From: Adam Tegen <ategen@manitowoc.org>
Sent: Tuesday, May 5, 2020 3:55 PM
To: Beggs, Tauren R - DNR; Byers, Harris
Subject: RE: SSSAP for Site 3 of Riverpoint District in Manitowoc

Thank you very much Tauren,

We appreciate your comments and willingness to help us move forward with our SAG Applications to the WEDC.

Adam

From: Beggs, Tauren R - DNR [mailto:Tauren.Beggs@wisconsin.gov]
Sent: Tuesday, May 5, 2020 3:47 PM
To: Byers, Harris; Adam Tegen
Subject: RE: SSSAP for Site 3 of Riverpoint District in Manitowoc

Hi Harris and Adam,

I have completed my review of the SSSAP for the continued investigation of Site 3. This SSSAP seems to be a reasonable approach to assessing areas of Site 3 that couldn't previously be accessed due to slabs still being in place. You could possibly split the difference between SB-85/TW-85 and SB-86/TW-86 with one sampling location since they are in fairly close proximity to each other, but the other locations selected seem to be good for being able to assess if there is contamination under each of the slabs. I don't have any other general comments at this time. These are just general comments I have on the SSSAP; if the City of Manitowoc/Manitowoc CDA (City/CDA) would like a more detailed review and written response/approvals/etc. from the DNR on future documents (example: review of a site investigation report), the City/CDA can submit a technical assistance request on DNR Form 4400-237 with applicable fee.

Regards,

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Tauren R. Beggs
Phone: (920) 366-5739 (Temporary Work Number)
Tauren.Beggs@wisconsin.gov (preferred contact method during work at home)

From: Byers, Harris <Harris.Byers@stantec.com>
Sent: Friday, April 24, 2020 2:18 PM
To: Beggs, Tauren R - DNR <Tauren.Beggs@wisconsin.gov>; Adam Tegen <ategen@manitowoc.org>
Subject: SSSAP for Site 3 of Riverpoint District in Manitowoc

Tauren:

We have put together the attached Site-Specific Sampling and Analysis Plan (SSSAP) to continue the subsurface investigation at Site 3 of the Riverpoint District in Manitowoc following removal of the remaining structural impediments and petroleum infrastructure (if present). The main objective for

performing the proposed sampling is to further evaluate the RECs identified in the Stantec (2019) Phase I ESA and impacts identified in the Stantec (2020) Phase II ESA by sampling soil and groundwater beneath the former oil/pump houses on Site 3, once the slabs are removed.

The City would like to include this SSSAP in their application to WEDC to support a SAG application for funds to remove the remaining slabs. Would you be able to review and provide email comment confirming that the SSSAP is a reasonable approach to continuing the investigation at the Site. This portion of the property is likely to enter the VPLE program down the road, thus we are proposing the full SVOC list vs. the more limited PAH list of constituents.

We acknowledge that the SSSAP may require modification and/or additional investigation could be warranted depending on conditions encountered beneath the slab once removed.

Sincerely,

Harris Byers, Ph.D.
Sr. Brownfields Project Manager

Direct: 414 581-6476
Harris.Byers@stantec.com

Stantec
12075 Corporate Parkway Suite 200
Mequon WI 53092-2649

Stantec Consulting Services Inc.
12075 Corporate Parkway, Suite 200 Mequon WI 53092

April 23, 2020

Attention: Mr. Adam Tegen
Community Development Director
City of Manitowoc
900 Quay Street
Manitowoc, Wisconsin 54220

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure
Riverpoint District – Site 3
1110 Buffalo Street
Manitowoc, Wisconsin 54220
WDNR BRRTS ID: 07-36-583000 (LGU Exemption)
WDNR BRRTS ID: 03-36-001962 (Closed)

Dear Mr. Tegen:

Stantec Consulting Services Inc. (Stantec) prepared this Site-Specific Sampling and Analysis Plan (SSSAP) for continuance of the subsurface investigation following the removal of remaining structural impediments and petroleum infrastructure at Site 3 of the Riverpoint District redevelopment project (1110 Buffalo Street; herein referred to as the Site).

BACKGROUND AND ENVIRONMENTAL CONCERNS

As described in the Stantec (2019) Phase I ESA, the Riverpoint District consists of a 20.1-acre peninsula bound to the north, south, and west by the Manitowoc River and bound to the east by North 10th Street and North 11th Street.

Site 3 of the Riverpoint District consists 5.1 acres of land within the larger 20.1-acre Riverpoint District. The property consists of 10 individual contiguous parcels of land (Figure 1). As noted previously, it is critical to realize that the individual PINS corresponded to leases between the previous owner and a variety of former industrial/bulk petroleum storage/commercial tenants. Records suggest large portions of Site 3 were leased to a variety of bulk fuel storage companies operating under a variety of names during the early/mid-20th Century. Records indicate most of the petroleum stored/handled at Site 3 was fuel oil. However, state records indicate a significant quantity of leaded and unleaded gasoline, diesel fuel, kerosene, and used/waste motor oil may have been stored in bulk at the Site. It would be impractical to document specific fueling/storage operations dating across roughly 80 years of bulk petroleum storage at Site 3. The locations of known historic features associated with bulk fuel storage by tenants are illustrated on Figure 1 and include 34 ASTs, 12 USTs, seven pump houses, four oil houses, and associated pipe runs. The final tenant appears to have vacated the property concurrent with reported removal of the final petroleum ASTs by 1997.

Similar to results from investigations conducted as part of AST abandonment, select volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs)/polycyclic aromatic hydrocarbons (PAH), and Resource Conservation and Recovery Act (RCRA) metals were detected in soil at Site 3 in the Stantec (2020) Phase II ESA at concentrations greater than

applicable NR 720 RCLs and/or Background Threshold Values (BTVs). Additionally, select VOCs, PAHs, and/or dissolved heavy metals were detected in groundwater at Site 3 at concentrations greater than applicable ch. NR 140 Wisconsin Administrative Code (NR 140) Preventive Action Limits (PALs) and/or Enforcement Standards (ESs).

Current redevelopment plans primarily include reuse of Site 3 for multi-family reuse. However, as discussed in the Stantec (2020) Phase II ESA, residual impacts to soil and groundwater remain at the Site at concentrations greater than health-based standards. A subsurface site investigation compliant with NR 716 Wis. Adm. Code must be completed for the Site to facilitate proposed commercial development. However, the remaining concrete oil/pump house slabs and other remaining petroleum impediments are significant obstacles to completing the warranted investigation. Stantec understands the City is seeking funding from the Wisconsin Economic Development Corporation (WEDC) for a Site Assessment Grant (SAG) to complete limited site investigation and slab demolition activities. The following describes the next steps in the subsurface investigation following removal of the remaining structural impediments and petroleum infrastructure at Site 3

SCOPE OF WORK

Various environmental concerns associated with the Property have been identified and were partially evaluated in the Stantec (2020) Phase II ESA. However, further work is warranted to evaluate possible source areas and further define the magnitude and delineate the extents of impacts and other requirements of NR 716 Wis. Adm. Code. The main objective for performing the proposed sampling is to further evaluate the RECs identified in the Stantec (2019) Phase I ESA and impacts identified in the Stantec (2020) by sampling soil and groundwater beneath remaining oil and pump house slabs, once the slabs are removed. As this property will be entered into the Voluntary Party Liability Exemption program, soil and groundwater samples will be analyzed for the full SVOC list.

Soil Assessment. Proposed soil sampling locations illustrated on Figure 1 and analyses summarized on Table 1 are based on the environmental concerns identified in the Stantec (2019) Phase I ESA and (2020) Phase II ESA. Diggers Hotline will be contacted to locate and mark the locations of registered utilities in the project area. A private utility locate will be completed as part of the geophysical survey to identify underground anomalies of additional concern. Soil quality data will be compared to ch. NR 720 WAC soil standards for the direct contact pathway at industrial and non-industrial properties and to soil standards for the soil to groundwater exposure pathway.

As illustrated on Figure 1, the proposed soil assessment includes advancing up to 11 soil borings using direct-push dual-tube Geoprobe® drilling methods. The borings are targeted to former petroleum/fuel oil storage/handling buildings, which are potential source areas for residual subsurface impacts. The borings will be advanced following removal of remaining structural impediments (e.g. slabs/foundations).

Soil samples will be collected continuously from each borehole, and each borehole will generally extend downward up to 10 feet below ground surface (bgs) to facilitate installation

of temporary groundwater monitoring wells. Actual locations may be adjusted based on accessibility, the results of the geophysical survey, and/or locations of underground utilities. Soil borings not completed as temporary wells will be abandoned with bentonite and the surface repaired to match surrounding.

The horizontal locations of each soil boring will be documented using sub-meter global positioning system (GPS) survey equipment. The elevation of the ground surface at each soil boring will be surveyed relative to a static site datum using a laser level or using a total station.

Soil sampling and field classification will be conducted by a field hydrogeologist. Sample collection and laboratory analytical methods for soil samples, as well as the rational for selecting sample locations and criteria to be used for selection of specific depth intervals for analysis, are presented in Table 1.

Soil samples will be collected continuously with four to five-foot samplers. Soil samples will be visually and physically examined by Stantec field geologists, and observations made of the general soil type (percentages of gravel, sand, silt, and clay), any visible layering, evidence of non-native fill materials (with estimated percentages of these materials contained in the soil matrix), indications of chemical or other staining, odors, and any other distinctive features. In addition, pertinent observations noted during installation of the soil borings will be documented on the soil boring logs.

Soil samples will be field screened for the presence of VOCs using a photoionization detector (PID). The PID will be calibrated daily in the field in accordance with the manufacturer's specifications. Samples will be further screened using a low-voltage ultraviolet light to further evaluate potential petroleum impacts.

The exact quantity of soil samples collected will be determined in the field and will target soils indicative of a suspected release. As summarized on Table 1, a minimum of one soil sample will be collected from the unsaturated zone from each boring and submitted for RCRA metals, VOC, and/or SVOC analysis from the depth interval of apparent impact (i.e. PID screening results, visual or olfactory observations, or fluorescence with ultraviolet light) and/or directly above the water table. A second sample may be collected from select borings within the upper 4 feet of the ground surface to evaluate the potential for direct contact and/or from directly above the capillary fringe of the shallow aquifer. All samples will be placed in laboratory-supplied containers, preserved as appropriate, stored on ice, and submitted under chain-of-custody procedures to TestAmerica (Chicago, Illinois), a State of Wisconsin-certified laboratory for analysis. Samples will be submitted to the laboratory as soon as possible after collection (i.e. daily). Anticipated sample collection and laboratory analytical methods for soil samples are summarized in Table 1.

As noted on Table 1, Quality Assurance/Quality Control (QA/QC) samples include a matrix spike/matrix spike duplicate, a de-identified field blank, and a trip blank.

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

Groundwater Assessment. Proposed groundwater sampling locations illustrated on Figure 1 and analyses summarized on Table 2 are based on the environmental concerns identified in the Stantec (2019) Phase I ESA and (2020) Phase II ESA. Groundwater quality data will be compared to ch. NR 140 WAC groundwater standards. In addition, VOCs detected in groundwater will be used to provide continued screening of the vapor intrusion pathway per WDNR Pub-RR800.

As illustrated on Figure 1, the proposed groundwater assessment includes completing each soil boring as a one-inch diameter temporary groundwater monitoring well. The wells are targeted to former petroleum/fuel oil storage/handling buildings, which are potential source areas for residual subsurface impacts. The wells will be installed in soil borings completed following removal of remaining structural impediments (e.g. slabs/foundations).

The depth for the new wells will depend on the actual depth at which groundwater is encountered beneath the Site. The wells will be constructed in general conformance with ch. NR 141 WAC using 1-inch diameter poly-vinyl chloride casing with 10-foot long 0.010-inch slotted-screens with coarse sand pack. Wells will be placed to intersect the water table surface. It is anticipated that well depths will be approximately 10 feet bgs, though some could terminate at a lower depth if dense non-aqueous phase liquids are suspected.

The horizontal locations of each well will be documented using sub-meter GPS survey equipment. The elevation of the top of each well casing will be surveyed relative to a static site datum using a laser level or total station.

Following installation and recovery, and prior to purging and collection of groundwater samples, the elevation of the groundwater table will be measured and the volume of water present within each well will be calculated. Groundwater elevation data will also be used to document the gradient in potentiometric surface. The depth and thickness of floating (light) and/or sinking (dense) non-aqueous phase liquids, if present, will be measured using an interface probe.

Each temporary well will be purged prior to sampling. If the geologic materials surrounding the well are low yielding, then the wells will be completely evacuated, and groundwater samples collected after the water level recovers sufficiently to provide the volume of water needed to fill sample containers for the desired analyses. Temperature, pH, dissolved oxygen and specific conductance will be measured on the evacuated purge water. The well may be purged using any of the following methods: a peristaltic pump, a low-flow Micro-Purge Sampling System (or equivalent), a Voss disposable polyethylene bailer (or equivalent), or a Waterra hand pump (or equivalent) or similar equipment.

After purging, groundwater samples will be collected from all temporary groundwater monitoring wells and analyzed for dissolved (field filtered) RCRA metals, VOCs, and/or sVOCs. All samples will be placed in laboratory-supplied containers, preserved as appropriate, stored on ice, and submitted under chain-of-custody procedures to TestAmerica (Chicago, Illinois), a State of Wisconsin-certified laboratory for analysis. Samples will be submitted to the laboratory

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

as soon as possible after collection (i.e. daily). Anticipated sample collection and laboratory analytical methods for groundwater samples are summarized in Table 2.

As noted on Table 2, QA/QC samples include a matrix spike/matrix spike duplicate, a de-identified field blank, and a trip blank.

Supplemental Site Investigation Report. A supplemental site investigation report will be prepared following receipt of the laboratory data. The report will include:

- Laboratory Analytical Reports
- Soil boring logs
- Monitoring Well Construction Forms
- Field PID data
- Groundwater Elevation Data
- Tables Summarizing Analytical Results for Soil and Groundwater Samples
- Potentiometric Surface Map of Shallow Groundwater

Recommendations for future actions, if any, to facilitate planned redevelopment of the Site will be provided in the report.

ESTIMATE OF PROBABLE COSTS

For budgeting purposes, the proposed investigation is estimated to cost $22,241, which includes $11,051 in Stantec labor and reimbursable expenses, $7,190 in laboratory costs (largely due to the cost for the full SVOC list), and $4,000 in driller subcontractor costs.

We trust this information meets your needs. Please feel free to contact us if you have any questions or concerns.

Regards,

STANTEC CONSULTING SERVICES INC.

Harris L. Byers, Ph.D.
Sr. Brownfields Project Manager
Harris.Byers@stantec.com
(414) 581-6476

STANTEC CONSULTING SERVICES INC.

Richard J. Binder, P.G., CPG
QA/QC Manager
Rick.Binder@stantec.com

Enclosures: Table
Figure

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

LIMITATIONS

Site investigation costs can vary greatly depending on conditions encountered in the field and other factors. Stantec's observations, findings, and opinions should not be considered as scientific certainties but only as opinion based on our professional judgment. Additionally, due to limitations of the cost estimation process and the necessary use of data furnished by others, Stantec cannot assume liability if actual conditions and costs differ from the information presented herein.

Stantec

TABLE

Design with community in mind

Table 1
Proposed Laboratory Analysis for Soil
200 North 10th Street
Manitowoc, Wisconsin

Soil Boring ID	Estimated Soil Boring Depth (ft)	Estimated Sample Depth (ft)	Rationale	VOCs (8260)	SVOCs (8270)	RCRA Metals (6020 and 7470)
SB-83	10 Feet (or 5 feet into the water table)	Various	SB-83 will evaluate soil quality beneath the former oil house, once the slab is removed. SB-83 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-84	10 Feet (or 5 feet into the water table)	Various	SB-84 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-84 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-85	10 Feet (or 5 feet into the water table)	Various	SB-85 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-85 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-86	10 Feet (or 5 feet into the water table)	Various	SB-86 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-86 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-87	10 Feet (or 5 feet into the water table)	Various	SB-87 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-87 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-88	10 Feet (or 5 feet into the water table)	Various	SB-88 will evaluate soil quality beneath the former oil house, once the slab is removed. SB-88 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-89	10 Feet (or 5 feet into the water table)	Various	SB-89 will evaluate soil quality beneath the former oil house, once the slab is removed. SB-89 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-90	10 Feet (or 5 feet into the water table)	Various	SB-90 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-90 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-91	10 Feet (or 5 feet into the water table)	Various	SB-91 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-91 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-92	10 Feet (or 5 feet into the water table)	Various	SB-92 will evaluate soil quality beneath the former pump house, once the slab is removed. SB-92 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-93	10 Feet (or 5 feet into the water table)	Various	SB-93 will evaluate soil quality beneath the former oil house, once the slab is removed. SB-93 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
Estimated number of investigative samples to be analyzed				16	11	16
Trip Blank		-	Field and Laboratory QAQC Sample	1	0	0
Matrix Spike/Matrix Spike Duplicate			Assess the influence of the matrix on lab results	2	2	2
Field Duplicate		-	Assess the quality of the data and collection techniques.	1	1	1
Estimated number of QAQC samples to be analyzed				4	3	3
Estimated number of samples to be analyzed				20	14	19

Notes:
FD = Field Duplicate
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
SVOCs = Semi-volatile Organic Compounds
RCRA = Resource Conservation and Recover Act
UST = Underground Storage Tank
AST = Aboveground Storage Tank
(6010) = Laboratory analytical method (SW-846)
Stantec, 2018, Phase I ESA 10th Street Railroad Property, August 2018.

Table 2
Proposed Laboratory Analysis for Groundwater
1110 Buffalo Street
Manitowoc, Wisconsin

Well ID	Estimated Well Depth (ft)	Rationale	VOCs (8260)	SVOCs (8270)	Dissolved RCRA Metals (6020 and7470)
TW-83	10 Feet (or 5 feet into the water table)	TW-83 will evaluate groundwater quality beneath the former oil house, once the slab is removed. TW-83 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-84	10 Feet (or 5 feet into the water table)	TW-84 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-84 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-85	10 Feet (or 5 feet into the water table)	TW-85 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-85 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-86	10 Feet (or 5 feet into the water table)	TW-86 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-86 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-87	10 Feet (or 5 feet into the water table)	TW-87 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-87 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-88	10 Feet (or 5 feet into the water table)	TW-88 will evaluate groundwater quality beneath the former oil house, once the slab is removed. TW-88 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-89	10 Feet (or 5 feet into the water table)	TW-89 will evaluate groundwater quality beneath the former oil house, once the slab is removed. TW-89 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-90	10 Feet (or 5 feet into the water table)	TW-90 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-90 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-91	10 Feet (or 5 feet into the water table)	TW-91 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-91 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-92	10 Feet (or 5 feet into the water table)	TW-92 will evaluate groundwater quality beneath the former pump house, once the slab is removed. TW-92 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-93	10 Feet (or 5 feet into the water table)	TW-93 will evaluate groundwater quality beneath the former oil house, once the slab is removed. TW-93 will determine if prior industrial/commercial bulk fuel oil storage/distribution and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
Estimated number of investigative samples to be analyzed			11	11	11
Trip Blank		Field and Laboratory QAQC Sample	1	0	0
Matrix Spike/Matrix Spike Duplicat		Assess the influence of the matrix on lab results	2	2	2
Field Duplicate		Assess the quality of the data and collection techniques.	1	1	1
Estimated number of QAQC samples to be analyzed			4	3	3
Estimated number of samples to be analyzed			15	14	14

Notes:
FD = Field Duplicate
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
SVOCs = Semi Volatile Organic Compounds
RCRA = Resource Conservation and Recover Act
UST = Underground Storage Tank
AST = Aboveground Storage Tank
(6010) = Laboratory analytical method (SW-846)
Stantec, 2018, Phase I ESA 10th Street Railroad Property, August 2018.

FIGURE

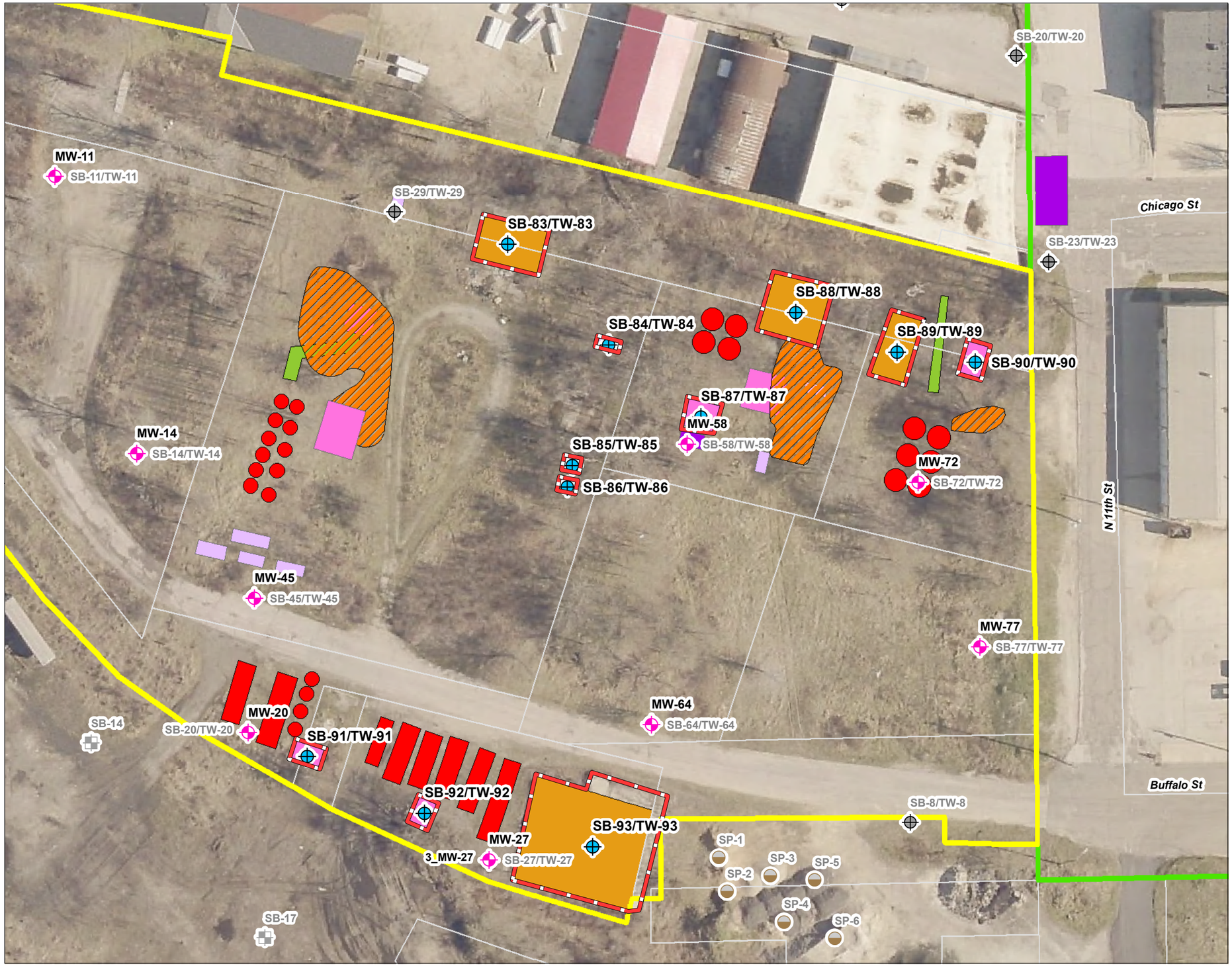

Figure No.
1

Title
Site Features and Prior and Proposed Post-Slab Removal Sample Locations

Client/Project
Riverpoint District Site 3
1110 Buffalo Street
City of Manitowoc

0 40 80 Feet

Prepared by HLB on 3/25/2020

Legend

N

- Site 3 - 1110 Bufalo Street (1)
- Riverpoint District
- Slabs Targeted for Removal (11)

Post-Slab Removal Sample Locations

- Soil Boring / Temp Well (11)

Prior Sampling Locations (Stantec 2019)

- Soil Boring (2)
- Surface Grab (6)
- Soil Boring/Temp Well (14)
- Groundwater Monitoring Wells (1)
- Groundwater Wells (AECOM, 2020) (9)

Prior Site Features (City Records)

- Oil House (4)
- Oil Tank (AST) (34)
- Pump House (5)
- UST (2)

Additional Site Features (WDNR Files)

- Former UST (10)
- Product Piping (2)
- Pump House (2)
- Soil Excavation (3)

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

Stantec

From: Beggs, Tauren R - DNR
Sent: Tuesday, May 5, 2020 3:47 PM
To: 'Byers, Harris'; Adam Tegen
Subject: RE: SSSAP for Site 1 of Riverpoint District in Manitowoc

Hi Harris and Adam,

I have completed my review of the SSSAP for the continued investigation of Site 1. This SSSAP seems to be a reasonable approach to assessing areas of Site 1 that couldn't previously be accessed due to slabs still being in place. The contaminants being sampled for and the locations of the samples seem to be appropriate. I don't have any other general comments at this time. These are just general comments I have on the SSSAP; if the City of Manitowoc/Manitowoc CDA (City/CDA) would like a more detailed review and written response/approvals/etc. from the DNR on future documents (example: review of a site investigation report), the City/CDA can submit a technical assistance request on DNR Form 4400-237 with applicable fee.

Regards,

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Tauren R. Beggs
Phone: (920) 366-5739 (Temporary Work Number)
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From: Byers, Harris <Harris.Byers@stantec.com>
Sent: Friday, April 24, 2020 2:15 PM
To: Beggs, Tauren R - DNR <Tauren.Beggs@wisconsin.gov>; Adam Tegen <ategen@manitowoc.org>
Subject: SSSAP for Site 1 of Riverpoint District in Manitowoc

Tauren:

We have put together the attached Site-Specific Sampling and Analysis Plan (SSSAP) to continue the subsurface investigation at Site 1 of the Riverpoint District in Manitowoc following removal of the remaining structural impediments and petroleum infrastructure (if present). The main objective for performing the proposed sampling is to further evaluate the RECs identified in the Stantec (2019) Phase I ESA and impacts identified in the Stantec (2020) Phase II ESA by sampling soil and groundwater beneath the former warehouse/former petroleum storage area and beneath the apparent remnant slab on Site 1, once the slabs are removed.

The City would like to include this SSSAP in their application to WEDC to support a SAG application for funds to remove the remaining slabs. Would you be able to review and provide email comment confirming that the SSSAP is a reasonable approach to continuing the investigation at the Site.

We acknowledge that the SSSAP may require modification and/or additional investigation could be warranted depending on conditions encountered beneath the slab once removed.

Sincerely,
Harris Byers, Ph.D.
Sr. Brownfields Project Manager

Direct: 414 581-6476
Harris.Byers@stantec.com

Stantec
12075 Corporate Parkway Suite 200
Mequon WI 53092-2649

Stantec Consulting Services Inc.
12075 Corporate Parkway, Suite 200 Mequon WI 53092

April 23, 2020

Attention: Mr. Adam Tegen
Community Development Director
City of Manitowoc
900 Quay Street
Manitowoc, Wisconsin 54220

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure
Riverpoint District – Site 1
200 North 10th Street
Manitowoc, Wisconsin 54220
WDNR BRRTS ID: 07-36-583000 (LGU Exemption)
WDNR BRRTS ID: 02-36-00408 (Closed)

Dear Mr. Tegen:

Stantec Consulting Services Inc. (Stantec) prepared this Site-Specific Sampling and Analysis Plan (SSSAP) for continuance of the subsurface investigation following the removal of remaining structural impediments and petroleum infrastructure at Site 1 of the Riverpoint District redevelopment project (200 North 10th Street; herein referred to as the Site.)

BACKGROUND AND ENVIRONMENTAL CONCERNS

As described in the Stantec (2019) Phase I ESA, the Riverpoint District consists of a 20.1-acre peninsula bound to the north, south, and west by the Manitowoc River and bound to the east by North 10th Street and North 11th Street.

Site 1 of the Riverpoint District consists 6.1 acres of land within the larger 20.1-acre Riverpoint District. The property consists of 5 individual contiguous parcels of land with the following PINs: 173000, 173003, 173100, 173160, and 173170. As noted previously, it is critical to realize that the individual PINS corresponded to leases between the previous owner and a variety of former industrial/bulk petroleum storage/commercial tenants. The Stantec (2019) Phase I ESA notes the northern portion of Site 1 was developed for bulk petroleum storage/distribution by the "Clarke Oil Company" (presumably a tenant) between 1912 and 1919. Bulk petroleum storage operations expanded between 1919 and 1927, at which point the operation consisted of eight oil tanks and a pump house. Bulk petroleum storage ceased between 1927 and 1946. The owner, Soo Line Minneapolis St. Paul and Sault St. Marie Railroad Company, leased the parcel to "JF Kerscher Co." on May 22, 1950, who constructed a large warehouse at the Site and utilized the Site for a variety of storage/commercial uses. The warehouse slab remains onsite. A Phase II ESA completed by SEC Donohue in 1992 identified heavy metal and petroleum impacts using the total recoverable petroleum hydrocarbons method (USEPA Method 9073). Based on evaluation criteria used at the time, WDNR closed this spill case (BRRTS Case No. 02-36-00408) on April 6, 1993.

Select volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAH), and Resource Conservation and Recovery Act (RCRA) metals were detected in soil at Site 1 during

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

the Stantec (2020) Phase II ESA at concentrations greater than applicable NR 720 RCLs and/or Background Threshold Values (BTVs). Additionally, select PAHs and/or dissolved heavy metals were detected in groundwater at Site 1 at concentrations greater than applicable ch. NR 140 Wisconsin Administrative Code (NR 140) Preventive Action Limits (PALs) and/or Enforcement Standards (ESs).

Current redevelopment plans include reuse of Site 1 for commercial purposes. However, as discussed in the Stantec (2020) Phase II ESA, residual impacts to soil and groundwater remain at the Site at concentrations greater than health-based standards. A subsurface site investigation compliant with NR 716 Wis. Adm. Code must be completed for the Site to facilitate proposed commercial redevelopment. However, the remaining concrete building slab of the former warehouse and other remaining impediments are significant obstacles to completing the warranted investigation. Stantec understands the City is seeking funding from the Wisconsin Economic Development Corporation (WEDC) for a Site Assessment Grant (SAG) to complete limited site investigation and slab demolition activities. The following describes the next steps in the subsurface investigation following removal of the remaining structural impediments and petroleum infrastructure at Site 1.

SCOPE OF WORK

Various environmental concerns associated with the Property have been identified and were partially evaluated in the Stantec (2020) Phase II ESA. However, further work is warranted to evaluate possible source areas and further define the magnitude and delineate the extents of impacts and other requirements of NR 716 Wis. Adm. Code. The main objective for performing the proposed sampling is to further evaluate the RECs identified in the Stantec (2019) Phase I ESA and impacts identified in the Stantec (2020) Phase II ESA by sampling soil and groundwater beneath the former warehouse/former petroleum storage area and beneath the apparent remnant slab on Site 1, once the slabs are removed.

Soil Assessment. Proposed soil sampling locations illustrated on Figure 1 and analyses summarized on Table 1 are based on the environmental concerns identified in the Stantec (2019) Phase I ESA and (2020) Phase II ESA. Diggers Hotline will be contacted to locate and mark the locations of registered utilities in the project area. A private utility locate will be completed as part of a geophysical survey to identify underground anomalies of additional concern. Soil quality data will be compared to ch. NR 720 WAC soil standards for the direct contact pathway at industrial and non-industrial properties and to soil standards for the soil to groundwater exposure pathway.

As illustrated on Figure 1, the proposed soil assessment includes advancing up to 10 soil borings using direct-push dual-tube Geoprobe® drilling methods. The borings are targeted to the former building slab(s) and former petroleum/fuel oil storage/handling areas, which are potential source areas for residual subsurface impacts. The borings will be advanced following removal of remaining structural impediments (e.g. slabs/foundations).

Soil samples will be collected continuously from each borehole, and each borehole will generally extend downward up to 15 feet below ground surface (bgs) to facilitate installation

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

of temporary groundwater monitoring wells. Actual locations may be adjusted based on accessibility, the results of the geophysical survey, and/or locations of underground utilities. Soil borings not completed as temporary wells will be abandoned with bentonite and the surface repaired to match surrounding.

The horizontal locations of each soil boring will be documented using sub-meter global positioning system (GPS) survey equipment. The elevation of the ground surface at each soil boring will be surveyed relative to a static site datum using a laser level or using a total station.

Soil sampling and field classification will be conducted by a field hydrogeologist. Sample collection and laboratory analytical methods for soil samples, as well as the rational for selecting sample locations and criteria to be used for selection of specific depth intervals for analysis, are presented in Table 1.

Soil samples will be collected continuously with four to five-foot samplers. Soil samples will be visually and physically examined by Stantec field geologists, and observations made of the general soil type (percentages of gravel, sand, silt, and clay), any visible layering, evidence of non-native fill materials (with estimated percentages of these materials contained in the soil matrix), indications of chemical or other staining, odors, and any other distinctive features. In addition, pertinent observations noted during installation of the soil borings will be documented on the soil boring logs.

Soil samples will be field screened for the presence of VOCs using a photoionization detector (PID). The PID will be calibrated daily in the field in accordance with the manufacturer's specifications. Samples will be further screened using a low-voltage ultraviolet light to evaluate possible petroleum impacts.

The exact quantity of soil samples collected will be determined in the field and will target soils indicative of a suspected release. As summarized on Table 1, a minimum of one soil sample will be collected from the unsaturated zone from each boring and submitted for RCRA metals, VOC, and/or PAH analysis from the depth interval of apparent impact (i.e. PID screening results, visual or olfactory observations, or fluorescence with ultraviolet light) and/or directly above the water table. A second sample may be collected from select borings within the upper 4 feet of the ground surface to evaluate the potential for direct contact and/or from directly above the capillary fringe of the shallow aquifer. All samples will be placed in laboratory-supplied containers, preserved as appropriate, stored on ice, and submitted under chain-of-custody procedures to TestAmerica (Chicago, Illinois), a State of Wisconsin-certified laboratory for analysis. Samples will be submitted to the laboratory as soon as possible after collection (i.e. daily). Anticipated sample collection and laboratory analytical methods for soil samples are summarized in Table 1.

As noted on Table 1, Quality Assurance/Quality Control (QA/QC) samples include a matrix spike/matrix spike duplicate, a de-identified field blank, and a trip blank.

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

Groundwater Assessment. Proposed groundwater sampling locations illustrated on Figure 1 and analyses summarized on Table 2 are based on the environmental concerns identified in the Stantec (2019) Phase I ESA and (2020) Phase II ESA. Groundwater quality data will be compared to ch. NR 140 WAC groundwater standards. In addition, VOCs detected in groundwater will be used to provide continued screening of the vapor intrusion pathway per WDNR Pub-RR800.

As illustrated on Figure 1, the proposed groundwater assessment includes completing six soil borings as a one-inch diameter temporary groundwater monitoring wells. The wells are targeted to the former building slab(s) and former petroleum/fuel oil storage/handling areas, which are potential source areas for residual subsurface impacts. The wells will be installed in soil borings completed following removal of remaining structural impediments (e.g. slabs/foundations).

The depth for the new wells will depend on the actual depth at which groundwater is encountered beneath the Site. The wells will be constructed in general conformance with ch. NR 141 WAC using 1-inch diameter poly-vinyl chloride casing with 10-foot long 0.010-inch slotted-screens with coarse sand pack. Wells will be placed to intersect the water table surface. It is anticipated that well depths will be approximately 10 feet bgs, though some could terminate at a lower depth if dense non-aqueous phase liquids are suspected.

The horizontal locations of each well will be documented using sub-meter GPS survey equipment. The elevation of the top of each well casing will be surveyed relative to a static site datum using a laser level or total station.

Following installation and recovery, and prior to purging and collection of groundwater samples, the elevation of the groundwater table will be measured and the volume of water present within each well will be calculated. Groundwater elevation data will also be used to document the gradient in potentiometric surface. The depth and thickness of floating (light) and/or sinking (dense) non-aqueous phase liquids, if present, will be measured using an interface probe.

Each temporary well will be purged prior to sampling. If the geologic materials surrounding the well are low yielding, then the wells will be completely evacuated, and groundwater samples collected after the water level recovers sufficiently to provide the volume of water needed to fill sample containers for the desired analyses. Temperature, pH, dissolved oxygen and specific conductance will be measured on the evacuated purge water. The well may be purged using any of the following methods: a peristaltic pump, a low-flow Micro-Purge Sampling System (or equivalent), a Voss disposable polyethylene bailer (or equivalent), or a Waterra hand pump (or equivalent) or similar equipment.

After purging, groundwater samples will be collected from all temporary groundwater monitoring wells and analyzed for dissolved (field filtered) RCRA metals, VOCs, and/or PAHs. All samples will be placed in laboratory-supplied containers, preserved as appropriate, stored on ice, and submitted under chain-of-custody procedures to TestAmerica (Chicago, Illinois), a

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

State of Wisconsin-certified laboratory for analysis. Samples will be submitted to the laboratory as soon as possible after collection (i.e. daily). Anticipated sample collection and laboratory analytical methods for groundwater samples are summarized in Table 2.

As noted on Table 2, QA/QC samples include a matrix spike/matrix spike duplicate, a de-identified field blank, and a trip blank.

Supplemental Site Investigation Report. A supplemental site investigation report will be prepared following receipt of the laboratory data. The report will include:

- Laboratory Analytical Reports
- Soil boring logs
- Monitoring Well Construction Forms
- Field PID data
- Groundwater Elevation Data
- Tables Summarizing Analytical Results for Soil and Groundwater Samples
- Potentiometric Surface Map of Shallow Groundwater

Recommendations for future actions, if any, to facilitate planned redevelopment of the Site will be provided in the report.

ESTIMATE OF PROBABLE COSTS

For budgeting purposes, the proposed investigation is estimated to cost $18,090, which includes $9,817 in Stantec labor and reimbursable expenses, $4,773 in laboratory costs, and $3,500 in driller subcontractor costs.

We trust this information meets your needs. Please feel free to contact us if you have any questions or concerns.

Regards,

STANTEC CONSULTING SERVICES INC.

Harris L. Byers, Ph.D.
Sr. Brownfields Project Manager
Harris.Byers@stantec.com
(414) 581-6476

STANTEC CONSULTING SERVICES INC.

Richard J. Binder, P.G., CPG
QA/QC Manager
Rick.Binder@stantec.com

Enclosures: Table
Figure

Reference: Site-Specific Sampling and Analysis Plan for Continuance of the Subsurface Investigation Following the Removal of Remaining Structural Impediments and Petroleum Infrastructure

LIMITATIONS

Site investigation costs can vary greatly depending on conditions encountered in the field and other factors. Stantec's observations, findings, and opinions should not be considered as scientific certainties but only as opinion based on our professional judgment. Additionally, due to limitations of the cost estimation process and the necessary use of data furnished by others, Stantec cannot assume liability if actual conditions and costs differ from the information presented herein.

Stantec

TABLE

Design with community in mind

Table 1
Proposed Laboratory Analysis for Soil
200 North 10th Street
Manitowoc, Wisconsin

Soil Boring ID	Estimated Soil Boring Depth (ft)	Estimated Sample Depth (ft)	Rationale	VOCs (8260)	PAHs (8270)	RCRA Metals (6010 and 7471)
SB-44	10 Feet (or 5 feet into the water table)	Various	SB-44 will evaluate soil quality beneath the remnant slab, once the slab is removed. The former use of the apparent slab remnant is unknown. SB-44 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-45	10 Feet (or to the water table)	Various	SB-45 will evaluate soil quality beneath the northwest portion of the concrete warehouse slab, once the slab is removed. SB-45 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-46	10 Feet (or to the water table)	Various	SB-46 will evaluate soil quality beneath the north-central portion of the concrete warehouse slab, once the slab is removed. SB-46 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-47	10 Feet (or to the water table)	Various	SB-47 will evaluate soil quality beneath the north-central portion of the concrete warehouse slab, once the slab is removed. SB-47 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-48	10 Feet (or to the water table)	Various	SB-48 will evaluate soil quality beneath the northeast portion of the concrete warehouse slab, once the slab is removed. SB-48 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-49	15 Feet (or 5 feet into the water table)	Various	SB-49 will evaluate soil quality beneath the southwest portion of the concrete warehouse slab (once the slab is removed) in an area corresponding to previous fuel oil ASTs. SB-49 will determine if prior bulk petroleum or industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-50	15 Feet (or 5 feet into the water table)	Various	SB-50 will evaluate soil quality beneath the southwest portion of the concrete warehouse slab (once the slab is removed) in an area corresponding to previous fuel oil ASTs. SB-50 will determine if prior bulk petroleum or industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-51	15 Feet (or 5 feet into the water table)	Various	SB-51 will evaluate soil quality beneath the southwest portion of the concrete warehouse slab (once the slab is removed) in an area corresponding to a previous fuel oil house. SB-51 will determine if prior bulk petroleum or industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-52	15 Feet (or 5 feet into the water table)	Various	SB-52 will evaluate soil quality beneath the south-central portion of the concrete warehouse slab, once the slab is removed. SB-52 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
SB-53	15 Feet (or 5 feet into the water table)	Various	SB-53 will evaluate soil quality beneath the south-central portion of the concrete warehouse slab, once the slab is removed. SB-53 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to soil.	(1) Highest PID and/or (2) Above Water Table	(1) Visual or Olfactory Indications of Impacts	(1) Surface and/or (2) Above Water Table
Estimated number of investigative samples to be analyzed				15	10	15
Trip Blank		-	Field and Laboratory QAQC Sample	1	0	0
Matrix Spike/Matrix Spike Duplicate			Assess the influence of the matrix on lab results	2	2	2
Field Duplicate		-	Assess the quality of the data and collection techniques.	1	1	1
Estimated number of QAQC samples to be analyzed				4	3	3
Estimated number of samples to be analyzed				19	13	18

Notes:
FD = Field Duplicate
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
PAH = Polycyclic Aromatic Hydrocarbons
RCRA = Resource Conservation and Recover Act
(6010) = Laboratory analytical method (SW-846)
Stantec, 2018, Phase I ESA 10th Street Railroad Property, August 2018.

Table 2
Proposed Laboratory Analysis for Groundwater
200 North 10th Street
Manitowoc, Wisconsin

Well ID	Estimated Well Depth (ft)	Rationale	VOCs (8260)	PAHs (8270)	Dissolved RCRA Metals (6020 and 7470)
TW-44	10 Feet (or 5 feet into the water table)	TW-44 will evaluate groundwater quality beneath the remnant slab, once the slab is removed. The former use of the apparent slab remnant is unknown. TW-44 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-49	15 Feet (or 5 feet into the water table)	TW-49 will evaluate groundwater quality beneath the southwest portion of the concrete warehouse slab (once the slab is removed) in an area corresponding to previous fuel oil ASTs. TW-49 will determine if prior bulk petroleum or industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-50	15 Feet (or 5 feet into the water table)	TW-50 will evaluate groundwater quality beneath the southwest portion of the concrete warehouse slab (once the slab is removed) in an area corresponding to previous fuel oil ASTs. TW-50 will determine if prior bulk petroleum or industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-51	15 Feet (or 5 feet into the water table)	TW-51 will evaluate groundwater quality beneath the southwest portion of the concrete warehouse slab (once the slab is removed) in an area corresponding to a previous fuel oil house. TW-51 will determine if prior bulk petroleum or industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-52	15 Feet (or 5 feet into the water table)	TW-52 will evaluate groundwater quality beneath the south-central portion of the concrete warehouse slab, once the slab is removed. TW-52 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
TW-53	15 Feet (or 5 feet into the water table)	TW-53 will evaluate groundwater quality beneath the south-central portion of the concrete warehouse slab, once the slab is removed. TW-53 will determine if prior industrial/commercial activities and/or placement of fill identified as REC#2 and REC#4, respectively in the Stantec (2018) Phase I ESA resulted in a release to groundwater.	1	1	1
Estimated number of investigative samples to be analyzed			6	6	6
Trip Blank		Field and Laboratory QAQC Sample	1	0	0
Matrix Spike/Matrix Spike Duplicate		Assess the influence of the matrix on lab results	2	2	2
Field Duplicate		Assess the quality of the data and collection techniques.	1	1	1
Estimated number of QAQC samples to be analyzed			4	3	3
Estimated number of samples to be analyzed			10	9	9

Notes:
FD = Field Duplicate
QAQC = Quality Assurance Quality Control
VOC = Volatile Organic Compounds
PAH = Polycyclic Aromatic Hydrocarbons
RCRA = Resource Conservation and Recover Act Metals (field filtered)
(6010) = Laboratory analytical method (SW-846)
Stantec, 2018, Phase I ESA 10th Street Railroad Property, August 2018.

FIGURE

Figure No.
1
Title
Site Features and Prior and Proposed Post-Slab Removal Sample Locations

Client/Project
Riverpoint District Site 1
200 North 10th Street
City of Manitowoc

0 20 40 Feet

Prepared by HLB on 3/25/2020

N

Legend

- Site 1 - 200 North 10th Street
- Riverpoint District
- Parcels (7)

Slabs Targeted for Removal

- Former Warehouse Slab
- Remnant Slab (?)

Post-Slab Removal Sample Locations

- Soil Boring (4)
- Soil Boring / Temp Well (6)

Prior Sample Locations (Stantec 2019)

- Soil Boring (6)
- Soil Boring/Temp Well (4)
- Groundwater Wells (AECOM, 2020) (2)

Prior Site Features (City Records)

- Oil House (1)
- Oil Tank (AST) (8)

Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Historic Site features illustrated on this figure were digitized from multiple historic maps/sources, including City Assessor files, WDNR files, and Sanborn (R) Fire Insurance Maps. These features are provided for illustration purposes only; Stantec makes no warranty as to the accuracy of these features.
3. Orthophotograph: Manitowoc County, 2017

Stantec