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September 2, 2015

Mr. Robert Klauk  
Wisconsin Department of Natural Resources  
2984 Shawano Avenue  
Green Bay, Wisconsin 54313

**Reference: Limited Site Investigation Work Plan for the Marinette County Association for Business and Industry Inc. (MCABI) - Tyco Redevelopment Site, 1310-1330 Main Street, Marinette, Wisconsin; BRRS #02-38-564236**

Dear Mr. Klauk:

Stantec Consulting Services Inc. (Stantec) has prepared this work plan to complete a Limited Site Investigation at the MCABI – Tyco Redevelopment Site (Parcel # 251-04268.000) located at the northwest corner of Main Street and Stanton Avenue, Marinette, Wisconsin (the Site or Property). The Site is located in the northeast quarter of the northeast quarter of Section 36, Township 24 North, Range 20 East (44 degrees, 30 minutes, 49 seconds north latitude; 88 degrees, 0 minutes, 36 seconds west longitude) in the City of Marinette, Marinette County, Wisconsin. The Site location is shown in attached Figure 1.

## **BACKGROUND**

The Site consists of a 2.42 acre parcel of currently vacant land owned by Tyco. As the result of a pending purchase of the Site, Stantec completed Phase I and II environmental site assessments (ESAs) on behalf of MCABI. The Phase II ESA was completed to confirm, characterize and define the extent of potential contamination associated with RECs identified via the Phase I ESA dated July 19, 2015 which included:

- The historic presence of a coal yard occupying central portions of the Property;
- The former presence of the Chicago and North Western rail line through central portions of the Property and the petroleum storage tanks that were formerly present adjacent to the rail line;
- The former presence of a service station with petroleum storage tanks on the southeastern portion of the Property;
- The known presence of buried solid waste at adjacent properties and undocumented fill material placed in the former log run near the northwestern portion of the Property;
- The former use of the southwestern portion of the Property as an auto repair business, battery services and machine shop, and tool works;
- The historic presence of a print shop and associated underground storage tank at an adjacent property up gradient of the Property.

To evaluate if contamination exists at the Site, Stantec completed a Phase II ESA at the Site in July 2015. The Phase II ESA identified up to 16 feet of generally sandy fill across the site. The fill contained discontinuous layers or intermixing of solid waste (i.e. wood chips and metal, slag, paper, glass, and/or plastic debris). Based on laboratory analysis of soil and groundwater samples collected from the Site, various PAHs, Resource Conservation and Recovery Act (RCRA) metals, and volatile organic compounds (VOCs), were reported at concentrations above

Reference: Phase II ESA Soil Sampling Plan, Tyco Redevelopment Site, Marinette, Wisconsin  
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established Wisconsin Administrative Code (WAC) NR 720 residual contaminant levels (RCLs). In addition, various PAHs and RCRA metals were detected above the preventive action limit (in groundwater grab samples collected from the Site). Additional details regarding the phase II ESA can be found in Stantec's report entitled MCABI-Tyco Redevelopment Site and dated August 13, 2015. To further evaluate and characterize the contamination at the Site identified by the previous Phase II ESA, Stantec is recommending the completion of a limited site investigation; details of which are outlined below.

## WORK PLAN

The proposed work plan consists of three major tasks:

- Task 1.0 Project initiation
- Task 2.0 Site Investigation
- Task 3.0 Case Closure Request

### TASK 1.0 PROJECT INITIATION

The proposed work is described below. Information regarding local geology and hydrogeology was obtained from a review of available literature and is presented below. Site scoping information required in section NR 716.07, Wisconsin Administrative Code (Wis. Adm. Code) is also presented below.

#### Subtask 1.1 - Basic Physiography, Geology, and Hydrogeology

According to the Wisconsin Geological and Natural History Survey, the Property is located in the area covered by the Green Bay Lobe of the Laurentide Ice Sheet during the Wisconsin Glaciation, resulting in topography that is rolling, moderately hilly, and containing numerous drumlins. In general, the portion of the county is covered by greater than 50 feet of unconsolidated glacial till. Underlying the till is a series of dolomite limestone, and shale units of the Sinnipee Group, Ordovician Formation (Bedrock Geology Map of Wisconsin, 1973). The unconsolidated till and bedrock in the southern portion of the county are considered good aquifers and yield abundant groundwater to public and private wells. However, the Phase II ESA indicated that historic fill consisting of sandy sediments with intermixing layers of solid waste extending to 16 feet below grade (fbg) is present at the Site. This historic fill material is common throughout this part of the City and is related to its past use.

Based on data collected during the Phase II ESA, depth to groundwater is approximately 4 to 11 fbg. Groundwater in the glacial drift aquifer generally moves from areas of higher elevations to areas of lower elevations. Based on the topography of the area and data collected from other nearby sites, groundwater flow is expected to be to the northeast towards the Menominee River. However, local variations in the groundwater flow may exist within the unconsolidated formation due to site-specific factors, such as fractures in the unconsolidated formation and manmade disturbances (utility lines, fill, etc.).

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### Subtask 1.2 - Site Investigation Scoping

As required by section NR 716.07, Wis. Adm. Code, the following items were evaluated to ensure that the scope and detail of the field investigation were appropriate to the complexity of the Site:

1. *History of the site or facility, including industrial, commercial, or other land uses that may have been associated with one or more hazardous substance discharges at the site or facility.*

Historically the Site has been used for industrial and commercial purposes dating back to at least 1921. The Site has been home to a coal storage yard, fuel tanks, and a rail line. The presence of fill material has also been documented at the Site. The historical use of the Property is detailed in Stantec's Phase I ESA report dated July 19, 2015.

2. *Knowledge of the type of contamination and the amount of the contamination.*

The Phase II ESA indicated that both soil and groundwater were impacted at the Site. Elevated PAH concentrations were present in several soil samples collected at the Site. Arsenic, lead, and/or silver concentrations were also detected in soil samples from seven boreholes exceeding one or more NR 720 RCLs. Benzene or tetrachloroethylene (PCE) concentrations in soil collected from two boreholes exceeded their respective NR 720 RCL for groundwater protection.

Dissolved arsenic in groundwater was identified in one temporary well exceeding the NR 140 enforcement standard (ES). Dissolved arsenic concentrations in groundwater exceeding the NR 140 PAL were detected in four of the temporary wells installed at the Site. Selenium concentrations exceeding the NR 140 PAL were also detected in one well. Finally, benzo(a)pyrene, benzo(b)fluoranthene, and chrysene concentrations in groundwater exceeding the NR 140 PAL were also detected in three of the temporary monitoring wells.

3. *History of previous hazardous substance discharges or environmental pollution.*

Undocumented fill material was previously brought onsite and likely used to fill a portion of the log run that previously extended across the Site.

4. *Environmental media affected or potentially affected by the contamination.*

Soil and groundwater is impacted at the Site.

5. *Location of the Site or facility, and its proximity to other sources of contamination.*

According to the review of the Wisconsin Department of Natural Resources (WDNR's) Remediation and Redevelopment Site Maps, there are several sites located near the Property. These sites appear to be either side or down-gradient of the Site and therefore do not appear to be impacting the Property. The Site is also in an area of the City with known historic fill including buried solid wastes.

6. *Need for permission from property owners to allow access to the Site or facility and to*

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*adjacent or nearby properties.*

If off-site drilling is necessary, the appropriate access agreements will be obtained.

7. *Potential or known impacts to receptors, including public and private water supplies; buildings and other cultural features; and utilities or other subsurface improvements. This evaluation shall include mapping the location of all water supply wells within a 1,200-foot radius of the outermost edge of contamination.*

According to the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) interactive geographic information system (GIS), one well installed in 1946 is present approximately 1,000 feet northwest of the Site. While it is unknown if this well currently exists, due to its current location up-gradient of the MCABI site, groundwater impacts are not suspected.

8. *Potential for impacts to any of the following: species, habitat or ecosystems sensitive to the contamination; wetlands; outstanding or exceptional resource waters; and sites or facilities of historical or archaeological significance.*

The proposed investigative activities will be performed on the Site in a developed area. There are no known potential impacts to threatened or endangered species; species, habitats or ecosystems sensitive to the contamination; and outstanding or exceptional resource waters. According to the email correspondence dated October 21, 2014, between MCABI and the WDNR, there are no known archaeological/historical concerns at the Site.

9. *Potential interim and remedial actions applicable to the site or facility and the contamination.*

If MCABI proceeds with redevelopment of the Site, all excavated soil will need to be properly handled or reused at the Site in accordance with a WDNR approved soil management plan. It is also likely that a cap will need to be installed at the Site to address soil that poses a direct contact concern.

10. *Immediate or interim actions already taken or in progress, including any evaluations made of whether an interim action is needed at the site or facility.*

No immediate action or interim actions have been taken or are in progress at the Site.

11. *Any other items, including climatological conditions and background water or soil quality information that may affect the scope or conduct of the site investigation.*

No other items were identified that may potentially impact the scope of this investigation.

## **TASK 2.0 SITE INVESTIGATION**

### Subtask 2.1 – Soil Sampling

As part of the limited site investigation, up to 3 soil borings will be completed to a maximum depth of 16 fbg using a Geoprobe. All three borings will be converted to temporary wells. The additional borings will be advanced adjacent to soil borings B400, B700, and B800 completed during the Phase II ESA. See attached Figure 2 for the soil boring locations. Soil samples will be collected from the boring advanced adjacent to B700 continuously at 2-foot intervals using techniques in accordance with American Society for Testing and Materials (ASTM) method 1586. All field samples collected will be field screened for volatile organic compounds (VOCs) using a photoionization detector (PID). Borings completed near B400 and B800 will be blind drilled for the purpose of installing temporary wells. One soil sample will be collected at 4 to 6 fbg near boring B700 for laboratory analysis for total lead analysis. The purpose of this sample is to confirm the elevated lead results detected near this boring during the Phase II ESA. If similar concentrations are confirmed during laboratory analysis the sample will also be analyzed for TCLP lead. No additional soil samples will be collected at the Site. Stratigraphic logs will also be prepared by Stantec field personnel in general conformance with ASTM D-2488.

Upon completion of sampling, all three borings will be converted to temporary wells. Soil cuttings produced during the drilling operations will be temporarily sealed in the on-site labeled 55-gallon drums and appropriate disposal of the soil cuttings will be determined after receipt of laboratory analysis.

### Subtask 2.2 - Groundwater Sampling

Temporary groundwater monitoring wells will be installed at all three boring locations (adjacent to B400, B700, and B800) and sampled to evaluate groundwater quality. It is anticipated the total depth of each well will extend approximately 16 fbg. The horizontal and vertical location of each well will be surveyed to determine the groundwater flow direction and gradient.

All temporary monitoring wells will be developed and purged before sampling to help ensure that water entering the well is representative of ambient ground-water quality. Grab samples will be taken the same day immediately following developing and purging of the temporary wells. All well development and sampling equipment will be thoroughly cleaned between boreholes and ground water produced from each well will be stored in 55-gallon drums on site. Appropriate disposal of the ground water will be determined after receipt of laboratory analyses.

Groundwater samples collected from the temporary wells installed near B400 and B700 will be analyzed by a WDNR-certified analytical laboratory for VOCs. In addition the temporary well installed near B700 will be analyzed for dissolved arsenic, lead, and silver. A confirmation water sample will be collected near B800 and analyzed for dissolved arsenic. One duplicate and one trip blank will be collected and analyzed if needed. The duplicate sample will quantify laboratory precision. The trip blank will be analyzed if other sources of contaminants affected the samples. Upon completion of groundwater sampling, a flush mount cover will be installed on the temporary wells and the wells left in place for possible future monitoring.



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#### Subtask 2.3 Data Reduction and Analysis

Following completion of the investigation, the data will be reviewed, tabulated and discussed with you upon receipt of laboratory results. The results of the investigation will be summarized in a letter report. The report will include all text, tables, figures, field data, and laboratory reports necessary to support the findings and conclusions.

#### **SCHEDULE**

Task 1.0 has been completed as part of this work plan. The soil borings and temporary wells are anticipated to be completed during September 2015 pending WDNR approval of the workplan. The laboratory results for soil and groundwater samples should be available within two to three weeks of sampling. Upon receipt of the laboratory results, Stantec will review the project results and, if necessary, discuss the need for additional work.

If you have any questions, or require any additional information, please call me at (715) 854-3360. We look forward to working with you on this project.

Respectfully,

**STANTEC CONSULTING SERVICES INC.**

A handwritten signature in blue ink that reads "Lynelle P. Caine".

Lynelle P. Caine  
Senior Project Geologist  
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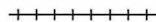


C: Ann Hartnel, MCABI  
Ken Pulver, Tyco Fire Protection Products

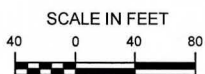
Attachments: Figure 1 – Site Location Map  
Figure 2 – Soil Boring Locations





**LEGEND**

-  APPROXIMATE PROPERTY LINE
-  APPROXIMATE LOCATION OF FORMER CHICAGO NORTH WESTERN SIDING RAILROAD
-  SOIL BORING LOCATION
-  SOIL BORING AND TEMPORARY WELL LOCATION



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**SOIL BORING AND TEMPORARY MONITORING WELL LOCATIONS**

TYCO PROPERTY  
 MAIN STREET  
 MARINETTE, WISCONSIN

DATE: 06/02/15	DRAWN BY: JRB	TASK NUMBER: 3.0.1	PROJECT NUMBER: 193703365	FIGURE 2
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