

Letter of Transmittal

Attention:	Mr. Tauren Beggs, WDNR Mr. James Kasdorf, WDNR	Date:	8/5/19
Project reference:	Former Town of Newton Gravel Pit BRRTS No. 02-36-000268	Project number:	60135471

We are sending you the following:

Number of originals:	Number of copies:	Description:
One	Zero	Expanded Downgradient Potable Well Sampling Work Plan - VOCs Former Town of Newton Gravel Pit BRRTS No. 02-36-000268

Tauren,

One copy of the Expanded Downgradient Potable Well Sampling Work Plan – VOCs is attached. Additionally, the report is being submitted through the WDNR’s electronic submittal system.

Please let me know if you have any questions.

Thank you.



David Henderson, P.E.
Senior Project Manager
D 414.944.6190 C 414.429.8304
dave.henderson@aecom.com

Cc: Ms. Kathleen M. McDaniel, City of Manitowoc
Mr. Dan Koski, City of Manitowoc

August 5, 2019

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

Mr. James Kasdorf, Jr.
Private Water Supply Specialist
Wisconsin Department of Natural Resources
N7725 Highway 28
Horicon, WI 53032

**Subject: Expanded Downgradient Potable Well Sampling Work Plan - VOCs
Former Town of Newton Gravel Pit
3130 Hecker Road, Manitowoc, Wisconsin
WDNR BRRTS No. 02-36-000268
WDNR FID No. 436104020**

Dear Mr. Beggs & Mr. Kasdorf,

On behalf of the City of Manitowoc (City), AECOM Technical Services, Inc. (AECOM) is submitting an Expanded Downgradient Potable Well Sampling Work Plan for volatile organic compounds (VOCs) in conjunction with on-going work associated with the Former Town of Newton Gravel Pit.

The proposed expanded potable well sampling for VOCs will continue the evaluation for the extent of cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC) as contaminants of concern (COCs) beyond the currently defined limits of the downgradient plume.

Presented below is background information and a scope of work description.

Background Information

Previous potable well sampling plans include the initial 2014 *Potable Well Monitoring Work Plan*¹, the 2015 to 2016 *Semi-Annual Potable Well Monitoring Work Plan*², and the May 2017 *Five-Year Potable Well Monitoring Work Plan*³. Information presented in these plans provide historical context to the project and the Five-Year Plan provides the current sampling schedule.

The down gradient potable wells were categorized and grouped in sampling zones as detailed in the 2017 Five-Year Work Plan and shown on the attached Figure 1.

In August of 2017 the property owner at 2918 S. 26th Street collected a potable well water sample and submitted it for VOC analysis to the Wisconsin State Laboratory of Hygiene, Madison, Wisconsin. The initial results indicated a new VOC detect approximately 1,600 feet down gradient from the last defined extent of the groundwater contaminant plume. The detect was confirmed in a September 2017 sample collected by AECOM.

With the information on the new VOC impact at 2918 S. 26th Street, the Wisconsin Department of Natural Resources (WDNR) conducted additional sampling at eight addresses in the vicinity of S. 26th Street,

¹ Potable Well Monitoring Work Plan, BRRTS No. 02-36-000268, AECOM, April 10, 2014.

² 2015 to 2016 Semi-Annual Potable Well Monitoring Work Plan, BRRTS No. 02-36-000268, AECOM, September 22, 2015.

³ Five Year Potable Well Monitoring Work Plan, Former Town of Newton Gravel Pit, 3130 Hecker Road, Manitowoc, Wisconsin, AECOM, May 8, 2017

Nelson Lane, and Elm Road during November and December 2017. The WDNR's sampling results identified two additional addresses with potable well VOC impacts. The VOC detections in this area are east of and down gradient from the sampling zones identified in the *Five-Year Potable Well Monitoring Work Plan*.

These VOC detections down gradient from the previously defined extent of groundwater impacts prompted reconsideration of the next investigational steps. Based on VOC mobility in fractured bedrock and consideration of how far from the former Newton Gravel Pit groundwater impacts have been quantified, it has become apparent that additional sampling should be extended to the regional groundwater discharge boundary (i.e. the shore of Lake Michigan).

In researching the property uses and addresses in the vicinity of S. 26th Street and eastward to Lake Michigan, AECOM identified five properties with known or possible environmental impacts that may influence the interpretation of the expanded sampling results. The properties are shown on the attached Figure 1A and include:

- Anderson Trucking Services, BRRTS No. 03-36-001597
The site is located at 2611 Viebahn Street. It is a closed WDNR Leaking Underground Storage Tank (LUST) petroleum contamination site.
- Former Heresite Protective Coatings – LGU, BRRTS No. 02-36-560770
The site is located on Orchard Lane east of S. 26th Street, between Viebahn Street and Silver Creek Road. It is a closed WDNR Environmental Repair Program (ERP) site.
- Radandt Development Corp. Landfill, BRRTS No. 02-36-000683
The landfill is located on S. 15th Street between Viebahn Street and Silver Creek Road. It is a closed WDNR ERP site that is still actively monitored by the WDNR's Bureau of Waste and Materials Management, Solid and Hazardous Waste Information System (SHWIMS) database under SHWIMS Nos. 436031860 and 436112050.
- Manitowoc B Groundwater, BRRTS No. 02-36-000119
The site is located along the shore of Lake Michigan east of CTH LS between Viebahn Street and Silver Creek Road, adjacent to Silver Creek Park. It is a closed WDNR ERP site that was a collector well that has been formally abandoned.
- Manitowoc Army Reserve Center, BRRTS No. N/A
The site is located along the shore of Lake Michigan east of CTH LS between Viebahn Street and Silver Creek Road, adjacent to Silver Creek Park, and just up gradient from the Manitowoc B Groundwater site. The Army Reserve Center was the location of environmental investigations during late 1980s and early 1990's.

AECOM will take into consideration possible impacts from these sites in our review of the expanded potable well sampling results.

Potable well monitoring results obtained to-date have been published in numerous letter reports. The most recent report, *October 2018 VOC Semi-Annual Potable Well Monitoring Letter Report and Initiation of Per- and Polyfluoroalkyl Substances (PFAS) Monitoring*⁴ provides the current sampling results as-well-as summary data tables of historical results.

Presented below is the scope of work for the proposed expanded potable well sampling.

⁴ 2018 VOC Semi-Annual Potable Well Monitoring Letter Report and Initiation of Per- and Polyfluoroalkyl Substances (PFAS) Monitoring, Former Town of Newton Gravel Pit, BRRTS No. 02-36-000268, AECOM, February 18, 2018.

Scope of Work




Sampling Zone

The expanded potable well sampling zone, See Figure 1A, is generally defined as follows:

- The western boundary – the established eastern extent of the five-year potable well sampling zone limits with adjustments for the VOC impacts in the vicinity of S. 26th Street, see orange “5 year sentinel zone” line on Figure 1A.
- The northern boundary – the City of Manitowoc, City Limit along Viebahn Street. Properties in the City Limits are served by city water. Properties south of the City Limits are within the sampling zone.
- The eastern boundary – the shore of Lake Michigan.
- The southern boundary – a line from the property at 4125 CTH CR southeast through farm fields to the intersection of S. 26th Street and Pheasant Drive, then east along Pheasant Drive to Lake Michigan (shown as “expanded sampling limits” on Figure 1A). Properties north of the described boundary are within the sampling zone.

In total, an estimated 303 potable wells have been identified within the expanded potable well sampling zone. The estimated count and location of the potential wells is based on a review of the Manitowoc County Geographic Information Systems (GIS) land records database, the WDNR’s private well construction information database, the Wisconsin Geological and Natural History Survey historic well construction report database, and a visual review of aerial photography.

A breakdown of the potential potable well sampling locations shown on Figure 1A is as follows:

- Potential Well Location – color code symbol: 
A sub-total of 236 wells. No well construction reports were identified for these wells.
- Unconsolidated Potential Well Location – color code symbol: 
A sub-total of 14 wells. Well construction reports were found for these locations and the logs indicate that the well is screened in unconsolidated soils (i.e. glacial till).
- Consolidated Potential Well Location – color code symbol: 
A sub-total of 53 wells. Well construction reports were found for these locations and the logs indicate that the well is screened in bedrock.

Schedule

Due to the magnitude of the proposed expanded potable well sampling, scheduling for the event includes time for an introductory public information campaign, significant time for the actual sampling, and a post-sampling town hall event. In general, the schedule is anticipated to include the following steps/tasks:

- Introductory Public Information Campaign
 - Prepare a potable well homeowner address database.
 - Prepare a press release and a homeowner introduction letter with a FAQ attachment.
 - Chose project dates for press release, homeowner RSVP dates, sampling period, and town hall date.
 - Issue press release and homeowner introduction letters.
- Pre-sampling RSVP Period
 - Answer questions from homeowners and media.

- Schedule homeowner sampling. Once the homeowners are informed of the sampling event, it will be the homeowner's responsibility to contact the City to schedule their individual sampling times. This method for scheduling may be adjusted depending on the rate of replies received from the homeowners.
- Sampling Field Work
 - AECOM assumes sampling will be conducted over a six-week period. This allows time for homeowners to schedule sampling at their convenience.
- Post-sampling
 - Provide results to individual homeowners and the WDNR.
 - Prepare a summary report.
 - Prepare for and conduct a town hall meeting as a forum where homeowners can ask questions. AECOM and the City may request WDNR participation in the town hall meeting.

Overall, considering the tasks above and laboratory analysis time, the sampling event is anticipated to take between four and five months to complete.

Sampling Methodology

After right-of-entry has been received from the potable well owner, the City will then work with AECOM and the homeowners to schedule an appointment for AECOM field technicians to sample the well.

Samples will be collected following purging from a cold water tap or spigot as near to the well as possible, preferably prior to any storage/pressure tanks or physical/chemical treatment system that might be present. The system will be purged for at least 10 minutes immediately prior to sampling. Samples for VOCs will be collected in 40-ml glass vials with Teflon septa. The vials will be filled to the top, leaving no headspace or bubbles and quickly capped. While filling sample containers, water flow will be reduced to a low level to minimize sample disturbance.

Potable well water samples for quality control will also be collected. The quality control samples will include field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples. The quality control samples will be determined by AECOM field personnel. Laboratory provided trip blanks will accompany the sample containers to evaluate the potential for analytical artifacts associated with container handling in the field and laboratory. The samples will be placed on ice in a cooler and picked-up by the laboratory analyzing the vials. The samples will be conveyed under chain of custody (COC) documentation.

Water samples will be submitted to a Wisconsin Administrative Code (WAC) Chapter NR 149 certified laboratory for analyses of VOCs (EPA Method SW 8260B). The groundwater analytical results will be compared to the WAC Ch. NR 140.10, Table 1, Public Health Groundwater Quality Standards.

Confirmation sampling will be conducted where analytical results for an individual well location identify a WAC NR 140.10, Table 1, Public Health Groundwater Quality Enforcement Standard (ES) exceedance. Confirmation sampling will be scheduled individually.

Reporting

Reporting of laboratory analytical results will be made to the City, WDNR, and individual potable well owners in general accordance with WAC Chapter NR 716.14 *Sample Results Notification Requirements*. Well owner reporting will include a cover letter explaining the results with an attached copy of the laboratory report. The WDNR will be copied on the well owner reporting.

A formal report of the expanded potable well sampling activities will be prepared and submitted to the WDNR. The letter report will include a written summary of the sampling event, summarized laboratory results in tabular form, a figure showing the results, and copies of laboratory reports. We anticipate discussing the results with WDNR prior to preparing an updated potable well monitoring work plan.

Ongoing Activities

At this time, potable well sampling is continuing as scheduled in accordance with the 2017 *Five-Year Potable Well Monitoring Work Plan*. If future sampling results indicate that a well is impacted by COCs, the data will be used to reclassify the well's sampling zone according to the five-year plan. The sampling frequency of the newly impacted well will also be adjusted to match the reclassified sampling zone schedule.

AECOM anticipates that, once the expanded potable well sampling event is complete, an updated potable well sampling work plan will be produced that takes into account the existing five-year plan and the newer results from the expanded sampling.

At this time, we are proceeding with scheduling the expanded potable well sampling event. If you have any questions regarding the work plan, please contact Dave Henderson at 414.944.6190 or dave.henderson@aecom.com.

Yours sincerely,

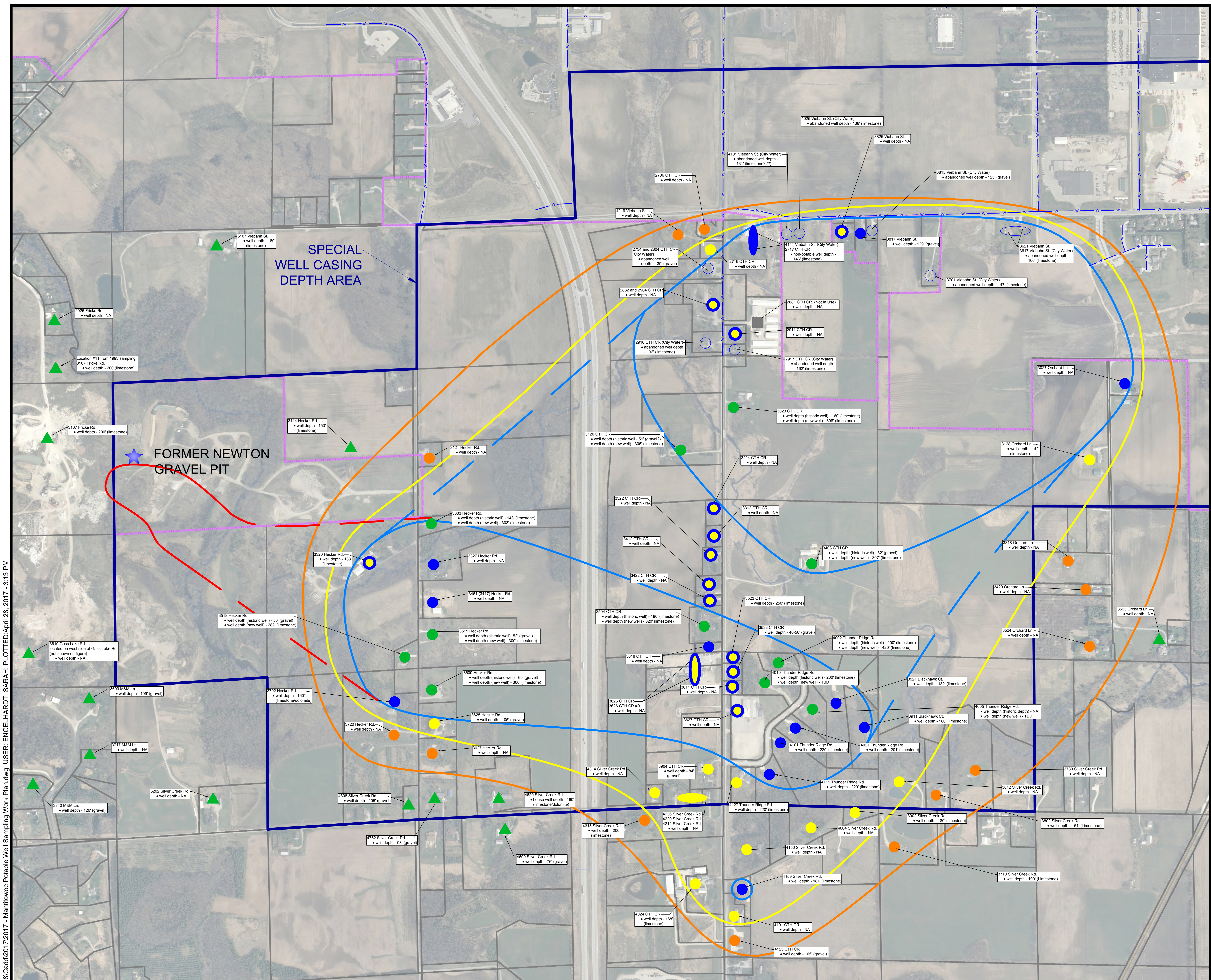
AECOM Technical Services, Inc.



David Henderson, P.E.
Senior Project Manager

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

Attachments: Figure 1, Potable Well Sampling Locations, Five Year Potable Well Sampling Plan
Figure 1A, 2019 Expanded Potable Well Sampling



File: \US\S\W\K\FS001\prod\Dat\Library\work\82518\Cadd\2017\2017 - Manitowoc Potable Well Sampling Work Plan.dwg; USER: ENGELHARDT, SARAH; PLOTTED April 28, 2017 - 3:13 PM

- LEGEND:**
- PROPERTY BOUNDARY
 - - - PROPERTY BOUNDARY - CITY LIMITS
 - W — UTILITIES:
 - POTABLE WATER SUPPLY (from City of Manitowoc)
 - POTABLE WELL SAMPLE LOCATIONS
 - - WITHIN TARGET ZONE
 - - WITHIN TARGET ZONE WITH NO DETECTS
 - - WITHIN SENTINEL ZONE-3 YEAR

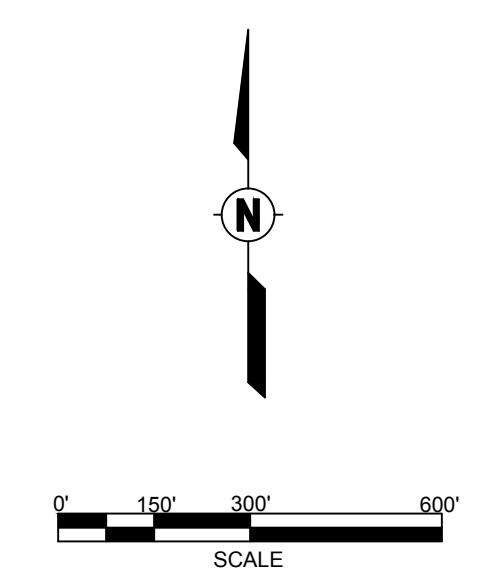
- POTABLE WELL SAMPLE LOCATIONS (CONTINUED)**
- - WITHIN SENTINEL ZONE-5 YEAR
 - - REPLACEMENT WELL WITHIN TARGET ZONE
 - ▲ - UPGRADIENT AND HISTORICALLY SAMPLED WELLS
 - - FORMER TARGET ZONE WELL, NOW ON CITY WATER
 - - WELL OUT OF SERVICE

- SAMPLING ZONES**
- TARGET ZONE
 - SENTINEL ZONE-3 YEAR
 - SENTINEL ZONE-5 YEAR
 - FORMER GRAVEL PIT ZONE

NOTES:

NA - NOT AVAILABLE

TBD - TO BE DETERMINED

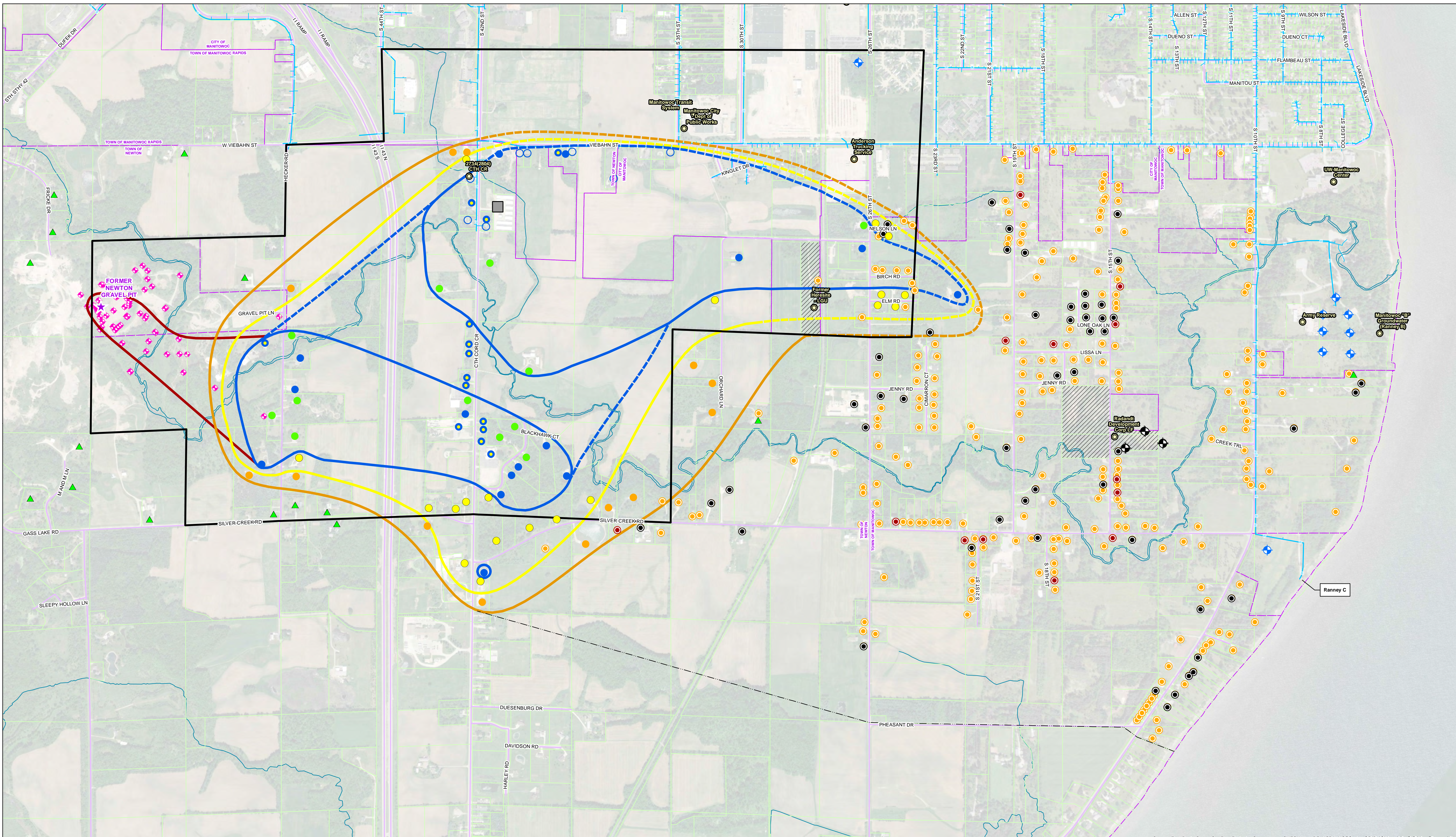


AECOM
 Milwaukee Office
 1555 RiverCenter Dr
 Milwaukee, WI
 414.944.6080

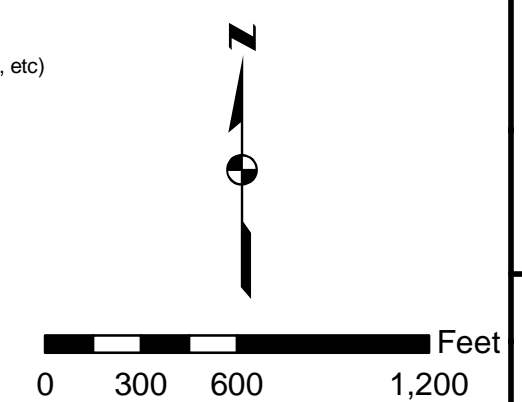
FORMER NEWTON GRAVEL PIT

**POTABLE WELL SAMPLING LOCATIONS
 FIVE YEAR POTABLE WELL SAMPLING PLAN**

Project Number: 60311767	Drawn By: SAE/ANS	Date: 4/28/2017	Figure No. 1
-----------------------------	----------------------	--------------------	--------------



Legend	
	Historical Deep Well Logs
	Supplementary Site Monitoring Wells
	Environmental Sites (BRTTS, LUST, etc)
	Well Out Of Service
	Site Location
	Within Target Zone, With Detects
	Within Target Zone, With No Detects
	Former Target Zone Well, With Detects, But Now On City Water
	Within Sentinel Zone - 3 Year, With No Detects
	Within Sentinel Zone - 5 Year, With No Detects
	Replacement Well Within Target Zone, With No Detects
	Historically Sampled Wells, With No Detects
	Potential Well Locations - Unconsolidated Log
	Potential Well Locations - Consolidated Log
	Expanded Sampling Limits
	Potential Well Locations - No Logs
	DNR Special Well Casing Depth Area
	Target Zone
	Inferred Target Zone
	3 Year Sentinel Zone
	Inferred 3 Year Sentinel Zone
	5 Year Sentinel Zone
	Inferred 5 Year Sentinel Zone
	Former Gravel Pit Zone
	Utility Water Line
	Road Centerlines
	Municipality Boundaries
	Parcels
	Environmental Sites Property (BRTTS, LUST, etc)
	Streams
	Newton Gravel Pit Monitoring Wells



AECOM Milwaukee Office 1555 River Center Dr Milwaukee WI	FORMER NEWTON GRAVEL PIT EXPANDED POTABLE WELL SAMPLING 2019	
	Project No. 60135471	Date: June 2019
AECOM	Drawn By: RW	FIGURE 1A

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

C:\na\proj\1555\NewtonGP\Map\Fig_22304_MonMapJune2019.mxd