



May 30, 2024

MS. DENICE NELSON
JOHNSON CONTROLS, INC
5757 N. GREEN BAY AVENUE
MILWAUKEE, WI 53209

Via Email Only to denice.karen.nelson@jci.com

SUBJECT: Response to *Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan – Interim Action Status Update*
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Ms. Nelson:

On May 17, 2024, the Wisconsin Department of Natural Resources (DNR) received the *Deep Aquifer Bedrock Well Design and Long-Term Monitoring Work Plan – Interim Action Status Update* (the “Deep Aquifer Monitoring Update”) for the above-referenced site (the “Site”) that was submitted by Arcadis U.S., Inc. (Arcadis), on behalf of Johnson Controls, Inc. and Tyco Fire Products LP (JCI/Tyco). The Deep Aquifer Monitoring Update was accompanied by the fee required under Wisconsin Administrative Code (Wis. Admin. Code) § NR 749.04(1) for DNR review and response.

Specifically, JCI/Tyco requested that the DNR complete a technical review and approve its request to reduce the purge volume required before sampling each deep monitoring well. The DNR asked a few clarifying questions to complete this review. A copy of the DNR’s questions and JCI/Tyco’s responses are attached (see **Attachment A**). In this letter, the DNR approves JCI/Tyco’s request to reduce the amount of water purged prior to sampling each of the deep monitoring wells to be approximately one well volume per well.

Background

JCI/Tyco is investigating and responding to the discharge of per- and polyfluoroalkyl substances (PFAS) to the environment at the JCI/Tyco Fire Technology Center (FTC), located at 2700 Industrial Parkway South in Marinette, Wisconsin. 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.

PFAS from the FTC have impacted private drinking water wells in the area. JCI/Tyco currently tests and provides alternative drinking water to residents in an area it refers to as the potable well sampling area (PWSA). In Dec. 2022, JCI/Tyco began installing deep drinking water wells for residents in the PWSA who opted to replace their existing drinking water well with a deeper well. JCI/Tyco’s installation of deep replacement wells is on-going. As part of this effort, JCI/Tyco installed and is monitoring four deep monitoring wells to evaluate the deep aquifer in the PWSA long-term for PFAS.

JCI/Tyco’s monitoring plan for the deep aquifer is summarized in its report dated Sept. 27, 2022 and its supplemental letter dated Jan. 19, 2023. The DNR approved JCI/Tyco’s deep aquifer monitoring plan on Nov. 11, 2022.

Summary and Review of the Deep Aquifer Monitoring Update

The Deep Aquifer Monitoring Update includes a summary of the PFAS results for samples collected in March 2024 from the deep monitoring wells DMW-01, DMW-03, DMW-03 and DMW-04. PFAS were not detected in the samples collected from these four wells.

The Deep Aquifer Monitoring Update also included an evaluation of water quality parameters (e.g., metals and hardness) for water collected after different volumes of water were purge from each well. JCI/Tyco's approved deep aquifer monitoring plan specified that five volumetric well casings of water be purged from each deep monitoring well prior to sampling. Because this equates to a significant amount of water to manage at each sampling event – up to 3,600 gallons per deep well – JCI/Tyco evaluated if purging a smaller quantity of water would provide samples that are representative of the groundwater in the deep aquifer in this area. To complete this evaluation, JCI/Tyco collected samples from each deep monitoring well after purging the approximate volumes of water summarized in **Attachment A**.

JCI/Tyco completed a statistical analysis on the water quality parameters analyzed from these samples and concluded that the water quality of samples collected after purging one well volume is similar to the water quality collected after purging three to five well volumes. These findings support that the water samples collected after purging one well volume are representative of the water quality in the deep aquifer near each deep monitoring well.

The DNR concurs with JCI/Tyco's conclusion and approves JCI/Tyco's request to reduce the amount of water purged prior to sampling each deep monitoring well to be approximately one well volume. This equates to approximately 400 to 800 gallons per well (see rows with the "1X" in the sample ID listed in the table in **Attachment A**).

Next Steps

Continue with the monitoring and reporting set forth in the approved deep aquifer monitoring plan; however, JCI/Tyco may begin using the smaller purge volume approved in this letter in its next and subsequent deep aquifer monitoring events.

If you have any questions, please contact me at Alyssa.Sellwood@wisconsin.gov or (608) 622-8606.

Sincerely,



Alyssa Sellwood, PE
Water Resources Engineer
Remediation & Redevelopment Program

Attachment A: Email BRRTS 02-38-580694 Questions Re: Deep Aquifer Purge Volume Request

cc: Jodie Thistle, DNR (via email: Jodie.Thistle@wisconsin.gov)

Sellwood, Alyssa A - DNR

From: Denice Nelson <denice.karen.nelson@jci.com>
Sent: Tuesday, May 21, 2024 3:40 PM
To: Sellwood, Alyssa A - DNR; Potter, Scott; Molitor, Tim
Cc: Thistle, Jodie M - DNR
Subject: Re: BRRTS 02-38-580694 Questions Re: Deep Aquifer Purge Volume Request

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Hi Alyssa - see responses below in yellow, I copied Tim on this email if you have additional questions (as Scott Potter is out of country this week).

Sorry I missed your call earlier today on this, I'm glad you followed up with an email.

Denice

Denice Nelson
Senior Director, Remediation and Strategy
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From: Sellwood, Alyssa A - DNR <alyssa.sellwood@wisconsin.gov>
Sent: Tuesday, May 21, 2024 2:40 PM
To: Potter, Scott <Scott.Potter@arcadis.com>; Denice Nelson <denice.karen.nelson@jci.com>
Cc: Thistle, Jodie M - DNR <jodie.thistle@wisconsin.gov>
Subject: BRRTS 02-38-580694 Questions Re: Deep Aquifer Purge Volume Request

Denice and Scott –

Thank you for submitting the attached request to change the purge volume used to sample the deep aquifer monitoring wells.

I have a just a couple clarifying questions to help us complete our review.

1. In this request, is “pore volume or pore flush” synonymous with “well volume”? *“...request to reduce the proposed 5x volumetric purge ... to one pore volume”*
 - a. **Yes**
2. Were the groundwater samples summarized in this letter collected when 1X, 3X and 5X the well volume had been purged (or 1X, 2X, and 3X in the case of well DMW-04) or after “purging at 33%, 67% and 100% well volumes”?
 - a. **Sorry for the confusion - to clarify, it was the first part - samples were collected at 1X, 3X and 5X the well volume, except for DMW-04, which was at 1X, 2X, and 3X**

Or...perhaps a better way is to ask:

1. Are the approximate purge volumes summarized below correct for each sample ID? These are based on volume of water in the well casing. **Yes**
2. Are the highlighted purge volumes representative (approximately) of purge volume being requested for approval? **Yes**

If the summary below is not correct, could you please provide a summary that clarifies the volume purged in gallons for each sample in this letter and the volume (in gallons) being requested as the approved purge volume for each well.

Well ID	Sample ID	Purge Volume	Approximate Purge Volume (gallons)
DMW-01	DMW-01_1X (031224)	1	400
	DMW-01_3X (031224)	3	1,200
	DMW-01_5X (031224)	5	2,000
DMW-02	DMW-02_1X (031324)	1	700
	DMW-02_3X (031324)	3	2,100
	DMW-02_5X (031324)	5	3,500
DMW-03	DMW-03_1X (030724)	1	700
	DMW-03_3X (030724)	3	2,100
	DMW-03_5X (030724)	5	3,500
DMW-04	DMW-04_1X (030524)	1	800
	DMW-04_2X (030524)	2	1,600
	DMW-04_3X (030624)	3	2,400

Thank you and I look forward to receiving your response. (A response via email will work great).

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Alyssa Sellwood, PE (WI)

Water Resources Engineer | Remediation and Redevelopment Program

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