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October 7, 2021

MR. JEFFREY DANKO
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Via Email Only to jeffrey.howard.danko@jci.com and scott.wahl@jci.com

SUBJECT: Approval of the Long-Term Monitoring Plan for the
Groundwater Extraction and Treatment System (GETS)
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Mr. Danko and Mr. Wahl:

On July 16, 2021 the Wisconsin Department of Natural Resources (DNR) received the *Long-Term Monitoring Plan for the Groundwater Extraction and Treatment System* ("GETS LTMP") for the above-referenced site 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 $425, required under Wisconsin Administrative Code (Wis. Adm. Code) § NR 749.04(1) for formal DNR review and response.

The DNR approves the GETS LTMP based on its review of the submittal (Wis. Adm. Code § NR 724.17(2)) and responses received to clarifying questions during its review. The responses are provided in footnotes in this letter, and two other clarifications that accompany this approval are listed at the end of this letter.

Background

JCI/Tyco is investigating and responding to the discharge per- and polyfluoroalkyl substances (PFAS) to the environment at the JCI/Tyco Ansul Fire Technology Center (FTC), located at 2700 Industrial Parkway South in Marinette, Wisconsin ("Site"). The discharge occurred as the result of fire suppressant training, testing, research and development of PFAS-containing aqueous film forming foams (AFFF) at the Site starting in the early 1960s.

JCI/Tyco's site investigation is on-going, and additional work is needed to define the degree and extent of the PFAS contamination per Wis. Adm. Code § NR 716.11(3)(a). Using the available data, JCI/Tyco determined that groundwater with PFAS concentrations greater than 10,000 parts per trillion (ppt) is present beneath and to the east of the FTC property and that contaminated groundwater upwells and contributes to the PFAS contamination detected in surface water in Ditch B that flows into the Bay of Green Bay in Lake Michigan. Based on these findings JCI/Tyco proposed an interim remedial action – the GETS – to capture and treat the highly contaminated groundwater migrating from the source property toward Ditch B.

On February 26, 2021, JCI/Tyco submitted the GETS Remedial Action Design Report (RADR) to the DNR for approval. The GETS design includes nine vertical groundwater extraction wells to capture contaminated groundwater migrating toward Ditch B and to pump it to a treatment building on the FTC property. The treatment will include oxidation, filtration, granular activated carbon (GAC) and ion exchange resins to remove PFAS mass

from groundwater. Treated water will be discharged into Ditch B at an outfall along Pierce Avenue, and the discharge is anticipated to be monitored and regulated under a Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit in accordance with Wis. Adm. Code § NR 205.08(1)(b).

GETS Long-Term Monitoring Plan Summary

JCI/Tyco developed the GETS LTMP to document performance of the interim remedy, specifically its effect on the groundwater and surface water conditions within the expected area of influence of the GETS. The criteria and monitoring of the effluent from the treatment system will be covered under the WPDES permit for the GETS.

The GETS LTMP covers the pre-startup, startup and short-term monitoring (first 2 years of operation after startup). Refinements and updates to the GETS LTMP are anticipated for the long-term monitoring phase based on findings and conclusions from the short-term monitoring phase.

JCI/Tyco's original draft of the GETS LTMP was included in its February 2021 GETS RADR (Appendix G). On May 18, 2021, the DNR issued conditional approval of the GETS RADR, part of which required that JCI/Tyco update the LTMP with the following changes: update the monitoring network, frequency and reporting schedule; specify how performance of the GETS will be measured; and prepare and provide a commissioning plan.

On July 16, 2021 the DNR received the GETS LTMP and a separate letter with subject, *Response to Comments – Conditional Approval of GETS RADR*. JCI/Tyco's GETS LTMP addressed the changes required in the DNR's conditional approval, and the accompanying letter with response to comments provided supplemental information for how certain conditions of approval to the GETS LTMP were addressed. The response to comments were included in the DNR's review of the GETS LTMP.

The *GETS Interim Remedial Action Commissioning Plan* ("Commissioning Plan") was prepared by Geosyntec Consultants (Geosyntec) and was included as an attachment to the GETS LTMP. Because the Commissioning Plan was added to the GETS LTMP as a condition of DNR's approval of the GETS RADR, this was the DNR's first time reviewing the plan; therefore, a summary is provided below.

The Commissioning Plan outlines three phases of operations:

1. ***Loop Phase:*** Test for leaks and general operations of the treatment system components using potable water that is recirculated through the system (i.e., looped) – no discharge to surface water.
2. ***Throughput Phase***: Begin groundwater extraction and treatment by adding in one extraction well at a time. Measure drawdown and aquifer response to achieve steady-state flow in each extraction well and adjust elements in the treatment system as needed to meet performance criteria. JCI/Tyco anticipates approximately 1 month to bring all nine extraction wells online, and the treatment system to operate at 150 gallons per minute (gpm). Discharge to Ditch B begins and occurs throughout this phase and the Ditch B surface water treatment system that is in place downstream of the GETS continues to operate.
3. ***Complete System Phase***: Operate groundwater extraction at full capacity (~ 225 gpm) and fine-tune operations to achieve permit limits and optimize other performance criteria for the GETS. Monitor the effluent and other intermediate points in the treatment process. Discharge to Ditch B occurs throughout this phase and the Ditch B surface water treatment system that is in place downstream of the GETS continues to operate until no longer needed (and shutdown is approved by the DNR).

The performance criteria for the intermediate sample points and individual processes are summarized in Table 5, the anticipated sampling schedule for compliance and intermediate sampling points is summarized in Table 6 and

possible issues and corrective actions are summarized in Table 7. The Commissioning Plan also states plans to adjust pumping rates if needed based on monitoring hydraulic response of the ditch and aquifer.

The Commissioning Plan includes a ***contingency plan*** that outlines a tiered approach to evaluate and correct potential exceedances in effluent once steady-state[1] conditions are achieved in the Complete System Phase. The tiered approach will apply to potential exceedances for PFAS[2], volatile organic compounds (VOCs) and polyaromatic hydrocarbons (PAHs) in the effluent once a routine changeout frequency has been established for the GAC and ion exchange resin. The routine changeout frequency will be established based on results of system monitoring during startup.

For PFAS, JCI/Tyco anticipates weekly effluent sampling; for VOCs and PAHs, JCI/Tyco anticipates weekly effluent sampling that will transition to a monthly or quarterly sampling frequency. The routine sampling in Table 6 will be completed using standard laboratory-turnaround time, which is expected to be approximately 10 business days. Laboratory analysis for the tiered response described below will be expedited, where turnaround time is expected to be 2 to 3 business days[3].

The tiered response proposed by JCI/Tyco is as follows:

- If an effluent sample result is over the WPDES discharge limits at a compliance sample location, then JCI/Tyco will collect another effluent sample within 48 hours of receipt of the initial results and request expedited laboratory analysis – this sample could be the most recent or next routine sample or a supplemental sample [2] (Tier 1). At the same time, JCI/Tyco will also provide the DNR with data from intermediate sample points in the treatment process to demonstrate overall system performance (Tier 2).
- If the effluent exceedance is not repeated, system will continue with normal operations. If the effluent exceedance is repeated, JCI/Tyco will implement operational modifications and system check and sample effluent following the standard sampling frequency in Table 6 (Tier 3).
- If the effluent exceedance is not corrected with the operational modifications, then JCI/Tyco will change out the GAC or ion exchange resin within 48 hours of receipt of the last result and sample the effluent within 48 hours to demonstrate compliance (Tier 4).

JCI/Tyco intends to submit the Commissioning Plan with its WPDES permit application for the GETS to document its tiered response for potential exceedances in the effluent and steps to compliance with the WPDES permit criteria.

DNR Review

The DNR reviewed the GETS LTMP and finds that it meets the requirements of Wis. Adm. Code § NR 724.17(2) and addressed the revisions specified in the DNR's conditions of approval to the GETS RADR[4]. The DNR approves the GETS LTMP, with the clarifications in the footnotes and noted below. These clarifications are for recordkeeping and common understanding; JCI/Tyco is <u>not</u> required to submit a revised GETS LTMP.

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[1] In a September 20, 2021 email, Geosyntec clarified that in this context, steady-state means that "two consecutive samples of the treated effluent collected at the frequencies described in Table 6 meet the discharge permit requirements."

[2] The current standard applied to PFAS discharges regulated under WPDES permits is a combined total of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) less than 20 ppt.

[3] Laboratory-turnaround times and explanation provided by Geosyntec in emails dated September 20 and 21, 2021.

[4] Exceptions with supporting justifications were outlined in the July 6, 2021 *Response to Comments* letter. Exceptions included: adding an existing rather than new well near PZ-22; not adding PZ-1S to the sampling program; evaluating the effects of shutdown of GETS on the aquifer and Ditch B only once during a possible scheduled shutdown event.

- The GETS LTMP references the 2020 draft Quality Assurance Project Plan (QAPP); however, the document should reference the final QAPP (March 2021) that was approved by the DNR.
- In Section 5.2, JCI/Tyco specifies surface water criteria of 420 ppt for PFOA and 11 ppt for PFOS. These values are from the WPDES Permit (WI-0046566-07-0) previously issued for the Ditch B treatment system; however, more stringent surface water criteria[2] are anticipated for the WPDES permit for the GETS, which will also apply to the Site (Wis. Adm. Code § NR 724.19(1)).
- Because the routine changeout frequency for the GAC and ion exchange resins will be established during system startup, it is currently uncertain how the timing of the contingency plan actions fit into the schedule for routine maintenance. Adjustments to the contingency plan map be needed in the future.

JCI/Tyco must apply for coverage under a WPDES Permit for the GETS in accordance with Wis. Adm. Code § NR 205.08(1)(b). The monitoring requirements and criteria for the treated effluent will be specified in coverage letter for the permit, and additional clarifications or modifications to the Commissioning Plan may be required as part of the review and approval of the final plans and specifications of the GETS and review of the WPDES general permit application for the discharge from the GETS.

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,

Alyssa Sellwood

Alyssa Sellwood, PE
Complex Sites Project Manager
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