



January 21, 2021

MR. JEFFREY DANKO
JOHNSON CONTROLS, INC
5757 N. GREEN BAY AVENUE
MILWAUKEE, WI 53209

MR. SCOTT WAHL
TYCO FIRE PRODUCTS LP
1 STANTON STREET
MARINETTE, WI 54143

SUBJECT: Response to Ditch B Pre-Design Site Investigation Work Plan
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Mr. Danko and Mr. Wahl:

On November 5, 2020 the Wisconsin Department of Natural Resources (DNR) received the *Ditch B Pre-Design Investigation Work Plan* (Work Plan) for the above-referenced site, dated October 29, 2020, and submitted by Arcadis U.S., Inc. (Arcadis), on behalf of Johnson Controls, Inc. and Tyco Fire Products LP (JCI/Tyco). The report was accompanied by the appropriate fee of \$700, required under Wisconsin Administrative Code § NR 749.04(1), for formal DNR review and response.

Background

On January 17, 2018, Johnson Controls, Inc. on behalf of Tyco Fire Products, LP (JCI/Tyco) reported a discharge of per- and polyfluoroalkyl substances (PFAS) to the environment. The discharge occurred as the result of PFAS-containing aqueous film forming foams (AFFF) being discharged as part of firefighting training activities conducted at the JCI/Tyco Ansul Fire Technology Center (FTC), located at 2700 Industrial Parkway in Marinette, Wisconsin (the Site), from approximately the 1960s through the fall of 2017.

Data collected as part of on-going site investigation activities indicate PFAS contaminants have spread from the FTC via surface water and groundwater, impacting private and public potable wells and surface water in the Town of Peshtigo, and surface water in the Bay of Green Bay in Lake Michigan. JCI/Tyco's investigation into other transport pathways and into the degree and extent of contamination is on-going. Two surface water features found to contain PFAS impacts from the FTC are referred to as Ditch A and Ditch B, and water in these ditches flows to the Bay of Green Bay in Lake Michigan.

As a result of these findings, JCI/Tyco implemented interim remedial actions under Wis. Admin. Code ch. NR 708 to reduce PFAS concentrations in the surface water in Ditch A and Ditch B. JCI/Tyco designed systems that temporarily divert and treat PFAS-impacted surface waters in Ditch A and B using granular activated carbon (GAC). The GAC absorbs the PFAS, which reduces the PFAS concentrations in the water, and the treated water is discharged back to each ditch under a Wisconsin Pollution Discharge Elimination System (WPDES) Permit. JCI/Tyco's system for Ditch A went on-line in January 2019 and the system for Ditch B went on-line in October 2019; JCI/Tyco currently operates and monitors both systems.

Based on the on-going site investigation JCI/Tyco determined that Ditch B receives PFAS-impacted groundwater migrating from the FTC site, and this groundwater is a source of the PFAS contamination detected in Ditch B. JCI/Tyco proposed an interim action to address PFAS migrating in the groundwater from the FTC site. JCI/Tyco anticipates designing a system that will intercept, extract, and treat PFAS-impacted groundwater upgradient of Ditch B. To advance this concept into a design, Arcadis, on behalf of JCI/Tyco, prepared a *Ditch B Pre-Design Investigation Work Plan*.

Summary of Ditch B Pre-Design Investigation Work Plan

The Work Plan includes the following scope and objectives:

- Determine where Ditch B is gaining/losing water and where groundwater with PFAS enters the ditch.
 - Install 30 stream-bed mini-piezometers in Ditch B between Industrial Parkway South and the outlet to Green Bay. Mini-piezometers will be screened 3 feet below bottom of the ditch.
 - Measure monthly groundwater and surface water elevations and collect monthly groundwater and surface water samples for PFAS at each location for 3 months starting in October 2020.
- Monitor the effectiveness of the current interim action in Ditch B.
 - Collect PFAS surface water samples at a location upstream (TPZ-L06) and downstream (SW-39) of the current Ditch B treatment system, at intervals approximately 2 weeks after each monthly monitoring event and at the same time as WPDES permit monitoring, to the extent practicable.
- Evaluate proof of yield for a groundwater extraction well to be installed west of Ditch B. (The locations of the extraction well and corresponding observation well were not provided in the Work Plan.)
 - Install a pilot borehole using sonic drilling to a depth of approximately 50 feet, and collect samples to characterize the geology, soil grain size, and PFAS concentration in groundwater.
 - Install a 6-inch diameter extraction well with a 20- to 30-foot screen. The specific depth and screen length for the extraction well will be based on findings from pilot borehole.
 - Complete a step test in the extraction well, by measuring drawdown in the extraction well and one observation well under three pumping rates allowed to run for 1 hour each. Select a sustainable pumping rate from the step test and verify by pumping well for 2 hours at the selected flow rate.
- Delineate wetlands on three parcels west of Ditch B between Pierce Avenue and Edwin Street and on property owned by Marinette School District south of Ditch B.

DNR Review

The DNR understands that JCI/Tyco initiated the proposed surface water and groundwater monitoring for Ditch B in October 2020, and that JCI/Tyco completed the extraction well yield test in December 2020 in a well on the northeastern corner of the FTC property, west of Ditch B.

The DNR reviewed the Work Plan and offers the following comments to each stated objective. These comments must be addressed prior to, or within, JCI/Tyco's Wis. Admin. Code § NR 724.09 design report.

- Determine where Ditch B is gaining/losing water and where groundwater with PFAS enters the ditch.
 - The Work Plan addresses where Ditch B gained and lost water in the fall of 2020, but does not address potential seasonal changes to groundwater-surface water interactions in Ditch B, in particular in the spring when periods of higher flow are expected. Additional monitoring of Ditch B is needed to design the interim action for potentially changing groundwater discharge conditions, and to provide a baseline for which to compare groundwater discharge conditions once pumping in the extraction wells begin. **Provide a work plan for additional pre-design monitoring of groundwater-surface water interactions in Ditch B.**
 - The Work Plan does not address the stretch of Ditch B between James and Todd Streets. **Provide information as to why this stretch of the ditch was not included in the Work Plan.**
- Monitor the effectiveness of the current interim action in Ditch B
 - The Work Plan provides 3 months of data on the PFAS concentrations in surface water directly upstream and downstream of the current treatment system, and at locations downstream of the current system where groundwater contaminated with PFAS may be entering the ditch.
 - The Work Plan does not address how surface water quality will be monitored long-term in Ditch B (see **Long-Term Monitoring Plan below**).
- Evaluate proof of yield for a groundwater extraction west of Ditch B:
 - The Work Plan is adequate to evaluate aquifer yield at an extraction well.
 - The single observation well does not address other elements important to the final design of a groundwater extraction system. **Provide information that addresses technical rationale and basis for the following design elements.**
 - Depth and screen length selected for the extraction well(s).
 - Area of influence, pumping rate, and well spacing required for plume capture.
 - Cumulative drawdown and potential effects on to groundwater-surface water interactions in Ditch B and wetlands in the area at the selected pumping rate(s).
- Delineate wetlands in defined areas:
 - The wetland delineation will be reviewed by the DNR as part of JCI/Tyco's Individual Wetlands Permit Application. The DNR reminds JCI/Tyco that the wetland delineation will need to cover all areas impacted by the final design.
 - Please note that future approval by the DNR for an interim remedial action does not constitute an approval for impacts to wetlands, or any other required permits or approvals. Please keep other permitting timelines for each in mind; all applicable laws must be followed.

Interim Action Design Report

The DNR understands that JCI/Tyco plans to submit a design report for the groundwater extraction system in early March 2021. JCI/Tyco's design report shall follow the requirements of Wis. Admin. Code § NR 724.09, and several requirements are highlighted below to clarify expectations for this report.

- Interim Action vs. Remedial Action: The site investigation is on-going; therefore, the design report must refer to the proposed remedy as an interim action per Wis. Admin. Code § NR 708.11(1).

- **Interim Action Remedial Objectives:** As required by Wis. Admin. Code § NR 708.11(4)(a), the design report must follow the requirements Wis. Admin. Code ch. 724, and therefore specifically identify the remedial objectives of the proposed action per Wis. Admin. Code § NR 724.09(7).
- **Long-Term Monitoring Plan:** Due to the complexity of this site and the fact that the degree and extent of contamination are still being defined as part of the on-going site investigation, the DNR requires that JCI/Tyco provide a long-term monitoring plan (per Wis. Admin. Code § NR 724.17(2)) in advance, or as part of the design report. **DNR's approval of the design report is predicated on prior or concurrent approval of the long-term monitoring plan per Wis. Admin. Code § NR 724.05(3)(b).** Minimum expectations for the long-term monitoring plan are listed below:
 - Includes a network of permanent monitoring wells (Wis. Admin. Code ch. NR 140) that are located upgradient, within, and downgradient of the expected capture zone of the proposed groundwater extraction system, and which include nested piezometers that can monitor groundwater conditions in the different hydrostratigraphic units, including the weathered bedrock.
 - Includes a groundwater monitoring program that establishes the baseline conditions (water level and PFAS concentration) in the permanent well network prior to start-up of a groundwater extraction system.
 - Includes a groundwater monitoring program to measure water levels and PFAS concentrations in the monitoring network following start-up of the groundwater extraction system.
 - Includes a monitoring program to measure flow rate in Ditch B at point(s) upstream and downstream of the area of influence of the proposed groundwater extraction system.
 - Includes a surface water monitoring program to measure PFAS concentrations in Ditch B at a point(s) upstream and downstream of the proposed groundwater extraction system and the current Ditch B treatment system, at additional points where PFAS-impacted groundwater was found to enter Ditch B during the pre-design investigation (e.g., GW-L03), and at a point within 100 feet of the confluence with Green Bay.

Conclusions:

Based on the project schedule submitted by JCI/Tyco on December 1, 2020, DNR understands that JCI/Tyco proposes to implement the groundwater extraction system by the end of 2021. The DNR considers this response action to be an interim action under chs. NR 708 and 724, as the full site investigation for the FTC has not been completed. The DNR appreciates JCI/Tyco's efforts to implement the proposed groundwater extraction system in a timely manner and will continue to respond to JCI/Tyco's requests for information on Wis. Admin. Code ch. NR 724 requirements and permits issued by other DNR Programs for the proposed action.

Pursuant to Wis. Admin. Code § NR 708.11(4), JCI/Tyco's proposed groundwater extraction system requires that DNR review and approve the design report prior to proceeding to the next steps in implementation or operation. **To help facilitate an efficient review, JCI/Tyco is directed to submit a design report that complies with the requirements of Wis. Admin. Code § NR 724.09, including the comments in this letter.** JCI/Tyco may submit other written response to the DNR to address any of these comments in advance of the design report. Failure to adequately address these comments may delay DNR review and approval of the design report.

As a reminder, this site is subject to an enforcement action and therefore all submittals to the DNR under Wis. Admin. Code chs. NR 700-799 and submittals directed by the DNR must be accompanied by an Wis. Admin. Code ch. NR 749 fee per Wis. Stat. § 292.94. These fees are not pro-ratable or refundable per Wis. Admin. Code § NR 749.04(1). If you have any questions about whether to include a fee with a submittal, please contact DNR staff prior to submitting a document without a fee.

The DNR appreciates your efforts to investigate and remediate this Site. If you have any questions about this letter, please contact me, the DNR Project Manager, at (608) 622-8606 or Alyssa.Sellwood@wisconsin.gov.

Sincerely,

A handwritten signature in black ink that reads "Alyssa Sellwood". The signature is written in a cursive style with a large, looped initial "A".

Alyssa Sellwood, PE
Complex Sites Project Manager - Remediation & Redevelopment Program
Central Office

cc: Mike Bedard, Arcadis (via email: Michael.bedard@arcadis.com)
Ben Verburg, Arcadis (via email: ben.verburg@arcadis.com)
Bridget Kelly, DNR (via email: bridgetb.kelly@wisconsin.gov)