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January 31, 2020

Mr. Tauren Beggs
Hydrogeologist
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay WI 54313-6727

Emerging Contaminant Work Plan Update #1
Former Town of Newton Gravel Pit
BRRTS No. 02-3-000268
AECOM Project No. 60135471(82518)

Dear Mr. Beggs,

AECOM Technical Services, Inc. (AECOM), on the behalf of the City of Manitowoc (City), is pleased to submit this emerging contaminant work plan update to investigate per- and polyfluoroalkyl substances (PFAS) at the Former Town of Newton Gravel Pit site, 3130 Hecker Road, Manitowoc Wisconsin.

Presented below is a project update along with a work plan update for continued groundwater and surface water monitoring.

PROJECT UPDATE

Initial Limited Groundwater Assessment

An initial limited groundwater assessment led by the Wisconsin Department of Natural Resources (WDNR) was conducted during July 2018[1]. Seven monitoring wells were sampled (i.e. WT-01, WP-06R, WT-26, PZ-26A, WT-31, PZ-31A, and WT-34). Groundwater samples were analyzed for PFAS compounds using the Modified EPA Method 537, isotope dilution method, for the Michigan 24 compound list. PFAS compounds were identified in all but one (PZ-31A) of the seven wells sampled.

Only the sample from one well (WT-01), exceeded the U.S. Environmental Protection Agency's (EPA's) published Health Advisory Level (HAL) for PFAS compounds, Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) (i.e. 70 nanograms per liter (ng/l)).

Samples from three wells (WT-01, WP-06R, and WT-31), exceeded the Wisconsin Department of Health Services (WDHS) groundwater standard recommendation for the PFOA and PFOS Enforcement Standard (ES) value of 20 ng/l.

[1] *Limited Groundwater Assessment for Emerging Contaminants*, Former Town of Newton Gravel Pit, 3130 Heck Road, Manitowoc, Wisconsin. AECOM dated October 22, 2018.

Additional On-site Groundwater Monitoring and Potable Well Sampling

On October 24, 2018, AECOM provided the WDNR with an initial *Emerging Contaminant Monitoring Work Plan and Project Status Update*[2]. In accordance with the work plan, AECOM completed additional on-site PFAS groundwater monitoring and potable well sampling along Hecker Road.

The additional on-site groundwater monitoring focused on sampling the balance of the on-site water table wells and the groundwater treatment pond, 10 locations total, including the following:

- WT-02A
- WT-03
- WP-07R
- WT-27
- WT-28
- WT-29
- WT-30
- WT-32
- WT-33
- Treatment Pond Staff Gage, SG-P

Samples were analyzed using the Modified EPA Method 537, isotope dilution method, for the Michigan 24 compound list. The results from this sampling effort were presented in the *Northern Source Area Sampling, 2018 VOC annual Groundwater Monitoring, and Initial Emerging Contaminant Groundwater Investigation Report*[3]*.* PFAS compounds were identified in all nine of the sampled water table monitoring wells. Samples from two wells (WT-02A and WT-28) exceeded the EPA HAL and samples from four wells (WT-03, WT-29, WT-32, and WT-33) exceeded the WDHS groundwater ES recommendation value. Additionally, PFAS compounds were identified in the sample collected from the groundwater treatment pond.

The PFAS potable well sampling along Hecker Road was conducted in parallel with the volatile organic compound (VOC) sampling schedule as presented in the *Five Year Potable Well Monitoring Work Plan*[4]. Four potable wells along Hecker Road were sampled, as follows:

- 3327 Hecker Road
- 3461(3417) Hecker Road
- 3702 Hecker Road
- 3320 Hecker Road

The samples collected from the potable wells were also analyzed using the Modified EPA Method 537, isotope dilution method, for the Michigan 24 compound list. Sampling results were presented in the *October 2018 VOC Semi-Annual Potable Well Monitoring Letter Report and Initiation of Per-and Polyfluoroalkyl Substances (PFAS) Monitoring*[5] report. PFAS compounds were identified in samples collected at two locations (3327 Hecker Road and 3461(3417) Hecker Road), at levels below both the EPA HAL and the WDHS groundwater ES recommendation value.

Site Investigation Summary

The following summarizes the PFAS site investigation work to date:

[2] *Emerging Contaminant Monitoring Work Plan and Project Status Update,* Former Town of Newton Gravel Pit, AECOM October 24, 2018
[3] *Northern Source Area Sampling, 2018 VOC annual Groundwater Monitoring, and Initial Emerging Contaminant Groundwater Investigation Report,* Former Town of Newton Gravel Pit, 3130 Hecker Road, Manitowoc, Wisconsin, AECOM dated June 5, 2019
[4] *Five Year Potable Well Monitoring Work Plan*, Former Town of Newton Gravel Pit, 3130 Hecker Road, Manitowoc, Wisconsin. AECOM dated May 8, 2017.
[5] *October 2018 VOC Semi-Annual Potable Well Monitoring Letter Report and Initiation of Per-and Polyfluoroalkyl Substances (PFAS) Monitoring,* Former Town of Newton Gravel Pit, AECOM dated February 18, 2019

- Sixteen water table wells and piezometers out of 27 on-site wells have been sampled. Results indicate EPA HAL and WDHS groundwater ES recommendation value exceedances. The on-site groundwater investigation activities are not complete; 11 piezometers have not been sampled.
- The on-site groundwater treatment pond has been sampled.
- Four potable wells along Hecker Road have been sampled. Results indicate no WDHS groundwater ES recommendation value exceedances.

WDNR Communication/Correspondence

In addition to the completed PFAS activities noted above, the City has been in frequent communication with the WDNR concerning future PFAS site investigation activities. During a Project Team Meeting on July 9, 2019, the group discussed multiple aspects of the PFAS work including the status of regulations, communications with homeowners, recommended responses when PFAS is identified, how to limit exposure, etc. As a follow-up to the meeting, the WDNR provided a PFAS "Compilation of Information" email on August 7, 2019.

On October 25, 2019, as part of a continuing email thread, the WDNR sent an email titled "RE: Former Newton Pit – Expanded Potable Well Sampling WP – PFAS" to the Project Team. The email identified the need to submit an updated PFAS site investigation work plan and identified a requested broad scope of work.

During a Project Team Meeting on December 10, 2019, PFAS discussions clarified and refined the WDNR's requested scope of work. In general terms, the scope of work included:

- Continued on-site and off-site groundwater monitoring.
- Surface water sampling of Silver Creek.
- Continued potable well sampling.

PFAS Regulatory Framework

As an emerging class of contaminants, the EPA has not determined a Maximum Contaminant Level (MCL) for PFAS under the Safe Drinking Water Act. There is no foreseeable date for when the EPA may promulgate PFAS MCLs.

There are currently no applicable Wisconsin Administrative Code Chapter NR 140 ESs or Preventative Action Limits (PALs) for PFAS in groundwater. As noted during the WDNR's PFAS Technical Advisory Group meeting on December 13, 2019, the NR 809 rulemaking process for two PFAS compounds, PFOA and PFOS, is underway with an anticipated promulgation date of summer 2022.

WORK PLAN UPDATE #1

This work plan update is provided in general accordance with the requirements of the Wisconsin Administrative Code Chapter NR 700 rule series with the understanding that multiple work plans for the project are currently in place and approved by the WDNR. Therefore, this work plan update is intended to be reviewed in conjunction with the existing plans.

The scope of work proposed for continued PFAS investigation activities takes into account the WDNR's requested scope of work, the lack of regulatory groundwater standards, the difficulties of communicating with property owners and homeowners when no regulatory standards exist, no currently identified exceedances to the WDHS groundwater ES recommendation values in potable wells, and the need to complete the existing on-site surface water and groundwater sampling activities.

The potential need for additional PFAS sampling beyond what is proposed in this work plan will be evaluated pending the results from the proposed sampling and future discussions with the WDNR.

Potable Well Sampling

The City will work with AECOM to develop a work plan for testing once the WDNR has set enforcement standards.

Groundwater Monitoring Well Sampling

The proposed scope of work is to expand the PFAS on-site groundwater monitoring by sampling the balance of the on-site wells. This includes a total of 11 wells as listed below and shown on Figure 1.

- PZ-01
- PZ-03
- PZ-26B
- PZ-26C
- PZ-30
- PZ-30A
- PZ-31
- PZ-32
- PZ-32A
- PZ-33
- PZ-33A

The combined results of the WDNR's initial July 2018 groundwater assessment event, the October 2018 sampling event, and this proposed event will provide a complete PFAS data set for the existing on-site wells.

On-site groundwater sampling for PFAS will include the following protocols:

Testing Laboratory:
Eurofins/TestAmerica
Either the Lancaster, PA or Sacramento, CA laboratories.

Laboratory Analysis:
Modified EPA Method 537 (isotope dilution method), State of Michigan list of 24 analytes.
Laboratory-supplied 250ml HDPE bottles without preservative.

Sampling:
Sampling will be conducted by AECOM-certified PFAS sampling teams. AECOM certification requires attending an AECOM internal PFAS sampling training course and reviewing the PFAS Sampling Guidance document designed to make AECOM samplers aware of the products that are known to have tested positive for PFAS compounds, as well as identifying products that are appropriate to use in the sampling environment. Care will be taken by the AECOM sample teams to use PFAS- free sampling protocols.

The groundwater monitoring wells will be sampled using laboratory-supplied 250ml HDPE bottles without preservative. The sample bottles, once filled, will be stored on ice in insulated coolers. The coolers will be shipped via FEDEX to the analytical laboratory for chemical analysis within the holding times specified by the analytical method (14 days). The samples will be transferred to the laboratory under standard chain of custody control.

Quality Control:
Duplicate Sample: No field dups will be obtained.

Field Blanks: The Method 537 sampling protocol, which require field blanks at each sampling location, will be modified as follows:

A single field blank will be collected from a central location within the Newton Pit for each day during the sampling event.

Equipment Blanks: AECOM will collect one (1) equipment blank representative of the sampling equipment.

Laboratory Quality Control: The test lab will provide a Level 2 data package. Matrix Spike/Spike Duplication (MS/MSD) analysis will not be requested. The laboratory will have batch MS/MSD data if needed.

Data Validation: AECOM will provide a data validation review using procedures described in the National Functional Guidelines for High Resolution Superfund Method Data Review (EPA, April 2016), as appropriate.

Reporting:
AECOM will incorporate the PFAS sampling results into a groundwater monitoring letter report. The report will also include historical PFAS groundwater analytical results.

Surface Water Sampling

The proposed scope of work is to conduct PFAS surface water sampling of Silver Creek within the boundaries of the Newton Pit property. This includes a total of four locations as listed below and shown on Figure 1.

- SW-A, the northern property line.
- SW-B, adjacent to the northeast property line.
- SW-C, the bridge.
- SW-D, the south property, adjacent to VOC sampling staff gauge location, SG-3.

Surface water sampling for PFAS will include the following protocols:

Testing Laboratory:
Eurofins/TestAmerica
Either the Lancaster, PA or Sacramento, CA laboratories.

Laboratory Analysis:
Modified EPA Method 537 (isotope dilution method), State of Michigan list of 24 analytes. Laboratory-supplied 250ml HDPE bottles without preservative.

Sampling:
Sampling will be conducted by AECOM-certified PFAS sampling teams. AECOM certification requires attending an AECOM internal PFAS sampling training course and reviewing the PFAS Sampling Guidance document designed to make AECOM samplers aware of the products that are known to have tested positive for PFAS compounds, as well as identifying products that are appropriate to use in the sampling environment. Care will be taken by the AECOM sample teams to use PFAS- free sampling protocols.

Sampling will be conducted in a down-stream to up-stream direction. At each sample location, samples will be obtained from an undisturbed mid-stream flowing channel of water. Due to the

reported properties of PFAS compounds, that indicate they like to exist at the air/water interface, grab samples will include the air/water interface.

The grab samples will be obtained using laboratory-supplied 250ml HDPE bottles without preservative. The sample bottles, once filled, will be stored on ice in insulated coolers. The coolers will be shipped via FEDEX to the analytical laboratory for chemical analysis within the holding times specified by the analytical method (14 days). The samples will be transferred to the laboratory under standard chain of custody control.

Quality Control:
Duplicate Sample: No field dups will be obtained.

Field Blanks: The Method 537 sampling protocol, which require field blanks at each sampling location, will be modified as follows:

> A single field blank will be collected from a central location within the Newton Pit for each day during the sampling event.

Equipment Blanks: AECOM will collect one (1) equipment blank representative of the sampling equipment, if necessary.

Laboratory Quality Control: The test lab will provide a Level 2 data package. Matrix Spike/Spike Duplication (MS/MSD) analysis will not be requested. The laboratory will have batch MS/MSD data if needed.

Data Validation: AECOM will provide a data validation review using procedures described in the National Functional Guidelines for High Resolution Superfund Method Data Review (EPA, April 2016), as appropriate.

Reporting:
AECOM will present the surface water PFAS sampling analytical results in a dedicated letter report.

CLOSING

Unless otherwise notified by the WDNR, the City intends to proceed with the activities proposed in this Work Plan Update. If you have any questions, please contact Dave Henderson at 414.944.6190 or dave.henderson@aecom.com.

Yours sincerely,

AECOM Technical Services, Inc.

D.S. Henderson

David Henderson, P.E.
Project Manager

Attachment: Figure 1 Proposed PFAS Sample Locations

Cc: Kathleen M. McDaniel, City Attorney, City of Manitowoc
Dan Koski, Director of Public Infrastructure, City of Manitowoc

Project Management Initials: BM Creator: MLB Checked: Approved: ANSI B 11" x 17"

FIGURE 1
PROPOSED PFAS SAMPLE LOCATIONS

Former Newton Gravel Pit
Manitowoc, Wisconsin

SW-A
SW-B
SW-C
SW-D
SG-1
SG-2
SG-3
SG-C
SG-P
WT-01
PZ-01
WT-02A
WT-03
PZ-03
WT-05
PZ-05A
PZ-05B
WT-11
WT-12
PZ-12
WT-15
PZ-15A
PZ-15B
WT-16
PZ-16
PZ-16A
PZ-16B
PZ-16C
WT-19R
WT-20
WT-21
WT-22
WT-23
WT-24
PZ-24A
PZ-24B
PZ-24C
WT-25
PZ-25A
PZ-25B
PZ-25C
WT-26
PZ-26A
PZ-26B
PZ-26C
WT-27
WT-28
WT-29
WT-30
PZ-30
PZ-30A
WT-31
PZ-31
PZ-31A
WT-32
PZ-32
PZ-32A
WT-33
PZ-33
PZ-33A
WT-34
WP-06R
WP-07R
GRAVEL PIT LN
HECKER RD

Legend

- Proposed Staff Gauge To Be Sampled For PFAS
- Proposed Well To Be Sampled For PFAS
- Well Not Proposed For PFAS Sampling
- Staff Gauge Not Proposed For PFAS Sampling
- Gravel Pit Roads
- Approximate Pond Location
- Approximate Outfall Pipe Location
- Engineered Cap Area
- Electric Line
- Civil Divisions
- Parcels
- Streams
- Building Footprints

Notes:
1. Horizontal Coordinates = NAD83 Manitowoc County Coordinates.

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DRAWN BY: RW	DATE: 1/21/2020

Project No.: 60581251

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