



April 9, 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 Groundwater Flow and Solute Transport Model Report
JCI/Tyco FTC PFAS, 2700 Industrial Parkway South, Marinette, WI
BRRTS #02-38-580694

Dear Mr. Danko and Mr. Wahl:

On November 19, 2020 the Wisconsin Department of Natural Resources (DNR) received the *Groundwater Flow and Solute Transport Model Report* (GW Model Report) for the above-referenced site, dated November 16, 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 (Wis. Admin. Code) § NR 749.04(1), for formal DNR review and response.

The DNR's technical review of the GW Model Report does not constitute approval of the models or the associated groundwater isoconcentration plume maps. The DNR emphasizes that groundwater models, while potentially useful tools for answering certain questions about a site, cannot be used in lieu of meeting the requirements in Wis. Admin. Code ch. NR 716.

Background

On January 16, 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 fire suppressant training, testing, research, and development of PFAS-containing aqueous film forming foams (AFFF) at the JCI/Tyco Ansul Fire Technology Center (FTC), located at 2700 Industrial Parkway South in Marinette, Wisconsin (the "Site").

In accordance with Wis. Admin. Code ch. NR 716, JCI/Tyco is required to complete a site investigation to evaluate all potential pathways for migration of contamination from the Site and to define the degree and extent of contamination occurring as a result of those migration pathways. JCI/Tyco has initiated the site investigation and has submitted reports and data notifications to DNR that summarize their work. The site investigation is on-going, and additional work is needed to satisfy the requirements of Wis. Admin. Code ch. NR 716.

Groundwater Flow and Solute Transport Models

As part of the on-going site investigation, Arcadis, on behalf of JCI/Tyco, developed a numerical groundwater flow model and an associated solute transport model for the Site. Arcadis developed the 3D steady-state groundwater flow model using MODFLOW-USG, and the associated solute transport model using the Dual

Domain Method (DDM) in MODFLOW-USG. The groundwater models were constructed based on a conceptual site model (CSM) and using site-specific data.

A groundwater model is considered calibrated when the outputs from model simulations match site-specific data and observations. Once calibrated, simulations can be run in a groundwater model to answer certain questions about a site. The groundwater flow model developed for JCI/Tyco by Arcadis was calibrated to hydraulic heads measured at the Site in October 2019 and the solute transport model was not calibrated.

Summary of GW Model Report

JCI/Tyco's GW Model Report summarizes the numerical groundwater flow model and associated solute transport model developed for the Site. The GW Model Report includes a summary of the CSM; descriptions of the models' design features; calibration and sensitivity analysis for the flow model; summary of how the solute transport model was developed; and a summary of the results for a simulation run on the solute transport model 5 years into the future. The report also includes groundwater isoconcentration maps for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) that illustrate an estimate of the degree and extent of PFOA and PFOS impacts to groundwater in the site investigation area.

DNR Review

The DNR reviewed the GW Model Report. The DNR's does not approve the isoconcentration maps provided in this report and DNR's technical review of the GW Model Report does not constitute approval of the models. Development of groundwater models is elective and may be useful in answering certain questions; however, **JCI/Tyco may not use the groundwater models in lieu of sampling in areas where sampling is practicable and warranted to define the degree and extent of the PFAS contamination.** The DNR's review comments are divided into two categories:

- 1) NR 716.15 requirements for the groundwater isoconcentration maps and cross-sections, and
- 2) technical review comments for the groundwater flow and solute transport models.

JCI/Tyco is required to address the items related to the groundwater isoconcentration plume maps and cross-sections summarized herein and all other site investigation deficiencies identified in prior DNR response letters.

JCI/Tyco did not explain the specific application (i.e., questions to be answered by the model) in the GW Model Report; therefore, the DNR assumes that the model is not intended to answer a specific question at this time, but is intended for future use. The DNR agrees that groundwater models can be useful tools when applied correctly. If JCI/Tyco elects to continue using the models, then DNR requests that JCI/Tyco address the technical review comments that are pertinent to the model's future proposed application. Addressing pertinent comments may improve confidence in the conclusions drawn from the models.

DNR Review Comments: Groundwater Isoconcentration Maps and Cross-Sections

Per Wis. Admin. Code § NR 716.15(4), isoconcentration maps and cross-sections depicting contaminant distribution and lithology are required to support interpretation of the degree and extent of contamination at a Site. JCI/Tyco's prior submittals to DNR have not included these visual aids, and DNR previously commented on these and other deficiencies in prior responses to JCI/Tyco. The lack of providing these basic site investigation submittals to the DNR simply delays our ability to collectively make important decisions in moving this project towards completion.

In the GW Model Report, JCI/Tyco provided groundwater isoconcentration maps for PFOA and PFOS at different depth intervals in the unconsolidated aquifer at the Site. The groundwater isoconcentration maps are

interpreted from data collected during the site investigation, and the GW Model Report is the first opportunity DNR has had to review these data interpretations.

The DNR does not approve the isoconcentration maps and cross-sections. Upon review, the inputs and interpretation for how the groundwater isoconcentration maps were developed are not revealed in the GW Model Report. (The DNR assumes by their inclusion in this report, that these maps were prepared using the groundwater modeling software). In accordance with Wis. Admin. Code § NR 716.15 the **DNR directs JCI/Tyco to submit the isoconcentration maps and cross-sections in a manner that allows the DNR to review the groundwater plume interpretations.** The following are the minimum expectations needed to satisfy this code requirement and are reasonable expectations for a site of this size and complexity. The DNR is available to discuss in further detail if requested by JCI/Tyco.

- Develop at least four cross-sections following the different flow paths passing through the FTC property and ending at the Bay of Green Bay in Lake Michigan.
- Add the actual groundwater concentration data to the cross-sections and draw isoconcentration contours to fit the data.
- Add sample/well ID's and the actual groundwater concentrations to the isoconcentration maps for each elevation interval. Do not include the results or points for groundwater samples collected from depths other than those depicted on a map.
- Dash contours where inferred.

In DNR's review of the groundwater isoconcentration maps, DNR found that the isoconcentration contour boundaries do not align with the actual groundwater data measured at some locations, which raises questions about the maps and whether other issues exist that cannot be discovered due to the way the data was presented. **DNR directs JCI/Tyco to correct, at minimum, the specific issues identified below in their resubmittal of the maps and cross-sections.**

#1: Contours disregard PFAS sample results from the shallow bedrock

JCI/Tyco collected a limited amount of data from the area between Ditch B and its Stanton Street property. The available data shows that PFAS is present in groundwater in the shallow bedrock at concentrations greater than 1,000 ppt (e.g., MW-003D, MW-013D and MW-102D), yet this data is not included in JCI/Tyco's groundwater isoconcentration maps. The site investigation data currently points to the FTC as the source of these PFAS impacts, and these groundwater results must be included in the isoconcentration maps prepared for the Site. The FTC as a contributing source to the PFAS concentrations in the shallow bedrock is supported by the following site investigation data: a downward vertical gradient is measured in groundwater west of Ditch B; the PFAS concentrations increase with depth in this area of the Site; and the unconsolidated sand aquifer and weathered bedrock are hydraulically connected in some locations west of Ditch B (e.g., no confining unit observed in boring for PZ-28). **The DNR directs JCI/Tyco to include and use all available data to develop the isoconcentration contours for the Site. If JCI/Tyco's interpretation of the groundwater isoconcentration contours disregard available data, then JCI/Tyco must still show the data on the figures and provide DNR with a technical justification for why data has not been used in contouring the contaminant plume for review.**

#2: Incorrect use of the sample results from private drinking wells.

Of the 172 private wells sampled, only 63 have information on the screened/open intervals in the wells. Many of the known screened/open intervals are below the lowest elevation included in JCI/Tyco's groundwater isoconcentration maps or the screens span more than one depth interval presented in these maps. JCI/Tyco appears to have used the PFAS concentration data from all 172 private wells to draw the

isoconcentration contours for each depth interval. Private well data may only be used to develop the isoconcentration contours if the screened/open interval below the well casing is known and the elevation of the screened/open interval aligns with the elevation interval of the isoconcentration map. Private wells that span several elevation intervals (i.e., have screened/open intervals longer than 10 to 15 feet) may have limited use. **The DNR directs JCI/Tyco to remove private wells not meeting these criteria from the isoconcentration contour maps and cross-sections.**

#3: Groundwater isoconcentration contour are limited to only PFOA and PFOS

JCI/Tyco is required to sample for 36 PFAS, of which 18 PFAS currently have recommended groundwater standards. **The DNR directs JCI/Tyco to develop isoconcentration maps and cross-sections for other PFAS detected the groundwater in addition to PFOA and PFOS.** At a minimum, JCI/Tyco must submit isoconcentration maps for those PFAS compounds that were detected at or above their respective Cycle 10 or Cycle 11 proposed groundwater standards in one or more groundwater sampling locations. In your next iteration, prepare separate isoconcentration maps for each PFAS compound. At this time, the DNR requests that JCI/Tyco also submit isoconcentration maps for all PFAS compounds that were detected at concentrations at or above 100 ppt, but for which the detected PFAS were below or do not have a proposed groundwater standard. Mapping these additional PFAS compounds is expected to help in advancing the evaluation of the PFAS signature and the overall site characterization.

The table below summarizes the PFAS compounds meeting criteria for mapping at the Site. This list is based on the DNR’s preliminary review of the currently available groundwater data; JCI/Tyco must verify this list when identifying the PFAS to map.

Chemical Name and Acronym		Cycle 10 or Cycle 11 Recommended Standard ^a (ppt)	
Required Isoconcentration Maps:			
PFAS Detected in Groundwater @ Greater than Cycle 10 or Cycle 11 Standard			
	PFOA	Perfluorooctanoic acid	20 ^b
	PFNA	Perfluorononanoic acid	30 ^c
	PFDA	Perfluorodecanoic acid	300 ^c
	PFUnA	Perfluoroundecanoic acid	3,000 ^c
	PFHxS	Perfluorohexanesulfonic acid	40 ^c
	PFOS	Perfluorooctanesulfonic acid	20 ^b
	FOSA	Perfluorooctane sulfonamide	20 ^c
	NEtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid	20 ^c
Additional Isoconcentration Maps:			
PFAS Detected in Groundwater @ Greater than 100 ppt but less than (or does not have) Cycle 10 or Cycle 11 Standard			
	PFBA	Perfluorobutanoic acid	10,000 ^c
	PFPeA	Perfluoropentanoic acid	-- ^d
	PFHxA	Perfluorohexanoic acid	150,000 ^c
	PFHpA	Perfluoroheptanoic acid	-- ^d
	PFBS	Perfluorobutanesulfonic acid	450,000 ^c
	4:2 FTSA	4:2 Fluorotelomer sulfonic acid	-- ^d
	6:2 FTSA	6:2 Fluorotelomer sulfonic acid	-- ^d
	8:2 FTSA	8:2 Fluorotelomer sulfonic acid	-- ^d

Footnotes:

^a Public health groundwater enforcement standard (ES) recommended by DHS. (<https://www.dhs.wisconsin.gov/water/gws.htm>)

^b Cycle 10 Groundwater ES. Combined PFOS and PFOA should not exceed 20 ppt.

^c Cycle 11 Groundwater ES. Combined FOSA, NEtFOSE, NEtFOSA, NEtFOSAA, PFOS and PFOA should not exceed 20 ppt.

^d No WI recommended groundwater ES available

DNR Review Comments: Groundwater Flow and Solute Transport Models

The DNR's technical review of the groundwater flow and solute transport models was limited to information summarized in the GW Model Report (i.e., the DNR did not receive or review the computer models developed by Arcadis). The DNR's technical review of the GW Model Report does not constitute approval of the models. If JCI/Tyco elects to pursue using the groundwater flow and/or associated solute transport models as tools for answering specific questions about the Site, then JCI/Tyco is requested to address the technical comments listed below that are pertinent to the proposed application. Addressing pertinent comments may improve confidence in the use and conclusions drawn from the models. As noted previously, JCI/Tyco may elect to pursue these models; however, DNR will rely on actual sampling consistent with the requirements in Wis. Admin. Code ch. NR 716 to determine the adequacy of the site investigation.

The first two items are requirements related to future potential application of the models.

#1: The objective of the modeling exercise is unclear

The objective of the model was generalized to be "a tool for decision makers." The usability of the model cannot be assessed if the questions about the groundwater system that are to be answered by the model are unknown. In future applications, **JCI/Tyco must provide a comprehensive objective¹ and/or specific question(s) to be answered by the modeling exercise.** The DNR requests that JCI/Tyco address technical review comments provided herein that are pertinent to the proposed application (i.e., question to be answered by the model).

#2: The CSM is oversimplified

The CSM focuses on PFAS only entering groundwater historically on the FTC property. **JCI/Tyco must include descriptions of other potential migration pathways in the CSM and test these in the model as needed to calibrate the model to match observed conditions.** This includes both historical and current pathways, such as: PFAS leaching to groundwater from the vadose zone on or off the property (e.g., aerial deposition); retention of PFAS mass in the vadose zone across the Site due to water table fluctuations combined with the affinity of PFAS to air-water interfaces; PFAS moving into groundwater from streams, ditches, wetlands, leaky sewers, or other stormwater recharge areas; and PFAS migration in groundwater in the weathered bedrock or preferential pathways.

The following are technical review comments for the groundwater flow model. The DNR does not approve JCI/Tyco's groundwater flow model; however, the DNR finds that JCI/Tyco's groundwater flow model is a reasonable approach to modeling the current groundwater flow conditions at the Site, and may be a tool that can supplement answering certain questions about the Site if pertinent technical comments are addressed. The DNR's technical review comments follow.

#1: Calibration of the hydraulic heads needs more field data and refinement

Calibration of the model is only possible where field measurements are available. Field measurements of water level/head in monitoring wells or surface water are sparse or lacking in areas northwest, west, and southwest of the FTC property, areas in and around Ditch C, and at depth in the aquifer. **Improved**

¹ Example of a comprehensive objective: "To develop a steady-state flow model that is representative of long-term average conditions and can predict the observed distribution of PFAS in groundwater from all potential release mechanisms identified in the CSM."

confidence in the model could be gained if JCI/Tyco installed and calibrated to monitoring points in these areas where field data is lacking. These monitoring points will also address other data gaps that DNR previously identified in JCI/Tyco's site investigation.

The groundwater flow model was calibrated to hydraulic heads measured in October 2019. **JCI/Tyco should evaluate if these October 2019 calibration targets are representative of the long-term average needed for a steady-state model, and address limitations of the model if they are not representative.**

Numerous monitoring wells, piezometers, and stilling wells are south of Radar Road where hydraulic head measurements are available from October 2019, none of which were used in the head calibration. **This omission is concerning to DNR. JCI/Tyco should use all available head data in the calibration of the model; where data are omitted, a technical justification should be included describing why data was not used.**

The calibration of the heads in the groundwater flow model may be statistically acceptable; however, there is a pattern in the residuals that effectively lowers the hydraulic gradient predicted by the model than was observed in the field measurement. When observed heads are high the model tends to underpredict heads, and when observed heads are low the model tends to overpredict heads. **JCI/Tyco should elaborate on whether these patterns/trends could be better addressed as part of the model calibration and discuss the impact they have on the stated objectives.**

Finally, the Bay of Green Bay was modeled as a constant head boundary for an average water level in October 2019, which is a reasonable approach for the steady-state model. However, because water levels in Green Bay are subject to daily and long-term changes, **JCI/Tyco should speak to or present the sensitivity of the model to daily and long-term fluctuations in water level in Green Bay.**

#2 Hydraulic conductivity zones require refinement

The hydraulic conductivity values assigned based on the unconsolidated material type are reasonable when compared to the results from slug test in shallow monitoring wells on the FTC property. The modeling exercise would benefit from additional field data to refine the assignment of hydraulic conductivity zones where data is sparse: additional borings to define lithology down to top of bedrock; and additional pump tests and/or slug tests from monitoring wells screened at different zones, including the weathered bedrock layer. **As additional data is gathered during the site investigation, JCI/Tyco should review and refine the assignment of hydraulic conductivity zones in the model or speak to how the zones in the model are supported by the new field data.** In future submittals documenting the model, JCI/Tyco should include hydraulic results from the field pump/slug tests.

The top of bedrock is generalized into a smooth 10-foot contour interval from regional bedrock maps, which is a reasonable approach; however, the model assigns low hydraulic conductivity values to bedrock that start immediately at the top of this generalized bedrock surface, when in fact we know that there is a weathered zone with higher permeability. **JCI/Tyco should evaluate influence of assigning a higher hydraulic conductivity zone to an interval representing the top of bedrock, and/or supply additional field data or discussion to support the current modeled conditions.**

Finally, if the groundwater model is going to be used to estimate transport of PFAS in groundwater, **JCI/Tyco should explicitly document the vertical anisotropy ratios, consider varying these by lithology, and check the sensitivity of the model to the vertical anisotropy ratios.**

#3: Refinements may be needed to the recharge rates

If the groundwater model is going to be used to estimate transport of PFAS in groundwater, JCI/Tyco should complete a more spatially-resolved assignment of recharge in areas near the FTC (e.g., ditches, wetlands, stormwater sewer), and conduct a more extensive calibration process accounting for the variability in assigned recharge rates based on topography, hydrology (soils and drainage), and seasonal influences. In particular as it relates to wetlands, JCI/Tyco assigned high recharge rates to wetlands in the model, but wetlands frequently store stormwater runoff. **JCI/Tyco should evaluate the impact of assigning a lower recharge rate to the wetlands in the model and present these results.**

#4: Parameters and basis for groundwater-surface water interactions need to be described

Groundwater-surface water interactions have important implications for the fate and transport of contaminants at this Site, but these are not well described in the GW Model Report. A connected linear network (CLN) boundary type was used to represent portions of Ditch A and the wetlands between the FTC and Ditch B; a river boundary type was used to represent the Menominee River and other ditches in the model; and a drain boundary type was used to represent the Little River and other wetland areas in the model. **JCI/Tyco should provide further justification and documentation for why a particular boundary type was selected at each location.**

CLNs require defining an interconnected network, groundwater interaction parameters, and transmission parameters between network nodes; but these parameters were not documented in the GW Model Report. The river and drain boundary types require conductance values to define groundwater-surface water interactions. The GW Model Report states that conductance values were established through calibration, but little documentation is provided. **JCI/Tyco should document the boundary condition parameters used to define the CLN, rivers, and drains (e.g., elevations, conductance terms, transmission parameters, and network geometries), and provide results of sensitivity analyses for conductance and transmission parameters.**

#5: Stream flow and PFAS mass flux quantified by the model need to be provided

The water flux and PFAS mass flux to surface water are quantified by the groundwater flow model, but this information is not provided in the GW Model Report or used to calibrate the model. **JCI/Tyco should calibrate the model to observed stream flow where flow data is available (e.g., Ditch A and Ditch B), and report out the stream flow and PFAS mass flux quantified by the model for surface flows in the model domain.**

#6: Need more particle tracking to show how the model works and support the site investigation

Particle tracks were presented in the GW Model Report but were limited to forward tracks from the eastern half of the FTC property boundary. **In future presentations of the model, JCI/Tyco should present additional particle tracking to demonstrate how the model functions.** JCI/Tyco should show forward particle tracks from surface flows starting upgradient of the Site; from other potential entry points to groundwater (e.g., ditches, wetlands, leaky sewers, or airborne deposition), and at various depths to look at preferential flow through various hydrostratigraphic units. JCI/Tyco should also show reverse particle tracks from locations where PFAS were detected to track back to identify potential source locations (e.g, MW-102D, PZ-27, PZ-28, VAP-09, VAP-48).

The following comments are specific to the solute transport model. The DNR does not approve JCI/Tyco's solute transport model. The DNR finds that JCI/Tyco's solute transport model is speculative and is not usable for drawing conclusions or making decisions about the Site in its current stage of development. DNR's first comment is a broad recommendation, and the remaining comments are minimum issues JCI/Tyco must address prior to the DNR offering further review or to consider the findings derived from the solute transport model.

#1: Solute transport model is not calibrated

The solute transport model cannot be calibrated with the available Site data, and without calibration the model has limited use in making predictions on solute transport at the Site. **The DNR suggests that at this stage in the project, JCI/Tyco focus on refinement of the groundwater flow model based on the additional sensitivity analysis and comments provided above.**

#2: Use of Dual Domain Method for the solute transport model is unsupported and appears biased

Use of DDM appears overly complex for the information known about the Site. The DNR expects that a single-domain advective-dispersion approach would first be used to develop the solute transport model, and a DDM approach would only be explored if the results of a single-domain model cannot be calibrated to match observed conditions. The need for a DDM might be expected in low permeability soils, fractured bedrock, or highly heterogeneous environments; none of these conditions dominate the geology in this area. A single-domain advective-dispersion is expected to be a better approach for modeling solute transport at this Site, and will allow site-specific factors (effective porosity, mechanical dispersion, and sorption or retardation) to be calibrated and reported out for each lithology.

There is a concern that the mass-transfer parameters JCI/Tyco assigned for the DDM are biased to result in a contaminant plume that does not migrate. The mass-transfer parameters assigned in the DDM assumes that two-thirds of the PFAS mass is tied up in the immobile phase and there is a slow transfer of that mass to the mobile phase. This does not match the current observations (i.e., there a large immobile phase now over 1 mile from the source). Additionally, there is no discussion of the uncertainties in the conclusions drawn for the 5-year future simulation run in the model, which describe the PFAS plume as largely immobile. If JCI/Tyco wants to continue to use a DDM, it must run the model with higher mass transfer coefficients and lower percentages of mass tied up in the immobile phase, vary these parameters by lithology, and report out the results.

#3 Mechanical dispersion is not explicitly included in the model

Mechanical dispersion in sand and gravel aquifers is an important transport process. For groundwater advective velocities starting on the order of 1 foot/day, some degree of mechanical dispersion is nearly always evident, and seasonal changes in flow direction, particularly near fluctuating surface water bodies, result in dispersion. These groundwater flow conditions are observed at the Site; therefore, mechanical dispersion should be simulated by estimating scale-dependent dispersivities and implementing the dispersion component of solute transport available in MODFLOW-USG.

#4: Transport factors are poorly defined

Modeling solute transport requires many site- and material-specific parameters that cannot be taken from literature or studies of other sites. In the example of the solid-liquid partitioning coefficient K_d , the need for site-specific sorption data is stated within Section 3.2.2 of the cited report Concawe (2016); despite the necessity of site-specific values stated in the cited report, a narrow range of values selected from the report are applied in the model. Overall, the apparent retardation of the PFAS contaminant plume in

saturated zone groundwater will be affected by a wide range of site-specific factors, such as: relative composition of the PFAS in the mixture, transformation of precursor compounds, presence of other contaminants, and sorption affinity of specific PFAS to organic carbon and aquifer minerals. Future development and calibration of the solute transport model will require work to resolve a range of transport parameters for different PFAS and site-specific materials, and documentation of the process and results in the report.

Conclusions:

Contaminant isoconcentration maps and cross-sections required under Wis. Admin. Code § NR 716.15 are essential to making informed decisions regarding the site investigation and interim and remedial actions. These visual aids are also necessary for effective communication with the public and other stakeholders as required under Wis. Admin. Code ch. NR 714. Therefore, within **60 days of date of this letter the DNR directs JCI/Tyco to submit the isoconcentration maps and cross-sections to DNR that address the comments in this letter, as required by Wis. Admin. Code ch. NR 716.** These may be submitted in a technical assistance document or in an interim Site Investigation Report, and the submittal must include the appropriate fee required under Wis. Admin. Code § NR 749.04(1) for DNR review and response.

The DNR reminds JCI/Tyco that continued development and use of the groundwater flow and solute transport models are elective; whereas, **the site investigation requirements in Wis. Admin. Code ch. NR 716 are not optional, and JCI/Tyco may not use the models in lieu of sampling where sampling is practicable and warranted to define the degree and extent of PFAS contamination.** If JCI/Tyco opts to continue developing and using these models to supplement answering certain questions about the Site, then the DNR requests that JCI/Tyco address the technical review comments that are pertinent to the proposed application if DNR is to consider the findings of the models in the future, along with actual field data. Addressing pertinent comments may improve confidence in the use and conclusions drawn from the models. Any updates to the groundwater flow and solute transport models may be summarized in a revised GW Model Report submitted with appropriate fee for technical assistance required under Wis. Admin. Code § NR 749.04(1) for formal DNR review and response.

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,



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

cc: Scott Potter, Arcadis (via email: Scott.Potter@arcadis.com)
Christopher Peter, Arcadis (via email: Christopher.Peter@arcadis.com)
Jennifer Wahlberg, Arcadis (via email: Jennifer.Wahlberg@arcadis.com)
Bridget Kelly, DNR (via email: bridgetb.kelly@wisconsin.gov)