170	<8.4	<9.6	<17	<3.6	<53	2237	-	-	-	-	-	7.13	-	-	-	-	-
	12/14/05	-	-	-	4.8	<5.0	-	-	-	-	-	-	-	-	<24	<9.2	3,000	14		<14	<11	-	<11	<17	250	<10	<12	<21	<4.5	<66	3534	-	-	-	-	-	7.83	-	-	-	-	-
	3/10/06	-	-	-	7.9	<5.0	-	-	-	-	-	-	-	-	<9.7	<3.7	1,600	8.6	140	<5.4	5.3	-	<4.5	<6.7	140	4.4	<4.8	<8.3	<1.8	<26.3	1898	-	-	-	-	-	7.43	807	-	-	-	-
	6/14/06	-	-	-	5.8	<6.8	-	-	-	-	-	-	-	-	<19	<7.4	2,300	13	200	<11	<8.6	-	<9	<13	150	9.3	<9.6	<17	<3.6	<53	2672	-	-	-	-	-	7.25	1,107	-	-	-	-
	9/13/06	-	-	-	19	<6.8	-	-	-	-	-	-	-	-	<19	<7.4	3,000	17	340	<11	11	-	<9.0	<13	170	9.2	<9.6	<17	<3.6	<53	3547	-	-	-	-	-	7.36	1,116	-	-	-	-
	10/20/06	-	-	180	4	<6.8	-	<50	140	<2.5	-	-	-	-	<240	<92	2,300	<90	4,000	<140	<110	-	<110	<170	32,000	<100	<120	<210	<45	<660	38300	-	-	-	-	-	7.70	1,141	-	-	-	-
	11/20/06	-	-	170	6	7	-	<50	150	<2.5	-	-	-	-	<48	<18	3,600	<18	390	<27	92	-	<22	<34	270	<21	<24	<42	<9	<132	4,352	-	-	-	-	-	7.52	1,236	-	-	-	-
	12/8/06	-	-	-	12	<6.8	-	<50	150	<2.5	-	-	-	-	<24	<9.2	3,100	18	360	<14	<15	-	<11	<17	210	<10	<12	<21	<4.5	<66	3,328	-	-	-	-	-	7.19	2,110	-	-	-	-
	1/2/07	-	-	-	9.3	<6.8	-	-	-	-	-	-	-	-	<24	<9.2	3,200	18	440	<14	13	-	<11	<17	260	<10	<12	<21	<4.5	<66	3,931	-	-	-	-	-	7.08	1,340	-	-	-	-
	1/30/07	-	-	-	16	<6.8	-	<50	160	<2.5	-	-	-	-	<39	<15	4,100	<14	600	<22	24	-	<18	<27	400	<17	<19	<33	<7.2	<72	5,124	-	-	-	-	-	-	-	-	-	-	-
	2/26/07	-	-	200	10	<6.8	-	<50	160	<2.5	-	-	-	-	<48	<18	5,000	31	740	<27	24	-	<22	<34	580	<21	<24	<42	<9	<132	6,375	-	-	-	-	-	6.78	1,355	-	-	-	-
	3/29/07	-	-	-	15	<6.8	-	<50	150	-	-	-	-	-	<39	<15	4,200	29	580	<22	18	-	<18	<27	510	<17	<19	<33	<7.2	<105	5,337	-	-	-	-	-	7.56	1,421	-	-	-	-
	6/6/07	-	-	-	9	5	-	<50	180	-	-	-	-	-	<39	<15	4,500	4500	680	<22	24	-	<18	<27	620	20	<19	<33	<7.2	<105	10,344	-	-	-	-	-	-	-	-	-	-	-
	9/11/07	-	-	-	110	<3.4	-	-	-	-	-	-	-	-	<19	<7.4	4,000	24	560	<11	15	-	<9	<13	440	15	<9.6	<17	<3.6	<17	5,054	-	-	-	-	-	7.50	1,065	-	-	-	-
	4/30/08	-	-	-	13	-	-	-	-	-	-	-	-	-	<24.2	<9.2	3,690	<9	519	<13.5	<10.8	-	<11.2	<16.8	274	<10.5	<12	<20.8	<4.5	<45	4,483	-	-	-	-	-	-	-	-	-	-	-
	9/26/08	-	-	-	11	-	-	-	-	-	-	-	-	-	<24.2	<32.5	3,240	21.1	409	<13.5	<10.8	-	<11.2	<16.8	294	15.5	<12	<20.8	<4.5	<65.8	3,980	-	-	-	-	-	7.22	1,178	-	-	-	-
	4/8/09	-	-	158	10.4	<3.4	-	<6.9	124	-	-	-	-	-	<24.2	<32.5	3,350	<9	486	<13.5	<10.8	-	<11.2	<16.8	161	<10.5	<12	<20.8	<4.5	<45	3,997	-	-	<0.17	-	-	-	-	1.2	0.17	1.8	2.4
	4/17/09	-	-	-	720	-	-	-	-	-	-	-	-	-	<24.2	<32.5	2,740	21.2	189	<13.5	11.5	-	<11.2	<16.8	188	12.7	<12	<20.8	<4.5	<45	3,162	-	-	-	-	-	-	-	-	-	-	-
	4/27/09	-	-	245	11.3	8.9	-	16	180	<2.3	-	-	-	-	<24.2	<32.5	4,760	31.7	633	<13.5	13.4	-	<11.2	<16.8	670	15.4	<12	<20.8	<4.5	<45	6,124	-	-	<0.17	-	-	-	-	39.4	< 0.085	4.0	3.0
	5/21/09	-	-	237	8.6	<3.4	-	12.6	178	<1.7	-	-	-	-	<38.8	<52.0	9,510	57.4	1,930	<21.6	36.9	-	<18.0	<26.8	910	33.3	<19.2	<33.2	<7.2	<72.0	12,478	-	-	<0.25	-	-	-	-	4.0	<0.085	1.8	2.6
	6/18/09	-	-	255	10.5	<3.9	-	19.6	187	<1.7	-	-	-	-	<38.8	<52.0	5,770	46.6	818	<21.6	<17.2	-	<18.0	<26.8	603	22.8	<19.2	<33.2	<7.2	<72.0	7,260	-	-	<0.25	-	-	-	-	1.4	<0.25	3.5	3.3
	7/15/09	-	-	245	11.2	7.8	-	5.3	181	<1.7	-	-	-	-	<48.5	<65	4,210	41.7	657	<27	<21.5	-	<22.5	<33.5	624	<21	<24	<41.5	<9	<90	5,533	-	-	<0.25	-	-	-	-	1.4	<0.25	3.7	3.3
	9/23/09 [K]	-	-	-	10	-	-	-	-	-	-	-	-	-	<32	<6.4	6,400	44	1,400	<16	<32	-	<16	<16	880	28	<6.4	<6.4	<6.4	<16	8,752	-	-	-	-	-	-	-	-	-	-	-
	9/23/09[D, K]	-	-	-	-	-	-	-	-	-	-	-	-	-	<32	<6.4	6,500	44	1,400	<16	<32	-	<16	<16	860	27	<6.4	<6.4	<6.4	<16	8,831	-	-	-	-	-	7.1	1,010	-	-	-	-
	3/29/10[S]	-	-	-	12	-	-	-	-	-	-	-	-	-	<100	<20	4,400	<50	620	<50	<100	-	<50	<50	380	<25	<20	<20	<20	<50	5,400	-	-	-	-	-	6.9	1,110	-	-	-	-
	9/23/10	-	-	-	<10	-	-	-	-	-	-	-	-	-	<50	<10	4,100	<25	820	<25	<50	-	<25	<25	310	<13	<10	<10	<10	<25	5,230	-	-	-	-	-	7.63	1,100	-	-	-	-
	3/17/11	-	-	-	<1.81	-	-	-	-	-	-	-	-	-	<50	<10	2,400	<25	410	<25	<50	-	<25	<25	110	<13	<10	<10	<10	<25	2,920	-	-	-	-	-	8.15	990	-	-	-	-
	9/22/11[SS]	-	-	-	1.5	-	-	-	-	-	-	-	-	-	<25	<5.0	3,200	20	660	<13	<25	-	<13	<13	150	11	<5.0	<5.0	<5.0	<13	4,041	-	-	-	-	-	7.51	910	-	-	-	-
	3/21/12[AC]	-	-	-	1.4	-	-	-	-	-	-	-	-	-	4.0	0.35	3,000	20	310	<0.50	7.4	-	<0.50	<0.50	170	11	0.80	<0.20	0.55	<0.50	3,524	-	-	-	-	-	7.60	960	-	-	-	-
	9/14/12[AC]	-	-	-	7.3	-	-	-	-	-	-	-	-	-	<48.5	<65.0	3,000	<18.0	168	<27.0	<21.5	-	<24.0	<33.5	9,900	<21.0	<24.0	<41.5	<9.0	<131.5	13,068	-	-	-	-	-	7.60	960	-	-	-	-
	5/1/13[AC]	-	-	-	2.7	-	-	-	-	-	-	-	-	-	<88.7	<138	6,580	<95.3	353	<100	<71.7	-	<94.4	<87.7	16,600	<78.0	<85.8	<500	<37.0	<263	23,533	-	-	-	-	-	8.80	187	-	-	-	-
	9/25/13[AC]	-	-	-	5.1	-	-	-	-	-	-	-	-	-	<88.7	<138	6,600	<95.3	301	<100	<71.7	-	<94.4	<87.7	13,600	<78.0	<72.8	<100	<37.0	<263	20,501	-	-	-	-	-	8.80	187	-	-	-	-
	5/15/14	-	-	-	<2.1	-	-	-	-	-	-	-	-	-	<18.7	<125	3,680	21.8	741	<25.0	<11.6	-	<25.0	<25.0	104	8.1 [AO]	<16.5	<25.0	<8.8	<75.0	4,547	-	-	-	-	-	6.91	1,000	-	-	-	-
	9/18/14	-	-	-	<2.1	-	-	-	-	-	-	-	-	-	<0.75	<5.0	193	0.87	63.2	<1.0	0.65	-	<1.0	<1.0	6.2	<0.31	<0.66	<1.0	<0.35	<3.0	264	-	-	-	-	-	6.91	1,000	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
P-7	1/18/99	-	-	-	140	140	-	-	-	-	-	-	-	-	<0.25	<0.25	34	<0.25	12	<0.25	<0.25	<0.25	<0.25	<1.2	140	<0.25	<0.25	0.25	<0.25	<1.0	186	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	2,600	1,100	-	-	-	-	-	-	-	-	<4.8	<0.72	35	<0.80	15	<1.5	<3.5	<0.56	<2.5	<1.6	210	<0.60	<2.0	<1.3	<1.8	<4.4	260	-	-	-	-	-	-	-	-	-	-	-
	1/10/00	-	-	-	37	<4.2	-	-	-	-	-	-	-	-	0.44	1.5	480	7.5	350	<0.25	5	<0.25	<0.25	<0.1	1,700	7.5	0.57	<0.1	0.89	<0.25	2,553	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	1,000	900	-	-	-	-	-	-	-	-	<25	<25	6,100	35	1,700	<25	120	<25	<25	<10	9,700	37	<25	<10	<25	<25	17,692	-	-	-	-	-	-	-	-	-	-	-
	9/19/01	-	-	180	850	1,100	-	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	170	690	810	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	150	320	310	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/29/01	-	-	130	2,200	890	-	5,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	170	2,200	1,400	-	3,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	67	1,400	410	-	24,000	-	-	-	-	-	-	<57	<75	3,100	<47	1,000	<43	<85	-	<57	<47	6,300	<72	<89	<52	<18	<194	10,400	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	2,000	1,100	-	12,000	-	-	-	-	-	-	<170	<90	12,000	<110	3,800	<110	<94	-	<130	<170	26,000	<100	<78	<130	<22	<370	41,800	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	300	1,200	410	-	13,000	-	-	-	-	-	-	<480	<180	15,000	<180	3,700	<270	<220	-	<220	<340	33,000	<210	<240	<420	<90	<1320	51,700	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	130	1,100	800	-	5,200	-	-	-	-	-	-	<240	<92	14,000	120	4,800	<140	<110	-	<110	<170	29,000	140	<120	<210	<45	<660	48,060	-	-	-	-	-	7.00	-	-	-	-	-
P-7B*	12/11/03	-	-	320	1,900	1,200	-	11,000	-	-	-	-	-	-	<480	<180	14,000	<180	4,300	<270	<220	-	<220	<340	35,000	<210	<240	<420	<90	<1320	53,300	-	-	-	-	-	7.00	-	-	-	-	-
	4/21/04	-	-	280	450	460	-	<32	-	-	-	-	-	-	<190	<74	13,000	95	3,400	<110	<86	-	<90	<130	27,000	110	<96	<170	<36	<530	43,605	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	310	680	700	-	170	-	-	-	-	-	-	<240	<92	17,000	110	5,500	<140	<110	-	<110	<170	34,000	<230	<120	<210	<45	<660	56,610	-	-	-	-	-	-	-	-	-	-	-
	6/28/04[D]	-	-	310	710	700	-	180	-	-	-	-	-	-	<240	<92	18,000	110	5,800	<140	<110	-	<110	<170	37,000	130	<120	<210	<45	<660	61,040	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	330	270	360	-	<18	-	-	-	-	-	-	<390	<150	18,000	180	5,500	<220	<170	-	<180	<270	46,000	<170	<190	<330	<72	<1050	69,680	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	300	390	380	-	<17	-	-	-	-	-	-	<60	<92	15,000	<90	5,100	<140	<110	-	<110	<170	41,000	130	<120	<210	<45	<660	61,230	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	150	640	540	-	19	-	-	-	-	-	-	<190	<74	8,900	<72	3,400	<110	<86	-	<90	<130	27,000	<84	<96	<170	<36	<530	39,300	-	-	-	-	-	7.86	-	-	-	-	-
	6/28/05	-	-	-	760	570	-	-	-	-	-	-	-	-	<480	<180	15,000	<180	4,800	<270	<220	-	<220	<340	43,000	<210	<240	<420	<90	<1320	62,800	-	-	-	-	-	6.98	-	-	-	-	-
	9/14/05	-	-	-	670	700	-	-	-	-	-	-	-	-	<390	<150	16,000	<330	5,000	<220	<170	-	<180	<270	38,000	<170	<190	<350	<72	<1,050	59,000	-	-	-	-	-	7.18	-	-	-	-	-
	12/14/05	-	-	-	830	510	-	-	-	-	-	-	-	-	<480	<180	17,000	<180	6,000	<270	<220	-	<220	<340	53,000	<210	<240	<420	<90	<1320	76,000	-	-	-	-	-	7.78	-	-	-	-	-
	3/10/06	-	-	-	260	290	-	-	-	-	-	-	-	-	<240	<92	14,000	<90	5,500	<140	<110	-	<110	<70	48,000	<100	<120	<210	<45	<660	27,500	-	-	-	-	-	7.08	1,598	-	-	-	-
	6/14/06	-	-	-	390	340	-	-	-	-	-	-	-	-	<970	<370	16,000	<560	5,900	<540	<430	-	<450	<670	50,000	<420	<480	<830	<180	<2630	71,900	-	-	-	-	-	7.05	1,579	-	-	-	-
	9/13/06	-	-	-	450	450	-	-	-	-	-	-	-	-	<480	<180	16,000	<180	6,700	<270	<220	-	<220	<340	56,000	<210	<240	<420	<90	<1320	78,700	-	-	-	-	-	7.25	1,427	-	-	-	-
	10/20/06	-	-	290	430	350	-	<50	250	<2.5	-	-	-	-	<240	<92	16,000	100	6,500	<140	<110	-	<110	<170	53,000	110	<120	<210	<45	<660	75,710	-	-	-	-	-	7.69	1,438	-	-	-	-
	11/20/06	-	-	310	1,000	1,100	-	<50	300	<2.5	-	-	-	-	<970	<370	16,000	<360	5,400	<540	760	-	<450	<670	51,000	<420	<480	<830	<180	<10100	73,160	-	-	-	-	-	6.91	1,438	-	-	-	-
	12/8/06	-	-	-	1,400	1,300	-	<50	210	<2.5	-	-	-	-	<190	<74	13,000	<72	4,500	<110	<86	-	<90	<130	41,000	85	<96	<170	<36	<530	58,585	-	-	-	-	-	7.73	1,533	-	-	-	-
	1/2/07	-	-	-	700	890	-	-	-	-	-	-	-	-	<480	<180	11,000	<180	4,400	<270	<220	-	<220	<340	37,000	<210	<240	<420	<90	<1320	52,400	-	-	-	-	-	6.83	1,602	-	-	-	-
	1/30/07	-	-	-	260	270	-	<50	240	<2.5	-	-	-	-	<74	<48	15,000	<72	6,200	<110	<86	-	<90	<130	50,000	<84	<96	<170	<36	<360	71,200	-	-	-	-	-	-	-	-	-	-	-
	2/26/07	-	-	240	240	<6.8	-	4100	250	<2.5	-	-	-	-	<480	<180	14,000	<180	5,300	<270	<220	-	<220	<340	41,000	<210	<240	<420	<90	<1320	60,300	-	-	-	-	-	6.31	1,399	-	-	-	-
	3/29/07	-	-	-	490	360	-	<50	130	-	-	-	-	-	<240	<92	13,000	<90	5,400	<140	<110	-	<110	<170	50,000	<100	<120	<210	<45	<660	68,400	-	-	-	-	-	7.70	1,491	-	-	-	-
	6/6/07	-	-	-	150	180	-	<50	69	-	-	-	-	-	<97	<37	4,000	<36	1,700	<54	<43	-	<45	<67	14,000	<42	<48	<83	<18	<263	19,700	-	-	-	-	-	-	-	-	-	-	-
	9/11/07	-	-	-	420	340	-	-	-	-	-	-	-	-	<240	<92	14,000	<90	5,200	<140	<110	-	<110	<170	46,000	110	<120	<210	<45	<210	65,310	-	-	-	-	-	7.78	1322	-	-	-	-
	4/30/08	-	-	-	465	-	-	-	-	-	-	-	-	-	<485	<185	15,600	<180	7,160	<270	<215	-	<225	<335	54,200	<210	<240	<415	<90	<900	76,960	-	-	-	-	-	-	-	-	-	-	-
	9/26/08	-	-	-	347	-	-	-	-	-	-	-	-	-	<242	<325	12,000	<90	4,530	<135	<108	-	<112	<168	41,400	<105	<120	<208	<45	<658	57,930	-	-	-	-	-	7.68	1,364	-	-	-	-
	4/9/09	-	-	218	458	310	-	<7.2	204	<2.3	-	-	-	-	<1210	<1620	16,400	<450	4,700	<675	<538	-	<562	<838	39,800	<525	<600	<1040	<225	<2250	60,900	-	-	<0.17	-	-	-	-	136	<0.85	6.5	5.7
	4/17/09	-	-	-	405	-	-	-	-	-	-	-	-	-	<485	<650	13,300	<180	4,560	<270	<215	-	<225	<335	40,300	<210	<240	<415	<90	<900	58,160	-	-	-	-	-	7.68	1364	-	-	-	-
	4/27/09	-	-	253	442	350	-	<4.0	240	<2.3	-	-	-	-	<485	<650	12,100	<180	3,920	<270	385	-	<225	<335	35,400	<210	<240	<415	<90	<900	51,805	-	-	<0.17	-	-	-	-	57.5	<0.085	4.6	6.6
	5/21/09	-	-	229	129	92	-	11.4	219	<1.7	-	-	-	-	<388	<520	14,100	<144	5,460	<216	<172	-	<180	<268	38,300	<168	<192	449	<72	<720	58,309	-	-	<0.25	-	-	-	-	72.0	<0.17	4.1	4.6
	6/18/09	-	-	249	68.5	25	-	17.1	238	<1.7	-	-	-	-	<388	<520	12,700	<144	3,410	<216	<172	-	<180	<268	33,000	<168	<192	<332	<72	<720	49,110	-	-	<0.25	-	-	-	-	130	<0.25	5.4	5.5
	7/15/09	-	-	265	217	310	-	4.9	256	<1.7	-	-	-	-	<388	<520	8,010	<144	2,660	<216	<172	-	<180	<268	30,500	<168	<192	<332	<72	<720	41,170	-	-	<0.25	-	-	-	-	150	0.37	5.4	5.6
	9/23/09[L,M,R]	-	-	-	760	-	-	-	-	-	-	-	-	-	28	13	12,000	65	3,600	<0.50	32	-	1.2	0.65	28,000	110	41	<0.20	40	<0.50	43,931	-	-	-	-	-	7.1	1,210	-	-	-	-
	3/29/10	-	-	-	740	-	-	-	-	-	-	-	-	-	<500	<100	11,000	<250	3,000	<250	<500	-	<250	<250	31,000	<120	<100	<100	<100	<250	45,000	-	-	-	-	-	7.0	550	-	-	-	-
	9/23/10[S]	-	-	-	15	-	-	-	-	-	-	-	-	-	<400	<80	13,000	<200	5,100	<200	<400	-	<200	<200	46,000	<100	<80	<80	<80	<200	64,100	-	-	-	-	-	6.69	1,290	-	-	-	-
	9/23/10[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<400	<80	13,000	<200	5,000	<200	<400	-	<200	<200	46,000	<100	<80	<80	<80	<200	64,000	-	-	-	-	-	-	-	-	-	-	-
	3/17/11[HH]	-	-	-	<1.81	-	-	-	-	-	-	-	-	-	<500	<100	10,000	<250	2,900	<250	<500	-	<250	<250	35,000	<130	<100	<100	<100	<250	47,900	-	-	-	-	-	7.87	1,860	-	-	-	-
	3/17/11[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<500	<100	11,000	<250	3,100	<250	<500	-	<250	<250	38,000	<130	<100	<100	<100	<250	52,100	-	-	-	-	-	-	-	-	-	-	-
	9/22/11	-	-	-	<1.5	-	-	-	-	-	-	-	-	-	<50	<10	1,200	<25	140	<25	<50	-	<25	<25	4,800	<13	<10	<10	<10	<25	6,140	-	-	-	-	-	7.66	300	-	-	-	-
	3/21/12[AL]	-	-	-	28	-	-	-	-	-	-	-	-	-	<1.0	0.21	200	1.1	58	<0.50	<1.0	-	<0.50	<0.50	2,200	2.4	1.2	<0.20	0.20	<0.50	2,463	-	-	-	-	-	7.77	180	-	-	-	-
	9/13/12[AL]	-	-	-	<2.0	-	-	-	-	-	-	-	-	-	<0.97	<1.3	<0.75	<0.36	0.59	<0.54	<0.43	-	<0.45	<0.67	2.4	<2.4	<0.48	<0.83	<0.18	<2.63	2.4	-	-	-	-	-	7.77	180	-	-	-	-
	5/1/13[AL]	-	-	-	<1.2	-	-	-	-	-	-	-	-	-	<0.44	<0.69	1.9	<0.48	<0.43	<0.50	<0.36	-	<0.47	<0.44	1.7	<0.39	<0.43	<2.5	<0.18	<1.32	3.6	-	-	-	-	-	8.80	187	-	-	-	-
	9/25/13[AL]	-	-	-	<1.2	-	-	-	-	-	-	-	-	-	<0.44	<0.69	3.7	<0.48	<0.43	<0.50	<0.36	-	<0.47	<0.44	4.8	<0.39	<0.36	<0.5	<0.18	<1.32	8.5	-	-	-	-	-	8.80	187	-	-	-	-
	5/15/14	-	-	-	2.8 [AO]	-	-	-	-	-	-	-	-	-	<37.5	<250	9,540	42.3 [AO]	503	<50.0	<23.3	-	<50.0	<50.0	19,800	66.7 [AO]	<33.1	<50.0	<17.6	<150.0	29,843	-	-	-	-	-	7.29	1,490	-	-	-	-
	9/18/14	-	-	-	13.4	-	-	-	-	-	-	-	-	-	<74.9	<500	8,860	<33.5	573	<100	<46.5	-	<100	<100	16,600	<31.1	<66.1	<100	<35.1	<300	26,033	-	-	-	-	-	7.29	1,490	-	-	-	-
P-7C	12/11/03	-	-	13	590	<2.6	-	66,000	-	-	-	--	-	-	<1.9	<0.74	64	<0.72	12	<1.1	<0.86	-	<0.90	<1300	260	<0.84	<0.96	<1.7	<0.36	<5300	336	-	-	-	-	-	7.00	-	-	-	-	-
	4/21/04	-	-	4.9	<1.1	<2.7	-	<32	-	-	-	-	-	-	<0.97	<0.37	18	<0.36	1.7	<0.54	<0.43	-	<0.45	<0.67	44.00	<0.42	<0.48	<0.83	<0.18	<2.63	63.7	-	-	-	-	-	-	-	-	-	-	-
	6/28/04	-	-	4.4	1.8	<2.7	-	21	-	-	-	-	-	-	<0.97	<0.37	16	<0.36	1.6	<0.54	<0.43	-	<0.45	<0.67	32.00	<0.92	<0.48	<0.83	<0.18	<2.63	49.6	-	-	-	-	-	-	-	-	-	-	-
	9/28/04	-	-	4.0	1.4	<2.7	-	<18	-	-	-	-	-	-	<0.97	<0.37	14	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	17.00	<0.42	<0.48	<0.83	<0.18	<2.63	31	-	-	-	-	-	-	-	-	-	-	-
	12/21/04	-	-	4.0	1.5	<2.7	-	<17	-	-	-	-	-	-	<0.97	<0.37	9.9	<0.36	0.61	<0.54	<0.43	-	<0.45	<0.67	12.00	<0.42	<0.48	<0.83	<0.18	<2.63	22.51	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	4.6	0.69	<2.7	-	19	-	-	-	-	-	-	<0.97	<0.37	13.0	<0.36	0.76	<0.54	<0.43	-	<0.45	<0.67	13.00	<0.42	<0.48	<0.83	<0.18	<2.63	26.76	-	-	-	-	-	8.44	-	-	-	-	-
	9/14/05	-	-	-	3.9	<5.0	-	-	-	-	-	-	-	-	<0.97	<0.37	8.8	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	4.60	<0.42	<0.48	<0.83	<0.18	<2.63	13.4	-	-	-	-	-	7.42	-	-	-	-	-
	9/13/06	-	-	-	2.3	<6.8	-	-	-	-	-	-	-	-	<0.97	<0.37	6.6	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	5.00	<0.42	<0.48	<0.83	<0.18	<2.63	11.6	-	-	-	-	-	8.30	-	-	-	-	-
	9/11/07	-	-	-	1.5	<3.4	-	-	-	-	-	-	-	-	<0.97	<0.37	4.7	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	5	<0.42	<0.48	<0.83	<0.18	<0.83	9.7	-	-	-	-	-	8.39	231	-	-	-	-
	9/23/09[N]	-	-	-	9.6	-	-	-	-	-	-	-	-	-	<1.0	<0.20	2.6	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	0.87	0.29	<0.20	<0.20	<0.20	<0.50	3.76	-	-	-	-	-	7.00	425	-	-	-	-
	9/22/11[TT]	-	-	-	<1.5	-	-	-	-	-	-	-	-	-	<1.0	<0.20	0.56	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	1.1	<0.25	<0.20	<0.20	<0.20	<0.50	1.66	-	-	-	-	-	7.86	150	-	-	-	-
	9/25/13[TT]	-	-	-	2.4	-	-	-	-	-	-	-	-	-	29.5	<17.2	243	<11.9	135	<12.5	<9.0	-	<11.8	<11.0	2,330	<9.7	<9.1	<12.5	7.8	<32.9	2,745.3	-	-	-	-	-	7.86	150	-	-	-	-
P-8	5/22/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	55.2	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	55	-	-	-	-	-	-	-	-	-	-	-
	8/20/98	-	-	-	<5.0	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	2.2	7	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.10	<0.25	<0.25	<0.25	<0.10	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	2.2	<4.2	-	-	-	-	-	-	-	-	<1.2	<0.18	<0.25	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	<0.28	<0.15	<0.49	<0.33	<0.46	<1.1	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	<5	13	<4.2	-	440	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.43	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	9/6/01	-	-	<5	1.6	<4.2	-	4,900	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.45	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	6.3	9.2	<4.2	-	13,000	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.57	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	1	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	<5	14	<4.2	-	27,000	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.6	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	1	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	440	25	<20	-	17,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/16/03	-	-	420	20	<2.6	-	14,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	240	34	<2.6	-	24,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
P-8A*	12/15/03	-	-	260	24	<2.6	-	18,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/21/04	-	-	170	<1.1	<2.7	-	<32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/30/04	-	-	140	0.85	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	150	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/28/04	-	-	110	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	600	0.82	<2.7	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.69	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/L)	Iron (ug/L)	Sulfate Dissolved (mg/L)	Sulfide Dissolved (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
P-9	8/19/98	-	-	-	8	<10.0	-	-	-	-	-	-	-	-	<1.0	<0.5	<1.0	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5	<1.0	<0.5	<0.5	<0.5	<1.0	<0.2	<1.0	0	-	-	-	-	-	-	-	-	-	-	-
	1/14/99	-	-	-	4	<4.2	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.10	<0.25	<0.25	0	-	-	-	-	-	-	-	-	-	-	-
	2/16/99	-	-	-	3	<4.2	-	-	-	-	-	-	-	-	<1.2	<0.18	<0.25	<0.20	<0.73	<0.38	<0.87	<0.14	<0.63	<0.39	<0.28	<0.15	<0.49	<0.33	<0.46	<1.1	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	0.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/03	-	-	1.2	6	<20	-	6,100	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	1.7	4.8	<2.6	-	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	1.5	10	<2.6	-	7,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
P-9A*	12/11/03	-	-	2.1	9.4	<2.6	-	8,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/28/04	-	-	1.9	1.2	<2.9	-	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	3.0	0.62	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/8/04	-	-	2.7	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/05	-	-	19	<0.65	<2.7	-	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P-12	3/22/00	-	-	-	9,100	10,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/5/00	-	-	-	15	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/2/01	-	-	-	6.6	<4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/20/01	-	-	<5	2.5	<4.2	-	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/4/01	-	-	<5	57	<4.2	-	3,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/15/01	-	-	<5	5	9	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	<5	12	20	-	78,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	<5	420	100	-	110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/19/02	-	-	2.1	960	<12	-	140,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/30/02	-	-	-	240	<10	-	50,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/17/03	-	-	2.1	130	<2.6	-	22,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/24/03	-	-	5.3	110	17	-	20,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
P-12A*	12/10/03	-	-	2.0	120	<2.6	-	22,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/15/04	-	-	2.1	5.7	<2.7	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	2.0	7.3	4	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/11/04	-	-	2.5	5.5	10	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	3.2	4.7	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/30/05	-	-	12	5.8	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.38	-	-	-	-	-
	9/14/05	-	-	-	3.5	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.06	-	-	-	-	-
	9/12/06	-	-	-	<1.3	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.52	-	-	-	-	-
	9/10/07	-	-	-	0.47	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.51	770	-	-	-	-
	9/23/09	-	-	-	<2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.80	910	-	-	-	-
	9/22/11	-	-	-	<1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.21	890	-	-	-	-
	9/24/13	-	-	-	<1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.21	890	-	-	-	-
P-15A	12/10/03[C]	-	-	60	95	<2.6	-	44,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/14/04	-	-	72	0.59	<2.7	-	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	30	1.1	<2.7	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/11/04	-	-	30	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	14	0.95	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	22	0.89	<5	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.05	-	-	-	-	-
P-15B	12/10/03[C]	-	-	23	910	<2.6	-	45,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/14/04	-	-	100	0.53	<2.7	-	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/22/04	-	-	72	0.94	<2.7	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/11/04	-	-	61	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04UF	-	-	-	300	<2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	43	22	<2.7	-	10,000[3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	24	1.2	<5	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.17	-	-	-	-	-
P-16A	12/10/03[C]	-	-	30	230	<2.6	-	170,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	4/14/04	-	-	8.8	1.2	<2.7	-	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/04	-	-	5.8	1.4	<2.7	-	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/12/04	-	-	5.3	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/16/04	-	-	4.8	<0.52	<2.7	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/18/05	-	-	4.5	<0.65	<5	-	<18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.95	-	-	-	-	-
Sump A Influent	9/19/01	-	-	61	4,500	5,100	-	<42	-	-	-	-	-	-	<25	<25	310	<25	360	<25	44	<25	<25	<10	2,500	<25	<25	<10	<25	<25	3,214	-	-	-	-	-	-	-	-	-	-	-
	10/3/01	-	-	85	3,000	3,300	-	890	-	-	-	-	-	-	<50	<50	330	<50	290	<50	160	<50	<50	<20	2,700	<50	<50	<20	<50	<50	3,480	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	68	15,000	13,000	-	290	-	-	-	-	-	-	<50	<50	380	<50	470	<50	260	<50	<50	<20	4,000	<50	<50	<20	<50	<50	5,110	-	-	-	-	-	-	-	-	-	-	-
	3/13/02	-	-	580	890,000	790,000	-	190	-	-	-	-	-	-	<12	<12	1,300	32	2,400	<12	<12	-	<12	<5.0	7,200	32	<12	<5.0	<12	<12	10,964	-	-	-	-	-	-	-	-	-	-	-
	6/18/02	-	-	56	12,000	8,900	-	290	-	-	-	-	-	-	<14	<19	490	<12	470	<11	<21	-	<14	<12	3,300	<18	<22	<13	<4.5	<49	4,260	-	-	-	-	-	7.00	-	-	-	-	-
	9/30/02	-	-	-	76,000	88,000	-	120	-	-	-	-	-	-	<21	<11	530	<14	400	<13	<12	-	<16	<21	2,800	<12	<9.8	<16	<2.8	<46	3,730	-	-	-	-	-	7.00	-	-	-	-	-
	12/23/02	-	-	-	180,000	170,000	-	48	-	-	-	-	-	-	<17	<9.0	530	<11	770	<11	<9.4	-	<13	<17	3,600	<10	<7.8	<13	<2.2	<37	4,900	-	-	-	-	-	7.00	-	-	-	-	-
	3/31/03	-	-	-	56,000	41,000	-	450	-	-	-	-	-	-	<19	<7.4	320	<7.2	500	<11	<8.6	-	<9.0	<13	2,000	<8.4	<9.6	<17	<3.6	<53	2,820	-	-	-	-	-	7.00	-	-	-	-	-
	6/16/03	-	-	70	47,000	41,000	-	110	-	-	-	-	-	-	<48	<18	740	<18	650	<27	<22	-	<22	<34	4,100	<21	<24	<42	<9.0	<132	5,490	-	-	-	-	-	7.00	-	-	-	-	-
	9/23/03	-	-	69	44,000	37,000	-	<48	-	-	-	-	-	-	<48	<18	690	<18	790	<27	<22	-	<22	<34	4,700	<21	<24	<42	<9.0	<132	6,180	-	-	-	-	-	7.00	-	-	-	-	-
	12/9/03	-		66	46,000	49,000	-	<47	-	-	-	-	-	-	<39	<15	730	<14	810	<22	<17	-	<18	<27	4,100	<17	<19	<33	<7.2	<105	5,640	-	-	-	-	-	7.00	-	-	-	-	-
	5/19/04	-	-	55	3,100	39,000	-	<400	-	-	-	-	-	-	<39	<15	400	<14	460	<22	<17	-	<18	<27	2,700	<17	<19	<33	<7.2	<105	3,560	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	50	28,000	29,000	-	<17	-	-	-	-	-	-	<19	<7.4	640	<7.2	700	<11	<8.6	-	<9.0	<13	3,500	<18	<9.6	<17	<3.6	<53	4,840	-	-	-	-	-	-	-	-	-	-	-
	10/6/04	-	-	65	35,000	-	-	<17	-	-	-	-	-	-	<97	<37	550	<36	700	<54	<43	-	<45	<67	3,000	<42	<48	<83	<18	<263	3,700	-	-	-	-	-	-	-	-	-	-	-
	01//04/05	-	-	55	21,000	22,000	-	58	-	-	-	-	-	-	<24	<9.2	640	<9.0	660	<14	<11	-	<11	<17	3,900	<10	<12	<21	<4.5	<66	5,200	-	-	-	-	-	-	-	-	-	-	-
	3/8/05	-	-	97	71,000	72,000	-	<18	-	-	-	-	-	-	<24	<9.2	1,100	<9	1,000	<14	<11	-	<11	<17	2,800	17	<12	<21	<4.5	<66	4,917	-	-	-	-	-	-	-	-	-	-	-
	6/27/05		-	-	17,000	17,000	-	-	-	-	-	-	-	-	<24	<9.2	530	<9	470	<14	<11	-	<11	<17	3,200	<23	<12	<21	<4.5	<66	4,200	-	-	-	-	-	-	-	-	-	-	-
	9/12/05	-	-	-	18,000	21,000	-	-	-	-	-	-	-	-	<24	<9.2	560	<9.0	500	<14	<11	-	<11	<17	2,800	<10	<12	<21	<4.5	<66	3,866	-	-	-	-	-	-	-	-	-	-	-
	12/20/05	-	-	-	15,000	15,000	-	-	-	-	-	-	-	-	<19	<7.4	490	<7.2	550	<11	<8.6	-	<9	<13	3,100	<8.4	<9.6	<17	<3.6	<53	4,140	-	-	-	-	-	-	-	-	-	-	-
	12/20/05[D]	-	-	-	15,000	14,000	-	-	-	-	-	-	-	-	<19	<7.4	490	<7.2	550	<11	<8.6	-	<9	<13	3,200	<8.4	<9.6	<17	<3.6	<53	4,240	-	-	-	-	-	-	-	-	-	-	-
	3/6/06	-	-	-	17,000	19,000	-	-	-	-	-	-	-	-	<24	<9.2	480	<9.0	490	<14	<11	-	<11	<17	2,600	<10	<12	<21	<4.5	<66	3,570	-	-	-	-	-	-	-	-	-	-	-
	6/15/06	-	-	-	20,000	22,000	-	-	-	-	-	-	-	-	<19	<7.4	480	<7.2	450	<11	<8.6	-	<9.0	<13	2,100	<8.4	<9.6	<17	<3.6	<53	3,030	-	-	-	-	-	-	-	-	-	-	-
	9/11/06	-	-	-	15,000	17,000	-	-	-	-	-	-	-	-	<24	<9.2	500	<9.0	530	<14	<15	-	<11	<17	2,100	<10	<12	<21	<4.5	<66	3,130	-	-	-	-	-	-	-	-	-	-	-
	12/11/06	-	-	-	15,000	16,000	-	-	-	-	-	-	-	-	<9.7	<3.7	370	<3.6	330	<5.4	<4.3	-	<4.5	<6.7	1,800	5.8	<4.8	<8.3	<1.8	<26.3	2,466	-	-	-	-	-	-	-	-	-	-	-
	12/11/06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<24	<9.2	450	<9.0	470	<14	<11	-	<11	<17	2,400	<10	<12	<21	<4.5	<66	3,320	-	-	-	-	-	-	-	-	-	-	-
	3/15/07	-	-	-	4,900	6,300	-	-	-	-	-	-	-	-	<9.7	<3.7	220	<3.6	230	<5.4	<4.3	-	<4.5	<6.7	1,300	<4.2	<4.8	<8.3	<1.8	<26.3	1,750	-	-	-	-	-	-	-	-	-	-	-
	3/15/07[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<9.7	<3.7	210	<3.6	220	<5.4	<4.3	-	<4.5	<6.7	1,200	<4.2	<4.8	<8.3	<1.8	<26.3	1,630	-	-	-	-	-	-	-	-	-	-	-
	4/18/07	-	-	-	15,000	16,000	-	55	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/17/07	-	-	-	15,000	15,000	-	580	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/2/07[F]	-	-	-	13,000	13,000	-	250	180	-	-	-	-	-	<24	<9.2	400	-	380	<14	<11	-	<11	<17	2,400	<10	<12	<21	<4.5	<66	3,180	-	-	-	-	-	-	-	-	-	-	-
	7/19/07	-	-	-	14,000	14,000	-	<50	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sept Monthly Sample	10/2/07	-	-	-	9,300	10,000	-	-	-	-	-	-	-	-	<24	<9.2	470	<9.0	430	<14	<11	-	<11	<17	2,800	<10	<12	<21	<4.5	<66	3,700	-	-	-	-	-	-	-	-	-	-	-
	12/20/07	-	-	-	11,000	13,000	-	-	-	-	-	-	-	-	<24	<9.2	360	<9.0	420	<14	<11	-	<11	<17	1,900	<10	<12	<21	<4.5	<66	2,957	-	-	-	-	-	-	-	-	-	-	-
	12/20/07D	-	-	-	-	-	-	-	-	-	-	-	-	-	<24	<9.2	380	<9.0	420	<14	<11	-	<11	<17	2,000	<10	<12	<21	<4.5	<66	3,079	-	-	-	-	-	-	-	-	-	-	-
	3/20/08	-	-	-	8,510	9,900	-	-	-	-	-	-	-	-	<24	<9.2	271	<9.0	250	<14	<11	-	<11	<17	1,550	<10	<12	<21	<4.5	<66	2,071	-	-	-	-	-	-	-	-	-	-	-
	6/12/08	-	-	-	10,300	12,100	-	-	-	-	-	-	-	-	<24	<9.2	388	<9.0	429	<14	<11	-	<11	<17	2,580	<10	<12	<21	<4.5	<66	3,397	-	-	-	-	-	-	-	-	-	-	-
	9/19/08	-	-	-	9,400	10,300	-	-	-	-	-	-	-	-	<24	<32.5	424	<9.0	453	<13.5	<10.8	-	<11.2	<16.8	2,950	<10.5	<12	<20.8	<4.5	<65.8	3,827	-	-	-	-	-	-	-	-	-	-	-
Grab @ Sump Manhole	12/12/08	-	-	97.2	16,000	13,300	-	1,970.0	-	1,020.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<.68	-	-	-	-	321	<0.085	5.2	-
	12/30/08	-	-	-	5,960	6,000	-	-	-	-	-	-	-	-	<19.4	<26	333	<7.2	334	<10.8	<8.6	-	<9	<13.4	2230	<8.4	<9.6	<16.6	<3.6	<52.6	2897	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl Isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen, Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
Sump A	3/12/09	-	-	-	738	80	-	-	-	-	-	-	-	-	<3.9	<5.2	60.5	<1.4	50.1	<2.2	<1.7	-	<1.8	<2.7	367	<1.7	<1.9	<3.3	<0.72	<10.5	477.6	-	-	-	-	-	-	-	-	-	-	-
Influent (Continued)	4/9/09	-	-	-	10,600	4,700	-	8.4	-	<2.3	-	-	-	-	<19.4	<26.0	515	<7.2	385	<10.8	<8.6	-	<9.0	<13.4	1,100	<8.4	<9.6	<16.6	<3.6	<36.0	2,000	-	-	<0.68	-	-	-	-	818	<0.85	16.3	21.9
taken before injection	4/27/09	-	-	54.6	7,120	6,600	-	-	215	<2.3	-	-	-	-	<24.2	<32.5	343	<9.0	380	<13.5	22.3	-	<11.2	<16.8	2,050	<10.5	<12.0	<20.8	<4.5	<45.0	2,795	-	-	<0.17	-	-	-	-	114	0.21	3.0	2.0
	5/21/09	-	-	60.7	4,510	5,300	-	9.8	211	<1.7	-	-	-	-	<19.4	<26	391	<7.2	508	<10.8	<8.6	-	<9.0	<13.4	2,230	<8.4	<9.6	<16.6	<3.6	<36	3,129	-	-	<0.25	-	-	-	-	111	0.18	1.7	1.6
	6/18/09	-	-	67.1	2,680	1,400	-	50.7	221	<1.7	-	-	-	-	<19.4	<26	307	<7.2	254	<10.8	<8.6	-	<9.0	<13.4	1,520	<8.4	<9.6	<16.6	<3.6	<36	2,081	-	-	<0.25	-	-	-	-	52.2	0.91	1.5	2.6
	6/23/09	-	-	-	1,700	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/15/09	-	-	57.8	1,330	1,400	-	<4.0	254	<1.7	-	-	-	-	<19.4	<26	204	<7.2	200	<10.8	<8.6	-	<9.0	<13.4	1,690	<8.4	<9.6	<16.6	<3.6	<36	2,094	-	-	<0.25	-	-	-	-	34.6	1.0	2.1	1.9
	9/23/09	-	-	-	230	<2.5	-	-	-	-	-	-	-	-	<32	<6.4	430	<16	370	<16	<32	-	<16	<16	1,900	<8.0	<6.4	<6.4	<6.4	<16	2,700	-	-	-	-	-	-	-	-	-	-	-
	2/10/10	-	-	-	42	<2.5	-	-	-	-	-	-	-	-	<25	<5.0	320	<12	270	<12	<12	-	<12	<12	1,400	<6.2	<5.0	<5.0	<5.0	<12	1,990	-	-	-	-	-	-	-	-	-	-	-
	9/23/10[BB]	-	-	-	230	4.4	-	-	-	-	-	-	-	-	<10	<2.0	130	<5.0	100	<5.0	<10	-	<5.0	<5.0	660	<2.5	<2.0	<2.0	<2.0	<5.0	890	-	-	-	-	-	-	-	-	-	-	-
	2/17/11[GG]	-	-	-	-	<3.0	-	-	-	-	-	-	-	-	<5.0	<1.0	230	<2.5	58	<2.5	<5.0	-	<2.5	<2.5	330	<1.3	1.2	<1.0	24	<2.5	643	-	-	-	-	-	-	-	-	-	-	-
	3/17/11	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/11[BB,GG,H]	-	-	-	75	9.0	-	-	-	-	-	-	-	-	<4.0	<0.80	100	<2.0	71	<2.0	<4.0	-	<2.0	<2.0	470	<1.0	1.9	<0.80	<0.80	<2.0	643	-	-	-	-	-	-	-	-	-	-	-
	9/22/11[YY,ZZ]	-	-	-	25	39	-	-	-	-	-	-	-	-	<4.0	<0.80	1,200	<2.0	25	<2.0	<4.0	-	<2.0	<2.0	21	<1.0	1.0	<0.80	6.0	<2.0	1,253	-	-	-	-	-	-	-	-	-	-	-
	12/12/11[AK]	-	-	-	36	<3.0	-	-	-	-	-	-	-	-	<16	<3.2	1,400	<8.0	<8.0	<8.0	<16	-	<8.0	12	<8.0	<4.0	<3.2	<3.2	5.5	<8.0	1,418	-	-	-	-	-	-	-	-	-	-	-
	4/4/12[AM]	-	-	-	120	<3.0	-	-	-	-	-	-	-	-	2.5	<0.25	100	<0.28	95	<0.14	<0.63	-	<0.22	<0.15	420	0.86	1.4	<0.23	1.4	<0.30	621	-	-	-	-	-	-	-	-	-	-	-
	6/7/12[AM]	-	-	-	99	<0.0039	-	-	-	-	-	-	-	-	<4.8	<6.5	112	<1.8	90.8	<2.7	<.43	-	<0.22	<0.15	<0.90	0.86	1.4	<0.23	<0.18	<0.30	205	-	-	-	-	-	-	-	-	-	-	-
	9/14/12[AM]	-	-	-	14	<0.0039	-	-	-	-	-	-	-	-	<4.8	<6.5	187	<1.8	96	<2.7	<2.2	-	<2.2	<3.4	392	<2.1	<2.4	<0.23	7.0	<0.30	682	-	-	-	-	-	-	-	-	-	-	-
	3/20/13[AM]	-	-	-	36	0.024	-	-	-	-	-	-	-	-	<3.9	<5.2	72	<1.4	72.8	<2.2	<1.7	-	<0.80	<2.7	338	<1.7	<1.9	<3.3	<0.72	<1.42	482	-	-	-	-	-	-	-	-	-	-	-
	9/26/13[AM]	-	-	-	42	<3.4	-	-	-	-	-	-	-	-	4.6	<3.4	126	<2.2	106	<2.5	<1.8	-	<2.4	<2.2	466	<1.7	2.0	<2.5	1.8	<6.6	706	-	-	-	-	-	-	-	-	-	-	-
	3/13/14	-	-	-	7.7	<3.4	-	-	-	-	-	-	-	-	<1.8	<2.8	79.1	<1.9	64.3	<2.0	<1.4	-	<1.9	<1.8	325	<1.6	<1.5	<2.0	<0.74	<5.3	468	-	-	-	-	-	-	-	-	-	-	-
	6/12/14	-	-	-	160	140	-	-	-	-	-	-	-	-	3.8 J	<12.5	98.0	<0.84	131	<2.5	<1.2	-	<2.5	<2.5	573	<0.78	<1.7	<2.5	<0.88	<7.5	802	-	-	-	-	-	-	-	-	-	-	-
	9/17/14	-	-	-	237	130	-	-	-	-	-	-	-	-	2.8 J	<12.5	223	<0.84	154	<2.5	1.3 J	-	<2.5	<2.5	1,270	<0.78	2.4 J	<2.5	<0.88	<7.5	1,647	-	-	-	-	-	-	-	-	-	-	-
Sump B	9/20/01	-	-	<5	1.7	<4.2	-	<42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Influent	10/3/01	-	-	33	1,200	120	-	1,500	-	-	-	-	-	-	<0.25	<0.25	5.1	<0.25	0.9	<0.25	1.4	<0.25	<0.25	<0.1	11	<0.25	<0.25	<0.1	<0.25	<0.25	18	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/7/02	-	-	150	<20	<4.2	-	420	-	-	-	-	-	-	<0.25	<0.25	0.32	<0.25	<0.25	<0.25	<0.25	-	<0.25	<0.1	1	<0.25	<0.25	<0.1	<0.25	<0.25	1	-	-	-	-	-	-	-	-	-	-	-
	6/18/02	-	-	38	4,300	3,500	-	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/30/02	-	-	-	7,900	9,300	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/23/02	-	-	-	8,900	9,800	-	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	3/31/03	-	-	-	43	54	-	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	6/16/03	-	-	57	7,400	6,400	-	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	9/23/03	-	-	36	7,600	7,500	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	12/9/03	-	-	39	6,300	7,000	-	1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.00	-	-	-	-	-
	5/19/04	-	-	44	4,300	4,200	-	890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	38	11,000	11,000	-	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/6/04	-	-	46	2,400	6,300	-	<17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/4/05	-	-	58	3,700	3,700	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/8/05	-	-	97	3,700	3,800	-	340	-	-	-	-	-	-	<0.97	<0.34	1.6	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	2.9	<0.42	<0.48	<0.83	<0.18	<2.63	4.5	-	-	-	-	-	-	-	-	-	-	-
	6/21/05	-	-	-	1,600	1,600	-	-	-	-	-	-	-	-	<0.97	<0.37	1.2	<0.36	<0.57	<0.54	<0.43		<0.45	<0.67	2.1	<0.42	<0.48	<0.83	<0.18	<2.63	3.3	-	-	-	-	-	-	-	-	-	-	-
	9/11/05	-	-	-	1,000	1,100	-	-	-	-	-	-	-	-	<0.97	<0.37	1.4	<0.36	<0.57	<0.54	<0.43	-	-	<0.67	2.4	<0.42	<0.48	<0.83	<0.18	<2.63	3.8	-	-	-	-	-	-	-	-	-	-	-
	12/20/05	-	-	-	1,100	1,100	-	-	-	-	-	-	-	-	<0.97	<0.37	2	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	3.7	<0.42	<0.48	<0.83	<0.18	<2.63	5.7	-	-	-	-	-	-	-	-	-	-	-
	3/6/06	-	-	-	2,400	3,400	-	-	-	-	-	-	-	-	<0.97	<0.37	1.2	<0.36	<0.57	<0.54	<0.43	-	<0.48	<0.67	2.1	<0.42	<0.48	<0.83	<0.18	<2.63	3.3	-	-	-	-	-	-	-	-	-	-	-
	03/06/06[D]	-	-	-	2,400	3,700	-	-	-	-	-	-	-	-	<0.97	<0.37	1.2	<0.36	<0.57	<0.54	<0.43	-	<0.48	<0.67	2	<0.42	<0.48	<0.83	<0.18	<2.63	3.2	-	-	-	-	-	-	-	-	-	-	-
	6/15/06	-	-	-	1,500	1,600	-	-	-	-	-	-	-	-	<0.97	<0.37	1.5	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	2.3	<0.42	<0.48	<0.83	<0.18	<2.63	3.8	-	-	-	-	-	-	-	-	-	-	-
	9/11/06	-	-	-	1,800	1,800	-	-	-	-	-	-	-	-	<0.97	<037	2.2	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	3.5	<0.42	<0.48	<0.83	<0.18	<2.63	5.7	-	-	-	-	-	-	-	-	-	-	-
	12/11/06	-	-	-	2,300	2,300	-	-	-	-	-	-	-	-	<0.97	<0.37	1.3	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	1.9	<0.42	<0.48	<0.83	<0.18	<2.63	3.2	-	-	-	-	-	-	-	-	-	-	-
	3/15/07	-	-	-	350	430	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
	7/2/07	-	-	-	320	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September Samples	10/2/07	-	-	-	620	460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/20/07	-	-	-	1,700	920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/20/08	-	-	-	927	1,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/12/08	-	-	-	1,860	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	--
	9/19/08	-	-	-	338	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/30/08	-	-	-	774	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/12/09	-	-	-	50	<8.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/09	-	-	-	2,600	2,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/09	-	-	-	1,000	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/14/09[S]	-	-	-	2.2	870	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/10/10	-	-	-	910	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/10	-	-	-	1,500	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/17/11	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/17/11	-	-	-	1,390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/2011[H]	-	-	-	410	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/22/11[ZZ]	-	-	-	6,800	2,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/12/11	-	-	-	1,700	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/21/12[AH]	-	-	-	330	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/7/12[AH]	-	-	-	878	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/14/12[AH]	-	-	-	51	<0.0039	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/20/13[AH]	-	-	-	164	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/18/13[AH]	-	-	-	511	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/26/13[AH]	-	-	-	876	0.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/12/14	-	-	-	905	<3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/17/14	-	-	-	382	0.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Between Carbon	6/18/02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.57	<0.75	<0.48	<0.47	<0.85	<0.43	<0.85	-	<0.57	<0.47	<0.69	<0.72	<0.89	<0.52	<0.18	<1.94	--	-	-	-	-	-	-	-	-	-	-	-
Drums- Unfiltered	9/30/02	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	<0.45	62	<0.55	<0.56	<0.53	3.8	-	<0.63	<0.84	130	<0.50	<0.39	<0.64	0.29	<1.83	200	-	-	-	-	-	-	-	-	-	-	-
	12/23/02	-	-	-	-	-	-	-	-	-	-	-	-	-	<4.2	<2.2	270	<2.8	<2.8	<2.6	6.7	-	<3.1	<4.2	710	<2.5	<1.9	<3.2	<0.55	<9.1	987	-	-	-	-	-	-	-	-	-	-	-
(a.k.a. Between GAC's)	3/31/03	-	-	-	-	-	-	-	-	-	-	-	-	-	<9.7	<3.7	530	<3.6	<5.7	<5.4	11	-	<4.5	<6.7	1,400	<4.2	<4.8	<8.3	<1.8	<26.3	1,941	-	-	-	-	-	-	-	-	-	-	-
	6/16/03	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	<0.74	98	<0.72	4.6	<1.1	6.5	-	<0.90	<1.3	200	<0.84	<0.96	<1.7	0.52	<5.3	315	-	-	-	-	-	-	-	-	-	-	-
	9/23/03	-	-	-	-	-	-	-	-	-	-	-	-	-	<9.7	<3.7	530	<3.6	15	<5.4	5.9	-	<4.5	<6.7	1,400	<4.2	<4.8	<8.3	<1.8	<26.3	1,951	-	-	-	-	-	-	-	-	-	-	-
	12/9/03	-	-	-	-	-	-	-	-	-	-	-	-	-	<24	<9.2	900	<9.0	120	<14	<11	-	<11	<17	3,700	<10	<12	<21	<4.5	<66	4,720	-	-	-	-	-	-	-	-	-	-	-
	5/19/04	-	-	-	-	-	-	-	-	-	-	-	-	-	<24	<9.2	740	<9.0	21	<14	<11	-	<11	<17	2,100	<10	<12	<21	<4.5	<66	2,861	-	-	-	-	-	-	-	-	-	-	-
	6/29/04	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	750	<7.2	220	<11	<8.6	-	<9.0	<13	3,400	<18	<9.6	<17	<3.6	<53	4,370	-	-	-	-	-	-	-	-	-	-	-
	10/6/04	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	<0.37	15	<0.36	<0.57	<0.54	2.6	-	<0.45	<0.67	67	<0.42	<0.48	<0.83	<0.18	<2.63	86.8	-	-	-	-	-	-	-	-	-	-	-
	1/4/05	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	<0.37	390	2.2	20	<0.54	6.2	-	<0.45	<0.67	1,600	<0.42	<0.48	<0.83	1.1	<2.63	-	-	-	-	-	-	-	-	-	-	-	-
	3/8/05	-	-	-	-	-	-	-	-	-	-	-	-	-	<9.7	<3.7	<7.5	<3.6	<5.7	<5.4	<4.3	-	<4.5	<6.7	<9	<4.2	<4.8	<8.3	<1.8	<26.3	-	-	-	-	-	-	-	-	-	-	-	-
	6/21/05	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	<1.8	230	<1.8	<2.8	<2.7	4.5	-	<2.2	<3.4	470	<2.1	<2.4	<4.1	<0.9	<13.1	700	-	-	-	-	-	-	-	-	-	-	-
	9/12/05	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	690	<17	<11	<11	<8.6	-	<9.0	<13	1,700	<8.4	<9.6	<17	<3.6	<53	2,390	-	-	-	-	-	-	-	-	-	-	-
	12/20/05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	1.3	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	9.9	<0.42	<0.48	<0.83	<0.18	<2.63	11	-	-	-	-	-	-	-	-	-	-	-
	3/6/06	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	<0.37	12	<0.36	<0.57	<0.54	1	-	<0.45	<0.67	72	<0.42	<0.48	<0.83	<0.18	<2.63	86	-	-	-	-	-	-	-	-	-	-	-
	6/15/06	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<3.7	460	<3.6	24	<5.4	<4.3	-	<4.5	<6.7	1,300	<4.2	<4.8	<8.3	<1.8	<26.3	1,784	-	-	-	-	-	-	-	-	-	-	-
	6/15/06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<3.7	460	<3.6	22	<5.4	<4.3	-	<4.5	<6.7	1,300	<4.2	<4.8	<8.3	<1.8	<26.3	1,782	-	-	-	-	-	-	-	-	-	-	-
	9/11/06	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	450	<7.2	50	<11	<8.6	-	<9.0	<13	1,000	<8.4	<9.6	<17	<3.6	<53	1,500	-	-	-	-	-	-	-	-	-	-	-
	9/11/06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	470	<7.2	52	<11	<8.6	-	<9.0	<13	1,000	<8.4	<9.6	<17	<3.6	<53	1,522	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/l)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
Sample Location	Sample Date																																									
Between Carbon	12/11/06	-	-	-	-	-	-	-	-	-	-	-	-	-	<9.7	<3.7	470	4	110	<5.4	<4.3	-	<4.5	<6.7	1,400	<4.2	<4.8	<8.3	<1.8	<26.3	1,984	-	-	-	-	-	-	-	-	-	-	-
Drums- Unfiltered	3/15/07	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.63	0	-	-	-	-	-	-	-	-	-	-	-
(a.k.a. Between GAC's)	7/2/07	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<3.7	230	<4.6	<0.57	<5.4	<4.3	-	<4.5	<6.7	660	<4.2	<4.8	<8.3	<1.8	<8.3	890	-	-	-	-	-	-	-	-	-	-	-
	7/2/07[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<3.7	430	<4.6	<0.57	<5.4	<4.3	-	<4.5	<6.7	1,300	<4.2	<4.8	<8.3	<1.8	<8.3	1,730	-	-	-	-	-	-	-	-	-	-	-
	10/03/07[G]	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	540	<7.2	14	<11	<8.6	-	<9.0	<13	1,500	<8.4	<9.6	<17	<3.6	<53	2,054	-	-	-	-	-	-	-	-	-	-	-
	10/03/07[GD]	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	530	<7.2	15	<11	<8.6	-	<9.0	<13	1,500	<8.4	<9.6	<17	<3.6	<53	2,045	-	-	-	-	-	-	-	-	-	-	-
	12/20/07	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	400	<7.2	43	<11	<8.6	-	<9.0	<13	1,400	<8.4	<9.6	<17	<3.6	<53	1,843	-	-	-	-	-	-	-	-	-	-	-
	3/20/08	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	376	<7.2	26.4	<11	<8.6	-	<9.0	<13	1,400	<8.4	<9.6	<17	<3.6	<53	1,802	-	-	-	-	-	-	-	-	-	-	-
	6/12/08	-	-	-	-	-	-	-	-	-	-	-	-	-	<19	<7.4	376	<7.2	232	<11	<8.6	-	<9.0	<13	1,960	<8.4	<9.6	<17	<3.6	<53	2,568	-	-	-	-	-	-	-	-	-	-	-
	9/19/08	-	-	-	-	-	-	-	-	-	-	-	-	-	<.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	2.80	<0.42	<0.48	<0.83	<0.18	<2.63	2.80	-	-	-	-	-	-	-	-	-	-	-
	12/30/08	-	-	-	-	-	-	-	-	-	-	-	-	-	<.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	2.80	<0.42	<0.48	<0.83	<0.18	<2.63	3	-	-	-	-	-	-	-	-	-	-	-
	3/12/09	-	-	-	-	-	-	-	-	-	-	-	-	-	<.97	<1.3	1.4	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	4.80	<0.42	<0.48	<0.83	<0.18	<2.63	6	-	-	-	-	-	-	-	-	-	-	-
	6/23/09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/09[O]	-	-	-	-	-	-	-	-	-	-	-	-	-	<4.0	<0.80	48	<2.0	2.1	<2.0	<4.0	-	<2.0	<2.0	160	<1.0	<0.80	<0.80	<0.80	<2.0	210	-	-	-	-	-	-	-	-	-	-	-
	2/10/10	-	-	-	-	-	-	-	-	-	-	-	-	-	<5.0	<1.0	83	<2.5	<2.5	<2.5	<5.0	-	<2.5	<2.5	240	<1.2	<1.0	<1.0	<1.0	<2.5	323	-	-	-	-	-	-	-	-	-	-	-
	9/23/10[CC]	-	-	-	20	<3	-	-	-	-	-	-	-	-	<1.0	<0.20	1.6	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	2.8	<0.25	<0.20	<0.20	<0.20	<0.50	4.4	-	-	-	-	-	-	-	-	-	-	-
	2/17/11	-	-	-	-	<3.0	-	-	-	-	-	-	-	-	<1.0	<0.20	8.6	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	8.6	-	-	-	-	-	-	-	-	-	-	-
	6/23/11 [EE]	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	0.52	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	1.2	<0.25	<0.20	<0.20	<0.20	<0.50	1.72	-	-	-	-	-	-	-	-	-	-	-
	9/22/11[XX]	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	<0.20	3.8	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	5.2	-	-	-	-	-	-	-	-	-	-	-
	12/12/11[AJ]	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	<0.20	3.0	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	0.21	<0.20	1.1	5.91	-	-	-	-	-	-	-	-	-	-	-
	4/4/12[AN]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.33	<0.25	<0.24	<0.28	<0.29	<0.14	<0.63	-	<0.22	<0.15	<0.26	<0.30	<0.18	<0.23	<0.13	<0.30	0	-	-	-	-	-	-	-	-	-	-	-
	3/20/13[AN]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<1.3	2.0	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.30	<0.18	<0.23	<0.13	<0.30	2	-	-	-	-	-	-	-	-	-	-	-
	9/26/13[AN]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.44	<0.69	27.7	<0.48	<0.43	<0.50	<0.36	-	<0.47	<0.44	5.2	<0.39	<0.36	<0.50	1.1	<1.32	34	-	-	-	-	-	-	-	-	-	-	-
	3/13/14	-	-	-	-	-	-	-	-	-	-	-	-	-	0.53 [J]	<0.69	75.3	<0.48	0.67 [AE]	<0.50	<0.36	-	<0.47	<0.44	48.0	<0.39	<0.36	<0.50	0.64 [J]	<1.32	48	-	-	-	-	-	-	-	-	-	-	-
	6/12/14	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	<2.5	107	<0.17	3.0	<0.50	<0.23	-	<0.50	<0.50	142	<0.16	<0.33	<0.50	1.2	<1.50	146.2	-	-	-	-	-	-	-	-	-	-	-
	9/17/14	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3 J	<6.2	134	<0.42	15.6	<1.2	0.94 J	-	<1.2	<1.2	329	<0.39	<0.83	<1.2	0.90 J	<3.7	344.6	-	-	-	-	-	-	-	-	-	-	-
Post Carbon Drums	8/21/02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.6	<0.1	<0.15	<0.12	<0.11	<0.08	<0.24	-	<0.15	<0.08	<0.14	<0.19	<0.13	<0.08	<0.16	<0.34	-	-	-	-	-	-	-	-	-	-	-	-
Unfiltered	8/28/02	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.6	<0.1	<0.15	<0.12	<0.11	<0.08	<0.44	-	<0.15	<0.08	<0.14	<0.19	<0.13	<0.08	<0.16	<0.34	-	-	-	-	-	-	-	-	-	-	-	-
	5/19/04	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	<0.37	1	<0.36	<0.57	<0.54	3.4	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.35	<0.18	<2.63	7	-	-	-	-	-	-	-	-	-	-	-
Effluent (UF)	8/30/01	-	-	-	59	-	-	-	-	-	-	-	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.43	<0.25	<0.25	<0.1	<0.25	<0.25	<0.25	<0.1	<0.25	<25	0	-	-	-	-	-	-	-	-	-	-	-
Unfiltered	9/19/01	-	-	68	62	<4.2	-	<42	-	-	-	-	-	-	<0.25	<0.25	1.8	<0.25	<0.25	<0.25	0.53	<0.25	<0.25	<0.1	5.2	<0.25	<0.25	<0.1	<0.25	<25	8	-	-	-	-	-	-	-	-	-	-	-
	10/3/01	-	-	45	140	<4.2	-	170	-	-	-	-	-	-	<0.25	<0.25	3.7	<0.25	0.25	<0.25	1.1	<0.25	<0.25	<0.1	20	<0.25	<0.25	<0.1	<0.25	<25	25	-	-	-	-	-	-	-	-	-	-	-
	10/30/01	-	-	64	95	<4.2	-	69	-	-	-	-	-	-	2.4	<0.25	44	<0.25	6.6	<0.25	2.6	<0.25	<0.25	<0.1	190	<0.25	<0.25	<0.1	<0.25	<25	246	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	80	85	<4.2	-	42	-	-	-	-	-	-	<2.5	<2.5	53	<2.5	7.1	<2.5	3	<2.5	<2.5	<1.0	290	<2.5	<2.5	<1.0	<2.5	<2.5	353	-	-	-	-	-	-	-	-	-	-	-
	11/14/01	-	-	80	85	<4.2	-	42	-	-	-	-	-	-	<2.5	<2.5	51	<2.5	6.9	<2.5	2.9	<2.5	<2.5	<1.0	270	<2.5	<2.5	<1.0	<2.5	<2.5	331	-	-	-	-	-	-	-	-	-	-	-
	3/7/02	-	-	-	600	380	-	-	-	-	-	-	-	-	2.5	<1.0	190	1.8	54	<1.0	<1.0	-	<1.0	<0.4	1,400	<1.0	<1.0	<0.4	<1.0	<1.0	1,648	-	-	-	-	-	-	-	-	-	-	-
	6/18/02	-	-	48	4,600	3,700	6.6	240	-	-	-	17	-	310	<0.57	<0.75	<0.48	<0.47	<0.85	<0.43	<0.85	-	<0.57	<0.47	<0.69	<0.72	<0.89	<0.52	<0.18	<1.94	0	-	-	-	-	-	7.00	-	-	-	-	-
	9/30/02	-	-	-	790	640	9.4	-	-	-	1.5	30	-	320	<0.84	<0.45	<0.87	<0.55	<0.56	<0.53	0.74	-	<0.63	<0.84	1.7	<0.50	<0.39	<0.64	<0.11	<1.83	2	11	<1.4	<0.12	4.1	<1.0	7.00	-	-	-	-	-
	12/23/02	-	-	-	1,000	2	-	-	-	-	-	-	-	-	1.2	<0.45	<0.87	<0.55	<0.56	<0.53	1.1	-	<0.63	<0.84	1.8		<0.39	<0.64	<0.11	<1.83	4	-	-	-	-	-	6.00	-	-	-	-	-
	12/23/02[A]	-	-	-	860	-	33	-	-	-	<34	43	-	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	12	0.13	1.1	30.0	6.40	-	-	-	-	-
	3/31/03	-	-	-	2,600	270	34	-	-	-	0.94	12	-	520	3.5	<0.37	0.99	<0.36	<0.57	<0.54	4.0	-	<0.45	<0.67	1.2	<0.42	<0.48	<0.83	<0.18	<2.63	10	<2.0	5.5	<0.11	<1.3	<6.7	4.00	-	-	-	-	-
	6/16/03	-	1.0	-	860	91	18	-	-	-	<1.3	85	-	320	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	1.4	<0.42	<0.48	<0.83	<0.18	<2.63	1	<2.0	110	<0.12	<1.1	<4.0	7.00	-	-	-	-	-
	9/23/03	-	<0.53	-	3,700	88	0.96	-	-	-	<1.3	12	-	990	2.5	<0.37	1.7	<0.36	<0.57	<0.54	2.6	-	<0.45	<0.67	2.8	<0.42	<0.48	<0.83	<0.18	<2.63	10	<2.0	12	<0.12	<0.99	<2.0	6.50	-	-	-	-	-
	12/09/03[A]	-	5.5	-	3,400	-	<18	-	-	-	<13	<4	5.8	570	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.1	<15	1.5	<1.0	10.4	6.30	-	-	-	-	-
	12/9/03	-	-	-	-	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/21/04	<0.03	<0.17	-	12	-	3.4	-	-	-	0.14	3.8	0.050	16	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	0.56	-	<0.45	<0.67	<0.90	<0.42	<0.48	-	<0.18	-	<0.37	<20	3.9	<0.054	0.8	<2.0	5.40	-	-	-	-	-
	6/29/04	<0.028	<0.17	-	850	570	6.0	-	-	-	0.40	11	<0.049	140	<4.8	<1.8	410	<1.8	<2.8	<2.7	6.9	-	<2.2	<3.4	610	<1.0	<2.4	-	1.4	-	1,028.3	<2.0	<1.6	<0.23	<0.57	<2.0	-	-	-	-	-	-
	10/6/04	<0.028	<0.30	-	190	540	5.4	<18	-	-	<1.1	10	<0.76	1,200	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	2.2	<0.42	<0.48	-	<0.18	-	2.2	<2.0	<3.7	<0.23	0.70	<2.0	5.30	-	-	-	-	-
	11/16/04[A]	<0.092	<5.4	-	220	-	<18	-	-	-	<13	10	<1.3	500	<1.0	<0.20	0.78	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.20	1.3	<0.25	<0.20	<0.20	<0.20	<0.50	2.08	1.3	<7.7	0.04	<1.0	20	6.40	-	-	-	-	-
	3/8/05	<0.028	<0.3	-	230	<2.7	25	-			<1.1	20	<0.76	280	<0.97	<0.37	0.99	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	1.4	<0.42	<0.48	<0.83	<0.18	<2.6	2.39	<2	<3.7	<0.23	-	1	-	-	-	-	-	-
	6/30/05	<0.026	<0.3	-	850	-	26	-			<1.1	32	<0.76	820	1	<0.37	<0.57	<0.36	<0.57	<0.54	1.8	-	<0.45	<0.67	<0.9	<0.42	<0.48	<0.83	<0.18	<2.6	2.8	<2	<3.7	<0.15	<5.4	3	-	-	-	-	-	-
	9/12/05	<0.026	<0.28	-	530	-	20	-		-	<1.0	12	<1.1	390	2.3	<0.37	11	<0.36	<0.57	<0.54	3.1	-	<0.45	<0.67	3.4	<0.42	<0.48	<0.83	<0.18	<2.6	16.8	<2.0	<0.0037	<0.15	<5.2	1	-	-	-	-	-	-
	3/3/06	<0.072	<0.74	-	960	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.48	<0.67	1.2	<0.42	<0.48	<0.83	<0.18	<2.6	1.2	<2.0	<0.0037	<0.15	<5.2	0.7	-	-	-	-	-	-
	3/3/06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	1.1	<0.42	<0.48	<0.83	<0.18	<2.6	1.1	-	-	-	-	-	-	-	-	-	-	-
	6/2/06	<0.072	<0.74	-	330	-	-	-	-	-	<3.4	5.2	<2.6	490	1.9	<0.37	11	<0.36	<0.57	<0.54	1.8	-	<0.45	0.79	27	<0.42	<0.48	<0.83	<0.18	<2.6	40.59	-	<0.0094	0.24	<5.2	51	-	-	-	-	-	-
	06/02/06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	<0.36	<0.57	<0.54	1.7	-	<0.45	0.76	27	<0.42	<0.48	<0.83	<0.18	<2.6	41.46						-	-	-	-	-	-
	9/11/06	<0.072	<0.74	-	1,300	<6.8	55	<50	-	-	<3.4	8.6	<2.6	530	2.2	<0.37	33	<0.36	<0.57	<0.54	2.4	-	<0.45	<0.67	23	<0.42	<0.48	<0.83	<0.18	<2.78	60.6	<2.0	<0.0094	<0.13	<5.1	0.3	-	-	-	-	-	-
	9/11/06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	<0.37	32	<0.36	<0.57	<0.054	2.3	-	<0.45	<0.67	23	<0.42	<0.48	<0.83	<0.18	<2.6	59.4	-	-	-	-	-	-	-	-	-	-	-
	1/24/07	-	-	-	1,100	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/21/07	-	-	-	1,100	<6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March 2007 HOTV	3/15/07	<0.072	<0.74	-	1,100	<6.8	31	-	-	-	<3.4	7.8	<2.6	710	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.6	0	<2	<0.0094	<0.13	<5.4	2.8	-	-	-	-	-	-
	3/15/07[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.6	0	-	-	-	-	-	-	-	-	-	-	-
	4/18/07	-	-	-	380	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June 2007 HOTV	6/8/07	<0.10	<0.55	-	770	-	15	<50	-	-	<1.6	5.2	<1.0	500	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.6	0	<2.0	<0.0060	<0.17	<5.1	1.9	-	-	-	-	-	-
	6/08/07[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<0.37	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	<0.83	<0.18	<2.6	0	-	-	-	-	-	-	-	-	-	-	-
	7/19/07	-	-	-	1,100	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/14/07	-	-	-	2,200	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September 2007 HOTV	10/02/07[G]	<0.10	<0.097	-	260	<3.4	21	-	-	-	0.06	12	<0.11	620	1.7	<0.37	4.4	<0.36	<0.57	<0.54	1.3	-	<0.45	2.5	6.2	<0.42	<0.48	<0.83	<0.18	<2.6	16.1	<2.0	<0.0060	<0.17	<5.3	1.1	-	-	-	-	-	-
	10/24/07	-	-	-	530	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/07	-	-	-	760	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/20/07	-	-	-	1,200	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/31/08	-	-	-	160	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/28/08	-	-	-	1,050	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March 2008 HOTV	3/20/08	<0.10	0.17	-	206	<3.4	6.2	-	-	-	<1.4	11	<0.34	237	<0.97	<0.37	0.76	<0.36	<0.57	<0.54	<0.43	<1.2	<0.45	1.1	6.5	<0.42	<0.48	<0.83	<0.18	<2.6	8.36	<2.0	<0.0060	<0.17	1.9	5.8	-	-	-	-	-	-
	3/20/08	-	-	-	203	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/30/08	-	-	-	104	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/30/08	-	-	-	252	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June 2008 HOTV	6/12/08	<0.10	0.27	-	174	-	15.1	-	-	-	<1.4	4.9	0.41	222	<4.8	<1.8	208	<1.8	<2.8	<2.7	<2.2	<6	<2.2	<3.4	545	<2.1	<2.4	<4.2	<0.9	<13.0	975	<2.0	0.008	<0.17		<.31	-	-	-	-	-	-
	7/25/08	-	-	-	540	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/7/08	-	-	-	1,360	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sept 2008 HOTV	9/19/08	<0.10	0.32	-	1,500	-	12.4	-	-	-	1.7	7.6	0.47	440	<9.7	<13	201	<3.6	<5.7	<5.4	<4.3	<12	<4.5	<6.7	728	<4.2	<4.8	<8.3	<1.8	<26	929	<2.0	0.0084	<0.17	3.1	<0.36	-	-	-	-	-	-
	10/31/08	-	-	-	2,470	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/26/08	-	-	-	428	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/11/08	-	-	-	320	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/30/09	-	-	-	484	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/26/09	-	-	-	238	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/12/09	-	-	-	723	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March 2009 HOTV	3/12/09	<0.10	0.17	-	651	-	32	-	-	-	2.7	2.9	<0.34	223	<.97	<1.3	4.8	<0.36	<.57	<.54	<.43	<1.2	<.45	<.67	14.3	<.42	<.48	<.83	<.18	<2.6	19.1	<2.0	<0.0060	<0.17	1.8	1.4	-	-	-	-	-	-
	6/23/09	<0.065	<1.1	-	340	<2.5	<18	-	-	-	<13	4.3	1.4	40	<1.0	<0.20	0.90	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	1.6	<0.25	<0.20	<0.20	<0.20	<0.50	2.50	<2.0	<0.017	<0.10	1.4	6.0	-	-	-	-	-	-
	9/23/09[Q]	<0.065	1.8	-	510	16	34	-	-	-	36	9.3	<1.3	100	<1.0	<0.20	0.59	<0.50	>0.50	<0.50	<1.0	-	<0.50	<0.50	0.67	<0.25	<0.20	<0.20	<0.20	<0.50	1.26	<2.0	<0.017	-	<0.72	11	-	-	-	-	-	-
	3/29/10	-	-	-	500	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

Sample Location	Sample Date	Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/l)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			0.5	125	10	10	130	150	125	NE	1.5	20	10	NE	80	0.6	85	0.5	0.7	140	0.5	50	0.5	200	40	0.5	0.5	96	0.02	1,000	NE	NE	40	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			5	250	100	100	1,300	300	250	NE	15	100	50	NE	400	6	850	5	7	700	5	500	5	1,000	200	5	5	480	0.2	10,000	NE	NE	200	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			300	NE	4,000	NE	4,000	NE			690	4,100	NE	4,200	Total Toxic Organics (TTO) < 2,130																	NE	1,900	NE	100	NE	5-9					
System Effluent	12/14/09[V]	-	-	-	220	<2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/10/10	<0.065	<5.0	-	410	<2.5	84	-	-	-	<16	9.1	<3.7	550	<1.0	<0.20	0.59	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	0.59	<2.0	0.063	-	<0.72	7.0	-	-	-	-	-	-
	9/23/10[DD]	<0.065	<5.0	-	410	<3.0	39	-	-	-	<16	15	<3.7	260	<1.0	<0.20	1.4	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	1.7	<0.25	<0.20	<0.20	<0.20	<0.50	3.1	-	<0.0081	<0.10	1.2	170	-	-	-	-	-	-
	10/7/10	-	-	-	500	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/3/10	-	-	-	1,500	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/6/11	-	-	-	3,500	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/17/2011[EE,KK]	<0.051	<0.25	-	150	15	69	-	-	-	2	4.5	<0.86	97	<1.0	<0.20	0.72	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	0.66	<0.25	<0.20	<0.20	<0.20	<0.50	1.38	<5.4	4.2	0.019	<1.9	110	-	-	-	-	-	-
	3/17/11[II]	-	-	-	196	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/11	-	-	-	120	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/23/11	-	-	-	560	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/11[MM]	-	-	-	180	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/14/11[II]	-	-	-	390	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/18/11[LL]	0.070	1.1	-	490	280	63	-	-	-	5.8	9.5	<0.71	210	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	0	<2.0	<0.0011	<0.019	<1.9	20	-	-	-	-	-	-
	9/22/11[WW]	<0.070	1.2	-	650	7.1	36	-	-	-	4.2	15	<0.71	160	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	0	<2.0	0.0017	0.030	<2.0	5.0	-	-	-	-	-	-
Grab Sample	10/6/11[V]	-	-	-	690	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grab Sample	11/22/11	-	-	-	410	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/12/11	-	-	-	82	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/18/12	-	-	-	850	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/29/12	-	-	-	320	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/21/12[AG]	<0.070	6.0	-	4,200	10	1,000	-	-	-	13	1,900	<1.1	3,500	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	0	<4.0	0.0022	0.18	<1.8	530	-	-	-	-	-	-
	4/4/12	-	-	-	190	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/7/12	-	-	-	329	<3	48	-	-	-	2.6	3	<2.3	347	-	<1.3	<0.75	<0.36	<.75	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.48	<0.48	-	<0.18	-	-	-	<0.0043	<0.088	<0.94	8	-	-	-	-	-	-
	9/14/12	-	-	-	2,490	4.9	943	-	-	-	58.7	328	<2.3	2,160	<0.97	10.6	<0.75	<0.36	<0.57	<0.54	18.9	-	<0.45	<0.67	<0.90	<0.42	<0.48	-	<0.18	-	-	3.9	0.011	-	<0.088	167	-	-	-	-	-	-
	2/7/13	-	-	-	2,190	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/20/13	-	0.8	-	222	<3.4	60.6	-	-	-	2.3	2.5	<1.4	282	<0.97	<1.3	<0.75	<0.36	<0.57	<0.54	<0.43	-	<0.45	<0.67	<0.90	<0.42	<0.48	-	<0.18	-	-	2.3	0.0046	<0.088	<1.0	4	-	-	-	-	-	-
	4/11/13	-	-	-	197	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/1/13	-	-	-	379	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/18/13	-	0.64	-	464	<3.4	14.4	-	-	-	<2.7	9.0	<1.7	123	<0.44	<0.69	1.2	<0.48	<0.43	<0.50	0.37	-	<0.47	<0.44	1.1	<0.39	<0.43	-	<0.18	-	-	<2.0	0.0039	<0.052	<1.0	2.0	-	-	-	-	-	-
	7/18/13	-	-	-	1,910	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/8/13	-	-	-	1,880	<0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/26/13	-	<0.48	-	296	<0.0034	-	-	-	-	<2.7	5.8	<1.7	342	<0.44	<0.69	0.3	<0.48	<0.43	<0.50	<0.36	-	<0.47	<0.44	<0.44	<0.39	<0.36	-	-	-	-	<2.0	0.0087	<0.052	<1.0	0.29	-	-	-	-	-	-
	11/14/13				148	0.0036																																				
	12/10/13				128																																					
	01/15/14				789																																					
	02/13/14				1,770																																					
	03/13/14	-	-	-	341	<3												<0.48	<0.43	<0.50	<0.36	-	<0.47	<0.44	4.4	<0.39	<0.36	-	<0.18	-	4.4	<2.0	0.0051[J]	<0.052	<1.0	2						
	04/22/14	-	-	-	101	<3.9												-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	05/13/14	-	-	-	3,700	12												-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	06/12/14			-	315	<3.9									<0.37	<2.5	0.38[AO]	<0.17	<0.41	<0.50	<0.23	-	<0.50	<0.50	0.53[AO]	<0.16	<0.33	-	<0.18	-	0.0	<2.0	<0.010	<0.052	<0.85	17.0						
System Effluent (continued)	08/13/14			-	27.1	<3.9																																				
	09/17/14			-	53.2	4.3	4.6 J	-	-	-	<1.6	6.9 J	<3.2	249	<0.37	<2.5	0.91 J	<0.17	<0.41	<0.50	<0.23	-	<0.50	<0.50	1.5	<0.25	<0.33	-	<0.18	-	1.5	<2.0	<0.010	<0.052	0.86 J	<0.95						
	10/16/14			-	87.0	86	4.6 J	-	-	-																																
Between Cation Canisters	12/14/09[V]	-	-	-	900	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/10/10	-	-	-	1,000	940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/10	-	-	-	620	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/3/10	-	-	-	2,000	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/6/11	-	-	-	790	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/17/11	-	-	-	-	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/17/2011[V]	-	-	-	398	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/14/11	-	-	-	120	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/23/11	-	-	-	120	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/23/11[MM]	-	-	-	460	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/14/11	-	-	-	740	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/18/11	-	-	-	1,400	1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/22/11	-	-	-	1,600	1,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/6/11[V]	-	-	-	1,400	1,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/22/11	-	-	-	1,300	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/12/11[AI]	-	-	-	1,300	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/18/12	-	-	-	1,700	1,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/29/12	-	-	-	1,400	1,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/21/12[AH]	-	-	-	210	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/4/12[AI]	-	-	-	70	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/14/12[AI]	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.97	<1.3	1.9	<0.36	<0.57	<0.54	<0.43	-	<0.48	<0.67	<.090	<0.42	<0.48	-	<0.18	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/7/13	-	-	-	562	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/7/13	-	-	-	712	0.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/11/13	-	-	-	49.9	<0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/1/13	-	-	-	289	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/18/13	-	-	-	1,910	2.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/8/13	-	-	-	1,880	<0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/14/13				193	0.00012																																				
	12/10/13				780	0.00078																																				
	1/15/14				219	0.00013																																				
	2/13/14				330	0.00012																																				
	3/13/14				341	<3.4																																				
	04/22/14	-	-	-	33.2	<3.9												-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	05/13/14	-	-	-	52.9	<3												-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	06/12/14	-	-	-	408	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/13/14	-	-	-	253	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	09/17/14	-	-	-	299	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/16/14	-	-	-	361	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cation Tank Unfiltered	9/12/05	<0.026	<0.28	-	530	-	20	-	-	-	<1.0	12	<1.1	390	2.3	<0.37	11	<0.36	<0.57	<0.54	2.9	-	<0.45	<0.67	3.3	<0.42	<0.48	<0.83	<0.18	2.6	19.8	-	-	-	-	-	-	-	-	-	-	-
	9/12/05	<0.026	-	-	540	<5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/14/05	-	-	-	580	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/12/05	-	-	-	8,200	8,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/14/05	-	-	-	1,400	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/24/07	-	-	-	2,600	2,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/21/07	-	-	-	2,500	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/15/07	-	-	-	2,600	2,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/18/07	-	-	-	7,300	8,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/17/07	-	-	-	250	<3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/27/07	-	-	-	12,000	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/19/07	-	-	-	11,000	9,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/14/07	-	-	-	11,000	12,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sept Monthly Sample	10/2/07	-	-	-	5,900	6,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/24/07	-	-	-	8,300	7,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/21/07	-	-	-	8,700	8,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/20/07	-	-	-	11,000	13,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin / Project #58127047

		Mercury (ug/L)	Cadmium (ug/L)	Chloride (mg/L)	Total Chromium (ug/L)	Hexavalent Chromium (ug/L)	Copper (ug/l)	Iron (ug/l)	Sulfate Dissolved (mg/l)	Sulfide Dissolved (ug/l)	Lead (ug/l)	Nickel (ug/l)	Silver (ug/l)	Zinc (ug/l)	Chloroethane (ug/L)	Chloroform (ug/L)	1,1-Dichloroethane (ug/L)	1,2-Dichloroethane (ug/L)	1,1-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methylene Chloride (ug/L)	Methyl isobutyl ketone (MIBK) (ug/L)	Tetrachloroethene (ug/L)	Toluene (ug/L)	1,1,1-Trichloroethane (ug/L)	1,1,2-Trichloroethane (ug/L)	Trichloroethene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	Total VOCs (ug/L)	BOD (mg/L)	Cyanide (mg/L)	Phosphorous, total (mg/L)	Oil & Grease, total (mg/L)	Suspended Solids, total (mg/L)	pH	Conductivity	Manganese (ug/L)	Nitrogen,Nitrate-Dissolved (mg/L)	TOC as NPOC (mg/L)	TOC as NPOC (DOC)-Dissolved (mg/L)
		Metals													Volatile Organic Compounds (VOC)																	Other										
NR 140 PAL			*0.5*	*125*	*10*	*10*	*130*	*150*	*125*	*NE*	*1.5*	*20*	10	NE	*80*	*0.6*	*85*	*0.5*	*0.7*	*140*	*0.5*	*50*	*0.5*	*200*	*40*	*0.5*	*0.5*	*96*	*0.02*	*1,000*	NE	NE	*40*	NE	NE	NE	NE	NE	NE	NE	NE	NE
NR 140 ES			**5**	**250**	**100**	**100**	**1,300**	**300**	**250**	**NE**	**15**	**100**	**50**	NE	**400**	**6**	**850**	**5**	**7**	**700**	**5**	**500**	**5**	**1,000**	**200**	**5**	**5**	**480**	**0.2**	**10,000**	NE	NE	**200**	NE	NE	NE	NE	NE	NE	NE	NE	NE
HOTV Discharge Limits			**300**	NE	**4,000**	NE	**4,000**	NE			**690**	**4,100**	NE	**4,200**	Total Toxic Organics (TTO) < 2,130																	NE	**1,900**	NE	**100**	NE	**5-9**					
Sample Location	**Sample Date**																																									
Cation Tank Unfiltered (continued)	**1/31/08**	-	-	-	**17,000**	**16,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/28/08	-	-	-	**10,200**	**11,200**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/20/08	-	-	-	**1,360**	**1,600**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/30/08	-	-	-	**7,680**	**7,600**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/30/08	-	-	-	**11,300**	*47*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6/12/08	-	-	-	**6,600**	**6,900**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/25/08	-	-	-	**9,110**	**8,300**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/7/08	-	-	-	**9,040**	**9,500**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/19/08	-	-	-	**6,420**	**6,700**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/31/08	-	-	-	**1,740**	**1,400**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/26/08	-	-	-	**3,380**	**2,900**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/11/08	-	-	-	**3,120**	**3,100**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/30/09	-	-	-	**1,590**	**1,500**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/26/08	-	-	-	**1,250**	**1,200**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/12/09	-	-	-	**872**	**840**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/09	-	-	-	**200**	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/10	-	-	-	**190**	<2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Blank	**9/23/09** [P]	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	*3.5*	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	3.5	-	-	-	-	-	-	-	-	-	-	-
	3/29/10 [T,U]	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	0.35	<0.50	<0.50	<0.50	<0.50	<1.0	-	*0.78*	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	1.1	-	-	-	-	-	-	-	-	-	-	-
	9/23/10	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	3/17/11 [JJ]	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank	**9/23/09**	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	9/24/09	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	3/29/10	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	9/23/10	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	3/17/11	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	8/18/11	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	9/22/11	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	12/12/11	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-
	3/21/12	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.20	<0.50	<0.50	<0.50	<0.50	<1.0	-	<0.50	<0.50	<0.50	<0.25	<0.20	<0.20	<0.20	<0.50	-	-	-	-	-	-	-	-	-	-	-	-

Table 2
Groundwater Analytical Results
Wisconsin Chrome, Kaukauna, Wisconsin Terracon Project No. 58127047

NOTES:
Units reported are micrograms per liter (ug/L) which is approximately equal to parts per billion (ppb) unless otherwise noted. Chloride, BOD, Phosphorus, and Oil and Grease, Suspended Solids, Sulfate Dissolved, Cyanide, and TOC and NPOC (DOC) - Dissolved are reported in units of milligrams per liter (mg/L).
PAL- Preventive Action Limit
ES - Enforcement Standard
HOTV - Heart of the Valley Metropolitan Sewerage District
BOD - Biological Oxygen Demand
NE - Not Established
- Not available or Not analyzed

Bold Date - sampling occurred after treatment system (Sump A - 8/13/01 and Sump B - 9/19/01) operational and ferric chloride injection (8/13/01)
Bold and Highlighted Concentration - compound meets or exceeds ES
Italic - compound meets or exceeds PAL
< - Indicates less than.
* P-4, P-7, P-8, P-9, and P-12 re-named prior to December 2003 sampling event.
[A] - Sample collected by HOTV
[B] - P-6A was not developed prior to sampling on 12/15/03.
[C]- MW-15, MW-16, P-1A, P-2A, P-7A, P-15A, P-16A and P-15B were developed immediately prior to sampling on 12/2003.
[D]- Duplicate Sample
[E] - Benzene was detected at a concentration of 5.4 ug/l in P-2A from the April 24, 2004 sampling event.
[F] - July sample date is actually for June event.
[G] - October sample date is actually for September event.
[H] - Total Chromium analyte was detected in the associated Method Blank.
[I] - Chloroethane and 1,1,2-Tetrachloroethane results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[J] - Trichloroethene results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[K] - 1,2-Dichloroethane results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[L] - 2,3-Dichloropropene was detected at a concentration of 0.78 ug/l and results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[M] - Tetrachloroethene and toluene results reported between the Method Detection Limit (MDL) and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[N] - 1,1,1-Trichloroethane and 1,1,2-Trichloroethane results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[O] - 1,1-Dichloroethene results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[P] - Bromodichloromethane was detected at a concentration of 3.0 ug/l. Chlorodibromomethane was detected at a concentration of 0.65 ug/l and results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[Q] - Cadmium, Copper, Lead, Nickel, 1,1-Dichloroethane, and 1,1,1-Trichloroethane results reported between the MDL and LOQ are less certain than results at or above the LOQ .
[R] - Benzene was detected at a concentration of 0.28 ug/l and results reported between the MDL and LOQ are less certain than results at or above the LOQ. Cis-1,2-Dichloroethene was detected at a concentration of 1.8 ug/l.
[S] - Chromium results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.
[T] - Chloroform and tetrachloroethene results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ
[U] - Bromodichloromethane was detected at a concentration of 0.79 ug/l, bromoform was detected at a concentration of 0.79 ug/l, and chlorodibromomethane was detected at a concentration of 1.2 ug/l.
[V] - Hexavalent chromium sample was received and analyzed past holding time.
[W] - BOD - 5 Day - The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criteria of at least 2 mg/l. Therefore the reported result is an estimated value only. Cyanide, nickel, and 1,1-dichloroethane results reported between the Method Detection Limit and Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.
[X]- Chloroform, 1,1,2-Trichloroethane, and Trichloroethene results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[Y]- Chloroethane and Trichloroethene results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[Z]- 1,1-Dichloroethane and 1,1-Dichloroethene results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[AA] - Chloroform and cis-1,2-Dichloroethene results reported between the MDL and LOQ are less certain than results at or above the LOQ. cis-1,2-Dichloroethene was detected at a concentration of 1.4 ug/l.
[BB] - Hexavalent chromium results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[CC] - Chromium and 1,1-Dichloroethane results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[DD] - Oil & Grease, Copper, Nickel, 1,1-Dichloroethane and 1,1,1-Trichloroethane results reported between the MDL and LOQ are less certain than results at or above the LOQ.
[EE] - 1,1-Dichloroethane and 1,1,1-Trichloroethane results estimated value. Analyte detected at a level less than the RL and greater than or equal to the MDL. The user of this data should be aware that this data is of limited reliability.
[FF] - Chromium MS and/or MSD were outside control limits.
[GG] - Trichloroethene results estimated value. Analyte detected at a level less than the RL and greater than or equal to the MDL. The user of this data should be aware that this data is of limited reliability.
[HH] - Chromium reported post digestion spike is out of acceptance limits for this analyte.
[II] - Hexavalent chromium results estimated value. Analyte detected at a level less than the RL and greater than or equal to the MDL. The user of this data should be aware that this data is of limited reliability.
[JJ] - Bromodichloromethane detection 0.25; Bromoform detection 0.21;Chlorodibromomethane detection 0.34. Estimated values. Analyte detected at a level less than the RL and greater than or equal to the MDL. The user of this data should be aware that this data is of limited reliability.
[KK] - BOD and TSS analysis-Sample was prepped or analyzed beyond the specified holding time. Cyanide, lead, nickel, and phosphorus as P results are less than the RL but greater than or equal to the MDL and the concentrations are approximate values. Cyanide and lead compounds were found in the blank and sample.
[LL] - Cadmium, nickel, and mercury - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. Mercury and total suspended solids - Compound was found in the blank and sample. Mercury - LCS or LCSD exceeds the control limits, and ICV,CCV,ICB,CCB,ISA, ISB,CRI,CRA,DLCK or MRL standard: Instrument related QC exceeds the control limits.
[MM] - Chromium - Compound was found in the blank and sample.
[NN] - Chloroethane and 1,1,2-trichloroethane - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[OO] - Chloromethane was detected at a concentration of 0.37 µg/l. Chloromethane, 1,1,2-trichloroethane, and trichloroethene result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[PP] - Trichloroethene - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[QQ] - Naphthalene was detected at a concentration of 26 µg/l, and 1,2,4-trimethylbenzene was detected at a concentration of 27 ug/l. Chloroethane, naphthalene, trichloroethene, and 1,2,4 - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[RR] - Chloroethane and trichloroethene - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[SS] - 1,2-Dichloroethane, 1,1,2-trichloroethane, and chromium - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[TT] - 1,1-Dichloroethane and 1,1,1-Trichloroethane - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[UU] - Chromium - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[VV] - Trichloroethene - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[WW] - Chlorobenzene was detected at a concentration of 0.27 ug/l. Chlorobenzene, cadmium, lead, total cyanide, phosphorus, and hexavalent chromium - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[XX] - Chloroethane - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[YY] - Trichloroethene and vinyl chloride - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[ZZ] - Chromium, hexavalent - Sample analysis performed past method-specified holding time.
[AB] - cis-1,2-Dichloroethene was detected at a concentration of 1.0 ug/l. Chloroform, cis-1,2-dichloroethene, methylene chloride, and vinyl chloride - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AC] - Chloroethane, chloroform, trichloroethene, vinyl chloride, and chromium - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AD] - 1,1-Dichloroethene and chromium - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AE] - 1,1-Dichloroethene - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AF] - 1,1,2-Trichloroethane, 1,2-dichloroethane, chloroethane, chloroform, and methylene chloride - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AG] - Cyanide and chromium - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. Cyanide and total suspended solids - Compound was found in the blank and sample.
[AH] - Chromium, hexavalent - Sample was prepped or analyzed beyond the specified holding time.
[AI] - Chromium, hexavalent - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AJ] - n-Butylbenzene was detected at a concentration of 0.23 ug/l. 1,2,4-Trimethylbenzene was detected at 1.4 ug/l. n-Butylbenzene, chloroethane, 1,2,4 and 1,3,5-trimethylbenzene, and xylenes - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AK] - Naphthalene was detected at a concentration of 18 ug/l. 1,2,4-Trimethylbenzene was detected at 5.6 ug/l. Naphthalene, toluene, 1,2,4-trimethylbenzene, and vinyl chloride - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. Naphthalene - Compound was found in the blank and sample.
[AL] - 1,2 Dichloroethane, chloroform, trichloroethene, and vinyl chloride - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
[AM] - 1,1,2-Trichloroethane - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. 1,2,3-Trichloropropane - LCS or LCSD exceeds the control limits.
[AN] - 1,2,3-Trichloropropane - LCS or LCSD exceeds the control limits.
[AO] = Estimated concentration above the above the adjusted method detection limt and below the below the adjusted reporting limit

1. All samples collected from 1997-2003 were not filtered including metals samples.
2. There was not enough water present in MW-11 and MW-18 during the September 2004 monitoring event to sample.
3. The result is biased very high due to the sample being only partially filtered in the field (filter malfunction). Refer to April, June and October 2004 iron results for recent accurate concentrations.
4. Groundwater extraction system down July 8 and 28, 2010 due to high level alarm on floor sump. Sump filled due to heavy rainfall.
5. Groundwater extraction system down August 5, 2010. Transfer pump failed and flooded floor sump (high alarm). Transfer pump replaced.
6. All data before March 2009 supplied to SCS BT Squared by the WDNR.

Consultant transition to Foth
Sampled after installation of new carbon vessels
Sampled after Sodium Bisulfite Injection
Pre and Post injection Sampling
HOTV Discharge Limits

Prepared by: C Ingram, Terracon 11/5/2014
Checked by: S Hodgson, Terracon 10/11/12

June 2005 Revised Monitoring Program
UF Unfiltered samples

N:\Projects\2012\58127047\Working Files\Tables\[Wis_Chrome_Tables_120621.xls]Table 2 Notes

Appendix B

Mass Balance for VOC Chemicals of Concern

Groundwater Mass

Well	1,1,1-TCA lbs	1,1-DCA lbs	TCE lbs	DCE lbs	VC lbs	GW Mass lbs	GW Mass %
MW-2	0.1	0.0	0.0	0.0	0.0	0.2	0.2%
MW-4	0.0	0.0	0.0	0.0	0.0	0.1	0.1%
MW-6R	0.1	0.0	0.0	0.0	0.0	0.1	0.1%
MW-7R	16.4	1.5	0.1	2.6	0.0	20.6	28.5%
P-7A	0.0	0.3	0.0	0.1	0.0	0.5	0.6%
P-7B	29.6	15.8	0.0	1.0	0.0	46.4	64.5%
MW-20	2.3	0.3	0.0	0.2	0.0	2.8	3.9%
MW-21	0.3	0.1	0.0	0.0	0.0	0.3	0.5%
MW-22	1.0	0.1	0.0	0.0	0.0	1.1	1.5%
					Totals	72.0	100.0%

Soil Mass

Well	1,1,1-TCA lbs	1,1-DCA lbs	TCE lbs	DCE lbs	VC lbs	Soil Mass lbs	Soil Mass %
MW-2	0.4	0.0	0.0	0.0	0.0	0.4	0.2%
MW-4	0.2	0.0	0.0	0.0	0.0	0.2	0.1%
MW-6R	0.2	0.0	0.0	0.0	0.0	0.2	0.1%
MW-7R	51.6	1.3	0.1	4.8	0.0	57.7	32.2%
P-7A	0.0	0.3	0.0	0.2	0.0	0.5	0.3%
P-7B	93.1	13.6	0.0	1.9	0.0	108.6	60.5%
MW-20	7.1	0.2	0.0	0.4	0.0	7.8	4.3%
MW-21	0.8	0.1	0.0	0.0	0.0	0.9	0.5%
MW-22	3.0	0.1	0.0	0.1	0.0	3.2	1.8%
					Totals	179.6	100.0%

Soil Density 62.5 lbs/cu ft

Prepared by: MGM
Checked by: BDS1

Groundwater 1,1,1-Trichloroethane Mass

Well	Depth A ft amsl	Depth B ft amsl	Thickness ft	Area sq ft	Soil Volume cu ft	Porosity	Volume GW gal	GW Conc ug/L	GW Mass lbs	GW Mass %
MW-2	698.0	684.0	14.0	4,500	63,000	0.35	164,945	82	0.1	0.2%
MW-4	695.0	680.0	15.0	3,600	54,000	0.35	141,381	41	0.0	0.1%
MW-6R	695.0	680.0	15.0	3,600	54,000	0.35	141,381	54	0.1	0.1%
MW-7R	697.0	678.0	19.0	2,800	53,200	0.35	139,287	14,100	16.4	33.0%
P-7A	678.0	666.0	12.0	6,800	81,600	0.35	213,643	6	0.0	0.0%
P-7B	666.0	654.0	12.0	6,800	81,600	0.35	213,643	16,600	29.6	59.5%
MW-20	696.0	678.0	18.0	4,000	72,000	0.35	188,509	1,440	2.3	4.6%
MW-21	696.5	678.0	18.5	2,000	37,000	0.35	96,872	318	0.3	0.5%
MW-22	698.5	678.0	20.5	5,400	110,700	0.35	289,832	397	1.0	1.9%
								Totals	49.7	100.0%

Soil 1,1,1-Trichloroethane Mass

Area	Soil Volume cu ft	GW Conc ug/L	Distribution Coefficient K_d	Soil Conc ug/kg	Soil Mass lbs	VOC Mass %
MW-2	63,000	82	1.10	90	0.4	0.2%
MW-4	54,000	41	1.10	45	0.2	0.1%
MW-6R	54,000	54	1.10	60	0.2	0.1%
MW-7R	53,200	14,100	1.10	15,510	51.6	33.0%
P-7A	81,600	6	1.10	7	0.0	0.0%
P-7B	81,600	16,600	1.10	18,260	93.1	59.5%
MW-20	72,000	1,440	1.10	1,584	7.1	4.6%
MW-21	37,000	318	1.10	350	0.8	0.5%
MW-22	110,700	397	1.10	437	3.0	1.9%
				Totals	156.4	100.0%

Soil Density 62.5 lbs/cu ft

Prepared by: MGM
Checked by: BDS1

Groundwater 1,1-Dichloroethane Mass

Well	Depth A ft amsl	Depth B ft amsl	Thickness ft	Area sq ft	Soil Volume cu ft	Porosity	Volume GW gal	GW Conc ug/L	GW Mass lbs	GW Mass %
MW-2	698.0	684.0	14.0	4,500	63,000	0.35	164,945	23	0.0	0.2%
MW-4	695.0	680.0	15.0	3,600	54,000	0.35	141,381	11	0.0	0.1%
MW-6R	695.0	680.0	15.0	3,600	54,000	0.35	141,381	11	0.0	0.1%
MW-7R	697.0	678.0	19.0	2,800	53,200	0.35	139,287	1,320	1.5	8.5%
P-7A	678.0	666.0	12.0	6,800	81,600	0.35	213,643	193	0.3	1.9%
P-7B	666.0	654.0	12.0	6,800	81,600	0.35	213,643	8,860	15.8	87.0%
MW-20	696.0	678.0	18.0	4,000	72,000	0.35	188,509	182	0.3	1.6%
MW-21	696.5	678.0	18.5	2,000	37,000	0.35	96,872	73	0.1	0.3%
MW-22	698.5	678.0	20.5	5,400	110,700	0.35	289,832	29	0.1	0.4%
								Totals	18.2	100.0%

Soil 1,1-Dichloroethane Mass

Area	Soil Volume cu ft	GW Conc ug/L	Distribution Coefficient K_d	Soil Conc ug/kg	Soil Mass lbs	VOC Mass %
MW-2	63,000	23	0.30	7	0.0	0.2%
MW-4	54,000	11	0.30	3	0.0	0.1%
MW-6R	54,000	11	0.30	3	0.0	0.1%
MW-7R	53,200	1,320	0.30	396	1.3	8.5%
P-7A	81,600	193	0.30	58	0.3	1.9%
P-7B	81,600	8,860	0.30	2,658	13.6	87.0%
MW-20	72,000	182	0.30	55	0.2	1.6%
MW-21	37,000	73	0.30	22	0.1	0.3%
MW-22	110,700	29	0.30	9	0.1	0.4%
				Totals	15.6	100.0%

Soil Density 62.5 lbs/cu ft

Prepared by: MGM
Checked by: BDS1

Groundwater Trichloroethene Mass

Well	Depth A ft amsl	Depth B ft amsl	Thickness ft	Area sq ft	Soil Volume cu ft	Porosity	Volume GW gal	GW Conc ug/L	GW Mass lbs	GW Mass %
MW-2	698.0	684.0	14.0	4,500	63,000	0.35	164,945	nd	0.0	0.0%
MW-4	695.0	680.0	15.0	3,600	54,000	0.35	141,381	nd	0.0	0.0%
MW-6R	695.0	680.0	15.0	3,600	54,000	0.35	141,381	1	0.0	1.1%
MW-7R	697.0	678.0	19.0	2,800	53,200	0.35	139,287	48	0.1	61.6%
P-7A	678.0	666.0	12.0	6,800	81,600	0.35	213,643	nd	0.0	0.0%
P-7B	666.0	654.0	12.0	6,800	81,600	0.35	213,643	nd	0.0	0.0%
MW-20	696.0	678.0	18.0	4,000	72,000	0.35	188,509	5	0.0	8.6%
MW-21	696.5	678.0	18.5	2,000	37,000	0.35	96,872	4	0.0	3.5%
MW-22	698.5	678.0	20.5	5,400	110,700	0.35	289,832	10	0.0	25.3%
								Totals	0.1	100.0%

Soil Trichloroethene Mass

Area	Soil Volume cu ft	GW Conc ug/L	Distribution Coefficient K_d	Soil Conc ug/kg	Soil Mass lbs	VOC Mass %
MW-2	63,000	nd	0.65	0	0.0	0.0%
MW-4	54,000	nd	0.65	0	0.0	0.0%
MW-6R	54,000	1	0.65	1	0.0	1.1%
MW-7R	53,200	48	0.65	31	0.1	61.6%
P-7A	81,600	nd	0.65	0	0.0	0.0%
P-7B	81,600	nd	0.65	0	0.0	0.0%
MW-20	72,000	5	0.65	3	0.0	8.6%
MW-21	37,000	4	0.65	3	0.0	3.5%
MW-22	110,700	10	0.65	6	0.0	25.3%
				Totals	0.2	100.0%

Soil Density 62.5 lbs/cu ft

Prepared by: MGM
Checked by: BDS1

Groundwater 1,1-Dichloroethene Mass

Well	Depth A ft amsl	Depth B ft amsl	Thickness ft	Area sq ft	Soil Volume cu ft	Porosity	Volume GW gal	GW Conc ug/L	GW Mass lbs	GW Mass %
MW-2	698.0	684.0	14.0	4,500	63,000	0.35	164,945	12	0.0	0.4%
MW-4	695.0	680.0	15.0	3,600	54,000	0.35	141,381	8	0.0	0.2%
MW-6R	695.0	680.0	15.0	3,600	54,000	0.35	141,381	8	0.0	0.2%
MW-7R	697.0	678.0	19.0	2,800	53,200	0.35	139,287	2,200	2.6	63.6%
P-7A	678.0	666.0	12.0	6,800	81,600	0.35	213,643	63	0.1	2.8%
P-7B	666.0	654.0	12.0	6,800	81,600	0.35	213,643	573	1.0	25.4%
MW-20	696.0	678.0	18.0	4,000	72,000	0.35	188,509	142	0.2	5.6%
MW-21	696.5	678.0	18.5	2,000	37,000	0.35	96,872	32	0.0	0.6%
MW-22	698.5	678.0	20.5	5,400	110,700	0.35	289,832	18	0.0	1.1%
								Totals	4.0	100.0%

Soil 1,1-Dichloroethene Mass

Area	Soil Volume cu ft	GW Conc ug/L	Distribution Coefficient K_d	Soil Conc ug/kg	Soil Mass lbs	VOC Mass %
MW-2	63,000	12	0.65	8	0.0	0.4%
MW-4	54,000	8	0.65	5	0.0	0.2%
MW-6R	54,000	8	0.65	5	0.0	0.2%
MW-7R	53,200	2,200	0.65	1,430	4.8	63.6%
P-7A	81,600	63	0.65	41	0.2	2.8%
P-7B	81,600	573	0.65	372	1.9	25.4%
MW-20	72,000	142	0.65	92	0.4	5.6%
MW-21	37,000	32	0.65	21	0.0	0.6%
MW-22	110,700	18	0.65	12	0.1	1.1%
				Totals	7.5	100.0%

Soil Density 62.5 lbs/cu ft

Prepared by: MGM
Checked by: BDS1

Groundwater Vinyl Chloride Mass

Well	Depth A ft amsl	Depth B ft amsl	Thickness ft	Area sq ft	Soil Volume cu ft	Porosity	Volume GW gal	GW Conc ug/L	GW Mass lbs	GW Mass %
MW-2	698.0	684.0	14.0	4,500	63,000	0.35	164,945	nd	0.0	0.0%
MW-4	695.0	680.0	15.0	3,600	54,000	0.35	141,381	nd	0.0	0.0%
MW-6R	695.0	680.0	15.0	3,600	54,000	0.35	141,381	nd	0.0	0.0%
MW-7R	697.0	678.0	19.0	2,800	53,200	0.35	139,287	10	0.0	61.7%
P-7A	678.0	666.0	12.0	6,800	81,600	0.35	213,643	nd	0.0	0.0%
P-7B	666.0	654.0	12.0	6,800	81,600	0.35	213,643	nd	0.0	0.0%
MW-20	696.0	678.0	18.0	4,000	72,000	0.35	188,509	4	0.0	38.3%
MW-21	696.5	678.0	18.5	2,000	37,000	0.35	96,872	nd	0.0	0.0%
MW-22	698.5	678.0	20.5	5,400	110,700	0.35	289,832	nd	0.0	0.0%
								Totals	0.0	100.0%

Soil Vinyl Chloride Mass

Area	Soil Volume cu ft	GW Conc ug/L	Distribution Coefficient K_d	Soil Conc ug/kg	Soil Mass lbs	VOC Mass %
MW-2	63,000	nd	0.02	0	0.0	0.0%
MW-4	54,000	nd	0.02	0	0.0	0.0%
MW-6R	54,000	nd	0.02	0	0.0	0.0%
MW-7R	53,200	10	0.02	0	0.0	61.7%
P-7A	81,600	nd	0.02	0	0.0	0.0%
P-7B	81,600	nd	0.02	0	0.0	0.0%
MW-20	72,000	4	0.02	0	0.0	38.3%
MW-21	37,000	nd	0.02	0	0.0	0.0%
MW-22	110,700	nd	0.02	0	0.0	0.0%
				Totals	0.0	100.0%

Soil Density 62.5 lbs/cu ft

Prepared by: MGM
Checked by: BDS1

Appendix C

Estimated Remediation Costs

Site: Former Wisconsin Chrome Corporation
Location: Kaukauna, Wisconsin
Phase: Feasibility Study (-30% to +50%)
Base Year: 2015
Date: 6-Mar-15

Remedial Action Option	Remediation Time (years)	Total Project Time including post-Remedy Monitoring	Construction Cost	O&M Cost	Administration	Total Cost to Property Transfer
Alternative 1 - Monitored Natural Attenuation (MNA)	40	40	$40,000	$1,080,000	$89,600	$1,210,000
Alternative 2 - Enhanced Bioremediation	10	12	$171,250	$324,000	$39,620	$535,000
Alternative 3 - Vacuum Enhanced Recovery (VER)	10	12	$70,100	$324,000	$31,528	$426,000
Alternative 4 - VER plus Enhanced Bioremediation	2	4	$201,350	$108,000	$24,748	$334,000

Prepared by: MGM
Checked by: BDS1

ASSUMPTIONS

Site: Former Wisconsin Chrome Corporation
Location: Kaukauna, Wisconsin
Phase: Feasibility Study (-30% to +50%)
Base Year: 2015
Date: 6-Mar-15

DESCRIPTION	QTY	UNIT	COST	NOTES
Construction Factors				
Fill compaction percentage	80%			Excavation volumes spread sheet
Overexcavation percentage	10%			Excavation volumes spread sheet
Additional material for backfill grading percentage	5%			Excavation volumes spread sheet
Bulk Factor	25%			Excavation volumes spread sheet
Excavated Soil Bulk Density	1.5	(TON/CY)		(Means Handbook)
Density of Concrete	2.03	(TON/CY)		(Useful Tables)
Excavation Quantities (all excavtion volumes are based on in place measure)				
In-situ impacted soil volume	1,867	CY		Excavation volumes spread sheet
Area of excavation/restoration	280	SY		Excavation volumes spread sheet
Excavated soil volume w/ construction factors	2,613	CY		Excavation volumes spread sheet
Excavated soil mass w/ construction factors	3,920	TON		
Common Costs				
Mobilization & Site Preparation	1	LS	$50,000	Engineering Judgement
Demolition				
Concrete & debris demolition	1	LS	$0	Means, 2004 (02200-240-5000) (See Appendix A)
Concrete & debris disposal	0	CY	$10.75	Means, 2004 (02200-320-0300) (See Appendix A)
Site Restoration				
Grading	280	SY	$1.25	
Geo-membrane fabric	280	SY	$1.25	Means, 2004 (02340-300-1510)
Base course (12-inch)	93	CY	$15.10	Means, 2004 (02315-210-5000+5$/cy transport)
Site Cleanup & Demobilization	1	LS	$20,000	Engineering Judgement
Hazardous Waste Disposal				
% Volume of Soil to Haz Waste Landfill	100%			engineering estimate
% Volume of Soil to Incineration	0%			engineering estimate
Hazardous Waste Disposal Landfill (OK)	3920	TON	$102.00	Clean Harbors Estimate
Hazardous Waste Disposal Incineration (NE)	0	TON	$320.00	Clean Harbors Estimate
Soil Mixing				
Volume of soil mixing per day	200	CY		

Parameter	Assumption	Comments
Soil and Groundwater Characteristics		
Media From Surface to Bedrock	Clay	Geotechnical Data
Hydraulic Gradient (ft/ft)	0.017	Average slope along plume length
Hydraulic Conductivity (ft/day)	0.82	Slug Test Data
Porosity	0.2	Geotechnical Data
Seepage Velocity (ft/yr)	30	Geotechnical Data
Fraction of Organic Carbon (Foc) (%)	0.5	Bioflush estimate
Bulk Density (g/cc)	1.59	Geotechnical Data
Octanol Water Partitioning Coefficient (Kow)	See Table 2	Estimate from Sorption Parameters
Organic Carbon Partitioning Coefficient (Koc)	See Table 2	Bioflush estimate
TCE Site Specific Soil Water Distribution Coefficient (Kd) (L/kg)	See Table 2	Bioflush estimate
TCE Henry's Law Dimensionless Constant (Volumetric Basis)	See Table 2	TCE Reference Sheet
TCE Retardation Factor	See Table 2	Estimate from Sorption Parameters
Treatment Characteristics		
Ratio of VOC Treated to Activated Carbon (lb/lb)	0.18	Calgon Isotherm
Darcy Flow (gpm)	0.232	Engineering Calculations
Dilution of TCE Concentration	0.50	Engineering Estimates
Air Emission from Volatilization Systems (lb/year)	320	System Observation
Off-Site PVC Piping Size (in)	2	Engineering Calculations
Source Area		
Unsaturated Zone Treatment Thickness (ft)	5	EC Logs
Soil Chlorinated VOC Concentration (mg/kg)	18.26	Sept 2014, P-7B
Groundwater Chlorinated VOC Concentration (mg/L)	16.6	Sept 2014, P-7B
Soil non-Chlorinated VOC Concentration; GRO (mg/kg)	0	DPT-SB-23 14-ft
Groundwater non-Chlorinated VOC Concentration; GRO (mg/L)	0	Lab Data Average
Source Area Length (ft)	80	Mass Balance
Source Area Width (ft)	85	Mass Balance
Treatment Thickness (Saturated Zone) (ft)	40	EC Logs
Source Area Remedy, Number of Wells	68	Alternative Analysis
Downgradient Boundary		
Groundwater VOC Concentration (mg/L)	7.90	Lab Data
Sectional Plume Length (ft)	500	Mass Balance
Sectional Plume Width; Length of Containment Trench (ft)	1000	Mass Balance
Treatment Thickness (Saturated Zone) (ft)	4	EC Logs
Enhanced Bioremediation/Hydraulic Containment Location	Property Boundary	Field Observations
Enhanced Bioremediation, Number of Wells	200	Alternative Analysis/Cost Estimates
Treatment Times		
Excavation / Thermal Time to Treat (yr)	1	Engineering Estimate
Enhanced Bio + VER Time to Treat (yr)	2	Engineering Estimate
Vacuum Enhanced Recovery Time to Treat (yr)	10	Engineering Estimate
Enhanced Bioremediation Time to Treat (yr)	10	Engineering Estimate
Monitored Natural Attenuation Time to Treat (yr)	40	Engineering Estimate

COST ESTIMATE SUMMARY

Alternative 1 - Monitored Natural Attenuation (MNA)

Description:

Site: Former Wisconsin Chrome Corporation
Location: Kaukauna, Wisconsin
Phase: Feasibility Study (-30% to +50%)
Base Year: 2015
Date: 6-Mar-15

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
PRE-DESIGN INVESTIGATION					
Focused Site Investigation	1	LS	$25,000	$25,000	MIP borings at 7 locations
Groundwater Microbial Evaluation Sample	1	LS	$5,000	$5,000	1 sample for microbial analysis
Vacuum Recovery Pilot Test	1	LS	$10,000	$10,000	One day with Vacuum Truck at 1 or 2 wells
Subtotal				**$40,000**	
MONITORED NATURAL ATTENUATION					
No projected capital costs					
Subtotal				**$0**	
MISCELLANEOUS					
Construction Management (over sight, startup, reporting, and permitting)				$0	U.S. EPA, FS Guidance, July 2000
Contingency (10% of Subtotal)				$0	U.S. EPA, FS Guidance, July 2000
Design (15% of Subtotal)				$0	U.S. EPA, FS Guidance, July 2000
Subtotal				**$0**	
Present Worth Capital				**$40,000**	
ANNUAL COSTS - OPERATIONS, MAINTENANCE AND MONITORING ("OM&M")					
Current Monitoring Program	1	LS	25,000.00	$25,000	
Additional MNA Monitoring Costs	2	LS	$1,000	$2,000	Semi-Annual sampling for additional parameters
Subtotal				**$27,000**	
Total Lifetime O&M **40 years**				**$1,080,000**	
Administration (8%)				**$89,600**	U.S. EPA, FS Guidance, July 2000
	Total Present Worth			**$1,210,000**	

COST ESTIMATE SUMMARY

Alternative 2 - Enhanced Bioremediation

Description:

Site: Former Wisconsin Chrome Corporation
Location: Kaukauna, Wisconsin
Phase: Feasibility Study (-30% to +50%)
Base Year: 2015
Date: 6-Mar-15

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
PRE-DESIGN INVESTIGATION					
Focused Site Investigation	1	LS	$25,000	$25,000	MIP borings at 7 locations
Groundwater Microbial Evaluation Sample	1	LS	$5,000	$5,000	1 sample for microbial analysis
Vacuum Recovery Pilot Test	1	LS	$10,000	$10,000	One day with Vacuum Truck at 1 or 2 wells
Subtotal				**$40,000**	
ENHANCED BIOREMEDIATION					
Remediation Construction Management	1	LS	$30,000	$30,000	50% Chromium Remedy Costs
Subcontractor Costs	1	LS	$25,000	$25,000	50% Chromium Remedy Costs
Bioremediation Chemicals	1	LS	$40,000	$40,000	50% Chromium Remedy Costs
Analytical Costs	1	LS	$10,000	$10,000	50% Chromium Remedy Costs
Subtotal				**$105,000**	
MISCELLANEOUS					
Capital Cost Administration (8% of Subtotal)				$8,400	U.S. EPA, FS Guidance, July 2000
Contingency (10% of Subtotal)				$10,500	U.S. EPA, FS Guidance, July 2000
Additional Design Support (15% of Subtotal)				$15,750	U.S. EPA, FS Guidance, July 2000
Remedial Action Documentation Report (15% of Subtotal)				$15,750	
Subtotal				**$26,250**	
Capital Cost				**$171,250**	
ANNUAL COSTS - OPERATIONS, MAINTENANCE AND MONITORING ("OM&M")					
Current Monitoring Program	1	LS	25,000.00	$25,000	
Additional MNA Monitoring Costs	2	LS	$1,000	$2,000	Semi-Annual sampling for additional parameter
Subtotal				**$27,000**	
Total Lifetime OM&M **12 years**				**$324,000**	
Administration (8%)				**$39,620.00**	U.S. EPA, FS Guidance, July 2000
		Total Cost		**$535,000**	

COST ESTIMATE SUMMARY

Alternative 3 - Vacuum Enhanced Recovery (VER)

Description:

Site: Former Wisconsin Chrome Corporation
Location: Kaukauna, Wisconsin
Phase: Feasibility Study (-30% to +50%)
Base Year: 2015
Date: 6-Mar-15

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
PRE-DESIGN INVESTIGATION					
Focused Site Investigation	1	LS	$25,000	$25,000	MIP borings at 7 locations
Groundwater Microbial Evaluation Sample	1	LS	$5,000	$5,000	1 sample for microbial analysis
Vacuum Recovery Pilot Test	1	LS	$10,000	$10,000	One day with Vacuum Truck at 1 or 2 wells
Subtotal				**$40,000**	
VACUUM ENHANCED RECOVERY					
Remediation Construction Management	2	month	$3,840	$7,680	Engineering Estimate
Subcontractor Costs	2	month	$3,200	$6,400	Engineering Estimate
Equipment Costs	2	month	$5,000	$10,000	Skid-mounted vacuum system rental
Subtotal				**$24,080**	
MISCELLANEOUS					
Capital Cost Administration (8% of Subtotal)				$1,926	U.S. EPA, FS Guidance, July 2000
Contingency (10% of Subtotal)				$2,408	U.S. EPA, FS Guidance, July 2000
Additional Design Support (15% of Subtotal)				$3,612	U.S. EPA, FS Guidance, July 2000
Remedial Action Documentation Report (15% of Subtotal)				$3,612	
Subtotal				**$6,020**	
Capital Cost				**$70,100**	
ANNUAL COSTS - OPERATIONS, MAINTENANCE AND MONITORING ("OM&M")					
Current Monitoring Program	1	LS	25,000.00	$25,000	
Additional MNA Monitoring Costs	2	LS	$1,000	$2,000	Semi-Annual sampling for additional parameter
Subtotal				**$27,000**	
Total Lifetime OM&M **12 years**				**$324,000**	
Administration (8%)				**$31,528.00**	U.S. EPA, FS Guidance, July 2000
		Total Cost		**$426,000**	

COST ESTIMATE SUMMARY

Alternative 4 - VER plus Enhanced Bioremediation

Description:

Site: Former Wisconsin Chrome Corporation
Location: Kaukauna, Wisconsin
Phase: Feasibility Study (-30% to +50%)
Base Year: 2015
Date: 6-Mar-15

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL	NOTES
PRE-DESIGN INVESTIGATION					
Focused Site Investigation	1	LS	$25,000	$25,000	MIP borings at 7 locations
Groundwater Microbial Evaluation Sample	1	LS	$5,000	$5,000	1 sample for microbial analysis
Vacuum Recovery Pilot Test	1	LS	$10,000	$10,000	One day with Vacuum Truck at 1 or 2 wells
Subtotal				**$40,000**	
ENHANCED BIOREMEDIATION					
Remediation Construction Management	2	month	$3,840	$7,680	Engineering Estimate
Subcontractor Costs	2	month	$3,200	$6,400	Engineering Estimate
Equipment Costs	2	month	$5,000	$10,000	Skid-mounted vacuum system rental
Remediation Construction Management	1	LS	$30,000	$30,000	50% Chromium Remedy Costs
Subcontractor Costs	1	LS	$25,000	$25,000	50% Chromium Remedy Costs
Bioremediation Chemicals	1	LS	$40,000	$40,000	50% Chromium Remedy Costs
Analytical Costs	1	LS	$10,000	$10,000	50% Chromium Remedy Costs
Subtotal				**$129,080**	
MISCELLANEOUS					
Capital Cost Administration (8% of Subtotal)				$10,326	U.S. EPA, FS Guidance, July 2000
Contingency (10% of Subtotal)				$12,908	U.S. EPA, FS Guidance, July 2000
Additional Design Support (15% of Subtotal)				$19,362	U.S. EPA, FS Guidance, July 2000
Remedial Action Documentation Report (15% of Subtotal)				$19,362	
Subtotal				**$32,270**	
Capital Cost				**$201,350**	
ANNUAL COSTS - OPERATIONS, MAINTENANCE AND MONITORING ("OM&M")					
Current Monitoring Program	1	LS	25,000.00	$25,000	
Additional MNA Monitoring Costs	2	LS	$1,000	$2,000	Semi-Annual sampling for additional parameter
Subtotal				**$27,000**	
Total Lifetime OM&M 4 years				**$108,000**	
Administration (8%)				**$24,748.00**	U.S. EPA, FS Guidance, July 2000
		Total Cost		**$334,000**	