

December 9, 2015

Ms. Jennifer Borski  
Wisconsin Department of Natural Resources  
Remediation and Redevelopment Program  
Oshkosh Service Center  
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Phone: (920) 424-7887  
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Re: Quality Assurance/Quality Control Plan  
N.W. Mauthe Superfund Site  
725 South Outagamie Street  
Appleton, Wisconsin  
BRRTS #02-45-000127  
WDNR Project RRYU  
Terracon Project No. 58117057

Dear Ms. Borski:

Terracon Consultants, Inc. (Terracon) is submitting this Quality Assurance/Quality Control (QA/QC) Plan as required by the August 2015 Scope of Work for Operation, Maintenance and Monitoring at the N.W. Mauthe Superfund site (Mauthe). The plan is outlined in the following sections.

## **1.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN**

### **1.1 Groundwater Monitoring**

#### **1.1.1 Field Sampling Techniques**

During each semi-annual groundwater sampling event, each of the wells designated for water level measurements for that event per Table 4 of the August 2015 Scope of Work are opened and allowed to equilibrate for at least 15 minutes prior to measuring water levels. To avoid issues with changes in barometric pressure, water levels are measured as quickly as possible. For flush-mount wells and other wells with air-tight caps, several water level measurements are taken several minutes apart to verify that the water table has equilibrated with the atmosphere and is stable. Water levels are measured to the nearest 0.01 foot using a decontaminated electronic water level indicator.



Prior to sampling, each observation well and piezometer to be sampled will be purged using techniques in general conformance with WDNR guidance document PUBL-DG-038 96 Groundwater Sampling Field Manual. A water quality meter with flow-through cell will be used to measure field parameters including pH, temperature, specific conductance, dissolved oxygen, and oxidation-reduction potential during purging. Purging may continue at less than 300 milliliters per minute until the parameters are stable to within 10% for three consecutive readings taken at least 2-minutes apart or until groundwater has been drawn down to the pump intake for wells that purge dry.

The final field parameter readings including pH, temperature, specific conductivity, dissolved oxygen, and oxidation-reduction potential will be recorded for each well in accordance with Table 4 included in the August 2015 Scope of Work. Groundwater sampling information sheets will be completed for each well sampled. The condition of the well and any repairs that may be needed will be noted on the groundwater sampling information sheet.

Samples will be collected into new, clean bottles provided by the laboratory for the analyses required in Table 4 of the August 2015 Scope of Work. Samples will be collected while pumping at the same rate as during purging. VOC samples will be collected first. Total chromium samples will be field-filtered with an in-line 0.45 micron filter. Samples will be placed on ice in a cooler and transported to the laboratory under Chain-of-Custody protocols.

### **1.1.2 Purge Water Handling**

Terracon will dispose of purge water by hauling the purge water in 5-gallon buckets to the building and dumping the water into the floor sump. The water will then be pumped from the sump into the storage tank and subsequently disposed into the sanitary sewer.

## **1.2 Groundwater System Operation and Maintenance**

Terracon will provide labor, materials, equipment and supplies to perform routine inspection and preventative maintenance of the groundwater system components. Duties will include troubleshooting, adjustment of valves and controls, manhole inspection (from the surface), and filling out operational logs and inspection documents during each routine O & M site visit. Operating conditions as well as any problems observed will be noted on the inspection log forms. Copies of the inspection logs will be submitted to the WDNR project manager monthly.

Terracon will be on call 24 hours per day, 7 days per week to respond to an emergency at the groundwater treatment facility.

As part of the general site operation and maintenance, Terracon will subcontract annual services including inspections of the heaters, fire extinguishers, overhead garage doors, and the cross-connection (backflow preventer).

### **1.2.1 Effluent Compliance Monitoring**

Terracon will collect process stream effluent samples for laboratory analysis of hexavalent chromium and total chromium (Method 200.7, 218.1, 218.2, or 218.3) in accordance with the Appleton Industrial User (Wastewater Discharge) Permit No. 15-21, Table 2 included in the request for proposal, and the relevant portions of the O & M Manual. Hexavalent chromium and total chromium samples will be collected monthly throughout the year.

The sample will be collected at the sampling port on the storage tank effluent line prior to Outfall 001. After purging the piping and rinsing a clean 1000 milliliter (mL) beaker with the effluent, approximately 1000 mL of sample will be collected. Approximately 250 mL of the collected sample will be transferred to a new, clean 250-mL plastic bottle provided by the laboratory. This unfiltered and unpreserved sample will be submitted to Pace Analytical (Pace) laboratory (Green Bay, Wisconsin) for analysis of hexavalent chromium. An additional aliquot of the original sample will be filtered through a 0.45 micron ( $\mu\text{m}$ ) filter and then transferred to a clean, new 250-mL plastic bottle with nitric acid preservative provided by the laboratory. This filtered, preserved sample will be submitted to Pace for analysis of total dissolved chromium. After the laboratory samples are prepared, the pH of the remaining collected discharge sample will be measured with a hand-held Oakton pHTestrs meter after calibration with standard buffer solutions.

In addition, local limit compliance effluent sampling will be performed annually. The effluent sample will be tested for the full list of local limit parameters given in Table 2 of the August 2015 Scope of Work. Samples will be collected via the same process described above and transferred to appropriate new, clean bottles provided by the laboratory. Parameters include:

- Aluminum, Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, and Zinc by EPA 200.7
- Mercury by EPA Method 245.1
- Cyanide, total dissolved by EPA Method 335.1

### **1.2.2 Manhole Influent Sampling**

In conjunction with the monthly effluent compliance monitoring, Terracon will collect influent samples from manhole 1 and manhole 2 influent sampling ports inside the building. Samples will be collected in a clean, 1000 mL beaker after opening the valve and allowing the effluent

to run into a 5-gallon bucket for 10-15 seconds and then rinsing the beaker three to five times with effluent from the sample port. The purged effluent will then be dumped into the floor sump and pumped into the storage tank

Samples will be analyzed for hexavalent chromium onsite with a Hach test kit in accordance with the Appleton Industrial User (Wastewater Discharge) Permit No. 15-21, Table 2A included in the August 2015 Scope of Work, and the relevant portions of the O & M Manual. Hach test hexavalent chromium samples will be collected monthly throughout the year. Hexavalent chromium samples will be prepared in accordance with the manufacturer's directions. In each case a blank as well as a primary sample will be prepared. The instrument will be tared using the blank prior to measurement of the primary sample. If the measured value of the primary sample is greater than 0.72 milligrams per liter (mg/L), the instrument maximum value, the sample will be diluted and re-rerun. The result multiplied by the dilution factor will be recorded.

The pH of each sample will also be measured during each sampling event with a hand-held Oakton pHTestrs meter after calibration with standard buffer solutions.

### **1.3 Decontamination Procedures**

During groundwater sampling activities the electronic water level indicator is decontaminated after the water level in each well is measured by washing with analconox-water solution and rinsing with distilled water. Dedicated tubing is used at each well during sampling to eliminate the need for decontamination procedures and minimize the potential for cross-contamination.

Labware used for monthly system sampling is washed with analconox-water solution, rinsed three to five times with tap water and then three to five times with distilled water. After cleaning the labware is placed on a rack to air dry.

### **1.4 Chain-of-Custody Procedures**

The chain-of-custody (COC) record will be completed by the sampler and will remain with the samples. The sampler will retain responsibility for the integrity of the samples until samples are relinquished to another person or the laboratory as indicated on the COC. The COC will include the record of persons responsible for the samples from the time of sampling until receipt at the laboratory in conformance with standard COC protocols. A copy of the complete COC will be included as part of the laboratory report.

## 1.5 Laboratory Analyses

The monitoring well samples will be analyzed for total dissolved chromium using EPA Method SW846 6010B. Samples collected for analysis of total chromium will be field filtered with a 40 micron filter. Samples from selected monitoring wells will also be analyzed for VOC using EPA Method SW846 8260B, and/or cyanide by EPA Method 335.4 according to the schedule indicated in Table 4 of the August 2015 Scope of Work. One blind duplicate sample will be collected for analysis of total dissolved chromium, cyanide, and VOCs during each sampling event.

Monthly effluent samples will be analyzed for total chromium by EPA Method SW846-6010B and hexavalent chromium will be analyzed by Method SM 3500-Cr (online).

In addition, local limit compliance effluent sampling will be performed annually. The effluent sample will be tested for the full list of local limit parameters given in Table 2 included with the August 2015 Scope of Work. Parameters include:

- Aluminum, Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, and Zinc by EPA 200.7
- Mercury by EPA Method 245.1
- Cyanide, total dissolved by EPA Method 335.1

If you have questions or require additional information, please contact our office at (414) 423-0255, Scott directly at (414) 209-7640, or email to [Scott.Hodgson@terracon.com](mailto:Scott.Hodgson@terracon.com).

Sincerely,



Scott A. Hodgson, P.G.  
Senior Project Manager

Blaine R. Schroyer, P.E.  
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