

July 19, 2021

Mr. Riley Neumann  
Wisconsin Department of Natural Resources  
2300 North Dr. Martin Luther King, Jr. Drive  
Milwaukee, Wisconsin 53212-3128

**Re: PFAs Additional Evaluation Work Plan**  
**BRRTS #: 02-41-576336 & 02-41-579429**  
**FID #: 241828620**  
**Sunrise Shopping Center**  
**2410-2424 10<sup>th</sup> Avenue & 1009 Marquette Avenue**  
**South Milwaukee, Wisconsin 53172**

Mr. Neumann:

As directed by the Wisconsin Department of Natural Resources (WDNR) in a letter dated November 23, 2020, an evaluation of potential subsurface impact of the Sunrise Shopping Center facility (Site) resulting from emerging contaminants was performed in March 2021. The results of the sampling were submitted to WDNR in the *Emerging Contaminant Evaluation Report* dated April 15, 2021. In a response letter dated May 19, 2021, the WDNR requested additional investigation of per- and polyfluoroalkyl substances (PFAS) and that a work plan be submitted prior to performing those additional investigations. This letter report is provided as a *PFAs Additional Evaluation Work Plan* (Work plan) proposing investigation methodology and addressing comments from the May 2021 response letter.

### **Response to Comments**

**Comment:** *In accordance with the August 17, 2020, letter from DNR, provide an evaluation on the use, handling, or storage, historically or present, of per- and polyfluoroalkyl substances (PFAS) and other applicable emerging contaminants...*

**Response:** Section 1.0 of the January 25, 2021, *Emerging Contaminant Evaluation Work Plan* provided an emerging contaminant assessment. The emerging contaminant assessment included a reevaluation of DAI's previous Phase I Environmental Site Assessment (Phase I ESA) and a review of the WDNR guidance document RR-101E. As was noted, PFAS were identified as potential contaminants of concern based upon comparison of the historical dry cleaning and petroleum storage to Table 1 of the WDNR guidance document.

Based upon the information currently available, there are no known specific uses, storage, handling, etc., of PFAS-containing chemicals. The Site is presently used as a strip shopping mall, with three (3) tenants: Ace Hardware (1009 Marquette Avenue), a clothing retail shop

(2412 10<sup>th</sup> Avenue), and Aurora Pharmacy (2414 10<sup>th</sup> Avenue). All other tenant spaces are presently vacant.

Additional research will be conducted to identify any potential occupants of the Site that were not previously identified, and that may be associated with PFAS usage. Historical records will be reviewed to investigate any historical fires at the Site which may have used PFAS containing flame retardants. The proposed PFAS sampling results will also be compared with ongoing groundwater sampling results to see if a spatial pattern is evident that suggests that the PFAS are entrained in the dry cleaning solvent (Tetrachloroethene) or in the petroleum products previously stored and handled by Caveney & Co. The locations of detectable PFAS from the proposed sampling may also provide some insight into historical sources.

**Comment:** *As PFAS was identified in groundwater samples, you should conduct additional sampling to define degree and extent of contamination, in accordance with Wis. Admin. Code ch. NR 716. Additional sampling should be conducted in all currently available monitoring wells.*

**Response:** As directed, additional groundwater sampling will be conducted from all available monitoring wells present on-site, include MW-1 to MW-5 and MW-201. Please see Attachment 1 to this letter for the proposed additional PFAS sampling activities.

**Comment:** *The sump water within the Ace Hardware basement is currently run through a carbon treatment process before discharging to the City of South Milwaukee storm sewer system, which ultimately discharges to Lake Michigan. This water should be sampled for PFAS prior to and after treatment.*

**Response:** As directed, the sump water and treatment system discharge will be analyzed for PFAS. Please see Attachment 1 to this letter for the proposed additional PFAS sampling activities.

**Comment:** *Provide a work plan to define degree and extent of groundwater contamination as identified in the points above.*

**Response:** Please see Attachment 1 to this letter for the proposed additional PFAS sampling activities.

**Comment:** *After additional sampling data is collected, provide a report detailing the new data along with interpretations. Additionally, the DNR would like to request the following revisions...for future documentation*

**Response:** The April 2021 *Emerging Contaminant Evaluation Report* will be updated following the additional PFAs sampling activities and submitted to WDNR. In addition to providing the results of the additional sampling performed, the report will include all of the March 2021 sampling results. The noted revisions to the tables and figure have been completed.

Upon approval of this Work plan by WDNR, the proposed sampling will be conducted. If you have any questions or require additional information, please contact me at (847) 996-3580. Thank you for your time and assistance.

Sincerely,  
**DAI Environmental, Inc.**



Christopher Cailles, P.E.  
Project Engineer

Attachment

**ATTACHMENT 1**  
**PFAS ADDITIONAL SAMPLING WORK PLAN**

## PFAS GROUNDWATER SAMPLING WORK PLAN

### **Monitoring Well Sampling Network**

As proposed in the January 25, 2021, *Emerging Contaminant Evaluation Work Plan*, groundwater sampling for emerging contaminants was performed on March 11, 2021, at two (2) existing groundwater monitoring wells that have historically shown the highest levels of contamination (MW-3 and MW-5). These monitoring wells were chosen to be representative of a larger area because a specific location of any potential release of emerging contaminants was not known.

Based upon the observation of various PFAS constituents in the groundwater sampling, including certain constituents at concentrations above the recommended (but not yet formally approved) Preventative Action Limits (PALs) and Enforcement Standards, WDNR has requested that all available monitoring wells on-site be sampled. Therefore, samples will be collected from six (6) existing monitoring wells: MW-1 to MW-5 and MW-201. This additional sampling will include the resampling of MW-3 and MW-5 for comparison to previous sampling results. No additional sampling for 1,4-Dioxane or n-Nonane are planned based upon the lack of any observed concentrations. Figure B.3.d in Attachment 2 shows the locations of the six (6) monitoring wells.

In addition to sampling groundwater from the six (6) monitoring wells, the water in the Ace Hardware sump pit and the discharge from the water treatment system will be sampled for PFAS. Samples will be collected on the same day as the groundwater sampling.

### **Monitoring Well Development**

Consistent with the protocol followed during quarterly sampling, the monitoring wells sampled for emerging contaminants in March 2021 were purged, to the extent practicable, to remove turbidity from the groundwater and allow the collection of a sediment-free sample that was representative of the surrounding groundwater conditions. The monitoring wells were purged using a peristaltic pump and dedicated HDPE tubing, consistent with published recommendations for PFAS sampling.

During this additional round of PFAS sampling, the development and sampling will be conducted in accordance with the United States Environmental Protection Agency (USEPA) *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells* (Sampling Procedure) dated January 19, 2010. Low-flow is an enhanced development and sampling protocol similar to sampling with a peristaltic pump that has been recommended as an improved sampling method that provides higher quality, more consistent data.

In simple summary, a submersible pump constructed of stainless steel is used to extract groundwater at a rate controlled to minimize drawdown in the monitoring well (approximately 100 to 500-mL/min). HDPE tubing will be used to minimize potential PFAS contamination from sampling equipment. Each well will utilize dedicated tubing and the submersible pump will be decontaminated with a non-phosphate detergent (e.g., Alconox®) between monitoring wells, minimizing the potential for cross-contamination.

To monitor the purging activities and determine when stable conditions have been achieved (i.e., appropriate to collect a sample), the recovered water will pass through a small volume flow-

through cell (e.g., 250-mL or less) coupled with a multi-parameter instrument (e.g., YSI Professional Plus or similar) for measuring field indicator parameters. The multi-parameter instrument measures pH, Oxidation-Reduction Potential (ORP), Dissolved Oxygen (DO), Specific Conductance, and Temperature. A separate Turbidity meter is used for measurement of Turbidity. The indicator field parameters are measured at a regular interval, approximately equivalent to at least the turn-over rate of the flow-through cell (e.g., 250-mL flow-through cell with a flow rate of 100-mL/min would have a maximum monitoring frequency of every 2.5-min). The purging is considered complete and sampling begins when the field indicator parameters have stabilized in three (3) consecutive readings as follows:

- Turbidity: 10% variance for values greater than 10 NTU, if three (3) consecutive Turbidity values are less than 10 NTU, consider the values as stabilized;
- DO: 10% variance for values greater than 0.5-mg/L, if three (3) consecutive DO values are less than 0.5-mg/L, consider the values as stabilized;
- Specific Conductance: 3%
- Temperature:  $\pm 1$  degree Celsius
- pH:  $\pm 0.1$  unit
- ORP:  $\pm 10$ -mV

Due to damage incurred during snow removal operations, MW-3 will likely still require sampling via peristaltic pump and HDPE tubing. The peristaltic pump will be operated as close to the above low-flow protocol as possible.

### **Groundwater Sampling Procedures**

Once purging is complete, the tubing is disconnected from the flow-through cell. Groundwater is then dispensed directly from the tubing into the appropriate sample container, a single 250-mL unpreserved plastic container supplied by the laboratory. Following collection, the sample containers will be immediately placed into a cooler with ice, pending transport to a commercially independent certified laboratory. Ice packs will not be used per the published recommendations indicating a potential for PFAS contamination from the packs. The samples will remain stored on ice until being transferred to a refrigerator or transferred to the laboratory courier (who will then maintain samples at or below 4°C pending transfer to the laboratory). New disposable nitrile gloves will be used to collect each sample to limit cross-contamination.

Per the requirements of the Wisconsin PFAS expectations guidance document one (1) equipment blank (e.g., pump distilled water through pump into sample containers), one (1) field blank, and one (1) duplicate sample will be collected for quality assurance/quality control purposes during PFAS sampling.

During the March 2021 sampling of MW-3 and MW-5, groundwater samples were analyzed for the full Wisconsin 33 PFAS list via Isotope Dilution (ID) Standard Operating Procedures (SOP). A total of 12 of the 33 constituents were observed during the sampling event, with only three (3) constituents indicating concentrations above the recommended PALs and Enforcement Standards. During this additional sampling, the laboratory will be instructed to report only the 12 observed PFAS constituents, including:

- Perfluorobutanoic acid (PFBA)
- Perfluoropentanoic acid (PFPeA)
- Perfluorohexanoic acid (PFHxA)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorooctanoic acid (PFOA)
- Perfluorononanoic acid (PFNA)
- Perfluorodecanoic acid (PFDA)
- Perfluorobutanesulfonic acid (PFBS)
- Perfluoropentanesulfonic acid (PFPeS)
- Perfluorohexanesulfonic acid (PFHxS)
- 6:2 Fluorotelomersulfonic acid (6:2 FTS)
- Perfluorooctane sulfonamide (PFOSA)

**ATTACHMENT 2**  
**FIGURE**



